



**The value relevance of accounting measures based on International
Financial Reporting Standards (IFRS) before, during and after
hyperinflationary period in Zimbabwe**

By

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DEDICATIONS

To my children, who are the reason why I work hard.

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I certify that this study is my own work (except where acknowledgements otherwise indicate) and has not been submitted, in whole or in part, for another degree at this or any other university.

Martin Makaya

Signed by candidate

July 2017

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LIST OF ACRONYMS

BP	Botswana Pula
BVPS	Book Value Per Share of Equity
CMBAR	Capital Market-Based Accounting Research
CPI	Consumer Price Index
DRC	Democratic Republic of Congo
ED	Exposure Draft
EPS	Earnings Per Share
ESAP	Economic Structural Adjustment Programme
EU	European Union
FASB	Financial Accounting Standards Board
FDI	Foreign Direct Investment
FTLRP	Fast Track Land Reform Programme
GAAP	Generally Accepted Accounting Practices
GDP	Gross Domestic Product
GNU	Government of National Unity
GPA	Global Political Agreement
HC	Historical Cost
HKAS	Historical Cost Accounting Standards in Honk Kong
IA	Incremental Association
IAS	International Accounting Standards
IASB	International Accounting Standards Board
IASC	International Accounting Standards Committee
ICAZ	Institute of Chartered Accountants of Zimbabwe
IFAC	International Federation of Accountants
IFRIC	International Financial Reporting Interpretations Committee
IFRS	International Financial Reporting Standards
IOSCO	International Organisation of Securities Commission
MDC	Movement for Democratic Change
MERP	Millennium Economic Recovery Programme
MIC	Marginal Information Content
MNCs	Multi-National Companies

NERP	National Economic Recovery Programme
OMIR	Old Mutual Implied Rate
PAAB	Public Accountants and Auditors Board
RA	Relative Association
RBZ	Reserve Bank of Zimbabwe
SADC	Southern African Development Community
SAPRIN	Structural Adjustment Participatory Review International Network
SI	Statutory Instrument
SMEs	Small and Medium-sized Entities
STERP	Short Term Economic Recovery Programme
UK	United Kingdom
UNDP	United Nations Development Programme
UNWTO	United Nations World Trade Organisation
US\$ or USD	United States Dollar
USA or US	United States of America
ZANU PF	Zimbabwe African National Union Patriotic Front
ZAPB	Zimbabwe Accounting Practices Board
ZAR	South African Rand
ZCTU	Zimbabwe Congress of Trade Unions
ZDERA	Zimbabwe Democracy and Economic Recovery Act
ZimAsset	Zimbabwe Agenda for Sustainable Socio-Economic Transformation
ZIMPREST	Zimbabwe Programme for Economic and Social Transformation
ZSE	Zimbabwe Stock Exchange

ABSTRACT

This study examines the value relevance of International Financial Reporting Standards (IFRS) based accounting measures for the periods before, during and after hyperinflation in Zimbabwe. The study uses a sample of 30 listed companies for the entire period from 1996 to 2013. It uses the fixed effects (FE) technique to examine the value relevance of IFRS based accounting numbers using the price model as the main tool for analysis and thereafter, the returns model as an additional tool for further analysis to this study

Using the price model, the results show that IFRS based accounting measures in the form of earnings per share (EPS) and book value of equity per share (BVPS) are more value relevant before and during the hyperinflation periods relative to the after-hyperinflation period using the share prices 4 months after year end as proxies for firm value. The results also show that EPS is more value relevant before and during the hyperinflation period where as BVPS is not. The results further show that both EPS and BVPS are not value relevant for the period after hyperinflation when share prices 4 months after year end are used in the analysis. Further tests under the price model show no change in the conclusions reached if share prices 5 and 6 months after year end are used. Furthermore, tests based on a year on year analysis show that IFRS based accounting measures were more value relevant before and during the hyperinflation period relative to the after the hyperinflation period. In addition, for the period during hyperinflation, the year on year analysis shows that the EPS measure was value relevant for all the years while the BVPS was not for the years 2003 and 2005.

A further test on whether historical cost IFRS based accounting measures are more value relevant than inflation adjusted IFRS based accounting measures (used in the main analysis) was also conducted for the period during hyperinflation (i.e. 2000-2005 only). The results based on this analysis show that both historical cost and inflation adjusted IFRS based accounting measures are value relevant during a hyperinflationary period irrespective of whether share prices 4, 5 or 6 months are used as proxies for firm value.

Thus, this finding shows that historical cost and inflation adjusted accounting information should be used as complements and not as substitutes for each other.

Using the returns model under additional analysis, the results further show that the accounting measures were more value relevant before and during the hyperinflation periods relative to the after-hyperinflation period. The results also show that EPS was value relevant before and during hyperinflation irrespective of whether share returns 4, 5 or 6 months after year end were used in the analysis. In addition, further tests based on the returns model show that both historical cost and inflation adjusted sets of accounting measures are value relevant for share valuation purposes during the hyperinflation period. This finding confirms that both historical cost and inflation adjusted accounting measures are value relevant and thus should be used jointly.

Keywords: Zimbabwe, Emerging capital markets, Accounting standards, Value relevance, Hyperinflation, Price model, Fixed effects, International Financial Reporting Standards, Zimbabwe Stock Exchange.

CHAPTER 1

INTRODUCTION

1.1 Background

Zimbabwe has over the years significantly changed from being a well-diversified export oriented economy during the late 1970s to a small imports-dependent economy post 2013. The Zimbabwean economy has shrunk to a small imports-dependent economy owing to economic policies that did not yield the desired results. Specifically, before hyperinflation between 1996 and 1999, the external debt as a percentage of Gross Domestic Product (GDP) grew from 44% at the termination of the Economic Structural Adjustment Programme (ESAP) in 1998 to an average of 77% by end of 1999 (ZimStat, 2001). The annual inflation rates rapidly increased averaging 16.6%, 19.8%, 46.6% and 56.9% for the years ended 31 December 1996, 1997, 1998 and 1999 respectively (ZimStat, 2001) while annual economic growth rates were on a decline averaging 10.4%, 2.7%, 2.9% and -0.8% respectively for the same years (UNDP, 2008). The budget deficit between 1996 and 1999 averaged -6.7% of GDP (ZimStat, 2001). The Zimbabwe economy gradually collapsed towards the millennium and effective 1 January 2000, it was determined to be hyperinflationary (ICAZ 2000; ZSE 2000).

During the hyperinflationary period between 2000 and 2005, the economy rapidly collapsed mainly due to high levels of inflation. Inflation was reported at 598.7% by 31 December 2003 (Kanyenze et al., 2011) largely because of excessive monetary expansion (Ndlela, 2011). On 9 January 2009, the Ministry of Finance (MOF) dollarized the economy in order to bring about monetary and economic stability (Kanyenze et al., 2011). The economy temporarily improved notably between 2009 and 2012 when the GDP grew by 6% in 2009; 11.4% in 2010; 11.9% in 2011 and 10.6% in 2012 but only to significantly fall to 4.5% by the end of 2013 (ZimStat, 2013).

Despite the difficult economic periods that the country faced as highlighted above, the most important thing to note though about Zimbabwe is that the Zimbabwe Stock Exchange (ZSE) insisted that all ZSE listed entities publish audited IFRS based financial statements half yearly and annually (ZSE, 2000). Using the similar environments, the private sector, the capital market and the accounting needs arguments in comparing Zimbabwe to countries where IFRS originated, Chamisa (2000) reports that IFRS are relevant in Zimbabwe and therefore useful to comply with.

Steps were therefore taken to comply with the IFRS requirements in presenting accounting information in the annual reports published before (1996-1999), during (2000-2005) and after (2010-2013) hyperinflation in Zimbabwe (ICAZ, 2000). The steps included (a) the incorporation into law of the IFRS through Statutory Instrument 62 of 1996 entitled “Companies (Financial Statements) Regulations”, (SI 62 of 1996) before hyperinflation; (b) the requirement to restate the financial statements in accordance with International Accounting Standard (IAS) 29, Financial Reporting in Hyperinflationary Economies during hyperinflation; and (c) religiously complying with the dictates of IFRS in changing the functional currency after hyperinflation.

Therefore, it is the key developments in the accounting profession as enunciated above which partly justify the examination of the value relevance of IFRS based accounting measures before, during and after hyperinflation in Zimbabwe. In particular, the key question: “which IFRS accounting measure between the earnings per share (EPS) and the book value of equity per share (BVPS) is value relevant for share valuation purposes before, during and after hyperinflation?” is central to this study.

The periods before, during and after hyperinflation explained above will also trace the performance of the Zimbabwe Stock Exchange (ZSE) through the changes in share prices after the publication of IFRS based accounting information by sampled companies on the ZSE. ZSE is the only official securities exchange in Zimbabwe that was operational before, during and after hyperinflation and it required the publication of audited IFRS based financial statements and the accounting measures therein is presumed to influence share prices. All shares listed on the ZSE have an equal chance of being traded in either through the Industrial Index or the Mining Index. Hence, ZSE therefore presents itself as an appropriate securities exchange to draw a sample of companies whose IFRS based accounting measures are used to examine the value relevance before, during and after hyperinflation in Zimbabwe.

The next section presents a review of the studies conducted on Zimbabwe before, during and after taking note of any similarities, differences, problems and/or limitations that could be used to justify the current study.

1.2 Prior studies and their limitations

In this study, prior studies on the value relevance of accounting information are considered under four broad categories: (a) studies conducted in stable economies where the accounting information was based on domestic/local accounting standards, (b) studies conducted in stable economies where there was a change from local accounting standards to IFRS, (c) studies conducted during economic and/or financial crisis and (d) studies conducted before and after economic and/or financial crisis.

Previous studies conducted in stable economies with the use of domestic accounting standards are dominated by those conducted in the US. US GAAP based empirical studies comprise those done by Amir and Lev (1996), Francis and Schipper (1999), Bryant (2003), Wang et al. (2005) and Jenkins et al. (2009). The research findings for the US based studies vary between being value relevant and not being value relevant. Prior studies in other stable economies excluding the US with the use of the local GAAP were done by Niskanen et al. (2000) in Finland, Nilsson (2003) in Sweden, Suijs (2007) in the Netherlands, Jifri and Citron (2007) in the UK, Dahmash et al. (2009) in Australia and So and Smith (2009) in Hong Kong who largely found the accounting measures value relevant.

Prior studies in stable economies with a change from domestic accounting standards to IFRS identified in this study occurred mainly in Europe following the adoption of IFRS with effect from 1 January 2005 (e.g. Capkun et al., 2008; Clarkson et al., 2011). In China, several studies were conducted which compared the value relevance of accounting information based on domestic accounting standards and IFRS (e.g. Bao & Chow, 1999; Sami & Zhou, 2004; Chamisa et al., 2012). Similar studies in other countries where there was a change from local accounting standards to IFRS include El Shamy and Kayed (2005), Alfaraih (2009) (Kuwait) and Filip and Raffournier (2010) (Romania). The findings of these studies are mixed.

Earlier research on the value relevance of accounting information conducted during economic and/or financial crisis were conducted by Gordon (2001), Filip and Raffournier (2010) and Chamisa et al. (2011). These studies largely report positive value relevance results. The main difference between the current study and the prior studies on the value relevance of accounting information during economic and / or financial crisis is that the current study covers three distinct periods – before (1996-1999), during (2000-2005) and after (2010-2013) the economic and/or

financial crisis while the prior studies do not. The current study investigates the value relevance of IFRS-based accounting measures during and after the hyper-inflationary periods when compared with the period before hyper-inflation.

The four studies carried out before and after economic and/or financial crisis were conducted by Graham et al. (2000), Ho et al. (2001), Davis-Friday and Gordon (2005) and Choi et al. (2010). Before and after the economic and/or financial crisis, the results show that the value relevance of accounting information decreases or remain unchanged. There are three key differences between this study and the four studies. First, the four empirical studies resulted from an instantaneous event that triggered widespread economic and/or financial crisis namely currency devaluation, yet the current study was precipitated by a number of economic and political events before, during and after the economic and/or financial crisis. Second, the four studies are based on the local GAAP accounting measures, whereas the accounting measures in the current study are based on IFRS described by Davis-Friday and Gordon (2005:2) as “superior”. Third, the four studies dealt with a year-long crisis whilst there was a multiple year crisis in Zimbabwe.

Two prior studies have been identified in this current study which have investigated the value relevance of accounting information in Zimbabwe either before an economic and/or financial crisis (Oppong, 1993) or during an economic and/or financial crisis (hyper-inflationary period) (Chamisa et al., 2011). The study by Oppong (1993) for the 1986-year tested the relationship between a set of accounting measures of profitability and share prices on the ZSE using industrial companies. He found that accounting measures of profitability were value relevant. The study by Chamisa et al. (2011) investigated the relative and incremental value relevance of IFRS based inflation adjusted (IA) and historical cost (HC) accounting measures. The study found that both IA and HC accounting information are value relevant under the price and return models. Again the main difference between the current study and these two studies is that the former covers three distinct periods – before (1996-1999), during (2000-2005) and after (2010-2013) the economic/financial crisis, while the later focus on either one of these periods (that is, before crisis – Oppong, 1993 and during crisis – Chamisa et al. 2011).

1.3 Research objective and its justification

The purpose of this study is to investigate the value relevance of IFRS based accounting measures in the form of EPS and BVPS before hyperinflation (1996-1999), during hyperinflation (2000-2005) and after hyperinflation (2010-2013).

The three periods in this study witnessed changes in the accounting practices when Accounting Standards (IASs) were incorporated into law through SI 62 of 1996 before hyperinflation, IAS 29 was applied during hyperinflation and the economy was dollarized after hyperinflation. It will therefore be interesting to investigate the value relevance of IFRS based accounting measures before, during and after hyperinflation and suggest which accounting measures is more value relevant than the other for share valuation purposes. This is particularly important because the two prior studies on value relevance of accounting measures in Zimbabwe imply that the results are not entirely predictable.

The segmentation of the entire period into before, during and after an extraordinary hyperinflationary period in a developing economy set up adds an additional dimension to the body of knowledge on the value reliance of IFRS based accounting measures since the events leading to or in periods before, during and after hyperinflation impact the economy differently. In addition, this segmentation provides an opportunity for inferences and interpretations that are both contextual and meaningful. This dissertation is therefore the first comprehensive study to examine the value relevance of accounting measures based on IFRS in Zimbabwe before, during and after hyperinflation. This study contributes to the debate on the value relevance of accounting measures in: (a) economies on the brink of being hyperinflationary; (b) economies that are in hyperinflationary times (c) economies that have come out of hyperinflation.

1.4 Research method

This empirical study investigates the value relevance of IFRS-based accounting measures on a sample of 30 listed companies in Zimbabwe for periods before, during and after hyperinflation. The three periods of the study give a 14-year or 168-month window of analysis for companies in various industries in Zimbabwe. The industries exclude financial institutions (banks and insurance companies) “whose accounting practices are so distinct that their valuation parameters

are likely to be substantially different from those for industrial firms” (Graham & King, 2000:453). Similar to Graham and King (2000), the accounting data used is IFRS compliant consolidated accounting information presented in annual reports before, during and after hyperinflation. Barth et al. (2001) observe that value relevance studies based on specific settings, for instance hyperinflation, require several years to effectively explain the value relevance of a chosen set of accounting measures, thus a 14-year period covered by this study is long enough to provide a basis for detailed interpretations.

EPS and BVPS are the two independent variables while the share price is the dependent variable to be used in measuring and analysing the value relevance before, during and after hyperinflation. The variables will be run in STATA using the price model as the main tool for analysis ahead of the returns model because the returns model is unable to match accounting amounts to periods. Nevertheless, the returns model is also used as a tool under further analysis to the study. The research methodology will be discussed in great depth in Chapter 4.

1.5 Organisation of the study

The study is organised into six chapters. Chapter 2 looks at Zimbabwe’s economic policies, accounting and financial reporting landscape before, during and after hyperinflation. It also chronicles the characteristics, size, performance and the capital efficiency of the ZSE for each of the three periods. Chapter 3 critically reviews prior literature on the value relevance of accounting information conducted (a) in stable economies, (b) during economic and / or financial crisis and (c) before and after economic and /or financial crisis. Chapter 4 presents the research methodology. Chapter 5 presents the analysis and interpretation of the results before, during and after hyperinflation. Thereafter, Chapter 6 presents the conclusions of the study.

CHAPTER 2
THE ZIMBABWE ECONOMIC ENVIRONMENT AND THE ACCOUNTING
PRACTICES

“Accounting must respond to the ever-changing needs of society and must reflect the...economic conditions in which it operates” (Hove, 1986:38).

2.1 Introduction

Economic conditions may determine the accounting methods to apply. According to Ye (2007), accounting responds significantly to economic conditions.

This Chapter provides an overview of the economic environment and accounting practices in Zimbabwe¹. The Chapter seeks to examine the main political and economic decisions that shaped the three distinct periods and their effect on accounting practices. For example, the before hyperinflation (that is, 1996 to 1999) period was punctuated by a series of events that contributed to hyperinflation in Zimbabwe. These events were both economic and political. The economic events included the compensation of war veterans in 1997 by the Zimbabwean government for their participation in the armed struggle through unbudgeted funds. The pay-out was therefore funded through the printing of money. Printing money to fund the war veterans’ gratuities had significant implications on inflation, since an increase in money supply was accompanied by an increase in the price level.

From the political perspective, the participation of the Zimbabwean troops in an expensive Democratic Republic of Congo (DRC) conflict meant that the cash constrained government of Zimbabwe had to print more money to finance the ongoing conflict in the DRC. The ongoing printing of more money fuelled a further rise in the inflation rate in the country. Furthermore, the formation of the Movement for Democratic Change (MDC) in September 1999 caused a political rift between the MDC and the former coloniser the United Kingdom (UK) arguably on one side against the ruling party Zanu P. F. on the other. The ruling party accused the UK of sponsoring the MDC formation. These political developments led to a further deterioration of the economy.

¹ Hellstrom (2007) notes that an in-depth knowledge of the economy and accounting practices is vital for value relevance studies.

The events that took place during the hyperinflation period (i.e. the period between 2000 and 2005) included the chaotic Fast Track Land Reform Programme (FTLRP). The FTLRP led to some disagreements between the Zimbabwean government, the European Union (EU) and United States of America (USA). Thus, the EU and USA had to put some Zimbabwean parastatals and individuals under economic sanctions. The economic sanctions damaged the economy leading to Zimbabwe falling into a hyperinflation phase. The onset of hyperinflation necessitated the use of International Accounting Standard 29 (IAS 29), Financial Reporting in Hyperinflationary Economies between 2000 and 2005. For this study, the period 2006 to 2009 is excluded because it was a period of economic crisis. Exchange rates were controlled by government and zeros were removed each time the currency accumulated a lot of digits. Severe hyperinflation of as high as 231 million percent was recorded in October 2008 (ZimStat, 2009).

The events that took place after hyperinflation (i.e. period between 2010 and 2013) included the introduction of the multicurrency system in the Zimbabwean economy with the United States of America dollar (US\$ or USD) being the dominant currency in circulation in the economy.

In view of both the economic and political developments that took place during the entire period under consideration, this chapter is organised as follows: Section 2.2 narrates the economic environment witnessed by Zimbabwe before, during and after hyperinflation. Section 2.3 explores the Zimbabwe Stock Exchange (ZSE) characteristics, size, performance and capital efficiency before, during and after hyperinflation. Section 2.4 chronicles the development of accounting practices in Zimbabwe while Section 2.5 seeks to answer the question whether IFRS are relevant in Zimbabwe. Finally, section 2.6 is a summary of the chapter.

2.2 The Zimbabwe economic environment before, during and after hyperinflation

For the purposes of this study, Zimbabwe has undergone three distinct economic stages. Several economic programmes or blue prints were developed in each of the three periods. Table 2.1 below summarises the key economic policy initiatives for the periods 1996-999, 2000-2005 and 2010-2013.

TABLE 2.1
Zimbabwe's economic planning programmes, 1996 – 1999; 2000 – 2005; 2010 - 2013

Date	Economic blueprint/plan	Responsible authority
<i>(a) 1996 – 1999 (Before hyperinflation)</i>		
Jan 1996	Economic Structural Adjustment Programme (ESAP) (officially abandoned in 1998)	Government of Zimbabwe but recommended by the World Bank and IMF
Feb 1998	Zimbabwe Programme for Economic and Social Transformation (ZIMPREST)	Ministry of Finance
<i>(b) 2000 – 2005 (During hyperinflation)</i>		
Aug 2001	Millennium Economic Recovery Programme (MERP)	Ministry of Finance
Apr 2003	National Economic Revival Plan (NERP)	Ministry of Finance
Nov 2004	2005 Macroeconomic Policy Framework	Ministry of Finance
<i>(c) 2010 – 2013 (After hyperinflation)</i>		
Mar 2009	Short- Term Emergency Recovery Programme (STERP)	Ministry of Finance
Oct 2013	Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZimAsset)	National Economic Planning Commission, Office of the President and Cabinet

Sources: UNDP (2008); Government of Zimbabwe (2013)

Following the failure of ESAP largely on account of lack of full acceptance in Zimbabwe, the Zimbabwe Programme for Economic and Social Transformation (ZIMPREST), the Millennium Economic Recovery Programme (MERP), the National Economic Revival Programme (NERP) and the 2005 Macroeconomic Policy Framework (MPF) were largely not implemented (Kanyenze et al., 2011; Ndhlela, 2011). After hyperinflation, economic growth rebounded on the back of the multi-currency regime and the implementation of a stabilization and recovery programme, the Short-Term Emergency Recovery Programme (STERP). STERP succeeded in stabilising the economy (Kanyenze et al., 2011; Ndhlela, 2011). After STERP, the ruling ZANU P.F party unveiled a policy framework called the Zimbabwe Agenda for Sustainable Economic Transformation (Zim Asset) after winning the harmonised elections on 31 July 2013. ZimAsset became the blueprint to guide economic development over the five-year period from October 2013 to December 2018. Despite the economic policy initiatives as highlighted in Table 2.1 above, not much progress was made to address the structurally binding constraints afflicting the economy (Kanyenze et al., 2011; Ndhlela, 2011).

Table 2.2 presents a summary of evidence of constraints that Zimbabwe was facing based on the economic performance indicators before hyperinflation (1996-1999), during hyperinflation (2000-2005) and after hyperinflation (2010-2013).

