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The impact of hyperinflation on the Zimbabwean construction industry

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Abstract

The purpose of this article is to indicate the effects of hyperinflation on the Zimbabwean construction industry. The latter, much like its successful regional and international counterparts, contributes towards the country's gross domestic product, improving employment levels, economic growth, and restructuring the unfavourable balance of payment. In the last decade, however, this has not been the case in Zimbabwe as the country has grappled with severe hyperinflation that has led to the lack of a stable national currency accompanied by shortages of investors and labour which have resulted in the collapse of the construction industry. Regardless of other debatable causes of the crises the Zimbabwean government has labelled hyperinflation the country's foremost enemy, the root cause of the construction industry crises. The article presents the findings of a Masters study whose primary objectives were to determine the cause of hyperinflation in Zimbabwe, investigate the relationship between hyperinflation and the collapse of the Zimbabwean construction industry, and determine whether hyperinflation is indeed responsible for the collapse of the Zimbabwean construction industry.

The significant findings of the study (conducted at the peak of Zimbabwe's hyperinflation) are as follows: the Zimbabwean government and the Reserve Bank of Zimbabwe arbitrarily printing money are the root cause of hyperinflation; hyperinflation has resulted in the lack of a stable national currency; investors and labour factors have led to business closures; stunted economic growth, and a collapsed construction industry.

The article concludes that hyperinflation shares an inverse relationship with the construction industry; in other words, as hyperinflation increases, construction industry performance decreases up to a point where the industry collapses and *vice versa*. The article demonstrates how this phenomenon has led to the collapse of the Zimbabwean construction industry. The article recommends that the variables that are lacking in Zimbabwe be replenished as a precondition for the revival of the construction industry and that the merits of a stable socio-economic environment, a new government, dollarisation and an infrastructure stimulus package to address or counteract the effects of hyperinflation on the construction sector be investigated.

Keywords: Hyperinflation, construction industry

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Abstrak

Die doel van hierdie artikel is om die uitwerking van hiperinflasie op die Zimbabwiese konstruksiebedryf aan te dui. Tot onlangs het die Zimbabwiese konstruksiebedryf, nes sy suksesvolle streeks- en internasionale eweknieë, heelwat bygedra tot die land se bruto binnelandse produk, beter vlakke van werkverskaffing, ekonomiese groei, en die herstrukturering van die onbevredigende betalingsbalans. In die laaste dekade was dit ongelukkig nie die geval in Zimbabwe nie; die land het geworstel met 'n ernstige hiperinflasie as gevolg van die gebrek aan 'n stabiele nasionale geleentheid, 'n tekort aan beleggers en werksgeleenthede wat gesamentlik bygedra het tot die ineenstorting van die konstruksiebedryf. Ongeag ander debateerbare oorsake van die krisis, het die Zimbabwiese regering intussen hiperinflasie as die land se grootste vyand uitgewys. Hierdie artikel bevat die resultate van 'n magisterstudie waarvan die doelstellings was om te stel wat die oorsaak is van hiperinflasie in Zimbabwe, ondersoek in te stel na die verhouding tussen hiperinflasie en die ineenstorting van die Zimbabwiese konstruksiebedryf en vas te stel of hiperinflasie beslis verantwoordelik is vir die ineenstorting van die Zimbabwiese konstruksiebedryf.

Die vernaamste bevindinge van die ondersoek (uitgevoer op die hoogtepunt van Zimbabwe se hiperinflasie) is die volgende: die Zimbabwiese regering en die Zimbabwiese Reserwebank druk op arbitrêre grondslag nuwe geld en dit is die vernaamste oorsaak van hiperinflasie; hiperinflasie lei weer op sy beurt tot die gebrek aan 'n stabiele nasionale geldeenheid, beleggers en arbeidsfaktore wat weer aanleiding gee tot die sluit van besighede, 'n negatiewe ekonomiese groei en 'n konstruksiebedryf wat in duie stort.

Die artikel kom tot die gevolgtrekking dat hiperinflasie 'n omgekeerde verhouding deel met die konstruksiebedryf want soos hiperinflasie toeneem, neem die konstruksiebedryf af tot op so 'n vlak dat dit feitlik in duie stort - en omgekeerd. Die artikel dui aan hoe hierdie toedrag van sake gelei het tot die ineenstorting van die Zimbabwiese konstruksiebedryf. Voorts beveel die artikel aan dat die veranderlikes wat tekort skiet in Zimbabwe, aangevul kan word as 'n voorvereiste vir die heropbou van die konstruksiebedryf. Die artikel stel voor dat 'n ondersoek geloods word na die meriete van 'n stabiele sosio-ekonomiese omgewing, 'n nuwe regering, dollarisering en 'n pakket wat die infrastruktuur moet stimuleer om die uitwerking van hiperinflasie op die konstruksiebedryf te kan aanspreek en teenwerk.