TABLE 2.2
Economic indicators before, during and after hyperinflation in Zimbabwe

Economic indicator	Time frame	1996-1999	2000-2005	2010-2013
Inflation rate	Average	36.1%	232.2%	3.1%
GDP size at market price (million)	Period end	Z\$231 986 (US\$6 610)	Z\$522 252 (US\$3 348)	US\$13 490
GDP growth rate	Average	39.7%	-6.2%	43.2%
GDP per capita at constant prices	Period end	US\$476	US\$452	US\$891
Budget deficit as a % of GDP	Average	-6.7%	-7.2%	-6.5%
Broad money supply (M3) growth	Average	26.4%	185.3%	-
Lending rate	Average	46.9%	61.6%	22.1%
Contribution to GDP at current prices				
- Agriculture	Average	20.6%	19.3%	12.9%
- Mining	Average	1.4%	5.8%	10.2%
- Manufacturing	Average	14.5%	16.1%	13.3%
- Distribution, hotels & restaurants	Average	15.9%	19.4%	15.8%
- Construction	Average	2.2%	3.1%	3.1%
Foreign exchange rate	Average	Z\$28	Controlled	US\$1
ZSE market capitalisation (millions)	Period end	Z\$90 013 (US\$2 564)	Z\$198 456 (US\$1 272)	US\$5 203
ZSE market capitalisation as a % of GDP	Period end	38%	38%	38%

Source: ZimStat (2013)

2.2.1 Gradual collapse of the economy before hyperinflation: period 1996 to 1999

The before hyperinflation period was marked by the end of ESAP in 1996. ESAP was a foreign induced policy which came to an end after the economy had gone into high external debt which was also accompanied by increasing poverty levels (Mumbengegwi, 2002; Kanyenze et al., 2011). While external debt as a percentage of GDP averaged 44% before ESAP, it rose to an average of 77% during the ESAP period. Similarly, the incidence of poverty increased from 40.4% in 1990/91 to 63.3% by 1995/96. In addition to that, the incidence of extreme poverty (households that could not meet basic food requirements) increased from 16.7% to 35.7% over the same period (ZimStat, 2000). The death of the foreign induced policy (i.e. ESAP) led to the birth of the home grown economy policy called ZIMPREST in 1998. However, the ZIMPREST policy suffered a still birth because of the political events at the time the economic blueprint was introduced.

The crash of the Zimbabwe dollar on 14 November 1997, which is commonly referred to as the 'Black Friday', marked the genesis of the economic crisis in Zimbabwe (Kanyenze et al., 2011; Ndlela, 2011). The crash was caused by the government's unbudgeted payment of gratuities to veterans of the liberation struggle (Mumbengegwi, 2002; Kanyenze et al., 2011; Ndlela, 2011). Because of the massive depreciation of the Zimbabwe dollar, input costs soared and this weakened the viability of producers and raised the cost of living (Mumbengegwi, 2002; Kanyenze et al., 2011). In August 1998, the government unilaterally intervened in the DRC by sending troops to help the government of that country to repel an insurrection by rebels. This cost Zimbabwe an estimated US\$33 million a month (SAPRIN, 2002; Mumbengegwi, 2002; UNDP, 2008; Ndlela, 2011; Kanyenze et al., 2011). Involvement in the DRC internal conflict and the payment of gratuities contributed to the ballooning fiscal deficit (UNDP, 2008). Kanyenze et al. (2011) described the twin decisions of the gratuities payment and DRC involvement as irrational.

Following the two decisions above, the economic indicators started to deteriorate. As at 31 December 1996, 1997, 1998 and 1999 the inflation rate was 16.6%, 19.8%, 46.6% and 56.9% (ZimStat, 2001) while the economic growth rate was 10.4%, 2.7%, 2.9% and -0.8% respectively (UNDP, 2008). During the same period, the budget deficit averaged -6.7% of GDP, broad money supply was an average of 26%, the lending rate averaged 46.9% and the average exchange rate was Z\$28 to the US\$ (ZimStat, 2001). The statistics above show a gradual decline or collapse of the economy over the years and that there were no signs of a reversal.

2.2.2 Hyperinflation and sharp economic decline: period 2000 to 2005

2.2.2.1 The economic environment

Effective 1 January 2000, the Zimbabwe economy became hyperinflationary (ICAZ 2000; ZSE 2000). During hyperinflation, a series of political events continued to occur. For instance, in June 2001, the government undertook a process of occupation of white-owned commercial farms under the Fast-Track Land Reform Programme (FTLRP). The FTLRP has an emotional and controversial background. First, the government reacted in May 1997 to the Tony Blair led British labour government's refusal to fund land purchase in Zimbabwe (Moyo, 2000; Mumbengegwi, 2002; Kanyenze et al., 2011). Second, the Movement for Democratic Change (MDC) led by Morgan Tsvangirai – an offshoot of the Zimbabwe Congress of Trade Unions (ZCTU) was born in 1999. To ignite political support and keep at bay the MDC, the ruling party ZANU P.F undertook to make available unused land to smallholder farmers. Third, chief Enock Zenda Gahadza (or chief Svosve) from Mashonaland East communal lands led his people to invade Daskop Farm – then under white commercial farmer Ancus Kenbell - in order to force the Government to redistribute land to the people (Kanyenze et al., 2011). The government acceded and replaced the willing-buyer-willing-seller policy with the violent and chaotic occupation of the commercial farms through the FTLRP in 2001 (ADB, 2007; Chamisa et al., 2011). Thus, the problem in the agriculture sector set off a series of negative chain reactions to the entire economy from then on.

In the same year, the European Union (EU) and the United States of America (US or USA) placed some parastatals and individuals in Zimbabwe under economic sanctions (Kanyenze et al., 2011) in disapproval of the violent occupation of commercial farms. In support, Washington came up with the Zimbabwe Democracy and Economic Recovery Act (ZDERA) that was signed into law by George W. Bush on December 4, 2001 (Kanyenze et al., 2011). The EU under the instigation of London for the same reason slapped some senior ZANU P.F. government officials with travel restrictions (Kanyenze et al., 2011). Washington prohibited US companies from doing business in Zimbabwe. Thus, Zimbabwean businesses connected to the US were crippled by such a decision.

Furthermore, the massive nationwide job stay-aways organised by the ZCTU in July 2001 negatively affected production (ADB, 2007; Kanyenze et al., 2011). Labour was demonstrating against the rapid decay of the economy. Moreover, the presidential elections of March 2002 which

were funded from a constrained budget and the price and wage freezes of November 2002 had adverse effects on the economy (UNDP, 2008; Kanyenze et al., 2011). These are some of the developments that exacerbated the economic decline in Zimbabwe.

From 2003 onwards, the economy was hostile. Key sectors of the economy namely agriculture, manufacturing and mining were no longer performing (UNDP, 2008). Agriculture was no longer performing because the new major players, the resettled A1 and A2 farmers, were under resourced (Moyo, 2000). About 840 manufacturing and mining companies closed (UNDP, 2008; Kanyenze et al., 2011). Reduced agriculture production, closure of manufacturing and mining companies brought about the sharp economic decline. The interventions by government to the economic decline were knee-jerk and incoherent. Ultimately, government had narrow options to tame the economic decay. Inflation reached 598.7% by 31 December 2003 (ADB, 2007; Kanyenze et al., 2011; Mangena et al., 2012). Thus, the Zimbabwean dollar significantly fell in value and became unattractive (Kanyenze et al., 2011; Mangena et al., 2012).

A new governor of the Reserve Bank of Zimbabwe (RBZ) was appointed in December 2003 to take charge of the economic turnaround efforts. The RBZ intervened extensively in the economy through its involvement with quasi-fiscal activities, funded through the printing of money (Kanyenze et al., 2011; Mangena et al., 2012). The printing of money against the backdrop of a weakening economy led to severe hyperinflation between 2006 and early 2009.

2.2.2.2 The causes of hyperinflation in Zimbabwe

To a great extent, the twin decisions, that is the unbudgeted gratuities payment and the costly DRC involvement, compounded by the FTLRP², provided a fertile ground for hyperinflation in Zimbabwe (Ndlela, 2011). Hyperinflation was caused mainly by three reasons. First, the rapid growth of money supply caused hyperinflation. Ndlela (2011:16) observes that:

“...the emergence of hyperinflation has been linked to excessive monetary expansion. As a result, monetary growth averaged 61 percent in 1999 and reached 60 percent in December 2000. Inflationary pressures further increased with the growing impact of the growth in money supply...”

² Chamisa et al. (2011:8) argue that “the Zimbabwe economy experienced hyperinflation because of inappropriate economic policies, the chaotic and often violent fast track land reform program and political instability”.

Kanyenze et al. (2011:44) also argue that “in 2003, the escalation of inflation was fuelled by rapid money growth. There is a close relationship between inflation and growth in broad money supply”. The impact of the rapid money supply growth overwhelmed government’s efforts to control hyperinflation.

Second, the control of the prices of products at levels below cost through the government controlled National Income and Pricing Commission of Zimbabwe, ostensibly to cushion the populace from rising inflation, contributed to hyperinflation (Kanyenze et al., 2011). Price controls (for instance through the Statutory Instrument 302 of 2002 on the Control of the Price of Goods (Price Freeze)) inadvertently created product shortages giving rise to the black market (Kanyenze et al., 2011). The black-market product prices became a source of hyperinflation.

Third, Kanyenze et al. (2011) and Ndhlela (2011) concur that the foreign currency shortages (mainly arising from the exodus of donors and investors from Zimbabwe) induced the rapid loss of value in the Zimbabwe currency, hence hyperinflation.

2.2.2.3 The effects of hyperinflation in Zimbabwe

The shortage of foreign currency for companies and the public to buy essential imports resulted from hyperinflation (Ndhlela, 2011; Mangena et al., 2012). The shortage of foreign currency gave birth to the parallel market where exchange rates shot up by the day (Mumbengegwi, 2002). These parallel markets which had the currency charged premiums as high as 20% to 45%, fuelling hyperinflation further (Ndhlela, 2011; Mangena et al, 2012).

The sharp economic decline with negative impact on the government, individuals, industries and severely diminished agriculture output were other direct effects of hyperinflation. Wines (2007:3) observed that “hyperinflation bankrupted the government, left 8 in 10 citizens destitute and decimated the country’s factories and farms. Hyperinflation had also eroded the government’s control over every aspect of public life and, by extension, over its own future”. Thus, the trading environment became difficult for business.

2.2.3 Economic rebound and/or recovery after hyperinflation: period 2010 to 2013

On 9 January 2009, Government accepted that the Zimbabwean dollar had suffered significant value loss and that a stable macroeconomic environment needed to be restored (Ministry of Finance, 2009a). As a result, the economy was dollarized in order to bring about monetary and economic stability (Kanyenze et al., 2011; Brixiova & Ncube, 2014).

The multiple currency system comprising the Zimbabwe dollar (Z\$), US dollar (US\$), South African rand (ZAR) and the Botswana pula (BP) began to be used for the first time in Zimbabwe (Ndlela, 2011; Kanyenze et al. 2011). The US\$ dominated the currencies in use. Kanyenze et al. (2011) argue that Zimbabwe welcomed the use of the US\$. To the contrary about Zimbabwe's welcoming of the use of the US\$, Brixiova and Ncube (2014) argued that the US\$ was overvalued in Zimbabwe. They argued that the South African rand was the optimal currency that Zimbabwe should have adopted as a dominant currency under the multicurrency system (Brixiova and Ncube, 2014). Their argument was that the South African rand could have addressed the problem of overvaluation and promoted exports and growth (Brixiova and Ncube, 2014). However, in view of the economic and political volatility in South Africa, the use of the South African rand as legal tender in Zimbabwe became debatable and insurmountable.

In an endeavour to restore the macroeconomic stability, the Government of National Unity (GNU) introduced the Short-Term Emergency Recovery Programme (STERP) in early 2009 (Kanyenze et al., 2011; Noko, 2011; Brixiova & Ncube 2014). Spurred by the multi-currency environment and STERP initiatives, the economy improved notably between 2009 and 2012. During this period, GDP grew by 6% in 2009; 11.4% in 2010; 11.9% in 2011 and 10.6% in 2012 (ZimStat, 2013). Furthermore, the ZSE market capitalisation reached a US\$5.2 billion mark by the end of 2013. While some economists argued that this growth signalled an economic rebound (Kanyenze et al., 2011; Ndlela, 2011), the government argued that it was an economic recovery (Ministry of Finance, 2009b). The Government further argued that the co-hosting (with Zambia) of the 20th Session of the United Nations World Tourism Organisation (UNWTO) General Assembly in 2012 contributed to economic recovery (ZimGov, 2013), while economists posit that the Zimbabwe economy did not benefit much from the event (Kanyenze et al., 2011).

Despite the reported economic growth rates from 2009 to 2012, the economy started weakening again after ZANU P.F won the March 2013 harmonised elections. The economic growth rate fell from 10.6% in 2012 to 4.5% by the end of 2013 (ZimStat, 2013). Liquidity constraints stalked the country amid a sharp decline in agriculture production. However, in response to the decline in economic growth, the government formulated a five-year economic plan called the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (Zim Asset) to drive the economy forward.

2.3 The Zimbabwe Stock Exchange (ZSE): Characteristics, size, performance and capital efficiency

2.3.1 Characteristics, size and performance of the ZSE

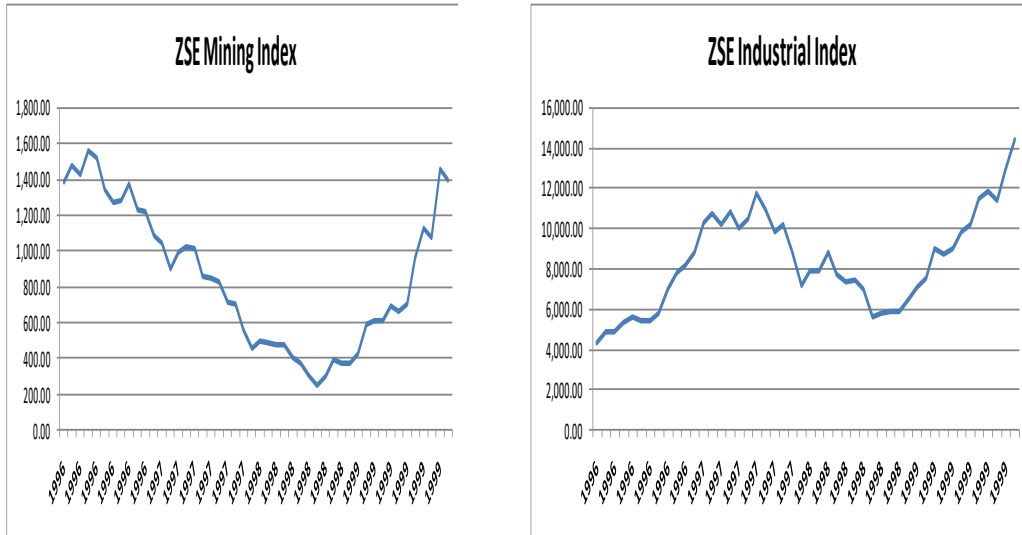
The ZSE is the only official securities exchange in Zimbabwe. It operates under the Securities Act (Chapter 24:25) which replaced the Zimbabwe Stock Exchange Act (1974). The ZSE is a member of the African Securities Exchange Association (ASEA). It is a medium sized emerging securities market monitored by the Standard & Poor's (S&P) Global Emerging Markets Database.

The ZSE's mandate, among other responsibilities, is to supervise companies listed on the exchange in terms of publishing audited IFRS-based financial statements annually and half-yearly. From 2013, the ZSE is undertaking a substantial administrative reform towards demutualisation (ZSE, 2014).

Over the years, the number of listed companies on the ZSE has marginally fluctuated. As at the end of 1999, 2005 and 2013, the ZSE counters were 72, 79 and 68 respectively (ZSE, 2014). The market capitalisation of these counters mirrors the size of the Zimbabwe economy. As at the end of 1999, 2005 and 2013, the total market capitalisation of the ZSE has been a consistent 38% of GDP (see Table 2.2). This suggests that there is a close relationship between the performance of ZSE and the economic performance of Zimbabwe.

The ZSE trades through the Industrial Index and the Mining Index. Figure 2.1 below shows the performance of the two indices before hyperinflation.

FIGURE 2.1
ZSE indices 1996 to 1999

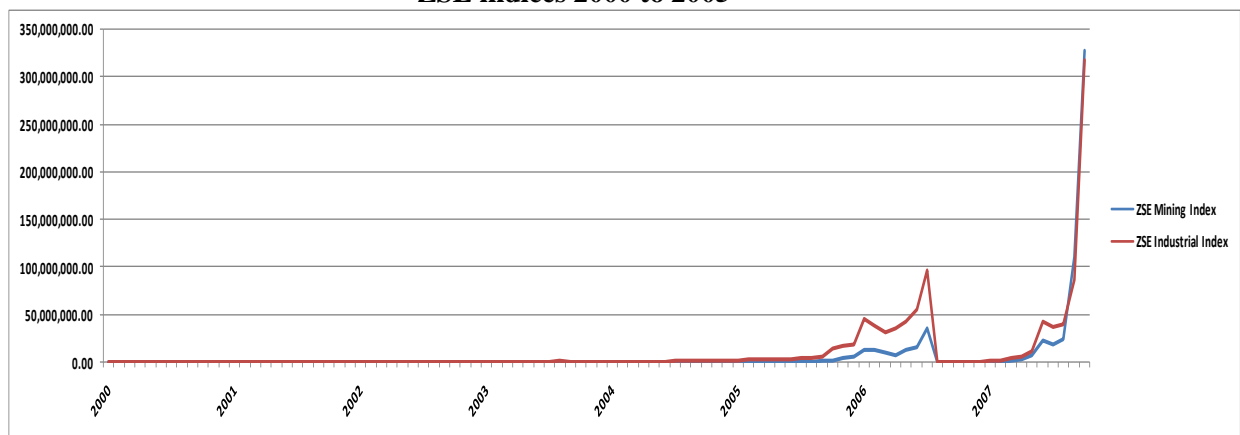


Source: ZSE (1999)

As depicted in Figure 2.1, in the period 1996 to 1999, the ZSE performed the worst in 1998. Investors were inactive on the securities market as they were pulled into the money market which had high interest rates (Mukwembi et al., 2014). The Mining Index significantly declined in 1998 as the mining sector took strain from the problems of labour unrest in the country (Kanyenze et al., 2011). The Industrial Index performed relatively better at first, again only to significantly fall in 1998.

Figure 2.2 below shows the performance of the two indices during hyperinflation.

FIGURE 2.2
ZSE indices 2000 to 2005

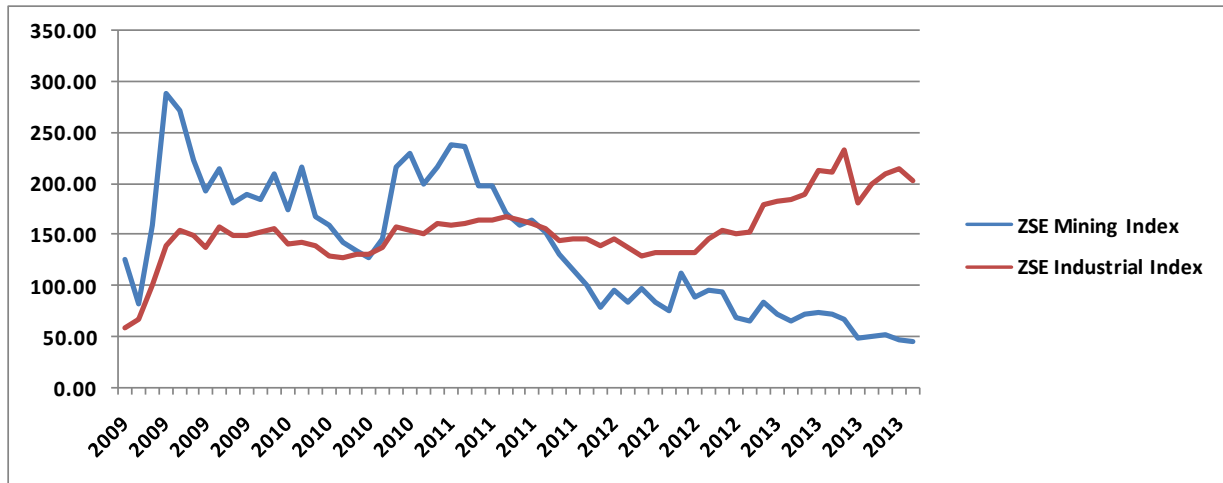


Source: ZSE (2005)

Figure 2.2 depicts that between 2000 and 2005, both the Mining and Industrial indices performed in a similar fashion. They were at the same level throughout the period.

After hyperinflation, the two indices performed as shown in Figure 2.3 below.

FIGURE 2.3
ZSE indices 2010 to 2013



Source: ZSE (2013)

After hyperinflation from 2010 to 2013, the ZSE's industrial index significantly rose in 2011 stabilising in 2012 before slowly picking up again in 2013. Similarly, the mining index first increased sharply in 2011 before it started decreasing. Declining commodity prices on the world market seem to have weighed on investor sentiment on mining. In general, the performance of capital markets, including the ZSE, reflects the country's economic performance, political and business climate. According to the World Bank (2011b), Zimbabwe ranked 157 out of 183 countries in the world, moving up two places from 2009 in terms of doing business. Its ranking, however, is still well below those of neighbouring countries such as South Africa (34), Namibia (69), and Botswana (52). This tells a story that there is room to improve the Zimbabwe investment and political climate.

2.3.2 Capital efficiency before, during and after hyperinflation

Jefferis and Smith (2005), Mlambo and Biekpe (2007), Sunde and Zivanomoyo (2008) and more recently Chikoko and Muparuri (2013) studied the capital efficiency of the ZSE. The results of the studies have been varying and intriguing about how efficient the ZSE is.

The ZSE has largely been deemed inefficient (Jefferies & Smith, 2005). This implies that the publication of positive or negative accounting numbers has the potential to affect the share prices. Jefferies and Smith (2005) further note that generally, African stock markets, inter alia, the ZSE, are inefficient due to (a) broader chronic economic instability; (b) institutional characteristics of markets like non-automation of the exchange; and (c) capital market restrictions that exist. In addition, Chikoko and Muparuri (2013) posit that the inefficiency is because the share trading environment is imperfect, while Mlambo and Biekpe (2007) observe that the inefficiency of some of the African markets is because of insider trading, lack of an automated trading system and liquidity constraints.

For the period before hyperinflation from 1996 to 1999, Mlambo and Biekpe (2007) found that the ZSE was efficient³. Using daily closing share prices and volumes between 1997 and 2002, the efficient market hypothesis was confirmed for Zimbabwe, although in weak form, ascribing the weak form efficiency to (a) the fact that the ZSE is one of the oldest capital markets on the African continent; and (b) thin trading (Mlambo & Biekpe, 2007).

For the period during hyperinflation from 2000 to 2005 period, the ZSE was inefficient (Sunde & Zivanomoyo, 2008). The ZSE provided an opportunity for investment practitioners to make huge share trading profits owing to its inefficiency. Njanike et al. (2009) found that the association studies such as the value relevance under hyperinflation should consider the impact of exogenous events (such as government announcements). They further suggested that researchers must exercise caution in interpreting the ZSE activity during hyperinflation because speculation would be rife as investors seek to cover themselves from hyperinflation (Njanike et al., 2009).

On another note, during hyperinflation, the securities market becomes very active ahead of other investment options like the property and foreign exchange markets, as it can keep abreast with hyperinflation (Njanike et al., 2009). For these reasons, the short horizon nature of the securities market under hyperinflationary conditions must explain the significant, if any, relationship between the accounting measures and the share prices. Any positive relationship between share prices and published accounting information under the hyperinflationary environment may arise from investors buying shares and hedging against hyperinflation (Njanike et al., 2009).

³ Kothari (2001) explains that an efficient capital market is one whose share price reflects the available information, financial information in particular.

For the period after hyperinflation from 2010 to 2013, no established capital (in)efficiency trend is known from prior research in Zimbabwe as this is a recent period. However, Jefferies and Smith (2005) note that when a market starts trading, it takes time for the share price discovery process⁴ to become known.

2.4. The development of accounting practices in Zimbabwe

2.4.1 Accounting practices in Zimbabwe before hyperinflation

Statutory Instrument (SI) 62 of 1996 of the Companies Act (Chapter 24:03), Companies (Financial Statements) Regulations was promulgated in Zimbabwe without any radical differences with existing International Accounting Standards (IASs) at that time (Chamisa, 2000). The SI was crafted substantially as a conceptual framework in line with the principles embodied in the IASs in force at that time. Unfortunately, the SI is now outdated and no longer covers all the IASs/IFRS adopted in Zimbabwe. Similarly, bringing financial reporting into the laws of the country has lagged significantly. For instance, IASs were last incorporated in regulations in 1999 up to IAS 29, Financial Reporting in Hyperinflationary Economies. As of 2013, the accounting standards that are not in Zimbabwean law are IAS 32, 33, 34, 35, 36, 37, 38, 39, 40 and 41 and IFRS 1 to 13.

The Public Accountants and Auditors Board (PAAB) was formed in April 1996 to lead the accounting profession. The PAAB was formed by an Act of Parliament to take over the role of prescribing from time to time the accounting standards for use in Zimbabwe. Since its formation in 1996, the PAAB has prescribed the use of the IFRS accounting framework.

2.4.2 Accounting practices in Zimbabwe during hyperinflation

2.4.2.1 Adoption and implementation of IAS 29

IFRS in general are categorised into three; those applicable to all industries, industry specific accounting standards and those that are economy specific. IAS 29 is specific to a hyperinflationary economy. According to IASB (2014:A944): -

“Hyperinflation is indicated by characteristics of the economic environment of a country which would include, but not limited to the following:

⁴ Wang et al. (2006:390) record that “also it seems that the market under reacts to accounting information up to 3 years”.

- (a) *The general population prefers to keep its wealth in non-monetary assets or in a relatively stable foreign currency. Amounts of local currency held are immediately invested to maintain purchasing power;*
- (b) *The general population regards monetary amounts not in terms of the local currency but in terms of a relatively stable foreign currency. Prices may be quoted in that currency;*
- (c) *Sales and purchases on credit take place at prices that compensate for the expected loss of purchasing power during the credit period, even if the period is short;*
- (d) *Interest rates, wages and prices are linked to a price index and*
- (e) *The cumulative inflation rate over three years is approaching, or exceeds, 100%”⁵*

The evidence that the Zimbabwe economy had become hyperinflationary came in various forms. ICAZ (1998) advanced the argument for the use of IAS 29 in the wake of (a) Zimbabweans buying tangible assets such as land, buildings and vehicles to store value, (b) individuals and companies trading in foreign currencies (particularly the United States dollar and the South African rand), (c) all sectors of the economy accommodating the use of the Consumer Price Index (CPI) to price goods and (d) inflation between 1997 and 2000 exceeding 100%.

Hence, in November 1999, the Zimbabwe economy was formally determined to be hyperinflationary (ZSE, 2000; ICAZ, 2000). To comply with IFRS, Zimbabwe proceeded to apply IAS 29. Research on the use of IAS 29 has documented that the accounting standard was received with criticism and resistance by both preparers and users of financial statements (ICAZ, 2000; Chamisa, 2007).

2.4.2.2 Criticisms and accounting challenges in the application of IAS 29

Bryn Thorn, the ICAZ President, in the ICAZ (2000-2001:16) annual report remarked that “IAS 29 has attracted a fair amount of criticism with the first full year of its application. The main points have been to do with the cost of the exercise and the result that it is giving”.

ICAZ (2009) added that there were challenges in the application of IAS 29⁶ particularly towards and during severe hyperinflation. The challenges arose from (a) surrogate rates such as the Old Mutual Implied Rate (OMIR) which was being used when official exchange rates could not be obtained (b) inability to determine the average exchange rates because of extreme volatility and (c) unavailability of spot exchange rates which led to their replacement by a blend of artificially legislated/arbitrary exchange rates (ZSE, 2009; ICAZ, 2009).

⁵ Filip and Raffournier (2010) noted that IAS 29 does not establish an absolute rate at which hyperinflation is deemed to arise.

⁶ Filip and Raffournier (2010) report that Romania failed to apply IAS 29 because the necessary information was not available.

The other challenge in the application of IAS 29 included the need for appropriate accounting skills and experience in applying it. These skills and experience were not easily available in Zimbabwe, partly due to the brain drain (World Bank, 2011a). For instance, 55% of ICAZ members left for other countries leaving behind a critical shortage of qualified accountants (ICAZ, 2009). The accounting profession in Zimbabwe went ahead with the adoption and implementation of IAS 29 for the years ending 31 December 2000 onwards despite its criticisms and resistance by preparers and users of the financial statements.

2.4.3 Accounting practices in Zimbabwe post hyperinflation

Accounting practices in Zimbabwe post-hyperinflation had three main characteristics, namely, the use of the US\$ as the functional currency, the discontinued use of IAS 29 and dealing with accounting aspects following the discontinuance of IAS 29 and specifically for an economy coming out of severe hyperinflation. At that time, the IFRS did not have the accounting provisions for an economy coming out of severe hyperinflation simultaneously accompanied by an adoption of a new functional currency. The adoption of the US\$ as the new functional currency needed to be dealt with within the realm of IFRS. Therefore, an Accounting Guidance (Appendix A) was developed in Zimbabwe in response to this gap in the IFRS. Table 2.3 below provides a summary of the Accounting Guidance.

TABLE 2.3
Summary of the provisions of the 2009 Accounting Guidance: Change in functional currency in Zimbabwe

Item	Provisions
Disclosures	Adopting another currency other than Z\$ was a change in functional currency. Effective date of change in functional currency will vary from entity to entity.
Measurement of assets and liabilities	Those already carried at fair value – use the existing fair values. Those carried at historical cost – use deemed cost.

Balancing off the statement of financial position

Insert equity figure called non-distributable reserve (the residual of assets less liabilities).

Source: ICAZ (2009)

ICAZ (2009) advances the argument that IFRS principles were used in the guidance. The key IFRS principles used, both in IAS 1, were fair presentation and constructive IFRS departures. The IASB accepted the usefulness of the accounting proposals from Zimbabwe and in support issued an Exposure Draft (ED) on Severe Hyperinflation in December 2010 (ICAZ, 2010). The ED became an amendment to IFRS 1 effective 1 July 2011, “Severe Hyperinflation and Removal of Fixed Dates for first Time Adopters” (IASB, 2011).

2.5 Are IFRS relevant in Zimbabwe?

The question: “Are the IASC Standards relevant to developing countries?” has been raised by several critics (see Chamisa, 1994:162). The discussion hereunder follows the seminal work by Chamisa (1994) who argues that IFRS are relevant in environments (a) like those countries where IFRS originated; (b) with the private sector which is significant to the economy; (c) that has a capital market; and (d) where accounting needs are being met.

2.5.1 Similar environments argument

According to Tyrrall et al. (2007), IFRS are most relevant in countries with a similar culture, similar commercial law systems and similar affiliations (be it accounting or trade) to that of the West (mainly US and Britain), where IFRS originated. Zimbabwe is a former British colony and therefore during colonialism, Britain exported its culture, commercial law systems and affiliations to Zimbabwe. During colonialism, strong cultural ties developed with Britain. Owing to these ties, the Zimbabwe culture resembles that of Britain. This is evidenced by the many Zimbabweans who migrate to Britain. London is the second home for Zimbabwean citizens. In addition, accountants in both Zimbabwe and Britain have strong ties. ICAZ (2004) reported that at the onset of hyperinflation, almost 50% of its members migrated abroad, mainly to Britain. The World Bank (2011) also adds that when the Zimbabwe economy went through chronic inflation, a significant number of accounting professionals left the country to settle in western countries.

IFRS originated in common law countries, Britain and USA. Common law references emanate both from pre-independent Zimbabwe (under British rule) and at times present day Britain. Hove (1986) observes that Zimbabwe commercial law is still imbedded in the UK mercantile law. The Zimbabwe Companies Act (Chapter 24:03) promulgated in 2000 talks to the UK Companies Act (1948) in both meaning and emphasis. Therefore, the legal interpretation of assets, liabilities, expenses and revenue in Zimbabwe are substantially British.

Zimbabwe often partners with international organisations to develop accounting practices and for trade. The joint accounting standards development or revision exercise carried out by the International Organization of Securities Commission (IOSCO) in conjunction with the IASC to address cross-border capital raising and listing processes on global markets in 1997 was endorsed by the World Trade Organisation, the Southern Africa Development Community (SADC) and the Zimbabwe Stock Exchange. The accounting standards which needed to be developed or revised included Income Taxes, Segment Reporting, Earnings Per Share, Presentation of Financial Statements, Employee Benefits, Impairment of Assets, Intangible Assets, Leasing, Discontinuing Operations, Interim Financial Reporting, Provisions and Contingences and Financial Instruments.

In addition, Zimbabwe is a member of the United Nations World Trade Organisation (UNWTO) and jointly hosted with Zambia the 20th Session of the UNWTO General Assembly in 2012. The UNWTO has its origin in the West where IFRS are crafted. At the same time, the World Bank is active in Zimbabwe. In its activities, it uses IFRS based accounting information to evaluate progress on its projects. This allows the World Bank also to do cross-country comparisons of financial performance. Thus, on the similar environment argument, Zimbabwe does not have unique circumstances that require adjustment on the content and breadth of the IFRS, hence their relevance to Zimbabwe.

2.5.2 The private sector argument

The relevance of IFRS increases in environments where the private sector dominates the economy (Tyrrall et al., 2007). The private sector wields significant influence on the Zimbabwe economy (Mukwembi et al., 2014). The private sector's contribution to GDP in Zimbabwe is consistently high (Chamisa, 2000). Zimbabwe government revenues mainly collected through value added taxes are from the private sector (individuals, foreign travellers and global mineral players). UNDP (2008) observes that at the beginning of 2009, the private sector's share of total bank credit

in Zimbabwe was 49.4%. For these reasons, the government is keen to see an increase in private investment (ZimGov, 2013). Under the ZimAsset economic plan for the period 2013 to 2018, the private sector is envisaged to play a major role in value addition and beneficiation of products (ZimGov, 2013). These arguments suggest that the private sector in Zimbabwe is significant to the economy.

2.5.3 The capital market argument

IFRS, as equity oriented accounting standards, are relevant in countries whose capital markets wield significant influence. With an average number of 64 countries, the ZSE's market capitalisation is 38% of the GDP (see Table 2.2). The ZSE is therefore comparably larger than any other type of investment for both capital appreciation and returns in Zimbabwe. The ZSE has depth in its specific industry and mining indices which track performance of individual countries. Therefore, the ZSE is a significant centre of economic activity that depends heavily on IFRS based accounting information. Given the extent of ZSE's influence on the Zimbabwe economy, the capital market argument that IFRS are relevant in Zimbabwe to save this capital market holds true. Zimbabwe has an organized, viable and growing capital market which requires the use of IFRS (Chamisa, 2007).

2.5.4 Accounting needs argument

The relevance of IFRS is strengthened when IFRS directly meet the accounting information needs of a country (Tyrrall et al., 2007) and are rigorously applied (World Bank, 2011a). To put to test whether the IFRS meet Zimbabwe needs, Table 2.4 below provides a summary of the key sectors of the Zimbabwe economy, their contribution and names of IFRS specific to the sector.

TABLE 2.4
The key and critical IFRS applicable in Zimbabwe by economic sector at 31 December 2013

Economic sector	% of GDP	Critical and specific IFRS applicable
1. Distribution, hotels and restaurants	16.8%	The effects of changes in foreign exchange rates (IAS 21) Intangible assets (IAS 38) Investment property (IAS 40) Leases (IAS 17) Operating segments (IFRS 8) Revenue from contracts with customers (IFRS 15)
2. Manufacturing	12.8%	The effects of changes in foreign exchange rates (IAS 21) Impairment of assets (IAS 36) Income taxes (IAS 12) Inventories (IAS 2) Operating segments (IFRS 8) Property, plant and equipment (IAS 16) Leases (IAS 17) Related party disclosures (IAS 24) Employee benefits (IAS 19)
3. Public sector	12.7%	International Public Sector Accounting Standards and IFRS
4. Transport and telecommunication	12.1%	Borrowing costs (IAS 23) The effects of changes in foreign exchange rates (IAS 21) Impairment of assets (IAS 36) Income taxes (IAS 12) Joint arrangements (IFRS 11) Property, plant and equipment (IAS 16) Revenue from contracts with customers (IFRS 15)
5. Agriculture	12.0%	Fair value measurement (IFRS 13) Agriculture (IAS 41)
6. Mining	10.4%	The effects of changes in foreign exchange rates (IAS 21) Exploration for and evaluation of mineral resources (IFRS 6) Property, plant and equipment (IAS 16) Inventories (IAS 2) Changes in existing decommissioning, restoration and similar liabilities (IFRIC 1) Stripping costs in the production phase of a surface mine (IFRIC 20)
7. Finance and insurance	9.4%	Insurance contracts (IFRS 4) Intangible assets (IAS 38) Financial instruments (IFRS 9) Financial instruments: Presentation (IAS 32) Financial instruments: Recognition & measurement (IAS 39)
8. Electricity and water	4.3%	Property, plant and equipment (IAS 16)
9. Construction	3.5%	Construction contracts (IAS 11) Inventories (IAS 2) Revenue (IAS 18) Income taxes (IAS 12) Property, plant and equipment (IAS 16)

Source: Author's compilation based on ZimStat (2014); IASB (2014)

Note: Applicable IFRS that are generic to all sectors of the economy have been excluded.

It is evident from Table 2.4 that IFRS are applicable to key sectors of the economy namely manufacturing, agriculture and mining. It is for this reason that the accounting profession in Zimbabwe has strongly rejected any attempt to lower the level of compliance, thus explaining the history of a strong accountancy profession in the country (World Bank, 2011a). The PAAB, largely assisted by ICAZ, ensures the strict adherence to IFRS (World Bank, 2011a). Table 2.5 below depicts Zimbabwe’s activities in its rigorous application of IFRS.

TABLE 2.5
Activities to promote rigorous application of IFRS in Zimbabwe

	Development of IFRS	Promotion of the use and rigorous application of IFRS in Zimbabwe	Having IFRS cater for the needs of entities	Promoting the adoption of IFRS by a nation
Responsibility	IASB	PAAB through the PAAB’s Zimbabwe Accounting Practices Board (ZAPB), ICAZ and ZSE.	ICAZ and other professional accounting bodies whose members are in public practice.	PAAB, ICAZ and ZSE.
Activities in Zimbabwe	Comments on exposure drafts are submitted to IASB by PAAB on behalf of the accounting profession in Zimbabwe.	Zimbabwe universities include IFRS as part of their syllabi. Professional accounting bodies’ financial accounting courses cover all the IFRS. ICAZ Education Committee reviews a sample of audited financial statements annually and brings all exceptions noted to the attention of the ICAZ member involved. ZSE reviews a sample of audited financial statements annually for listed entities and communicates exceptions to the PAAB who in turn engages the professional body to which the member belongs.	No specific activity known at the moment.	Not necessary as Zimbabwe is already in full compliance with IFRS.

Source: IASB (2014); Ministry of Finance (2009b); ICAZ (2014); ZSE (2014)

Zimbabwe has over the years realized that strict and uncompromised compliance with IFRS brings about quality on financial reporting. IFRS are understandable and enforceable hence, making them applicable in Zimbabwe. Fortunately, as well, the impact of globalisation has profiled accounting practices (in the form of IFRS) quite highly with an emphasis on consistency and quality (Chamisa, 1994).

On whether IFRS are relevant in developing countries such as Zimbabwe, there are critics who have documented that they are not relevant.

First, Hove (1986), observes that accounting practices in developing countries are a negative legacy for they are not in line with societal needs. These accounting practices cater for the West from which they originated and are being forcefully marketed in the developing countries through channels and methods that favour the West. They are for the sophisticated capital markets in the West. Hove (1986) and Chamisa (1994) argue that IFRS development processes have not managed to encompass business transactions common and significant to developing countries like transfer pricing, water pollution hazards, disease outbreaks, value addition and beneficiation. This arises from the fact that no effective consultation is carried out in the development of IFRS, hence, the IFRS are meant to satisfy accounting informational needs of Multi-National Companies (MNCs).

Second, Hove (1986) suggests that IFRS are a Western commercial law extension imposed on developing countries. They are an imposition on developing countries by MNCs starting with the times developing countries were colonised to the present. These MNCs often require subsidiaries in the developing countries to adopt IFRS. The imposition of IFRS has also been made easier because developing countries rely on foreign professional accounting institutes for advanced training in IFRS. Use of IFRS is also compulsory in certain economic aid agreements given to most developing countries. Institutions like the World Bank also at some point insisted on the use of IFRS, thus making them an imposition to the developing economies.

Third, Hove (1986)'s assertion that IFRS are a Western commercial law extension to developing countries shows that commercial law in developing countries is linked to the law used by former colonisers. For instance, the impetus in Zimbabwe and the rest of Anglophone Africa, is the British Companies Act of 1948 from which financial reporting and disclosure requirements

embodied in IFRS are uprooted and placed in developing countries legislation. On the basis of this view, IFRS are an extension of Western accounting practices to developing countries.

Fourth, Chamisa (1994) identifies the weaknesses of IFRS in that: (i) they lack specific accounting methods to deal with matters peculiar to developing countries (ii) they require robust accounting systems that carry the IFRS and (iii) the use of IFRS could be costly. According to Tyrrall et al. (2007), disadvantages of using IFRS include (i) their failure to take into account each country's peculiarities; (ii) "standards overload" in some jurisdictions, (iii) limited accounting skill in some jurisdictions and (iv) their potential to decimate small accounting and audit firms that are perceived to have little knowledge of IFRS.

2.6 Summary

The three economic periods in this study have the following characteristics:

- Period 1 (1996 – 1999): gradual collapse of the economy before hyperinflation,
- Period 2 (2000 – 2005): hyperinflation associated with sharp economic decline during hyperinflation and
- Period 3 (2010 – 2013): economic rebound and/or recovery after hyperinflation.

Before hyperinflation, IASs were in use and were brought into law in 1996 through SI 62 of 1996. During hyperinflation, IAS 29 became an applicable financial reporting standard. The use of IAS 29 entailed a change in financial reporting as preparation of financial statements was extended to incorporate the restatement of historical cost figures into inflation-adjusted amounts. Hyperinflation later went out of hand because of (a) the printing of money; (b) price controls and price hikes; and (c) the severe foreign currency shortages.

After hyperinflation, the Zimbabwe dollar was replaced by a multiple currency system and the process of the functional currency change took place in terms of the Accounting Guidance developed in Zimbabwe which culminated in the amendment to IFRS. While the multiple currencies were in use, liquidity challenges ensued and this slowed down economic activity. As a partial response, government developed the ZimAsset cluster based economic blue print in July 2013.

The ZSE, the only market for listed securities in Zimbabwe which is described largely as inefficient, performed differently before, during and after hyperinflation. Before hyperinflation, the ZSE's performance was subdued. During hyperinflation, investors gravitated towards the ZSE and this capital market became active and performed better than before. After hyperinflation, the tight liquidity dampened the securities exchange.

Two broad views exist on the relevance of IFRS in Zimbabwe. The first view is that IFRS are relevant as they enhance the quality of financial reporting while the second view is that IFRS are not relevant seeing them as an imposition or extension by or of the West with little consideration of the societal needs of developing countries. Prior research suggests that even though the IFRS have short-comings or disadvantages, they are relevant in Zimbabwe. Chapter 3 which follows, explores in detail the prior literature on the value relevance of accounting information.