Sleutelwoorde: Hiperinflasie, konstruksiebedryf

1. Introduction

Hyperinflation is more than a mere earthquake (the analogy for severe crisis); it is an atomic bomb (Corrales, 1998: 628). Hyperinflation is a crisis of a different degree. Citizens who survive a hyperinflationary process never find words to describe the panic that envelops the nation during these rare historical moments. People's salaries, if not lifelong savings, evaporate in a matter of hours (Corrales, 1998: 627).

In economics, hyperinflation is inflation that is 'out of control', a condition in which prices increase rapidly as a currency loses its

value. No precise definition of hyperinflation is universally accepted. However, Siklos (2000: 2) indicates that academics generally accept Cagan's (1956: 25-117) definition of hyperinflation as an inflation rate of at least 50% per month, or 12.875% per annum. In this article the authors have adopted this definition.

Before Zimbabwe first breached the 50% hyperinflation benchmark in March 2007 (Hanke & Kwok, 2009: 354) the Zimbabwean construction industry held a pivotal role in the nation's economy and represented the biggest institution of fixed capital in the country, contributing towards improving employment levels, the country's gross domestic product, and allied industries such as cement, glass, steel, timber, bricks, among others (Gombera & Okoroh, 1999: 337).

Currently, however, the Zimbabwean construction industry is characterised by a lack of construction projects due to a collapsed economy (Hanke, 2008a: 1). The Zimbabwean government has officially attributed the country's economic difficulties to "drought and/or economic sabotage by any number of the country's enemies" (Clemens & Moss, 2005: 2).

Some of the most popular theories cited for Zimbabwe's demise are listed below:

- According to President Mugabe, a number of droughts have led to Zimbabwe's economic collapse (Richardson, 2005: online);
- President Mugabe's policies are to blame for the economic collapse in Zimbabwe (Higgins, 2008: online);
- Disregard for the rule of law and property rights has led to Zimbabwe's economic collapse (Richardson, 2005: online), and
- Erratic government policies are to blame for Zimbabwe's economic collapse (Coltard, 2008: online)

Although numerous reasons have been accentuated as the potential cause of Zimbabwe's problems, Hanke (2008a: 1) indicates that the hallmark of Zimbabwe's economic collapse was hyperinflation. Hyperinflation in Zimbabwe peaked at a monthly rate of 79.6 billion percent in mid-November 2008 at which point people simply refused to use the Zimbabwe dollar (Hanke 2008a: 9). Zimbabwe now ranks in second place in the world hyperinflation record books after Hungary's 1946-hyperinflation era (Hanke & Kwok, 2008: 355).

Given the touted impact of hyperinflation, a study was undertaken to investigate whether hyperinflation in Zimbabwe has solely led to

the lack of a stable national currency accompanied by shortages of investors and labour, which have led to the collapse of the construction industry. As such, the hypotheses to be tested are whether:

- Hyperinflation has resulted in the lack of a stable national currency.
- The unchecked money supply of Zimbabwean dollars is causing hyperinflation.
- Hyperinflation has resulted in high interest rates leading to investor shortage.
- Hyperinflation is forcing labour to emigrate.
- Hyperinflation is the root cause of the collapse of the Zimbabwean construction industry.

2.   Review of literature

This section provides a review of the literature pertaining to the effects of hyperinflation on the value of money, investors and labour *vis-à-vis* the Zimbabwean construction industry with the aim of indicating whether hyperinflation has indeed solely led to the collapse of the Zimbabwean construction sector.

2.1   Inflation

> *If there is anything in the world, which ought to be stable it is money, the measure of everything which enters the channels of trade. What confusion would there not be in a state where weights and measures frequently changed? On what basis and with what assurance would one person deal with another and which nations would come deal with people who lived in such disorder? (Francois LeBlanc as cited in Tödter & Manzke, 2007: 1).*

Inflation is the rate of growth of the general price level of goods and services in an economy (Gono, 2005: 35). Coleman (2007: 4) contends that such a depiction of inflation is misleading as increases in price level are effects of inflation rather than a definition of inflation. Coleman (2007: 4) states that inflation is best defined as the reduction of the value of money that must occur if an increase in money supply is required. Correspondingly, Galland & Casey (2008: 4) contend that inflation is best defined by splitting it into two broad concepts, which ought to be kept separate: monetary inflation and price inflation. Monetary inflation is a process whereby the supply of money increases faster than the supply of goods, increasing prices

and lowering demand and the value of money, whereas price inflation is an increase in the overall level of prices for goods.