CHAPTER 3

PRIOR STUDIES ON THE VALUE RELEVANCE OF ACCOUNTING INFORMATION

3.1 Introduction

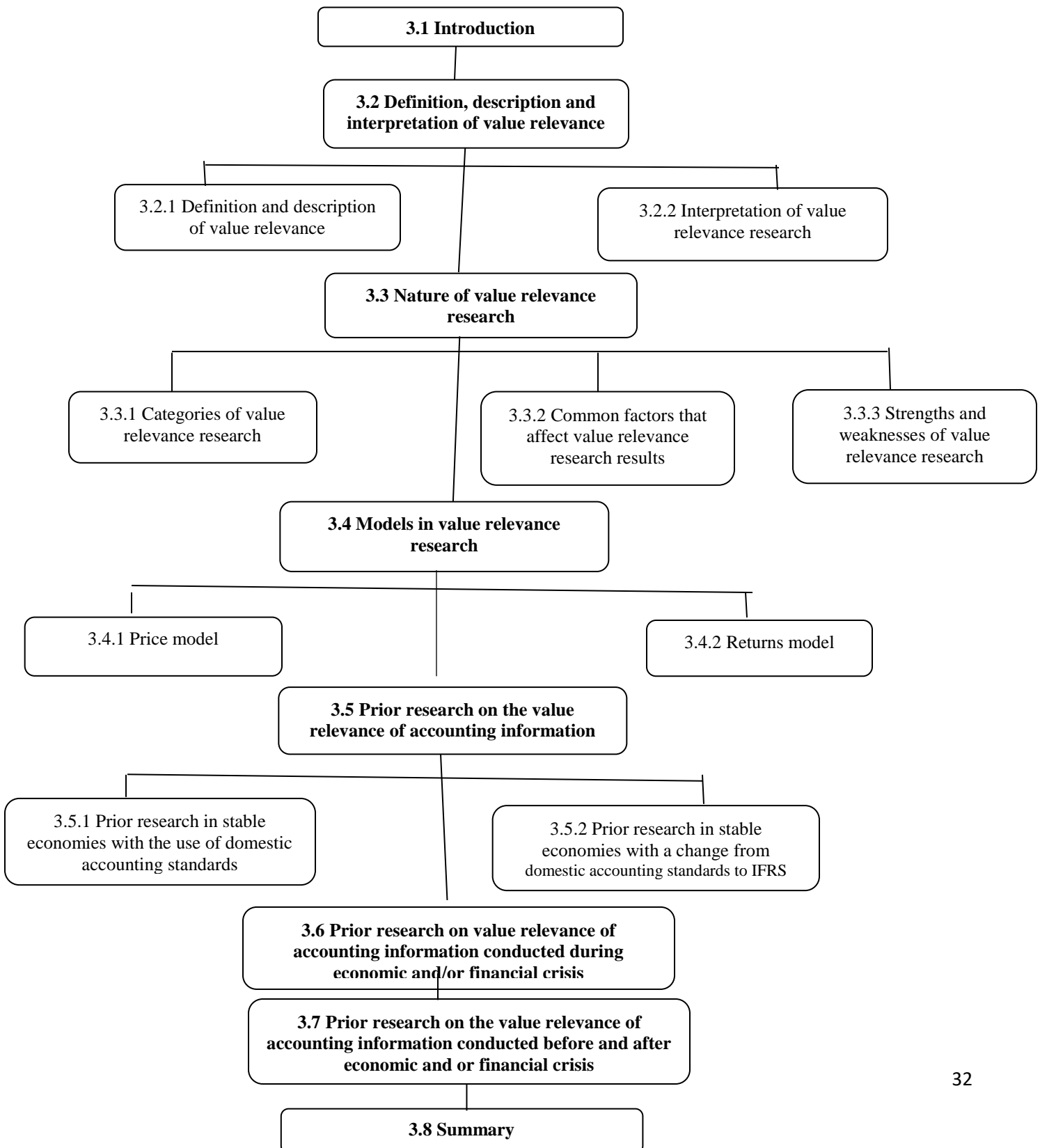
The previous Chapter provided the detailed literature on the Zimbabwe economic environment and the accounting practices, a context for the investigation of the value relevance of accounting measures based on IFRS before, during after hyperinflation in Zimbabwe. This Chapter critically reviews the literature on the value relevance of accounting information. The literature review on the value relevance of accounting information in this chapter primarily uses the peer reviewed papers available at the beginning of the earliest period in this study i.e. 1996 until 2014. Also, due to the limited studies in Zimbabwe, a few unpublished working papers, thesis and dissertations are reviewed.

The significance of this chapter is that it builds the theoretical foundation upon which the study is premised through reviewing related literature to bring out matters that have been studied before, controversies if any and the research gap. The Zimbabwean experience provides a unique situation (or natural experiment) to investigate the value relevance of IFRS based accounting measures for the periods before, during and after hyperinflation.

After this introduction, Section 3.2 defines, describes and interprets the phrase value relevance. Section 3.3 discusses the nature of value relevance while its models are reviewed under Section 3.4. Section 3.5 examines prior research on value relevance of accounting information in stable economies where the accounting information was based on domestic or local accounting standards and where there was a change from local accounting standards to IFRS. Section 3.6 discusses the prior research on the value relevance of accounting information during economic and/or financial crisis. Section 3.7 examines the prior research on the value relevance of accounting information before and after economic and /or financial crisis. Thereafter section 3.8 presents a summary of the chapter.

The structure of the Chapter is summarised schematically in Figure 3.1 below.

FIGURE 3.1
Structure of the literature review chapter on the value relevance of accounting information



3.2 Definition, description and interpretation of the phrase value relevance

3.2.1 Definition and description of value relevance

Value relevance entails the extent to which selected accounting measures represent that which investors use to value ordinary shares (Barth et al., 2001; Holthausen & Watts, 2001; Sami & Zhou, 2004; Karunarathne & Rajapakse, 2011). Hellstrom (2007:325) explains that “value relevance is understood as the ability of accounting measures to capture or summarise information that affects share values and empirically tested as a statistical association between market values and accounting value”.

Kothari (2001) observes that capital markets are used in accounting research for (a) comparing the share price to the fundamental analysis derived value; (b) testing the capital market efficiency; and (c) providing confirmatory evidence of association studies. As an extension, Beisland (2009) notes that studies on value relevance are part of Capital Market-Based Accounting Research (CMBAR). CMBAR, nevertheless, must not be confused with tests of reliability, completeness or accuracy of accounting information (Nilsson, 2003).

3.2.2 Interpretation of value relevance

Scholars such as Francis and Schipper (1999) and Nilsson (2003) identified four interpretations of value relevance. These four interpretations of the value relevance of accounting information are briefly explained below.

Under Interpretation 1, Francis and Schipper (1999) explain that intrinsic values cause the decision to buy shares. The decision maker bases a decision on the positivity of accounting numbers. Under this interpretation, accounting numbers alone to an investor predict future returns. Issues such as the peculiarities of that financial period and risk profiles are ignored. Nilsson (2003) describes this interpretation as the fundamental analysis view of value relevance. “Fundamental analysis entails the use of information in current and past financial statements, in conjunction with industry and macroeconomic data to arrive at a firm’s intrinsic value. Fundamental analysis obtains the intrinsic value of a company and compare it to the market price, if the market price is available. In this sense, a comparison of the market price of the share to the intrinsic value gives an indication of the extent the market value is representative of the actual

value of the company” (Kothari, 2001:109). This interpretation has been overtaken by improved interpretations and therefore it is not used in this study. Accounting numbers alone do not tell a full story on high risk profile countries with unstable economies such as Zimbabwe.

Interpretation 2 by Nilsson (2003) is termed the prediction view of value relevance. Francis and Schipper (1999) interpret that accounting information is value relevant if the set of accounting data contain those units of measure or variables that are required in a business valuation. Since this interpretation is narrowed towards the specifics of a business valuation as opposed to the broad needs of the users of financial statements, it will not be used in this study whose focus is the value relevance of IFRS based accounting measures.

Nilsson (2003) describes Interpretation 3 as the information view of value relevance. This information view of value relevance aligns with views by Francis and Schipper (1999). They note that association studies test the extent to which market players influence prices. Value relevance measures the market reaction to new accounting information (information content) in short periods. This current study considers a long period panel data and therefore this interpretation would not be suitable.

Interpretation 4 is defined as the measurement view of value relevance by Nilsson (2003). Francis and Schipper (1999:326) state that value relevance measures “a statistical association between accounting information and market values or returns, particularly over a long window”. Over a long window, accounting information, either as prices and/or returns, is adjudged to be value relevant when it has the capacity to influence the level of the share price, regardless of the time the accounting information is released and who supplies it. This is the interpretation of value relevance followed in this study. IFRS based accounting measures are regressed against share prices. This was followed in Francis and Schipper (1999), Sami and Zhou (2004) and Chamisa et al. (2012).

3.3 Nature of value relevance research

3.3.1 Categories of value relevance research

Holthausen and Watts (2001) categorise value relevance studies into (a) incremental association (IA), which investigates whether the accounting number of interest is useful in explaining value

or returns (over long windows) given other specified variables; (b) relative association (RA), which compares the association between share values (or changes in share values) and alternative bottom-line measures; and (c) a marginal information content (MIC) study which investigates whether a particular accounting number adds to the information set available to investors.

IA “exists when one information source can provide information beyond that provided by another” (Graham et al., 2000:87). IA studies move away from zero under the influence of various factors (Holthausen & Watts, 2001). This study does not examine the IA of accounting information, instead it uses the RA. RA considers whether one measure provides greater information content than the other. In this dissertation, accounting measures’ association with share prices is evaluated from long window panel data before, during and after hyperinflation in Zimbabwe.

MIC studies are short term event based studies that look at the extent of a change in a variable caused by a set variable (Holthausen & Watts, 2001). Being a short window class of study, it is not applicable in this study.

3.3.2 Common factors that affect value relevance research results

Hellstrom (2007) observes that there are several common factors which affect the degree of value relevance of accounting information. These factors are both financial and non-financial. Amir and Lev (1996) advance the view that unless complemented by non-financial information, accounting information on its own cannot give enough information content to induce a decision by an investor to buy, sell, or hold shares. Hence, accounting and non-accounting information are complementary variables necessary for investors to decide. The focus of this dissertation is on the value relevance of IFRS based accounting measures, therefore, the impact of non-financial factors will not be accommodated.

The first common factor emanates from the argument whether an industry specific value relevance study determines the result. Amir and Lev (1996) observe that industry specific studies give rise to higher levels of value relevance. Francis and Schipper (1999) concur that an industry specific test for value relevance is appropriate because there is a difference between what investors look out for and the accounting information disclosed/presented. This also aligns with

Bae and Jeong (2007)'s view that it is incorrect to assume that a conclusion on value relevance for the entire market for a country is applicable to all entities.

The second factor relates to the influence of accounting standards and models on value relevance research. Francis and Schipper (1999) posit that modern-day accounting models (in the form of local accounting standards and/or IFRS) have little influence as they do not appropriately recognise and measure the economic assets deployed to create shareholder value. Therefore, accounting information is no longer appropriate as it has lost its value owing to incorrect models/methods, content and timing. On the other hand, Kothari (2001) supports the idea that accounting methods that increase value relevance must continue to be used. So and Smith (2009) observe that the degree of value relevance is further increased if the accounting methods are new or significantly overhauled.

The third factor is that the type of economy affects the value relevance research result. Lopes (2003) recognises two kinds of economies: (a) the new economy, comprising telecommunications, media and technology whose assets are mostly intangibles and research in these economies show that accounting information is highly value relevant; and (b) the old economy comprising steel plants, textile, metallurgy, chemical, industrial mechanics, ore processing and petrochemical industries where there is nil or low value relevance. Dontoh, et al. (2007) confirm these assertions and add that the constituent parts or the participants or characteristics in an economy affect the degrees of value relevance.

The fourth factor that affects value relevance research results is the condition of the economy, that is, about openness, boom, slump or contraction. The more open and active an economy is, the higher the levels of value relevance (Bodnar et al., 2003; Jenkins et al., 2009). The opposite holds true. Kanyenze et al. (2011) describe the Zimbabwean economy as relatively closed. This potentially gives rise to low levels of value relevance for periods before, during, and after hyperinflation.

From empirical research, factors which reduce the value relevance of accounting information include capital markets with (a) low growth and loss-making entities (Aharony et al., 2006); (b) state controlled entities (Hellstrom, 2007); (c) high investment risk (Suijis, 2007); (d) widely spread ownership (Lopes, 2003); (e) weak corporate governance structures (Bae & Jeong, 2007);

and (f) opaque entities (Agostino et al., 2010). As alluded to in Chapter 2, constrained growth, high country risk, and opaqueness characterise the Zimbabwean economy and the ZSE.

3.3.3 Strengths and weaknesses of value relevance research

Empirical research reveals that studies on the value relevance of accounting information have several strengths. First, value relevance research informs standard setters (for instance the Financial Accounting Standards Board, the International Accounting Standards Board and the International Federation of Accountants), academic researchers, firm managers, financial statement users, policy makers and regulators on the degrees of value relevance in various economies (Barth et al., 2001). Standard setters become awake to the need for (a) low costs and high benefits of accounting standards; (b) practicality of accounting methods; and (c) ability of accounting standards to add clarity, narrow choices and enhance quality (Holthausen & Watts, 2001).

Second, low value relevance potentially increases the cost of capital and cost of doing business. The higher the value relevance, the lower the cost of capital or equity resulting from lower information risk investors attach to the accounting information (Beisland, 2009). In fact, value relevant accounting information results in low cost of capital (Vijitha & Nimathalasan, 2014).

Third, accounting numbers that are used to measure value relevance are advisory in nature to investors (Holthausen & Watts, 2001). Central to the value relevance studies is the futuristic value of advising investors of what action to take after knowing the behaviour of share prices in the face of published accounting information (Nilsson, 2003). If the behaviour of market prices in a certain economic environment is detached from (not value relevant) published accounting information, it is not worth the while for the investor to take heed of published accounting information in making an economic decision.

Empirical research has also identified shortcomings of studies on value relevance. First, omitted variables, measurement error, cross sectional differences in valuation parameters and incorrectly calculated co-efficient standard errors may give spurious results (Barth et al., 2001). Second, value relevance studies (a) do not answer the question whether market participants use the accounting information correctly; and (b) may not give guidance for a decision to be made today. Value relevance studies perpetuate the inherent weakness in accounting in that it tells the user of the

accounting information about the past. Because of these shortcomings, Karunaratne and Rajapakse (2011) argue on the need for a robust conceptual framework for value relevance studies to be developed. The same conceptual framework may also be used to improve accounting standards setting and practices.

3.4 Models in value relevance research

3.4.1 Price model

The price model examines the relationship between share prices, earnings and book. Share prices, earnings and book values in price based studies are tested for validity as summary measures of the events that have affected the firm up to a specific date (Nilsson, 2003). Comparatively, price models have better value relevance than return models (Karunaratne & Rajapakse, 2011) and hence, their widespread use. This study uses the price model for a long window panel data.

3.4.2 Returns model

The returns model examines the relationship between share returns, earnings and earnings changes over the return interval (Nilsson, 2003). Barth et al. (2001) argue that the returns approach has difficulties such as; (a) matching returns to their specific period; (b) the need for long periods of data; and (c) the difficulty to satisfy specifications. The returns model is used under additional analyses in Section 5.5.

3.4.3 The price and the returns models

The price and returns models address different but related questions or issues (Barth et al., 2001). “The key distinction between value relevance studies examining price levels and those examining price changes, or returns, is that the former are interested in determining what is reflected in firm value and the latter are interested in determining what is reflected in changes in value over a specific period of time” (Barth et al., 2001:95). In this study, both the price and returns models will be applied in testing the value relevance of accounting information as these two complement each other.

3.5 Prior research on the value relevance of accounting information in stable economies

Prior studies conducted in stable economies fall into two sub-categories as follows: (a) with the use of domestic accounting standards and (b) with a change from domestic accounting standards to IFRS.

3.5.1 Prior studies in stable economies where the accounting information was based on domestic or local accounting standards

Empirical studies in stable economies where local or domestic accounting standards were used are dominated by those in the US. For instance, in an industry specific⁷ research by Amir and Lev (1996) for the period 1988 to 1993 using the US GAAP, accounting information is found not value relevant. The research results tally with Francis and Schipper (1999) who found a decrease in the value relevance of US GAAP based accounting information for the period 1952 to 1994.

Additional studies in the US on the value relevance of accounting information were conducted by Bryant (2003), Wang et al. (2005) and Jenkins et al. (2009) investigating (a) historical cost accounting policies, (b) derivative disclosures and (c) business cycles respectively. The accounting measures based on the US GAAP are regressed against share prices or share returns. The accounting information is found to be value relevant. Bryant (2003) argues that US GAAP are broad and robust hence the positive value relevance. This contradicts Kadri et al. (2009) who contend that US GAAP are rules based and therefore provide preparers with an opportunity to engage in creative accounting.

About the studies on the value relevance of accounting information in the US, some have encouraged countries to drop local accounting standards in favour of IFRS. For instance, Zeghal and Mhedhbi (2006:373) argue that “with the growing internationalisation of economic trade and the globalisation of businesses and financial markets, financial information prepared according to a national accounting system may no longer satisfy the needs of users whose decisions are more and more international in scope. In some ways, purely domestic information may even be a handicap for businesses as well as investors”. Despite this recommendation, the US still uses domestic accounting standards.

⁷ Amir and Lev (1996) examined the value relevance of non-financial information in the wireless communications industry.

Empirical studies on the value relevance of accounting information have been performed in other stable economies such as Finland, Sweden, the Netherlands, UK, Australia and Hong Kong. Under the Finland GAAP, Niskanen et al. (2000) found earnings to be significantly value relevant for the period 1984 to 1992. Nilsson (2003) examined the value relevance of Swedish GAAP based financial statements for the period 1989 to 1999 and the accounting information was established to be value relevant. In the Netherlands, Suijjs (2007) established a positive value relevance of financial reporting policies. In a year-long research conducted in 2002, Jifri and Citron (2007) found that the UK GAAP based financial statement disclosures are value relevant. Goodwill and intangible assets derived from Australian GAAP were found to be value relevant accounting information in a research by Dahmash et al. (2009). So and Smith (2009) investigated the value relevance of the revised Hong Kong Accounting Standard 40 (HKAS40): Investment Property adapted from IAS 40 from 2003 to 2006 and found the accounting information to be value relevant.

3.5.2 Prior studies in stable economies where there was a change from local accounting standards to IFRS

A study on the value relevance of accounting information in stable economies with a change from domestic accounting standards to IFRS occurred mainly in Europe following the adoption of IFRS effected 1 January 2005 (Capkun et al., 2008). The argument which arose in complying with the directive was a comparison in quality between local accounting standards and IFRS. Clarkson et al. (2011:5) argued that “the impact of IFRS adoption for any given country should depend on the quality of the original (local) GAAP earnings figures in that country”. Nevertheless, even where the local accounting standards were of superior quality, the use of IFRS accounting information is argued to result in higher value relevance than local GAAP (Chalmers et al. 2011).

The replacement of GAAP with IFRS potentially improves the value relevance of accounting information (Agostino et al., 2010). However, research findings in Europe indicate that the shift from GAAP to IFRS brought about significantly lower value relevance though not uniformly across the accounting measures. Kadri et al. (2009:1) observe that “the change in financial reporting regime affects significantly the value relevance of book values but not earnings”. For instance, in their study, Kadri et al. (2009:1) found that, “while book values and earnings are

value relevant during the Malaysian Accounting Standards Board period, only book values are value relevant during the International Financial Reporting Standards period”.

Some sizeable amount of research has been performed on the Chinese economy comparing the value relevance of accounting information based on domestic accounting standards and IFRS (e.g. Bao & Chow, 1999; Sami & Zhou, 2004; Chamisa et al., 2012) and these report mixed results. Bao and Chow (1999) covered a 5-year period under the arguably primitive and incomplete Chinese GAAP and compared the results to the IAS. IAS based accounting measures were found to be more value relevant than local accounting standards. In Sami and Zhou (2004), investigations were done during the transition from GAAP to IAS for 81 listed entities under both the Chinese GAAP and IAS and the studies revealed that accounting information was value relevant for both the Chinese GAAP and IAS. In Chamisa et al. (2012)’s investigation into the relative value relevance of Chinese GAAP and IFRS accounting measures in relation to prices of A and B shares respectively, the findings show that Chinese GAAP and IFRS measures were both value relevant during the study period.

Studies on the value relevance of accounting information have been performed in other economies such as Kuwait and Romania where there was a change from local accounting standards to IFRS. El Shamy and Kayed (2005) and Alfaraih (2009) studied the Kuwait market. Both studies used the Ohlson model and earnings, book values and share prices as variables of interest. El Shamy and Kayed (2005) employed the price model under the local GAAP while Alfaraih (2009) used the returns model under IFRS for the periods 1992 to 2001 and 1995 to 2006 respectively. Both researches were done during the transitional period from GAAP to IAS and the accounting information was found to be value relevant under the two accounting frameworks though value relevance under IAS was reduced compared to the GAAP. A study in Romania by Fillip and Raffournier (2010) established lack of value relevance of share returns and earnings per share in a research done on the Romanian market from 1998 to 2004 when local GAAP was being transformed to IFRS.

3.6 Prior studies on the value relevance of accounting information conducted during economic and/or financial crisis

Prior research on the value relevance of accounting information conducted during economic and/or financial crisis which investigate the value relevance of accounting measures (equity book values, earnings and cash flows) were conducted by Gordon (2001), Filip and Raffournier (2010) and Chamisa et al. (2011). The studies carried out *during* economic and/or financial crisis are dominated by studies conducted in countries that experienced hyperinflation. They examine the relative and incremental value relevance of accounting information based on historical cost and those based on inflation-adjusted accounting information. Gordon (2001) investigates the value relevance of historical cost, price level and replacement cost accounting in Mexico from the high inflation (of 7% to 52%) period from 1989 to 1995, in which study she expressed returns as a function of earnings and changes in earnings derived from data collected on entities listed on the Mexican Stock Exchange and some commercial data bases. Gordon (2001:178) finds that “replacement cost adjustment are incrementally relevant beyond historical cost and price level measures while price level adjustments are incrementally value relevant beyond historical measures”. The study by Gordon (2001) has the strength that the findings are subjected to extensive additional tests. Filip and Raffournier (2010) investigated the value relevance of earnings and earning changes in a hyperinflationary transitional Romanian market economy using an empirical model that regresses accounting data with corresponding measures of market performance. Non-financial companies listed on the Bucharest Stock Exchange between 1998 and 2004 were used. Data was collected from individual firms’ financial statements. Research findings indicate that earnings and earnings variations are highly value relevant in Romania.

3.7 Prior studies on value relevance of accounting information conducted before and after economic and/or financial crisis

Prior research on the value relevance of accounting information conducted for periods *before and after* economic and/or financial crisis largely report mixed but consistent results. Studies in this category investigate whether or not accounting information (equity book values, earnings and cash flows) changed after an economic and/or financial crisis when compared to the period before the crisis. First, Graham et al. (2000) investigated the value relevance of accounting information, before and after the 1997 currency value loss of 20% on companies listed on the stock exchange

in Thailand under the local GAAP accounting framework. The results show a decline in the value relevance of both the equity book values and earnings after the currency crisis when compared to the period before the crisis. Second, Ho et al. (2001) investigated the value relevance of local GAAP based accounting measures after the 1997 Asian local currency devaluation. The results show that the value relevance of accounting earnings declined after the crisis while that of book value of equity and cash flows from operations improved. Third, in Mexico, the value relevance of the local GAAP based accounting information before and after the 1994 currency devaluation is documented by Davies-Friday and Gordon (2005). The research findings show that the value relevance of book values did not change, while that of earnings and cash flows declined. Fourth, Choi et al. (2010) also performed the value relevance investigations after the 1997 Asian currency devaluation induced financial crisis. The findings are that the value relevance of the accounting accruals declined in the period after the crisis, while there was no change on the value relevance of earnings and cash flows.