Wijewardena (2007: 1) suggests that inflation is detrimental to the economy as it leads to the erosion of the confidence of people in the domestic currency, and the loss of control by governments of national money, which inevitably results in the failure to use monetary policy to curb further inflation hikes or the effects thereof.

In summary, Wijewardena (2007: 2) states that inflation has the following results:

- Discourages exports and encourages imports;
- Discourages savers and favours borrowers;
- Discourages financial savings and encourages non-productive types of investments in real estate, gold bullion and other types of precious metals;
- Distorts the resource allocation function of an economy;
- Distorts the balance sheets of companies, in particular the balance sheets of financial institutions, and
- Forcefully hits the vulnerable groups with a weaker bargaining power.

Regardless of the apparent perplexity surrounding the ideal definition of inflation, it can be noted that there is a consensus among the public, economists and policymakers that inflation is usually detrimental to the economy.

2.1.1   Causes of inflation

Inflation may occur due to any one of the following occurrences:

- An accelerated rate of growth which is greater than the required or planned rate of growth;
- Governments trying to absorb more resources than that released by the economy at the existing price level, and
- Groups of participants (employers, traders, business merchants, and so on) in an economy scaling up their incomes, thereby increasing prices of the goods offered (to match higher incomes) without increasing production (Oyediran, 2006: online).

Some scholars contend that there are only two major causes of inflation which include excessive money supply growth, and excessive demand. Excessive money supply causes prices to rise, prompting

the value of the money that an economy is printing and circulating to grow larger than the value of the goods it is producing. As such, the result of this process is that the surplus currency devalues, resulting in inflation (Venezie & Schmidt, 2007: online). In basic terms, there will be too much money chasing too few goods. The alternative school of thought suggests that inflation occurs when overall demand is greater than the economy's ability to satisfy this demand, thereby creating a shortage in supply, which causes prices to rise (Venezie & Schmidt, 2007: online).

2.1.2   Causes of high inflation or hyperinflation

Hanke & Kwok (2008: 353) indicate that:

> Hyperinflations have never occurred when a commodity served as money or when paper money was convertible into a commodity. The curse of hyperinflation has only reared its ugly head when the supply of money had no natural constraints and was governed by a discretionary paper money standard.

Dem, Mihailovici & Gao (2001: 11) agree with the above and provide three scenarios which can be placed under the abovementioned cause. First, high inflations must always be preceded by major increases in money supply which can only occur in systems with money that has no intrinsic value. Under the metallic currency system the supply of metals does not increase at rates necessary to produce high inflation or hyperinflation. It is only when governments abandon a metal standard that such inflations are possible. Secondly, the role of civil war, revolution or deep social unrest is clearly a factor in many of the hyperinflations prior to the 1980s. The strain on the public budget caused the financing of a war effort leading to major public deficits. Government expenditure is significantly increased during war which makes the government turn to its printing presses to finance its budget. Thirdly, the existence of weak governments has been identified as another important trigger to hyperinflation. In general, weak or inexperienced governments lack the ability to enforce tax collection and implement the necessary budgetary reforms. In addition, they are easily tempted to placate different groups of the population with transfers and subsidies in order to build a political base. Under these circumstances governments are likely to turn to inflationary finance, thus setting the stage for high inflation.