There are three key differences between this study and the studies by Graham et al. (2000), Ho et al. (2001), Davis-Friday and Gordon (2005) and Choi et al. (2010). First, the four empirical studies resulted from an instantaneous event that triggered widespread economic and/or financial crisis namely currency devaluation, yet the current study was precipitated by a number of economic and political events before, during and after the economic and/or financial crisis. For that reason, the four studies have extensive discussions for the period before and after the crisis, yet the current study has extensive discussions for the periods before, during and after. Second, the four studies are based on the local GAAP accounting measures, whereas the accounting measures in the current study are based on IFRS described by Davis-Friday and Gordon (2005:2) as superior. Davis-Friday and Gordon (2005) propose that if there is a decrease in the value relevance of accounting information before and after a crisis, then one can conclude that the accounting information (the local GAAPs in these studies) is not robust to economic shocks and if there is no change or improvement, then one can conclude that the accounting system (or standards) is(are) robust. The proposal by Davis-Friday and Gordon (2005) will be tested in this study. Third, the four studies dealt with a year-long crisis whilst there was a multiple year crisis in Zimbabwe. The devaluation in Zimbabwe was more gradual than a sudden shock.

Two prior studies identified in this current study which have investigated the value relevance of accounting information in Zimbabwe either during stable economic conditions or during an

economic crisis (hyper-inflationary period) are by Oppong (1993) and Chamisa et al. (2011) respectively. First, the study by Oppong (1993) used data for the 1986-year end to perform statistical tests on the relationship between a set of accounting measures of profitability and share prices on the Zimbabwe Stock Exchange. He finds that accounting measures are value relevant as they explain 62.96% of the movement in share prices at the 1% significance level. The IASs based accounting measures of profitability were calculated on 47 industrial companies listed on the ZSE excluding mining entities. Of interest to note is that Oppong (1993:75) described the “quality of financial statement reporting by firms on the ZSE as quite good”. Oppong (1993) posits that value relevance research performed in emerging capital markets such as the ZSE potentially gives a positive result because of: (a) the support and active participation by the International Finance Corporation (IFC), an arm of the World Bank; (b) the history of high returns they give to investors and (c) the accounting information which competes with few other sources on which investment decisions are based. However, the data used by Oppong (1993) was limited to (a) a short period of 12 months; and (b) covered the industrial sector of the economy only, thus, it excluded market-wide effects. The study was exploratory for it was performed while the author was a visiting lecturer in Zimbabwe between 1985 and 1987, the early years after the Zimbabwe independence when local brokerage firms were only two, as compared to 13 in 2003 (Chamisa, 2007).

Second, Chamisa et al. (2011) investigated the value relevance of accounting information during an economic crisis (hyper-inflationary period) in Zimbabwe. The study dwelt on the relative and incremental value relevance of IFRS based inflation adjusted (IA) and historical cost (HC) accounting measures in Zimbabwe for the 2000 to 2005 hyperinflationary period under both the price and returns models for ZSE listed entities. The findings were that both IA and HC accounting information is value relevant under the price and return models.

Chamisa et al. (2011) further extensively discusses the behavior of accounting information during a hyperinflation induced economic and/or financial crisis. They observe that with both IA and HC being value relevant at adjusted R^2 of 93.8% and 75.3% respectively, this means that IA and HC are complimentary. If IA data is more value relevant than HC, this result supports IAS 29, and the opposite holds true. Nevertheless, they observe that “IA information does not provide value relevant information beyond what is provided by HC information” (Chamisa et al., 2011:19). On statistical significance during the hyperinflationary period 2000 to 2005, EPS is positive at the

1% level for both IA and HC while BVPS is negative at the 10% significance level for both HC and IA. These research results will be a subject of further analysis and discussion in the current study.

On another note, studies in Africa on the value relevance of accounting information during an economic and/or financial crisis are limited. Other than Chamisa et al. (2011), no study has looked at the value relevance of accounting information in economic and/or financial crisis in Africa. The current study compliments a study by Chamisa et al. (2011) as it explores related findings in the same period. The current study is different from Chamisa et al. (2011) in that the period 2000 to 2005 in Chamisa et al. (2011) is not bordered by research for the period before and after hyperinflation. The fact that the current study is bordered by periods before and after hyperinflation is an advantage in that it gives the background and aftermath of events for a balanced interpretation of the investigations. The interpretations will be in the context of Zimbabwe.

The peculiarities of Zimbabwe further justify this study. These are (a) the economic developments that had distinct differences; (b) the bringing into law of IFRS/IASs in 1996 with subsequent rigorous application thereof (World Bank, 2011); (c) Zimbabwe financial reporting practices meeting significant challenges (for instance the application of IAS 29 during hyperinflation and change in functional currency for a situation not provided for in the IFRS after hyperinflation) and (d) the Zimbabwean economy being under significant macroeconomic shocks such as sanctions and politics (Chamisa et al., 2011; Mangena et al., 2012).

3.8 Summary

Value relevance, defined as the association of accounting amounts with share prices or returns, is a branch of the capital market based accounting research (CMBAR). In accounting research, the four interpretations of the value relevance of accounting information are the fundamental analysis view, prediction view, information view and the measurement view of value relevance.

In value relevance studies, several factors potentially affect research results. These include industry specific studies, appropriateness of accounting standards and models and the nature and conditions of the economy. Factors which reduce the value relevance of accounting information

include capital markets with shrinking activities, state control, high risk, weak corporate governance arrangements and economies that are opaque.

The strengths of value relevance studies include their ability to (a) inform standard setters, financial statement users and regulators and (b) provide an inference on the cost of capital or equity in a country. Value relevance research also provides a platform to validate accounting information used in contracts and in investment decisions. The shortcomings of value relevance research are its (a) weak variables; (b) failure to tell whether investors use the information; and (c) use of past data.

Two models are used in value relevance research; the price and returns models. While the price model uses the share prices, the returns model uses the share returns which comprise of capital gain and dividends.

Prior studies on the value relevance of accounting information in the US, a stable economy, finds that the accounting information is value relevant. This is so because US GAAP are argued to be broad and robust. Stable economies other than the US who use local/domestic accounting standards also have value relevant accounting information. Prior research on the value relevance of accounting information in stable economies with a change from domestic accounting standards to IFRS have mixed results. This is contrary to the general expectation that accounting information following the adoption of IFRS would be value relevant.

Studies carried out *during* economic and/or financial crisis are dominated by studies conducted in countries that experienced hyperinflation and these report positive value relevance. The four prior studies carried out in Asia and Mexico on the value relevance of accounting information *before and after* economic and/or financial crisis report a decline in the value relevance after the crisis period compared to the period before the crisis. Two prior studies carried out in Zimbabwe either during stable economic conditions or during an economic crisis (hyper-inflationary period) show related results. The study carried out in Zimbabwe before the crisis show that the accounting information is value relevant similar to the one carried out during hyperinflation which also shows positive value relevance.

The next chapter focuses on the research methodology to be used to investigate the value relevance of IFRS based accounting measures before, during and after hyperinflation in Zimbabwe.

CHAPTER 4

RESEARCH METHODOLOGY

“The conventional wisdom on value relevance has been that accounting practice is little more than a mere ritual but now there is a motion program of accounting research that examines every conceivable aspect of the share price earnings relationship” (Oppong, 1993:73).

4.1 Introduction

The previous Chapter that dwelt on research issues pertinent to this study managed to define value relevance, explored the common factors that influence the value research result and identified its strengths and weaknesses including a summary of the major empirical findings in previous research.

This Chapter dwells on the research methodology and explain the methods and tools used to collect the data to answer the question whether IFRS based accounting measures are value relevant before, during and after hyperinflation in Zimbabwe. The research is a quantitative analysis regressing IFRS based EPS and BVPS accounting measures obtained from the published company reports to share prices from the ZSE as the data for the study. The Chapter further explains how the data is handled from the type to source, collection and adjustments including the sample and period selection criteria to ensure that it is valid, reliable and complete. The research methodology is applied in each of the segments periods before (1996-1999), during (2000-2005) and after (2010-2013) hyperinflation in Zimbabwe.

The chapter proceeds as follows. Section 4.2 explains the research design justifying the use of the Ohlson price model in the main tests and the returns model in the additional tests. Section 4.3 gives details of the data type while Section 4.4 explains the data sources after which the data collection methods are explained in Section 4.5. Under Section 4.6, data adjustment is discussed while period selection and sample selection are discussed in Sections 4.7 and 4.8 respectively. Data limitations are presented in section 4.9 and lastly, Section 4.10 presents the summary for the chapter.

4.2 Research design

4.2.1 Research approach

Research designs come in different forms in value relevance research. This study investigates the value relevance of accounting measures based on IFRS for the period before, during and after hyperinflation in Zimbabwe between 1996 and 2013.

Kothari (2001) describes a good research design as one that (a) minimises bias, (b) uses reliable data, (c) has the smallest experimental error and (d) minimises the effect of extraneous variables. Kothari (2001:4) points out that a cross sectional empirical study has such characteristics in that it “relies on observation, being data based research, coming up with conclusions which are capable of being verified by observation or experiment”. This study is an empirical correlational quantitative analysis tracing value relevance from its definition, through use, tests and finally the results. Long window portfolio tests are the statistical association metrics used in this study as in Francis and Schipper (1999).

4.2.2 Use of the price model

As already mentioned in Chapter 3, the price model (called the absolute model by Filip & Raffournier, 2010), is used in this study like many other prior studies including Graham et al. (2003), Oliveira et al. (2010) and Chamisa et al. (2011).

Various reasons are advanced for the use of the price model. The price model suggests that the value of a company is a function of net assets available to an entity and the capacity of those net assets to generate earnings (Horton, 2007). Barth et al. (2001) argue that the price model (a) is tried and tested, (b) is the correct method for general value relevance studies and (c) uses the right variables. In a study by Chamisa et al. (2011), the price model has stronger value relevance results than the returns model. On the other hand, the price model has weaknesses in the bias and heteroscedasticity induced errors in co-efficients (Barth et al., 2001).

Barth et al. (2001) highlight that regression results under the price and returns model could be different but one model can be used to confirm the results of the other. This justifies the use of the returns model for additional analysis as explained as below.

The returns model (named the relative model by Filip & Raffournier, 2010 and price changes model by Barth et al., 2001) analyses the association between annual share returns and levels of earnings and earnings changes (Hellstrom, 2007). The returns model looks at the pattern of changes in values over time (Barth et al., 2001).

There are convergent views on the advantages and suitability of the returns model. The returns model has the advantages that it (a) smoothens market highs and lows; and (b) is sensitive to scale effects (Dobija & Kimczak, 2010). Goodwin and Ahmed (2006) posit that the inclusion of earnings change in the returns model improves: (a) informativeness of earnings; (b) the degree of earnings persistence; and (c) comparability. On the suitability of the returns model, Barth et al. (2001) report that the returns model is most suitable when the research is closely interested in the timeliness of the accounting measure at hand. A question like “at what point after year end is accounting information most relevant?” would best be answered by using the returns model (Barth et al., 2001:16). Barth et al. (2001) also argue that the returns model is most suitable if value relevance is interpreted under the measurement perspective (accounting amounts that measure the elements of the financial statements may not be new to the market and may be available from other sources) and informational perspective (accounting amounts provide new information to the market and add to the other sources of information). The additional analysis under the returns models will affirm if the regression results under the price model are valid and accurate.

4.2.3 Model specification

The price model used in this study is as follows: -

$$P_{it} = \alpha + \beta_1 EPS_{it} + \beta_2 BVPS_{it} + \varepsilon_{it}$$

Where

P_{it} = Share price on the ZSE of firm i four months after the end of the year t

α = The intercept of the regression model

β_1 = The regression coefficient of the independent variable EPS_{it}

β_2 = The regression coefficient of the independent variable $BVPS_{it}$

EPS_{it} = The earnings per share of firm i for the period t-1 to t

$BVPS_{it}$ = Book value of equity per share of firm i at the end of the year t

ε_{it} = The error term

Under the returns model, $\frac{P_{it}}{P_{it-1}} = \beta_0 + \beta_1 \frac{X_{it}}{P_{it-1}} + e_{it}$ is used, like Filip and Raffournier (2010),

where: -

P_{it} = stock price at year t for firm i

P_{it-1} = stock price at year t-1 for firm i

β_0 = regression intercept

β_1 = regression slope

X_{it} = earnings per share

e_{it} = error term

$\frac{X_{it}}{P_{it-1}}$ = is earnings per share (eps) divided by past share price

$\frac{P_{it}}{P_{it-1}}$ = current share price divided by past share price

4.2.4 Tests for value relevance

In this study, the adjusted R^2 will be used to infer the value relevance of accounting measures in the valuation of the shares of a company. There are similar studies in value relevance literature that used the adjusted R^2 to determine if accounting numbers are useful for determining the value of the firm, see for example, Prather-Kinsey (2006) and Chamisa et al. (2011). The independent variable(s) with the highest adjusted R^2 best explains changes in the dependent variable (Chamisa et al., 2011). Beisland (2009:5) argues that “the explanatory power or simply R^2 measures the proportion of variance in the dependent variable that is explained by the independent variable(s). If share prices are regressed on accounting variables, R^2 is a measure of how much variation in share prices is explained by the accounting variables analysed”.

4.2.5 Panel data

This study uses panel data. Panel data is used in prior studies such as Amir and Lev (1996) and Oliveira et al. (2010), among others. Amir and Lev (1996) describe panel data as data for the same companies in successive periods. Studies that use panel data follow the conventional route of regressing share prices to reported financial variables, under the assumption that the latter provide investors with value relevant accounting information.

Panel data has several advantages. Greene (2010) highlight that panel data usually gives the researcher many data points, increases the degrees of freedom and reduces the co-linearity among explanatory variables; hence, improves the efficiency of econometric estimates, although there might be heterogeneity bias. In addition, Greene (2010) states that the fundamental advantage of a panel data set is that it allows the researcher great flexibility in modelling differences in behaviour across individual observations.

One of the major problems for an applied researcher is making a decision that pertains to the choice between treating the effect as fixed or random. The random effects model is said to be more appropriate when N individuals are randomly drawn from a large population. On the other hand, the fixed effects model is an appropriate specification if the sample is closed or exhaustive (Maddala, 1987). Since the study selected all companies that were listed on the ZSE in all the periods 1996 to 1999, 2000 to 2005 and 2010 to 2013 except for those in the financial services, insurance and property management sectors (see section 4.8 below), the fixed effects model becomes more appropriate.

The fixed effects (FE) model in this study is estimated in STATA software.

4.2.6 Testing for multi-collinearity

The multi-collinearity problem occurs when there is a high correlation between one or more explanatory variables. In this study, like Chamisa et al. (2012), variables with a correlation of above 0.8 are dropped out of the model because this violates the condition of multi-collinearity under classical linear regression.

4.3 Sample selection

The sample comprises of ZSE listed non-financial companies in line with prior studies (e.g. Karunaratne & Rajapakse, 2011; Oliveira, 2010; Callao et al., 2007). The ZSE was also the source of the sample used in Chamisa (2000) and Chamisa et al (2011). Stock exchanges were also used as the source of samples in research by Gordon (2001) (Mexico), Lopes (2003) (Brazil), Sami and Zhou (2004) (China), Schiebel (2006) (German), Cools and Praag (2007) (The

Netherlands), Alfaraih (2009) (Kuwait), Filip and Raffournier (2010) (Romania), and Vijitha and Nimalathan (2014) (Colombo).

In the sample selection process, companies that were listed on the ZSE were identified in all the periods 1996 to 1999, 2000 to 2005 and 2010 to 2013 became part of the sample. Companies in the financial services, insurance and property management sectors whose accounting practices differ substantially from the companies in the other sectors were excluded like in prior studies (e.g. Karunaratne & Rajapakse, 2011; Oliveira, 2010; Callao et al., 2007). As a result of this process, a sample of 30 listed companies were identified. The list is in Appendix B.

The 30 listed companies in the sample are spread over the following sectors: 2 companies in beverages, 1 in tourism, 5 in agriculture, 5 in industrial holding, 4 in mining, 2 in engineering, 2 in food, 2 in retail, 1 in paper and packaging, 4 in building and associated industries, 1 in agro-industrial and 1 in printing and packaging. The sample has almost all key industries in Zimbabwe represented and the sample represents about 50% of an annual average number of ZSE listed companies of about 60.

The determination of the firm-years is calculated as a product of the number of years in a Panel and the number of companies in the sample (i.e 30 listed companies). Firm-years of missing accounting and share price data were deducted to obtain the final sample of observations per Panel. The results of this sampling procedure are captured in Table 4.1 below.

TABLE 4.1
Sample selection procedure for periods: 1996 to 1999, 2000 to 2005 and 2010 to 2013

<i>Panel A: 1996-1999</i>	No. of firm-years
Population: Firm-years	120
Less: Firm-years with missing annual reports	-
Final sample observations #	120
<i>Panel B: 2000-2005</i>	
Population: Firm-years	180
Less: Firm-years with missing annual reports	(90)
Final sample observations #	90
<i>Panel C: 2010-2013</i>	

Population: Firm-years	120
Less: Firm-years with missing annual reports	(12)
Final sample observations #	108
Source: ZSE (2014)	

As shown in Table 4.1, Panel A has 120 firm-years which resulted in a final sample of the same number of firm years as there is no missing BVPS, EPS and/or share price data. In Panel B, tests will be performed on 90 firm-years drawn from a population of 180 firm-years after excluding 90 firm-years due to missing data. Firms with missing data represent 50% of the population in Panel B. Lastly, in Panel C, the population comprises 120 firm-years and the final sample is 108 firm-years after excluding 12 firm-years (10% of the population) with missing data. The missing accounting data is due to annual reports which could not be found either as soft copies or hard copies.

4.4 Data type

As the study aims to investigate the value relevance of accounting measures based on IFRS, a brief look at the IFRS measures is necessary. In any case, Hung (2001) argues that it is essential to define variables. Nilsson (2003) also gave details of the accounting data used.

Accounting variables used in this study are book values per share (BVPS) and earnings per share (EPS) based on IFRS. IFRS are investor (Schiebel, 2006) and shareholder (Tsalavoutas et al., 2012) oriented. While IFRS are costly to use (Prather-Kinsey, 2006), they, however, (a) promote fair value accounting⁸ (Graham et al., 2003), (b) give a homogenous accounting-information-product that is comparable and reliable (Zeghal & Mhedhdi, 2006), (c) are useful (Prather-Kinsey, 2006), (d) improve the image of companies (Callao et al., 2007) and (e) give rise to accurate, comprehensive and timely accounting information (Chalmers et al., 2011).

BVPS and EPS used in the period 1996 to 1999 are based on Zimbabwe dollars (Z\$). During hyperinflation from 2000 to 2005, inflation adjusted Z\$ amounts are used. In hyperinflationary

⁸Graham et al. (2003) explain that fair value accounting progresses accounting numbers towards the willing seller willing buyer market value of an entity at the reporting (or balance sheet) date.

economies, inflation adjusted Z\$ figures become the primary accounting information (IASB, 2014). In the period 2010 to 2013, the BVPS and EPS figures are based in US\$, the functional currency in that period. The BVPS and EPS for the three periods are calculated based on publicly available financial statements for ZSE listed companies. These financial statements are audited by any one of BDO Zimbabwe, Deloitte, Ernst & Young, KPMG, Grant Thornton and Price Waterhouse Coopers (ZSE, 2014). Vijitha and Nimalathan (2014) argue that audited accounting information is valid and reliable, hence, the reason for the use of such information in this study.

Some prior empirical research tests also use both BVPS and EPS. Nilsson (2003) and Sami and Zhou (2004), who used BVPS and EPS, observed that these accounting measures are complementary in imperfect markets in value relevance tests.

4.5 Data source

This study uses annual reports as opposed to newspaper publications used by Haw et al. (1999). BVPS and EPS were recomputed from the sampled companies' annual reports. This aligns with Horton (2007) who manually extracted accounting numbers using firm's annual reports. Dobija and Klimczak (2010) also used the annual reports collected from sampled listed companies on the Warsaw Stock Exchange in Poland. Published annual reports are carefully edited and comprehensively reviewed by external auditors, hence accounting information in them is complete and accurate.

Two methods were used in collecting annual reports. The first method was website and internet downloads like Zeghal and Mhedhbi (2006) and So and Smith (2009) who sourced accounting information from websites and internet respectively. Network disruptions and unavailability of the annual reports were the key challenges. Worse still, some webpages did not contain annual reports but instead product lists, contact details or one annual report for the most recent period. Abridged annual reports available on webpages were not useful and therefore ignored.

The second method used was physical collection of the hard- or soft-copy annual reports from the listed companies. Identifying the specific individual, the gatekeeper, at a listed company who had the authority to release the annual reports was a major challenge. Some hard-copy annual reports were either collected or received through courier or delivered to the researcher by messengers or

post. The Zimbabwe Stock Exchange provided the highest number of hard copies. Annual reports collected in form of soft copies were first printed into hard copies. The additional advantage of converting soft copies into hard copies is the stability of hard copies, being a fixed record over time. Collection of the annual reports was successful as the researcher also benefited from personal contacts at some of the listed entities.

4.6 Data collection

The collected company annual reports were distributed to two recently qualified chartered accountants (the research assistants) for them to extract or calculate the BVPS and EPS required for the study. The choice of these research assistants was appropriate because they understand these values and are familiar with published annual reports. Chamisa et al. (2011) also uses research assistants for a similar exercise.

The research assistants were given annual reports to use in the extraction of accounting data. The annual reports were later exchanged among the research assistants to cross check each other's work. To pilot the exercise and ensure the procedure for extracting data from annual reports was understood, the researcher sat down with the research assistants and worked on a sample of annual reports. The BVPS and EPS values were calculated from the companies' annual reports because this data is not readily available in Zimbabwe unlike some countries that have databases. The researcher on a sample basis re-performed the calculations (also see Chamisa et al., 2011). Differences were then dealt with by reference to the annual reports. In cases where the accounting measures were disclosed in the annual reports, these were compared to the calculated amounts.

The share prices were extracted from the ZSE daily price data four, five and six months after the end of the year. For this purpose, as with accounting data, two research assistants were engaged to extract the share prices. For quality control purposes, a sample sheet for the extraction of the price data was used as a guide for the research assistants.

All variables (BVPS, EPS and share prices) were first captured into Excel and then transferred into STATA, a statistical package, similar in process to Nilsson (2003).

4.7 Data adjustment

Empirical studies record that data is adjusted in various ways and for various reasons. Bae and Jeong (2007) adjusted their data by deleting all observations where total liabilities were larger than total assets as they argue that value relevance of earnings and book values is hard to interpret in that situation. Capkun et al. (2008) adjusted their data by excluding all observations with negative book equity values. Agostino et al. (2010), as an alternative way of coping with extreme values, analysed the full sample excluding the observations lying in the first and last percentile of the distribution of each variable. Oliveira et al. (2010) and Chamisa et al. (2012) excluded negative book values, similar to Tsalavoutas et al. (2012). In all these adjustments, results did not significantly change. In this study, because of the little impact of data adjustments, the regressions are run without data adjustments.

The scale effect anchored on per share measurement and R^2 methods are used in this study. This is like studies by Eccher and Healy (2000), Bae and Jeong (2007), Chamisa et al. (2011) and Chamisa et al. (2012).

4.8 Period selection

The sample data was put together for three distinct periods, namely: (a) the period before hyperinflation (1996 to 1999), (b) the period during hyperinflation (2000 to 2005) and (c) the period after hyperinflation (2010 to 2013). This study uses 1996 as the year the collection of data begins because it is the year IFRS were brought into law through Statutory Instrument 62 of 1996 (ZimGov, 1996). The cut-off date of 1999 for the first period is the last year before the economy of Zimbabwe was determined to be hyperinflationary. The hyperinflationary period is between 2000 and 2005. The three years 2006 to 2008 are excluded because this is the period that witnessed severe hyperinflation and a period during which zeros were removed from the Z\$. The period 2010 to 2013 is the period after hyperinflation in which a multicurrency system was used. The year 2009 was excluded from the sample because this was the year of transition from a hyperinflation to a post-hyperinflation economy.

4.9 Study limitations and challenges

This study is restricted to a single and relatively small emerging capital market as opposed to two or more capital markets such as the research by Hellstrom (2007) which used samples from the Prague Stock Exchange and Stockholm Stock Exchange. Like the problem Chamisa, Mangena and Ye (2012) encountered, not all annual reports could be found for the during and after hyperinflation periods to extract the data needed for the study. Missing values create an unbalanced sample of observations over the three periods (before, during and after hyperinflation).

4.10 Summary

This Chapter has explained the research method followed in this study. The main model is specified as $P_{it} = \alpha + \beta_1 EPS_{it} + \beta_2 BVPS_{it} + \varepsilon_{it}$ while the measure for value relevance is by using the adjusted R^2 on the panel data that is run in STATA software. As can be seen from the model, accounting data will be in the form of EPS and BVPS based on IFRS. Prior research captures many advantages of using IFRS as an accounting framework which include usefulness and robustness.

Additional tests will be carried out under the returns model $\frac{P_{it}}{P_{it-1}} = \beta_0 + \beta_1 \frac{X_{it}}{P_{it-1}} + e_{it}$.

The sources of the accounting data are annual reports either downloaded from the internet, physically collected from the companies or delivered by courier and/or messengers. Data for missing annual reports were reported as missing firm-years. Accounting measures were recalculated from annual reports. The share prices were extracted from the ZSE daily price data.

The period selection was based on the three research periods in this study (i.e. 1996 to 1999, 2000 to 2005 and 2010 to 2013). The three years 2006 to 2008 are excluded because this is the period that witnessed severe hyperinflation during which zeros were removed from the Zimbabwe currency, the Z\$. The year 2009 was excluded as it was the year of transition from the Z\$ to the US\$.

The population in this study comprises of ZSE listed companies. Companies in the financial services, insurance and property management sectors, whose accounting practices differ substantially from the other companies, were removed.

The next chapter (Chapter 5) reveals the results of the data analysed in STATA. The regression results are explained in the context of Chapter 2, 3 and using the research methodology explained in this chapter.

CHAPTER 5

ANALYSIS AND INTERPRETATION OF THE RESULTS

5.1 Introduction

This chapter's objective is to provide an analysis and interpretation of the regression results of the value relevance of accounting measures based on IFRS adoption in Zimbabwe for the period 1996 to 2013. The importance of this chapter is that it provides an analysis and interpretation of results that is based on the segmentation of the entire period under consideration (that is 1996 to 2013) into before, during and post hyperinflationary periods.

As explained in previous Chapters, the before hyperinflation period covers the years 1996 to 1999, hyperinflation period covers the years 2000 to 2005 while the post hyperinflation period covers the 2010 to 2013 period. The presentation of the findings is organised into Panels to allow for a clear analysis and interpretation of results. Panel A presents the results based on the before hyperinflation period, Panel B presents an analysis based on the during hyperinflation period while Panel C presents the results based on the post hyperinflation period.

Pursuant to the objectives of this current study, this Chapter addresses the key question on whether accounting measures based on IFRS are value relevant before, during and after hyperinflationary periods. The price model is the primary model that is used to examine whether one set of IFRS based accounting measures in each period is better than the other. The accounting measures under consideration are the EPS and BVPS. Share prices are used as proxies for firm value. Thereafter, the returns model is used as an alternative model. The Chapter is organised into six sections: Section 5.2 presents the summary of the descriptive statistics. Section 5.3 presents the empirical results with an analysis of the value relevance of accounting information based on the price model. Sections 5.4 and 5.5 present additional analyses under the price and returns models respectively as tools for further analysis of the results of the value relevance of IFRS based accounting measures. Finally, section 5.6 summarises the chapter.

5.2 Summary of descriptive statistics

Table 5.1 below presents the descriptive statistics on the variables used in the models for the partitioned periods which are organised into Panels as follows; Panel A: - before hyperinflation (1996-1999); Panel B: - during hyperinflation (2000-2005) and Panel C:- after hyperinflation (2010-2013).

TABLE 5.1
Descriptive statistics for the variables

Variables	Mean	Median	SD	Minimum	Maximum
<i>Panel A: period 1996-1999 (observations = 120 firm-years)</i>					
Share price	9.04	4.50	12.19	0.01	82.00
EPS	1.09	0.59	1.77	-2.01	12.15
BVPS	5.81	3.85	5.79	0.15	40.96
<i>Panel B: period 2000-2005 (observations = 90 firm-years)</i>					
Share price	8 281.93	195.00	52 837.48	0.32	500 000.00
EPS	362.83	7.79	1 942.25	-1 089.25	17 128.00
BVPS	2 169.39	97.21	7 418.01	1.08	53 436.41
<i>Panel C: period 2010-2013 (observations = 108 firm-years)</i>					
Share price	0.52	0.16	1.09	0.01	9.00
EPS	0.06	0.01	0.36	-0.98	2.11
BVPS	0.43	0.15	0.72	-0.13	3.85

Notes:

EPS – Earnings per share

BVPS – Book value per share of equity

SD – Standard deviation

In Panel A (before hyperinflation), share prices increased from a minimum of Z\$0.01 to a maximum of Z\$82.00 with a standard deviation of 12.19%. The mean and median share prices are Z\$9.04 and Z\$4.50 respectively. The share prices were subdued during this period possibly due to low market confidence owing to (a) the crash of the Zimbabwe dollar in November 1997 following the government's unbudgeted payment of gratuities to veterans of the liberation struggle and (b) the unilateral intervention in the DRC military uprising in August 1998. In addition, the ZSE underperformed in 1998 as investors opted for the money market with high interest yields. The standard deviation shows low variability and clustering of share prices, perhaps showing low activity at the ZSE.

The EPS increased from a minimum value of –Z\$2.01 to a maximum value of Z\$12.15 with a standard deviation of 1.77%. The mean and median EPS are Z\$1.09 and Z\$0.59 respectively. The BVPS also increased from a minimum of Z\$0.15 to a maximum of Z\$40.96, with a standard

deviation of 5.79%. The mean and median BVPS are Z\$5.81 and Z\$3.85 respectively. The EPS and BVPS amounts are relatively small, which could be because of little activity in the economy due to dwindling investor confidence and recessionary economic pressures.

In Panel B (during hyperinflation), share prices increased from a minimum of Z\$0.32 to a maximum of Z\$500 000.00 with a standard deviation of 52 837.48%. The mean and median share prices are Z\$8 281.93 and Z\$195.00 respectively. The steep share price increase embodied a real gain as it exceeded the increase in inflation which averaged 232.2% (See Table 2.2 in Chapter 2). The rise in share price could be attributed to the ZSE performance that was spurred by investors gravitating towards shares (and some properties) in search of assets to store value. The standard deviation shows high volatility of share prices. The high standard deviation of share prices on the ZSE is consistent with the findings by Oppong (1993) and Mlambo and Biekpe (2007) who observed high volatility in share prices in emerging capital markets like the ZSE. These studies attributed the high volatility in share prices to thin trading (few trades) common in emerging capital markets.

The EPS increased from a minimum of -Z\$1 089.25 to a maximum of Z\$17 128.00 with a standard deviation of 1 942.25%. The mean and median EPS are Z\$362.83 and Z\$7.79 respectively. The BVPS increased from a minimum of Z\$1.08 to a maximum of Z\$53 436.41 with a standard deviation of 7 418.01%. The mean and median BVPS are Z\$2 169.39 and Z\$97.21 respectively. Large increases in EPS and BVPS accounting measures during the hyperinflation period is attributed to the impact of inflation in this period.

In Panel C (after hyperinflation), share prices increased from a minimum of US\$0.01 to a maximum of US\$9.00 with a standard deviation of 1.09%. The mean share price is US\$0.52 while the median is US\$0.16. The low share prices show that counters were in the process of finding their true prices in the dollarized environment (Jefferies & Smith, 2005). The dollarization led to a liquidity squeeze which in turn led to a severely low demand for shares and a consequential decline in share prices. Thus, the minimum and maximum share price variations might show the impact of liquidity constraints.

The EPS increased from a minimum of -US\$0.98 to a maximum of US\$2.11 with a standard deviation of 0.36%. The mean and median EPS are US\$0.06 and US\$0.01 respectively. The

BVPS increased from a minimum of -US\$0.13 to a maximum of US\$3.85 with a standard deviation of 0.72%. The mean and median BVPS are US\$0.43 and US\$0.15 respectively. EPS and BVPS values are severely low largely showing the strength of the US\$ currency as compared to the Z\$ currency.

Overall, a closer examination of the descriptive statistics for each panel presented in Table 5.1 shows that all the variables under consideration are positively skewed as their means are greater than their medians. The impact of inflation is also evident as the descriptive statistics presented in Panel B (during hyperinflation) are extremely higher than those for the before and after the hyperinflation periods. Furthermore, the during hyperinflation period experienced greater volatility in share prices, EPS and BVPS in comparison to the before and after hyperinflation periods. The after-hyperinflation period experienced the lowest share prices, EPS and BVPS volatility, possibly due to the adoption of the multicurrency system which was meant to absorb both internal and external pressures on the Zimbabwean dollar and hence, spur economic growth in the country.

Before performing the regression analysis, the Pearson correlation matrix was conducted to test for multicollinearity. Table 5.2 presents the correlation matrix for the dependent and independent variables. The correlation coefficients are low for Panels A and C, which shows that multicollinearity is not an issue for those two panels. However, there is a high correlation between EPS and share prices for Panel B (during hyperinflation, an extraordinary period) which could be an indication of a multicollinearity problem chiefly because the correlation coefficient for these two variables exceeds 80%. Despite that variables should only be dropped if correlation is above 80% (see paragraph 4.2.6 in Chapter 4), these variables are retained in the analysis because EPS and BVPS are the two key variables of the price model.

TABLE 5.2
Pearson correlation coefficients

Variables	Share price	EPS	BVPS
<i>Panel A: period 1996-1999 (observations = 120 firm-years)</i>			
Share price	1		
EPS	0.4200	1	
BVPS	0.1842	0.6151	1
<i>Panel B: period 2000-2005 (observations = 90 firm-years)</i>			
Share price	1		
EPS	0.9461	1	
BVPS	0.5807	0.6388	1
<i>Panel C: period 2010-2013 (observations = 108 firm-years)</i>			
Share price	1		
EPS	0.3545	1	
BVPS	0.2973	0.5170	1

Notes:

EPS – Earnings per share

BVPS – Book value per share of equity

5.3 Empirical results

Table 5.3 presents the empirical results of the value relevance of accounting measures before, during and after hyperinflation using the price model. The tests are run using the fixed effects regression analysis by partitioning the entire period into before, during and after hyperinflation periods. The before (Panel A: 1996-1999 period) and after hyperinflation (Panel C: 2010-2013 period) accounting measures used for this analysis are based on historical cost accounting information while the inflation adjusted accounting measures are used during hyperinflation (Panel B: 2000-2005 period). During the hyperinflation period, companies were required to publish inflation adjusted accounting information. The inflation adjusted accounting information is implied to be useful as IAS 29 asserts that historical cost accounting information is not useful during hyperinflation. The results presented in this section use share prices published 4 months after year end as the dependent variable.

TABLE 5.3**Regression results of IFRS based accounting measures based on four months share prices after year end**

<i>Panel A: Regression results for period 1996-1999 (before hyperinflation)</i>				
	Coefficient	Standard error	t-value	P> t
EPS	1.8652	0.6024	3.10	0.003
BVPS	-0.0836	0.2469	-0.34	0.736
Intercept	7.4995	1.2955	5.79	0.000
	R² = 0.8022			
	Adjusted R² = 0.7325			
<i>Panel B: Regression results for period 2000-2005 (during hyperinflation)</i>				
	Coefficient	Standard error	t-value	P> t
EPS	26.4018	1.3584	19.43	0.000
BVPS	-0.2331	0.3494	-0.67	0.507
Intercept	-791.7615	1906.6360	-0.42	0.679
	R² = 0.9164			
	Adjusted R² = 0.8937			
<i>Panel C: Regression results for period 2010-2013 (after hyperinflation)</i>				
	Coefficient	Standard error	t-value	P> t
EPS	-0.5925	0.7246	-0.82	0.416
BVPS	0.3078	0.3030	1.02	0.313
Intercept	0.4200	0.1371	3.06	0.003
	R² = 0.6820			
	Adjusted R² = 0.5653			

Notes:

EPS – Earnings per share

BVPS – Book value per share of equity

An examination of Panels A to C shows that Panel A and B have high adjusted R² at 73.25% and 89.37% compared to 56.53% for the after-hyperinflation period. This shows that accounting measures were more value relevant before and during the hyperinflation periods relative to the after-hyperinflation period.

Apart from the differences in the significance of the explanatory powers shown in the three Panels A to C, it is also important to examine if EPS or BVPS is more value relevant for share valuation purposes in the periods before, during and after hyperinflation. In Panel A, the results show that the relationship between the share prices and the accounting measures as represented by EPS is significant at 1%. The coefficient of the EPS is positive (that is 1.8652), which means that a 1% change in EPS would cause a 1.87 cents change in share prices before hyperinflation. On the other hand, the relationship between the BVPS and share prices before hyperinflation is negative and insignificant. This shows that the EPS provides value relevant accounting information for share valuation purposes for the period prior to hyperinflation. This contrasts with the BVPS accounting

measure which provides nothing to little value relevant accounting information for share valuation purposes in the same period. Overall, the empirical results in Panel A show that EPS provides value relevant accounting information for the purposes of share valuation before a hyperinflationary period while BVPS does not.

In Panel B, the results show that the relationship between inflation adjusted EPS and share prices is significant at 1%. The coefficient of the inflation adjusted EPS is positive and large (that is, 26.4018), which means that a 1% change in inflation adjusted EPS would cause a 26.40 cents change in share prices during a hyperinflationary period. This shows that the EPS provides value relevant accounting information for share valuation purposes for the period during hyperinflation. However, the relationship between the inflation adjusted BVPS and share prices is negative and insignificant. This shows that the inflation adjusted BVPS provides nothing to little value relevant accounting information for share valuation purposes during a hyperinflationary period. Overall, the results in Panel B show that the inflation adjusted EPS measure provides more value relevant accounting information for the purposes of share valuation during hyperinflationary periods than the BVPS accounting measure.

In contrast to the results in Panels A and B, the results in Panel C show that the relationship between share price and EPS or BVPS is not significant. The coefficient of the EPS is negative while that of the BVPS is positive. Thus, it can be concluded that neither the EPS nor BVPS provides value relevant accounting information for share valuation purposes after hyperinflation.

5.4 Additional analyses under the price model

In addition to using share prices 4 months after the year end, this current study also used share prices 5 and 6 months after year end as further analysis to examine the value relevance of accounting measures before, during and after a hyperinflationary period under the price model. Furthermore, an examination of the relevance of accounting measures prepared using historical cost accounting measures was conducted under the hyperinflation period using the 4, 5 and 6 months share prices after year end as the dependent variables using the price model. In addition, the year on year analysis was also conducted using the price model. Thereafter, a returns model was also used as an alternative method to examine the value relevance of accounting information before, during and after hyperinflation.

The presentation of this analysis proceeds as follows: section 5.4.1 presents regression results of the value relevance of accounting information based on share prices 5 months after year end. Section 5.4.2 presents regression results on the value relevance of accounting information based on share prices 6 months after year-end. Section 5.4.3 provides an analysis of results based on the regression results on the value relevance of accounting information based on the historical cost accounting information during a hyperinflationary period (2000-2005) using share prices 4, 5 and 6 months after year-end as the dependent variables. Section 5.4.4 presents the analysis of the regression results on the value relevance of accounting information on a year-by-year basis conducted using the historical cost accounting measures for the before and after hyperinflation periods and the inflation adjusted accounting measures for the years during hyperinflation using share prices 4 months after year end as a dependent variable. Thereafter, section 5.5 presents an analysis of the regressions results based on the returns model.

5.4.1 Regression results of the value relevance of accounting information based on share prices 5 months after year end

Table 5.4 presents the regression results when share prices 5 months after year end are used as the dependent variable as further analysis on whether accounting measures are value relevant. A glance at these results shows that the conclusions to be reached from analysing all the Panels presented for this purpose are not different to those reached when the share prices 4 months after the year end were used as a dependent variable. The only observable difference is with regards to the changes in the explanatory power of the regression equations. The results from the after-hyperinflation period has the highest adjusted R^2 at 89.96%, followed by the during hyperinflation period at 89.59% and lastly the before hyperinflation period at 67.95%. The explanatory power of the period after hyperinflation has increased tremendously while that of the before hyperinflation period dropped marginally. The explanatory power of the during hyperinflation period improved slightly (See Table 5.4 below for reference).

TABLE 5.4**Regression results of IFRS accounting measures based on five months share prices after year end**

<i>Panel A: Regression results for period 1996-1999 (before hyperinflation)</i>					
	Coefficient	Standard error	t-value	P> t	
EPS	2.7042	0.7199	3.76	0.000	
BVPS	-0.2122	0.2952	-0.72	0.474	
Intercept	7.9990	1.7610	4.54	0.000	
	R² = 0.7630				
	Adjusted R² = 0.6795				
<i>Panel B: Regression results for period 2000-2005 (during hyperinflation)</i>					
	Coefficient	Standard error	t-value	P> t	
EPS	25.7097	1.3481	19.07	0.000	
BVPS	0.0464	0.3467	0.13	0.894	
Intercept	-434.8830	1892.0700	-0.23	0.819	
	R² = 0.9181				
	Adjusted R² = 0.8959				
<i>Panel C: Regression results for period 2010-2013 (after hyperinflation)</i>					
	Coefficient	Standard error	t-value	P> t	
EPS	-1.1410	0.9089	-1.26	0.213	
BVPS	0.4505	0.3800	1.19	0.239	
Intercept	0.4528	0.1720	2.63	0.010	
	R² = 0.5645				
	Adjusted R² = 0.8996				

Notes:

EPS – Earnings per share

BVPS – Book value per share of equity

Furthermore, the results presented in Table 5.4 show that the conclusions that can be drawn from analysing the significance of the association between each accounting measure using share prices 5 months after year-end are not different when share prices 4 months after year-end are used in the analysis. For instance, similar to an earlier conclusion when share prices 4 months after year-end were used, as shown in Panel A, the EPS has a significant relationship at 1% with share prices 5 months after year-end before the hyperinflation period. The coefficient is also positive but slightly higher at 2.7042. This means that a 1% change in EPS results in the share price increasing by 2.70 cents before a hyperinflation period. The BVPS also found to be negatively and insignificantly related to share prices 5 months after year-end. Overall, the results in Panel A show that the EPS is the only accounting measure that is value relevant for share valuation purposes if share prices 5 months after year-end are used as a dependent variable.

In Panel B, the inflation adjusted EPS accounting measure has a significant relationship with share prices 5 months after year end at 1%. The coefficient is also large and positive (25.71), which means that a 1% change in the inflation adjusted EPS results in an increase in the share of 25.71 cents during a hyperinflation period. Contrary to the finding on EPS, the results also show that the inflation adjusted BVPS is insignificantly related to share prices 5 months after year end. This means that BVPS provide little or no value relevant accounting information for share valuation purposes during a hyperinflationary period.

Consistent with the findings observed when share prices 4 months after year end were used, the results in Panel C also show that neither the EPS nor BVPS is value relevant for share valuation purposes after hyperinflation if share prices 5 months after year end are used in the analysis.

5.4.2 Regression results of the value relevance of accounting information based on share prices 6 months after year-end.

Table 5.5 presents the regression results when share prices 6 months after year end are used as the dependent variable as further analysis on whether accounting measures are value relevant. An examination of the results based on each panel in Table 5.5 shows that the significance of the explanatory power of the regression equation during hyperinflation is the highest at 87.41%, followed by the before hyperinflation period at 64.43% and lastly the after-hyperinflation period at 49.42%. A comparison of the significance of the explanatory power of the regression equation using share prices 4; 5 and 6 months after year-end shows some interesting insights. For example, a glance at the before hyperinflations period (i.e. Panel As- for share prices 4; 5 and 6 after year end), shows that the significance of the explanatory power continues to decrease as we move from using share prices 4 months after year end to using share prices 5 and 6 months after year end as dependent variables. In contrast to the findings in Panel As the results in Panel B, show that the significance of the explanatory power of the regression equation remained consistently above 85% regardless of whether 4, 5 or 6 months share prices are used as a dependent variable in the analysis. However, in Panel C, the significance of the explanatory power of the regression equation fell below 50% when the share prices 6 months after year end were used in the analysis.

Overall, on the basis of the significance of the explanatory power, the results show that IFRS based accounting measures were more value relevant for share valuation purposes before and during hyperinflation relative to the after-hyperinflation period.