2.1.3   Government's role in inflation or hyperinflation

Governments are the major causes of inflation (Punungwe, 2009: online). Since governments control currencies, it follows that governments create inflation (West, 2000: online). As a result, innumerable scholars posit that inflation is similar to sin because every government condemns it, yet every government practises it (Sir Frederick Keith-Ross as cited in Makochekanwa, 2007: 2). This sequence of events occurs when government increases the money supply via the printing press faster than the quantity of goods available (McMahon, 2008: online). This process inevitably leads to inflation because it represents an increase in money balances without a corresponding increase in the quantity of goods in the economy (Harriott, 2000: online). Krois (2002: 1) resolves that inflation is the result of 'weak' governments who simply print more money in an effort to finance quasi-fiscal expenditure. Dem, Mihailovici & Gao (2001: 2) concur and state that weak governments create inflation via seignorage finance whereby governments try to pacify different forms of the population with grants in order to build up political bases. This indicates that even the weakest governments can enforce inflation when they can enforce nothing else (Keynes as cited in Makochekanwa, 2007: 1). Governments can continue in this vein of idiocy (printing money incessantly) for a short period as inflation progressively debases the national currency, leading to financial collapse (West Coast Asset Management, 2009: online). This assertion applies to the Zimbabwean context: excessive money supply growth by the government has inflamed inflation. Money supply growth in Zimbabwe emanates from the government's continued borrowing from the Reserve Bank (Gono, 2005: 35).

2.2   Construction investment

Construction investment is a form of economic planning that involves the uptake of new capital or finance from lending agencies to undertake new projects that generally employ people and generate income (Khan, 2008: 3). Like most financial ventures, construction investment is subject to social and financial constraints (Abutaleb, Sedik, Ramadan & Khattab, 1999: 33-35). Construction investment is subject to:

- Low returns from the constructed structure;
- High returns through derived demand;
- High initial investment costs, and

- A general shortage of investors given the aforementioned factors.

Given the problems inherent in construction investment, fluctuations in the rate of inflation pose an additional problem that further adds to the industry's unattractiveness to investors (Oyediran, 2006: online). Derived demand from activities such as manufacturing depends on guaranteed returns. Inflation, on the other hand, creates uncertainty, which reduces the occurrence of this guarantee (Faria & Carneiro, 2001: 13-15). This occurs mainly due to an increase in nominal interest rates, which results in an increase in investment interest debt (Madsen, 2008: 1-3). As a result, during high inflationary periods an investor's debt will increase while revenue decreases. Duczynski (2000: 3-8) concurs and states that the 'Fisher effect' defined by the relationship $i = \varpi + r$, where i is the nominal interest rate, and ϖ inflation, best explains this relationship, which postulates that nominal interest rates move together with the rate of inflation. Duczynski (2000: 3-8) contends that this relationship discourages all forms of investment. Effectively as inflation escalates and interest rates follow suit, banks start to ration credit in order to decrease risk (Boyd & Champ, 2006: 5). Ultimately, as inflation and interest rates continue to rise, investors may refuse to invest, or at least restrict the quantity of investments they make (Boyd & Champ, 2006: 5).

2.2.1 Construction investment in Zimbabwe

Since the start of hyperinflation in Zimbabwe, interest rates have soared at least twice as much as those of neighbouring sub-Saharan African countries (United States Agency for International Development, 2007: 1). As such, inflation-inflamed interest rates have reduced the potential for industrial investment (Hanke, 2008b: online). Inflation has significantly deterred investment, in particular, in machinery and equipment and in non-residential buildings and structures (Madsen, 2008: 1-3). As such, given the costs associated with inflation, investors have moved to hedge against negative real returns by seeking refuge in non-interest-bearing assets such as equities, the property market and the currency market, while abandoning high-risk sectors such as the construction industry (Mambondiani, 2008: online).

2.2.2 Alternative causes of investor shortages

Declines in construction investment are cyclical and follow the Kuznets and Kondratieff cycles, which relate to construction investment of which the different duration of the cycles depends

on the relative durability of different construction goods (Merrifield, 2000: online). As such, the periodic lack of infrastructure investment may indicate that there is abundant infrastructure in existence that leads to a decrease in demand for new infrastructure investment (Merrifield, 2000: online). As the Kuznets and Kondratieff cycles postulate that economic inequality increases over time while a country is developing only to decrease once a certain average income is attained, it can be argued that it is at this particular average income that a developing nation may have acquired adequate infrastructure. At this point investment finance may only become available if there is a demand for repairs and renovations to existing infrastructure (Merrifield, 2000: online). On the other hand, investors may be driven by emotions, which determine whether they invest or not (Mambondiani, 2008: online). On occasion, the Zimbabwean government argues that investment shortages in the country are a result of sanctions imposed on the country by the United States of America and the European Union (Moss, 2007: 1). These arguments indicate that the lack of construction investment in Zimbabwe may be due to other reasons besides inflation.