TABLE 5.5

Regression results of IFRS accounting measures based on six months share prices after year end

Panel A: Regression results for period 1996-1999 (before hyperinflation)

	Coefficient	Standard error	t-value	P> t
EPS	2.9122	0.8530	3.41	0.001
BVPS	-0.2737	0.3497	-0.78	0.436
Intercept	7.7998	1.8347	4.25	0.000
	R² = 0.7369			
	Adjusted R² = 0.6443			

Panel B: Regression results for period 2000-2005 (during hyperinflation)

	Coefficient	Standard error	t-value	P> t
EPS	47.3097	2.6559	17.81	0.000
BVPS	-0.4648	0.6831	-0.68	0.498
Intercept	0.2456	3727.5800	-0.66	0.512
	R² = 0.9010			
	Adjusted R² = 0.8741			

Panel C: Regression results for period 2010-2013 (after hyperinflation)

	Coefficient	Standard error	t-value	P> t
EPS	-1.1315	1.0675	-1.06	0.292
BVPS	0.3894	0.4463	0.87	0.386
Intercept	0.4787	0.2020	2.37	0.020
	R² = 0.6300			
	Adjusted R² = 0.4942			

Notes:

EPS – Earnings per share

BVPS – Book value per share of equity

As Table 5.5 shows, the results in Panel A and B show that EPS has a significant positive relationship with share prices 6 months after year-end at 1%. Consistent with the results in earlier sections of this study, these results in Table 5.5 show that the coefficient of the EPS for the period before and during hyperinflation were positively significant and increasing at each level of analysis (see results based on Table 5.3 and Table 5.4). However, an important observation to note is that the coefficient of the EPS when share prices 6 months after year-end are used for the period during hyperinflation increased tremendously (47.31), compared to when the share prices 4 and 5 months after year-end prices were used. In contrast to the before and during hyperinflation period, the coefficient of the EPS after hyperinflation has been insignificantly negative regardless of whether share prices 4; 5 or 6 months were used in the analysis. Thus, these results confirm that the EPS measure is not value relevant for share valuation purposes after a period of hyperinflation. Consistent with the findings when share prices 4 and 5 months after year-end were

used, the BVPS measure is insignificantly related to share prices 6 months after year-end. This implies that the BVPS accounting measure provides little or no value relevant information for share valuation purposes regardless of whether the analysis is done for the before, during or after a period of hyperinflation. However, another important observation worth noting is that, both the EPS and BVPS are not value relevant for a period after hyperinflation regardless of whether share prices 4; 5 or 6 months after year end are used in the analysis.

Overall, Table 5.6 below provides a summary of the regression results of the IFRS based EPS and BVPS accounting measures for the three time periods examined using 4, 5 and 6 months share prices after year end. The three panels (i.e. A, B and C) presented in Table 5.6 show that for share valuation purposes, EPS is value relevant in the periods before and during hyperinflation but not value relevant after hyperinflation while BVPS is not value relevant for share valuation purposes regardless of whether the period is before, during or after hyperinflation (see Tables 5.3; 5.4 and 5.5 for evidence of the results presented in Table 5.6).

TABLE 5.6
Summary of regression results of IFRS accounting measures four, five and six months share prices after year end

Share prices	EPS			BVPS		
	Panel A	Panel B	Panel C	Panel A	Panel B	Panel C
4 months	√	√	x	x	x	x
5 months	√	√	x	x	x	x
6 months	√	√	x	x	x	x

Notes: -

EPS - Earnings per share

BVPS – Book value per share of equity

Panel A – Before hyperinflation (1996-1999)

Panel B – During hyperinflation (2000-2005)

Panel C – After hyperinflation (2010-2013)

√ Value relevant for share valuation purposes

× Not value relevant for share valuation purposes

5.4.3 Regression results on the value relevance of historical cost accounting information four, five and six months share prices after year-end during a hyperinflationary period

IAS 29 argues that historical cost accounting information is not useful under hyperinflationary periods. Thus, IAS 29 discourages the publication of historical cost accounting information during hyperinflationary periods and encourages the publication of inflation adjusted accounting information instead. In this section, this current study examines whether historical cost accounting

measures are value relevant during a hyperinflationary period as part of further analysis. The objective is to review whether the suggestions of the IAS 29 hold. Share prices 4, 5 and 6 months after year end are used for this analysis and the results are presented in Table 5.7.

An examination of the results in Table 5.7 shows that the explanatory power of the regression equations as shown by the adjusted R^2 is greater than 71% regardless of whether share prices 4, 5 or 6 months after year end are used. The regression equation that uses 5 months share prices after year end has the highest adjusted R^2 at 77.82%, followed by the 4 months share prices after year end at 73.67% and lastly the 6 months share prices at year end at 71.59% (See Table 5.7 below for reference). The results confirm that historical cost accounting measures are value relevant especially when share prices 5 months after year are used in the analysis. These findings are consistent with those revealed by inflation adjusted accounting measures.

TABLE 5.7
Regression results for historical cost IFRS accounting measures based on four, five and six months share prices after year end during hyperinflation

<i>Regression results for 4 months after year end (2000-2005)</i>				
	Coefficient	Standard error	t-value	P> t
EPS	21.1665	1.6473	12.85	0.000
BVPS	-1.4295	1.6434	-2.22	0.030
Intercept	-3075.3610	3133.3990	-0.98	0.330
	$R^2 = 0.7918$			
	Adjusted $R^2 = 0.7367$			
<i>Regression results for 5 months after year end (2000-2005)</i>				
	Coefficient	Standard error	t-value	P> t
EPS	21.4807	0.5952	14.10	0.000
BVPS	-1.1658	1.5239	-1.96	0.054
Intercept	-2727.3940	2898.5670	-0.94	0.350
	$R^2 = 0.9181$			
	Adjusted $R^2 = 0.7782$			
<i>Regression results for 6 months after year end (2000-2005)</i>				
	Coefficient	Standard error	t-value	P> t
EPS	37.8740	-3.0745	12.32	0.000
BVPS	-2.6370	-1.2009	-2.20	0.032
Intercept	-6425.7350	5847.8190	-1.10	0.276
	$R^2 = 0.7753$			
	Adjusted $R^2 = 0.7159$			

Notes:

EPS – Earnings per share

BVPS – Book value per share of equity

More interestingly, the results in Table 5.7 show that the historical cost accounting measures as represented by EPS and BVPS are both value relevant when regressed against either share prices 4, 5 or 6 months after year end during a hyperinflationary period. The EPS has a positive and significant relationship with share prices 4, 5 and 6 months after year end at 1%. The coefficients for EPS are also high and increasing (i.e. 21.17; 21.48 and 37.87) when the share prices 4, 5 and 6 months after year end are used respectively. The significance of the findings based on the historic cost EPS are consistent with the findings based on the inflation adjusted EPS measure. In contrast, the historic cost BVPS though significant, has a consistent negative relationship with share prices 4, 5 and 6 months after year end at 5%. Thus, these findings show that while the 1% change in historical cost EPS results in an increase in share prices, a 1% change in the historical cost BVPS results in a decrease in share prices during a hyperinflationary period.

However, based on the results above, IAS 29's assertion that historical cost accounting information should not be published during a hyperinflationary period warrants a further investigation. While the findings based on the inflation adjusted accounting measures show that only the EPS is value relevant for share valuation purposes at 1% regardless of whether share prices 4, 5 or 6 months after year end are used during a hyperinflationary period, the historical cost accounting measures show that both EPS and BVPS are value relevant at 1% and 5% respectively when share prices 4, 5 and 6 months after year end are used during hyperinflation. Therefore, these findings suggest that both historical cost and inflation adjusted accounting measures are value relevant during hyperinflation. In this vein, the two sets of accounts complement each other, hence, they are not substitutes.

5.4.4 Year-by-year regressions

In addition to the other analyses performed above, the year-by-year regressions were also conducted as further analysis under the price model using the share prices 4 months after year end based on historical cost (period before hyperinflation), inflation adjusted (period during hyperinflation) and historical cost (after hyperinflation) accounting measures to infer if accounting measures' value relevance could be attributed to a particular year of trading. The regression results are presented in Table 5.8 below.

TABLE 5.8
Yearly regression results for IFRS based accounting measures under the price model

Year	EPS	BVPS	Adjusted R ²
<i>Panel A : Yearly regression results for period 1996 -1999</i>			
1996	3.7123 (1.16)	-0.5154 (-0.84)	0.0543
1997	5.9675 (1.55)	0.0412 (0.10)	0.0680
1998	2.7285 (2.18) **	0.0799 (-0.17)	0.1447
1999	4.2925 (3.24)***	-0.5313 (-1.24)	0.2666
<i>Panel B : Yearly regression results for period 2000 -2005</i>			
2000	14.1944 (2.85)**	2.5525 (3.33)**	0.7026
2001	14.5328 (7.54)***	2.1985 (6.13)***	0.8813
2002	17.7883 (2.89)***	4.9722 (5.65)***	0.7049
2003	12.1283 (5.18)***	-.2038 (-0.22)	0.7245
2004	10.7466 (2.74)**	1.6869 (1.84)*	0.6203
2005	26.7549 (8.33)***	-0.2160 (-0.24)	0.8757
<i>Panel C : Yearly regression results for period 2010 -2013</i>			
2010	1.0141 (4.09)	0.2402 (1.49)	0.4989
2011	1.2714 (5.29)***	0.10272 (0.87)	0.5791
2012	1.0267 (1.03)	0.3455 (0.81)	0.0482
2013	0.3444 (0.27)	0.3923 (0.65)	-0.0171

* Significant at the 10% level

** Significant at the 5% level

*** Significant at the 1% level

Notes:

EPS – Earnings per share

BVPS – Book value per share of equity

An examination of the regression results in Table 5.8 reveals some important insights about the value relevance of each IFRS based accounting measure considered for this current study. In Panel A, for example, the results show that EPS has a positive and significant relationship with share prices 4 months after year end at 5% in 1998 and at 1% in 1999 while BVPS has a negative but insignificant relationship with share prices 4 months after year end for all the years. This finding shows that EPS was value relevant in 1998 and 1999 while BVPS was not value relevant in all the years.

In Panel B, the results show that EPS is value relevant for each of the years during hyperinflation at 1% (see years, 2001; 2002; 2003 and 2005) and 5% (see years, 2000 and 2004) levels of significance while BVPS is value relevant at 1% (see years, 2001 and 2002), 5% (see year 2000), 10% (see year 2004) and not value relevant for the years 2003 and 2005.

In Panel C, the EPS is only value relevant in 2011 at 1% significance level and not value relevant for the years 2010, 2012 and 2013 while BVPS is not value relevant on a year-by-year basis for all the years after hyperinflation.

An important observation is that the adjusted R^2 for each of the years during hyperinflation is extremely higher compared to the years before and after hyperinflation. This finding shows that the inflation adjusted accounting measures were more value relevant during the hyperinflation period compared to the before and after hyperinflation periods.

5.5 Additional analyses under the returns model

This section uses the returns model as a further check to the robustness of the results explained in prior sections. The share returns were calculated based on the 4, 5 and 6 months share prices after year end. Earnings per share were regressed against share returns for the before, during and after hyperinflation periods. The results are shown in Table 5.9 below in terms of models. Model 1 shows the results based on the returns calculated using the 4 months share price after year end, while Models 2 and 3 present results based on the returns calculated based on the share prices 5 and 6 months after the year end respectively.

TABLE 5.9

Returns model: The value relevance of IFRS accounting measures before, during and after hyperinflation

Variable	Model 1	Model 2	Model 3
<i>Panel A: 1996-1999</i>			
β_0	140.1379 (0.87)	-22.4434 (-0.47)	-18.9085 (0.46)
$\frac{EPS_{it}}{MPPSMS_{it-1}}$	1.9880 (5.90)***	10.1452 (24.05)***	8.8765 (24.83)***
F-test	34.84***	578.38***	616.59***
Adjusted R ²	0.2677	0.8649	0.8722
<i>Panel B: 2000-2005 (inflation adjusted)</i>			
β_0	5.98 (3.29)***	6.95 (3.11)***	7.02 (3.66)***
$\frac{EPS_{it}}{MPPSMS_{it-1}}$	8.86 (24.70)***	12.39 (24.04)***	11.66 (20.44)***
F-test	609.8	577.59	417.90
Adjusted R ²	0.9009	0.8969	0.8624
<i>Panel C: 2010-2013</i>			
β_0	3.67 (3.27)***	3.89 (3.34)***	3.21 (4.32)***
$\frac{EPS_{it}}{MPPSMS_{it-1}}$	1.53 (4.53)***	1.84 (6.12)***	1.51 (37.50)***
F-test	20.5	37.48	1405.94
Adjusted R ²	0.4107	0.4888	0.9487
<i>Panel D: 2000-2005 (historical cost)</i>			
β_0	-3.61 (3.28)***	3.24 (3.14)***	3.586 (3.39)***
$\frac{EPS_{it}}{MPPSMS_{it-1}}$	4.12 (43.26)***	5.92 (55.86)***	5.94 (40.99)***
F-test	1871.34	3120.71	1679.96
Adjusted R ²	0.9652	0.9789	0.9610

Notes: -

β_0 = the regression intercept

EPS_{it} = earnings per share

$MPPSMS_{it-1}$ = Current price less past price divided by past price

From Table 5.9 above, Models 1 to 3 for Panel A (i.e. the before hyperinflation period) shows that the explanatory power of the models is high and on the increase especially when the share returns 5 and 6 months after year end are used. For example, Model 1 which uses share returns 4 months after year end has the least explanatory power (26.77%), followed by Model 2 (86.49%) and Model 3 (87.22%) which use share returns 5 and 6 months respectively. In addition to the increasing explanatory power from one model to the next, the results show that the relationship between EPS and share returns 4 months after year end is positive and significant at 1% significance level. Hence, these results show that EPS is value relevant before the hyperinflation period irrespective of whether one uses share returns 4, 5 or 6 months after year end for valuing the firm.

In Panel B, that is, the period during hyperinflation, the results show a tremendous improvement in the significance of the explanatory power of each model (model 1 to 3). The explanatory power for each model is greater than 85%. In contrast to the period before hyperinflation where the model 3 had the highest adjusted R^2 followed by model 2 and lastly 3, the period during hyperinflation shows that Model 1 had the highest at 90.01%, followed by Model 2 at 89.69% and lastly Model 3 at 86.24%. Furthermore, the results for each model show that there is a positive and significant relationship between EPS and the share returns at 1% irrespective of whether the returns are calculated based on the share returns 4, 5 or 6 months after year end. This shows that EPS is value relevant for share valuation purposes during a hyperinflation period.

In Panel C (i.e. period after hyperinflation), the explanatory power for model 1 and 2 dropped drastically compared to the during the hyperinflation period except for the period when share returns 6 months are used in the analysis. Model 3 which uses share returns 6 months after year end has the highest adjusted R^2 at 94.87%, followed by model 2 at 48.88% and lastly model 1 at 41.07%. There is an observable increase in the significance of the explanatory power for models 1 to 3. More so, the results also show that there is a positive and significant relationship between EPS and share returns at 1% irrespective of whether these share returns were calculated based on share prices 4, 5 or 6 months after year end as proxies for firm value.

Overall, the results show that the periods before and during hyperinflation (Panels A and B) have the highest explanatory power for all models (i.e. model 1 to 3) relative to after hyperinflation period (Panel C). This shows that IFRS based accounting measures were more value relevant before and during hyperinflation periods relative to the after-hyperinflation period for share valuation purposes.

In Panel D, the historical cost accounting information during a hyperinflation period was used as a robust check to the findings based on inflation adjusted accounting information during the same period. Like the findings based on inflation adjusted accounting information, the significance of the explanatory power for each model is extremely high albeit slightly higher when historical cost information is used (above 95% for each model compared to the above 85% for each model when inflation adjusted accounting information is used). Unlike the inflation adjusted accounting information where there is a declining trend in the adjusted R^2 between models 1 and 3, the explanatory power for each model using the historical cost information is mixed. The results in Panel D show that the adjusted R^2 is increasing between model 1 and 2 but decreasing slightly between models 2 and 3. However, Panels B and D together show that both historical cost and inflation adjusted accounting measures are useful for share valuation purposes during a hyperinflation period.

Similar to the conclusion reached for Panel B (using inflation adjusted accounting information), the findings about the relationship between historical cost EPS and share returns is positive and significant at 1% irrespective of whether share prices 4, 5 or 6 months after year end were used to calculate share returns as a proxy for firm value. The coefficients for historical cost EPS are increasing despite being smaller than those of the inflation adjusted EPS for each model during a hyperinflation period. From a comparative point of view, these results confirm that both historical cost EPS and inflation adjusted EPS are value relevant for share valuation purposes during a hyperinflation period. This is consistent with earlier studies that found that historic cost accounting information and inflation adjusted accounting information complement rather than substitute each other (Chamisa et al., 2011). In other words, the two should be used in conjunction with each other for share valuation purposes during hyperinflationary periods.

5.6 Summary

This current study tested the value relevance of IFRS based accounting measures through a segmentation of the entire 1996 to 2013 period into three partitions namely; the before (1996-1999),

during (2000-2005) and after hyperinflation (2010-2013) period in Zimbabwe. The periods before and after hyperinflation use historical cost accounting measures for analysis while the period during hyperinflation uses inflation adjusted accounting measures to test whether IFRS based accounting measures are value relevant for share valuation purposes. However, the value relevance of the historical cost accounting measures was also tested during a hyperinflation period to infer whether inflation adjusted accounting measures provide better accounting information (i.e. more useful) for share valuation purposes compared to historical cost accounting measures. This analysis was conducted using the price model as the primary tool for analysis and the returns model as a tool for further analysis.

Using the price model, the results show that the IFRS based accounting measures are more value relevant before and during the hyperinflation periods relative to the after-hyperinflation period if share prices 4 months after year end are used as a proxy for firm value. In particular, an analysis of the association between individual accounting measures and share prices 4 months after year end shows that for the periods before and during hyperinflation, the EPS is value relevant while BVPS is not. The EPS accounting measure has a positive and significant relationship with firm value at 1% for the period before and during hyperinflation while BVPS has an insignificant relationship with firm value for the same periods. Both the EPS and BVPS accounting measures have an insignificant relationship with firm value after hyperinflation. This means both EPS and BVPS are not value relevant for share valuation purposes after hyperinflation (see Table 5.6 for the summary of results).

In addition, the robustness checks of the above findings were conducted using share prices 5 and 6 months after year end and the results were consistent with those observed when share prices 4 months after year ended were used for analysis for all the panels (that is before, during and after). For the period before and during hyperinflationary period, the findings show that the EPS accounting measure is value relevant regardless of whether share prices 4, 5 or 6 months after year end are used in the analysis. In contrast, the EPS is not value relevant for the period after hyperinflation regardless of whether share prices 4, 5 or 6 after year end are considered in the analysis.

On the other hand, the BVPS accounting measure is not value relevant regardless of whether share prices 4, 5 or 6 months after year end are used and regardless of whether the period is before, during or after hyperinflation. (see table 5.6 for reference). However, the only common feature to note is that both EPS and BVPS accounting measures are not value relevant regardless of whether share prices 4,

5 or 6 months after year end are used as proxy for firm value after the hyperinflationary period (refer to Table 5.6 for this summary).

Further analysis was also conducted to infer whether historical cost accounting measures are value relevant during hyperinflation as a further robustness check on the value relevance of IFRS based accounting measures using share prices 4, 5 and 6 months as proxies for firm value. This analysis was conducted as a follow up on the findings based on the inflation adjusted accounting measures. The results show extremely higher R^2 s irrespective of whether the analysis was conducted based on either the historical cost or inflation adjusted accounting measures. This means that both historic cost and inflation adjusted accounts are value relevant during a hyperinflation period. The results also show that both EPS and BVPS accounting measures are also value relevant during hyperinflation irrespective of whether share prices 4, 5 or 6 months after year-end are used as a proxy for firm value. The only difference is that historical cost BVPS has a consistent negative relationship with firm value while the historical cost EPS has a consistent positive relationship with firm value during hyperinflation.

Furthermore, a year on year robustness check on the results was also conducted for each year under each segmented period (before, during and after hyperinflation) using share prices 4 months after year end as proxy for firm value. The results show that EPS and BVPS were more value relevant for each of the years before and during hyperinflation relative to each of the years after hyperinflation when regressed to the share prices 4 months after year end as proxies for firm value. Based on each accounting measure, the results for the period before hyperinflation show that EPS was value relevant in 1998 and 1999 (and not in 1996 and 1997) while the BVPS was not value relevant in each of all the years before hyperinflation. For the period during hyperinflation, the inflation adjusted EPS accounting measure was value relevant for each of the years under this period, while the inflation adjusted BVPS accounting measure was value relevant for the years 2000, 2001, 2002 and 2004 but not value relevant in the years 2003 and 2005. Thus, while the inflation adjusted EPS accounting was value relevant for share valuation purposes during each of the hyperinflation years, the inflation adjusted BVPS accounting measure was not value relevant in 2003 and 2005. The period after hyperinflation shows that the EPS accounting measure was only value relevant in 2011 and not value relevant in each of the other years under consideration after hyperinflation. The results also show that the BVPS accounting measure was not value relevant for share valuation purposes in each of the years after hyperinflation.

Using the returns model, the results confirm that accounting measures were more value relevant for share valuation purposes before and during hyperinflation relative to after hyperinflation. Furthermore, the results show that the EPS accounting measure is value relevant before and during the hyperinflation periods irrespective of whether one uses share returns 4, 5 or 6 months after year end as a proxy for firm value. Further tests using the returns model also show that historical cost accounting measures are value relevant during hyperinflation. Furthermore, historical cost EPS accounting measure was found to be value relevant during the hyperinflation period irrespective of whether share returns 4, 5 or 6 months after year end were used as a proxy for firm value. Overall, the empirical results under the returns model confirm that both historical cost and inflation adjusted IFRS based accounting measures are value relevant for share valuation purposes during hyperinflation. These results are consistent with the findings based on the price model when a comparison was made about whether inflation adjusted accounting measures are more useful than historical cost accounting measures. These findings therefore suggest that both historical cost and inflation adjusted accounting measures are value relevant for share valuation purposes during the hyperinflation period. Therefore, this implies that the two sets of IFRS based accounting measures under hyperinflation should be treated as complements and not as substitutes.

The foregoing research results on the value relevance of the EPS and BVPS accounting measures in the period before hyperinflation are comparable to those obtained from prior studies conducted in stable economies. Positive value relevance like in the current study on the EPS accounting measure is found in studies conducted in Zimbabwe by Oppong (1993). Therefore, Oppong (1993) and this study share the same research result for the period before hyperinflation about the value relevance of the EPS accounting measure. In addition, comparable research results are found in studies conducted in Finland by Niskanen et al. (2000) even though Finland uses local GAAPs. About the BVPS accounting measure, like in this study, it was found not value relevant in Amir & Lev (1996) in America, Capkun et al. (2008) and Clarkson et al. (2011) in Europe and Filip and Raffournier (2010) for Romania.

The value relevance results for the period during hyperinflation for inflation adjusted and historical cost accounting information in this study are consistent with previous studies conducted in similar hyperinflationary environments. Prior studies conducted by Gordon (2001), Filip and Raffournier (2010) and Chamisa et al. (2011) for hyperinflationary economies of Mexico, Romania and Zimbabwe respectively report positive value relevance for both inflation adjusted and historical cost accounting information but with higher value relevance on the inflation adjusted accounting information. On

accounting measures, in this study, the value relevance of the inflation adjusted EPS increases while that of BVPS declines. The findings on the value relevance of the EPS accounting measure contradict research results in Graham et al. (2000), Ho et al. (2001), Davies-Friday and Gordon (2005) and Choi et al. (2010) that report a decline or no change in the value relevance in the EPS accounting measure. This could be due to the key differences that (a) the foregoing four empirical studies resulted from an instantaneous event that triggered widespread economic and/or financial crisis while the economic problems for the study at hand arose from a number of events during the crisis, (b) the accounting measures for the four studies are based on GAAPs while the current study accounting measures are based on IFRS and (c) the research results of the four studies arise from a year-long crisis while the current study has multiple-year crisis. The research results for the BVPS in this study are similar to the foregoing four studies in that the value relevance either declined or remained unchanged.

Research results in this study on the value relevance of accounting information after hyperinflation are comparable to the prior studies carried out in stable economies. The findings in this study are that both the EPS and BVPS accounting measures have an insignificant relationship with firm value in the dollarized environment after hyperinflation. Many of the studies carried out in stable economies such as Amir & Lev (1996) and Francis and Schipper (1999) in America and Capkun et al. (2008) and Clarkson et al. (2011) conducted in Europe and Filip and Raffournier (2010) done in Romania also found accounting information not value relevant. However, the research results that accounting information is not value relevant in times of economic stability contradict findings in prior studies conducted in Finland by Niskanen et al. (2000) and in America by Bryant (2003), Wang et al. (2006) and Jenkins et al. (2009) who found accounting measures value relevant. The reason for contradicting research results could be the accounting framework as prior studies in stable countries referred to use GAAPs as opposed to the IFRS that are used in this study.

CHAPTER 6

CONCLUSIONS

6.1 Introduction

This chapter provides the conclusions of the study on the value relevance of accounting measures for share valuation purposes before, during and after hyperinflation. The chapter is set out as follows: section 6.2 provides a summary of the study. Section 6.3 explains the approach used in this study together with the key findings. Section 6.4 presents the insights coming out of the study. Suggestions for future studies are presented in Section 6.5.

6.2 Summary of the study

Accounting practices in Zimbabwe have largely been based on the IFRS accounting framework but periodically adjusted to consider the economic conditions. Before hyperinflation, accounting practices comprised of the use of the IASs in which period an important step was taken to incorporate the IASs into law through SI 62 of 1996. During hyperinflation, effective 1 January 2000, the major development in the accounting practices was the application of IAS 29 to the financial statements since the functional currency of Zimbabwe had become a currency of a hyperinflationary economy. In the after-hyperinflation period, a major economic decision was made by the Ministry of Finance (MOF) to dollarize the economy and this significantly transformed the economy as the Z\$ was replaced by the strong and stable U\$ currency. The transition from a currency that had been affected by severe hyperinflation into a new functional currency involved the use of a Zimbabwe authored Accounting Guidance which later became an Amendment to the IFRS. Thus, the development of accounting practices in Zimbabwe entailed the need to accommodate the trends in the economy but within the auspices of the IFRS accounting framework.

The ZSE, the only stock market in Zimbabwe, which is also described as stable and reliable, throughout the three periods before, during and after hyperinflation, insisted that listed companies should prepare and publish IFRS-compliant financial statements. The accounting information in the financial statements is used by investors in arriving at a decision to buy or sell shares on the

exchange, thereby influencing the share price movement. It is the association of the share price movement and the accounting information that is the focus of this study.

The key developments in the use of IFRS in Zimbabwe and the stability and reliability of the ZSE as the securities market mentioned above provide a unique opportunity to undertake an investigation into the value relevance for share valuation purposes of accounting measures based on IFRS before, during and after hyperinflationary period in Zimbabwe. According to Barth et al. (2001), Holthausen and Watts (2001) Sami and Zhou (2004) and Karunarathne and Rajapakse (2011), value relevance entails the extent to which selected accounting measures represent that which investors use to value ordinary shares. This view is expanded by Hellstrom (2007:2) who explains that “value relevance is understood as the ability of accounting measures to capture or summarise information that affects share values and empirically tested as a statistical association between market values and accounting value”. A review of prior studies in Zimbabwe on the value relevance of accounting information for share valuation purposes reveals some limitations and/or problems. The studies have a sample period of a maximum period of 5 years and the last research was conducted for the period during hyperinflation up to 2005. The objective of this study is to examine the value relevance of accounting measures based on IFRS before (1996-1999), during (2000-2005) and after (2010-2013) hyperinflation in Zimbabwe. A summary of the approach used and the key findings are presented in the ensuing section.

6.3 Approach to the study and key findings

To meet the objective of the study, the sample comprised of 30 companies listed on the ZSE for the entire period from 1996 to 2013 after excluding those that are in the financial services, insurance and property management sectors whose accounting practices are peculiar to their operations. Period selection was divided into: (i) before hyperinflation (1996 to 1999), (ii) during hyperinflation (2000 to 2005) and (iii) after hyperinflation (2010 to 2013). Years 2006 - 2008 were excluded because it was during these years that zeros were removed from the Zimbabwe dollar currency. The year 2009 was also excluded as it was a transition year from the Z\$ to the US\$.

This study used the price model as the primary model to examine the value relevance of accounting measures for share valuation purposes before, during and after hyperinflation. Share

prices 4 months after the individual companies' year ends were used as dependant variables as proxies for firm value, with the EPS and BVPS used as independent variables. In addition to analysing the results using share prices 4 months after the companies' year ends as proxies for firm value, further analysis was conducted based on the share prices 5 and 6 months-window periods, the year-by-year regressions and the returns model.

The principal finding is that accounting information in Zimbabwe is more value relevant for share valuation purposes before and during the hyperinflation periods relative to the after-hyperinflation period if share prices 4 months after year end are used as a proxy for firm value. However, for individual accounting measures, EPS is value relevant for share valuation purposes while BVPS is not. The robustness checks for this finding using share prices 5 and 6 months after year end as proxy for firm value reached similar conclusions. For the hyperinflation period, the results show that both historical cost and inflation adjusted accounting measures are value relevant for share valuation purposes. Furthermore, a year on year robustness check for the segmented before, during and after hyperinflation periods gave the same results. Similarly, the returns model produced results that are consistent with the findings using the price model.

6.4 Further insights provided by this research

The following conclusions were made from the study: -

- Before hyperinflation, the regression results provide the empirical evidence that the accounting measures as represented by EPS is related to share prices at 1% significance level. The finding on the positive value relevance of EPS is like the study results by Oppong (1993) who find positive value relevance on measures of profitability. The relationship between BVPS and share prices is negative and insignificant. This shows that the EPS provides value relevant accounting information for share valuation purposes for the period prior to hyperinflation while BVPS does not.
- During hyperinflation, the regression results show that the relationship between inflation adjusted EPS and share prices is significant at 1%. The coefficient of the inflation adjusted EPS reveals that a 1% change in inflation adjusted EPS

would cause a 26.40 cents change in share prices during a hyperinflationary period.

- After hyperinflation, the regression results show that the relationship between share price and both EPS and BVPS is not significant. Nevertheless, as seen from the year by year regressions, while accounting information was value relevant for share valuation purposes between 2000 and 2005 it fell significantly between 2010 and 2013 largely because of liquidity constraints.

6.5 Suggestions for future research

The study on value relevance of accounting information in Zimbabwe still has areas that researchers may be interested in looking at. Possible study areas, linked to this study at hand, are suggested as follows: -

- This study results are purely quantitative. It would also be interesting to determine how the results change if the research methodology includes qualitative aspects.
- In this study, the focus was on all the companies listed on the Zimbabwe stock exchange which involves companies operating in several industries. However, it would be interesting to commit a study towards specific industries and see the pattern.
- This study has ended in 2013. Study results for the period after hyperinflation may need to be extended to see the trend beyond 2013.

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APPENDIX A

2009 Accounting Guidance: Change in functional currency in Zimbabwe

Issue	IFRS reference and guidance	Comments	Implication
1. Application of IFRS 1	If a standard cannot reasonably be applied, then entities are strongly encouraged to apply the principles set out in IFRS 1:1.	IFRS 1 states how a first –time adopter should move from one reporting currency to another.	Disclosure: There should be detailed notes for readers setting out the changes from ZWD balances to the new functional currency.
2. Date of change in functional currency	The date of change must be a deemed date in the context of specific entities.	The date of change in functional currency will vary from entity to entity. For most entities, the factual date of change is likely to be between 1 January and 28 February 2009.	Disclosure: Date of change. Practical Considerations: A practical decision based on professional judgement is likely to be made and is acceptable in terms of this Guidance.
3. Determination of new functional currency	Each entity must factually establish its new functional currency. IAS 21 paras 9 to 13 set out factors to consider in determining a new functional currency.	Given the predominance of the USD, entities with functional currencies other than USD should consider using the USD as their presentation currency (IAS 21 paras 38-43).	Disclosure: New functional currency and reasons for changing functional currency IAS 21:54.
4. Comparatives	(a) Conform to the criteria in IFRS 1 para 1(a) to (c).	The objective is to generate high quality, transparent information at a cost that does not exceed the benefit to users.	Disclosure should make clear what the entity has done and, in particular, should indicate that the translated figures are for comparative purposes and should not be interpreted as restating tax, VAT and other returns.

Issue	Guidance	Comments	Implication
	<p>If it is not possible to produce comparatives which comply with IFRS 1:1, do not disclose any comparatives and disclose fully the reasons why there are none.</p>	<p>Because of the lack of hyperinflation indices for the period July 2008 to January 2009, it will not be possible to adjust for hyperinflation the comparative figures for that period.</p> <p>So:</p> <ul style="list-style-type: none"> (i) Identify the new functional currency values when the transactions occurred and use those figures as comparatives (preferred approach); or (ii) Translate the Z\$ comparatives into the new functional currency at the transaction dates using the chosen exchange rate and fully disclose the rate and method. 	<p>Comparatives should be presented as this is a requirement of IAS 1, but those comparatives should ONLY be presented if they meet the objectives of IAS 1 and IFRS 1.</p>
<p>5. Income statement</p>		<p>The income statement will be in the new functional currency from 1 January 2009 or, if the date of change is a later date, from that later date.</p> <p>If the Z\$ figures are material, it is recommended that the two periods (Z\$ and new functional currency) be shown in their separate currencies in the year-end income statement.</p>	

Issue	Guidance	Comments	Implication
<p>6. Balance sheet</p> <p>6.1 Monetary items:</p> <p>a) Cash Z\$ currency</p> <p>b) Other currencies</p>	<p>Carry at nil value in the new functional currency.</p> <p>Convert at applicable international exchange rates at the effective date of change to new functional currency.</p>	<p>Each entity must establish opening balances on a line-by-line basis in the new functional currency on the date of change of functional currency.</p> <p>Amounts invoiced and recorded in the respect of fuel or fuel coupons and other barter transactions should be reflective of the underlying fair value e.g. fair value of the settlement consideration.</p>	<p>As from March 2009 Z\$ had no value, hence Nil value in the new functional currency balance sheet. The Z\$ must be disclosed by way of notes to the financial statements as contingent assets and liabilities.</p>
<p>c) Receivables</p> <p>d) Payables</p> <p>6.2 Non-monetary items:</p> <p>a) Property plant and equipment (PPE).</p>	<p>Recoverability approach to establish ‘deemed cost’.</p> <p>Establish settlement amount with the supplier to establish the ‘deemed liability’.</p> <p>i) Establish ‘deemed cost’ depending on the nature and specialty of the assets concerned; this may be either a professional or directors’ valuation.</p> <p>ii) Alternatively, if it is possible, establish new functional currency values by reference to purchase date and applying the spot rate at purchase date. Certain assets still in use may assume new values but fully depreciated assets must not have new values.</p>	<p>The carrying amounts of the PPE in the new functional currency would follow existing policies, would not be regarded as a change in accounting policies, and therefore would not require the application of IAS 8.</p> <p>Should the entity choose to change policies, IAS 8 requirements would have to be followed.</p>	

Issue	Guidance	Comments	Implication
b) Intangible assets	These should be treated in the same manner as property, plant and equipment in 6.2 (a) above.	IFRS 1 requires an entity to recognize in its opening balance sheet all internally generated intangible assets that qualify for recognition under IFRS.	
c) Inventory	<p>Establish 'deemed cost' by determining current replacement cost but care must be taken to ensure that inventories are not carried above cost or net realizable values. Current factors such as new duty and exchange rates cannot be applied to old inventories.</p> <p>Alternatively, establish the underlying functional currency equivalent value of the ZWD value, if this is known.</p>	<p>The provisions of IFRS 1 para 18 have been considered in making this recommendation although IFRS 1.18 limits the application of the fair value as deemed cost principle to PPE, investment property and intangible assets. The objective with inventory is to develop a cost which would approximate the cost if an alternative currency had been applied consistently.</p> <p>Recommendation is made to adopt the opening quoted prices on 19 February 2009 for financial assets listed on the Zimbabwe Stock Exchange (ZSE) unless a preparer can establish other reasonable prices that show an audit trail.</p>	
d) Financial instruments at fair value	<ul style="list-style-type: none"> i) Market value ii) Market value of similar assets iii) Use of valuation models/techniques following IFRS guidance. 	<p>For inactive listed counters as well as unlisted ones, note that the only method applicable will be the use of valuation models/techniques.</p>	

Issue	Guidance	Comments	Implication
<p>e) Investment property</p> <p>f) Biological assets</p> <p>g) Investments in associates and subsidiaries</p>	<p>i) For investment property carried at fair value, re-measure in the new functional currency at the date of change of functional currency.</p> <p>ii) For investment property carried at cost, developing a fair value for investment property at the date of the opening balance sheet and using this as deemed cost is recommended in IFRS 1.16-19 and IG8-IG9.</p> <p>Re-measure in the new functional currency at the date of change of functional currency.</p> <p>Note that equity accounting requires fair values to be determined at the date of change in functional currency. If an associate has established other reasonable values for its assets and liabilities, fair values will still need to be determined for equity accounting purposes. This applies for subsidiary companies that are consolidated.</p>	<p>Directors' valuations are permitted but must have some verifiable basis.</p>	

Issue	Guidance	Comments	Implication
<p>h) Tax and deferred tax</p> <p>i) Equity</p> <p>(i) Share capital and share premium;</p>	<p>Preparers of financial statements are urged to consult their tax advisor.</p> <p>Equity will be a derived figure in the new functional currency opening balance sheet, being the difference between total assets and total liabilities. However, it should be recognized that this derived figure comprises both reserves and share capital and premium.</p> <p>Therefore, it is recommended that:</p> <p>(a) The equity –derived figure should be declared by each entity as a non-distributable reserve. This will ensure that there are no declarations out of capital and will give the entity time to establish more properly the split between capital and reserves.</p> <p>(b) Issued share capital and share premium will initially be carried at Nil in the new functional currency. This is a result of the removal of 25 zeros which have effectively reduced share capital and premium to zero.</p> <p>However, as there are legal requirements in terms of the Companies Act for each company to have share capital, and, as the Registrar of Companies has not yet resolved this matter, it is not possible to give a definitive answer to what each entity’s share capital is.</p> <p>Each entity should disclose in the notes to the financial statements the full correct statutory details of share capital even though the result will be less than zero.</p>		

Issue	Guidance	Comments	Implication
ii) Other reserves: - Foreign currency translation reserve (FCTR) -Treasury shares	See section on consolidation. These must be stated at cost. It is recommended that they be carried at 'deemed cost' which should be established by reference to fair value on change date or at 19 February 2009 ZSE prices.		
7. IFRS 2 share –based payments	It is recommended that either: (i) Intrinsic value from date of change of functional currency to reporting date be considered, and thereafter intrinsic value be established at reporting date or (ii) Actual grant date value be established and converted to new currency unit using the applicable rate of exchange on the date.	Where an entity is dual –listed, the relevant information should be available on the alternative stock exchanges.	
8. Consolidation	Consolidation will need to be done as if from initial acquisition, with the assets of the subsidiary fairly valued. For a group with foreign subsidiaries, the components of equity will need to be 'rolled back' i.e. calculated by reference to the actual foreign currency	Under normal circumstances, consolidations are generally complex in nature. While the unique accounting challenges in 2008/9 compound this complexity, the guidance given has been anchored in standard basic consolidation principles.	

Issue	Guidance	Comments	Implication
	exchange rates at the time of the translation/calculation.	It is not practical to issue specific guidance on all the scenarios that will be found in consolidation; thus preparers must apply their minds and build on the core guidance given.	
	<p>In terms of the foreign currency translation reserve, IFRS 1 allows for an entity to either: apply IAS 21 retrospectively to determine the cumulative translation differences for each foreign operation that must be recognized as a separate component of equity at the date of transition; or deem the cumulative translation differences to be zero at the date of change in functional currency, and reclassify any amounts recognized previously at date of change as retained earnings.</p> <p>The above procedures are likely to see goodwill falling away.</p> <p>However, it is possible for intangible assets that were previously not recognized to be recognized at date of change in functional currency as envisaged under IFRS 3.</p>	<p>The guidance on treatment of the FCTR is expected to apply to Zimbabwean entities with foreign entities whose functional currencies are different from the Zimbabwean parent's new one. In rare circumstances, however, it is possible for a Zimbabwean entity to have a local subsidiary with a different functional currency, where this guidance may also apply.</p> <p>Goodwill would have to be reworked based on converted historical cost values. A simple conversion of the Goodwill at that date may not be appropriate if such goodwill was determined in ZWDs. Most entities in Zimbabwe are likely to have impaired goodwill totally so this may not be an issue for some.</p>	

Issue	Guidance	Comments	Implication
9. Cash flow statement	Follow the guidance in point 5 above. Consider not providing comparatives unless the established comparatives meet the criteria stated in IFRS 1 para 1(a) to (c) (refer to point 4 in respect of comparatives).	If, based on the guidance provided in point 5, an entity prepares two income statements, then two cash flow statements may also be prepared-one in ZWD and the other in the applicable new functional currency. For most entities, it is unlikely that the ZWD cash flow statement will be considered meaningful as the ZWD cash balances will be carried at Nil.	

Source: ICAZ (2009)

APPENDIX B

Zimbabwe's history in the use of IASs/IFRS

- 1973 IASC is founded with 16 members from 9 countries (excluding Zimbabwe) and issues the first 22 IASs.
- 1974 ICAZ joins IASC as an associate member, marking Zimbabwe's entry into the IASs arena.
- 1977 Zimbabwe Accounting Practices Board (ZAPB) is formed and is given the responsibility to develop Zimbabwe National Accounting Standards. ZAPB, through a due process, adopts IASs for use in Zimbabwe.
- 1996 Zimbabwe brings into law IASs through Statutory Instrument 62 of 1996 – “Companies (Financial Statements) Regulations” in Zimbabwe.
- 1999 The Zimbabwe economy is determined to be hyperinflationary. IAS 29 to be applied effective 1 January 2000.
- 2008 Zimbabwe is unable to apply IAS 1, IAS 21 and IAS 29 at the back of World Bank estimate of inflation rate of 500 billion per cent, multiple interest rates of 100% to 10 000%.
- 2009 Zimbabwe economy is “dollarized”, as use of multiple currencies is permitted. Zimbabwe submits to IASB a paper with proposals on how to adopt a new functional currency after severe hyperinflation.
- 2009 IASB introduces IFRS for SMEs which also becomes applicable in Zimbabwe.
- 2010 In December 2010, IASB, in response to the Zimbabwe problem, issues an Amendment to IFRS 1, “Severe Hyperinflation and Removal of Fixed Dates for First Time Adopters”.

Sources: ICAZ (1998, 2000, 2004, 2006, 2009, 2010); Chamisa (2000); Companies Act (2000); IASB (2000, 2011, 2014); Kanyenze et al. (2011); World Bank (2011).

APPENDIX C

Selected study sample

#	Name of listed company	Sector	Year end	Auditor as at 2013 year end
1.	African Distillers Limited	Beverages	June	Deloitte
2.	African Sun Limited	Tourism	September	PwC
3.	Ariston Holdings Limited	Agricultural	September	Deloitte
4.	Astra Industries Limited	Industrial holding	December	Deloitte
5.	Bindura Nickel Corporation Limited	Mining	March	KPMG
6.	Border Timbers Limited	Agricultural	June	PwC
7.	British American Tobacco Zimbabwe Limited	Agricultural	December	PwC
8.	Cafca Limited	Engineering	September	PwC
9.	Colcom Holdings Limited	Food	June	EY
10.	Delta Corporation Limited	Beverages	March	Deloitte
11.	Edgars Stores Limited	Retail	December	EY
12.	Falcon Gold Zimbabwe Limited	Mining	September	EY
13.	Hippo Valley Estates Limited	Agricultural	March	Deloitte
14.	Hunyani Holdings Limited	Paper and packaging	October	EY
15.	Hwange Colliery Company Limited	Mining	December	Grant Thornton
16.	Lafarge Cement Zimbabwe Limited	Building and associated industries	December	Deloitte
17.	Masimba Holdings Limited	Building and associated industries	December	Deloitte
18.	Meikles Limited	Industrial holding	March	Deloitte
19.	National Foods Holdings Limited	Agro-industrial	June	EY

#	Name of listed company	Sector	Year end	Auditor as at 2013 year end
20.	National Tyre Services Limited	Industrial holding	March	Deloitte
21.	Pretoria Portland Cement Limited	Building and associated industries	September	Deloitte
22.	Radar Holdings limited	Building and associated industries	June	PwC
23.	RioZim Limited	Mining	December	EY
24.	Seed Co Limited	Agricultural	March	EY
25.	starafricacorporation Limited	Food	March	EY
26.	TA Holdings Limited	Industrial holding	December	PwC
27.	Truworths Limited	Retail	July	EY
28.	TSL Limited	Industrial holding	October	EY
29.	Zimbabwe Newspapers (1980) Limited	Printing and publishing	December	BDO
30.	Zimplow Holdings Limited	Engineering	December	EY

Source: ZSE (1999; 2005; 2013)