2.3   Construction labour

Labour denotes two discrete yet related entities. One is the productive power of human beings, commonly referred to as productivity, while the other is the physical inconvenience endured by men during the course of production (Kitchener, 2001: 2). Sayers (2007: 4-5) states that labour is an influential activity, which gives form to materials. Alternatively, Burkett & Bellamy Foster (2008: 6) state that labour is a process involving the use of mechanical and intellectual energy. Fluitman (2002: 6) concurs and refers to labour simply as either physical or mental work, or a factor of production.

Burkett & Bellamy Foster (2008: 6) posit that human labour only ever leads to some kind of muscular effort. In industry, labour is often denoted as the willingness of a human being to toil for the good of others in exchange for a wage (Small, 2000: 13-16). Inglehart, Basa´n˜ez, Dı´ez-Medrano, Halman & Luijkx, (2004: 1) contend that, although people work for a variety of reasons such as to achieve something, to meet people, to learn things, or to make themselves feel useful, among other considerations, work is done primarily for a decent income, such that one has no 'qualms about money'. Ehrbar (2002: 4), in agreement with Inglehart et al. (2004: 1), argues that labour is a process that is restricted to one elemental standard 'money'. In other words, labour emerges altogether as an item that is 'paid for' (Laycock, 1999: 1). As a result, it can be recognised why

decent pay is the reason most often mentioned for doing work (Van de Vliert, Van Yperen & Thierry, 2008: 79).

Labour is fundamental because it is a means of production (Laycock, 1999: 2-3). Industry needs labour in order to produce goods and services; hence industry cannot exist without this valuable resource. Human capital is the most important factor of production (Schneider, 2005). Similarly, McNiven & Foster (2009: 2) suggest that labour is vital, as it is an instrument for obtaining and sustaining economic growth.

2.3.1   Construction labour in Zimbabwe

Zimbabwe's building industry faces imminent collapse owing to an inflation-induced exodus of skilled labour (Crush & Williams, 2001: 2). Mbiba & Ndubiwa (2006: 23-24) concur and state that the economic decline accompanied by a shrinking number of construction projects has resulted in a decline in qualified bricklayers, artisans, carpenters, and so on to other countries in the region, notably South Africa, Mozambique and Botswana, leading to a skills shortage. Chisi (2008: online) calls this phenomenon 'skills flight' and attributes it to the lure of more stable wages that Zimbabweans have found hard to resist. In accordance with Chisi (2008: online), Mbizvo (2006: online) argues that the flight of Zimbabweans is related to the value of the local currency, as there are numerous employment opportunities in the country. Inflation has rendered the Zimbabwean currency worthless, thereby eroding the purchasing power of the currency, adversely affecting the livelihood of the ordinary household as standards of living fall and basic social services become unaffordable (Murerwa, 2006: 42). According to Mumbengegwi (2007: 28), wage adjustments have failed to ease rampant inflation rendering workers incapable of generating sufficient income levels to support themselves and their dependents (Mbizvo, 2006: online). Correlated to this, the decline in economic activity has resulted in the exodus of construction firms, which has further exacerbated labour shortages as the firms leave with some of their local labour force (Mbiba & Ndubiwa, 2006: 35). On the other hand, other individuals have left the industry for other lucrative sectors, such as the informal diamond mining trade, further exacerbating the construction industry labour shortages (Mbiba & Ndubiwa, 2006: 35). Inflation has thus complicated the lives of Zimbabweans, leaving them with little option other than to leave the country (Wilcox, 2008: online).

2.3.2   Alternative causes of labour shortages

Chisi (2008: online) suggests that a number of personnel have left Zimbabwe for South Africa due to the huge infrastructure demands of the 2010 soccer world cup tournament. South African companies, in particular, have embarked on a massive drive to recruit personnel to meet deadlines for the 2010 spectacle (Crush & Williams, 2001: 6). This argument indicates that the lack of construction industry labour in Zimbabwe may be due to another reason besides inflation. Alternatively, Avera (2008: online) contends that construction labour shortages may result from any of the following: an aging workforce combined with fewer young people entering the sector, and mass exodus of the 'baby boomers' (born during the post-WWII baby boom), from the construction industry.

Pearman (2003: 1-5) argues that this is extremely relevant because construction is unique compared to other industries in that the retirement age of workers tends to be earlier because of the demanding physical nature of construction jobs. Alternatively, Carliner (2005: 21) suggests that at times an unusually large demand for construction projects may also result in a shortage of labour.

3.   Research methodology

The literature survey led to the identification of the probable causes of inflation as well as the publicised effects of inflation on currency, investment and labour. While revealing the impact of hyperinflation on the Zimbabwean construction industry relative to the aforementioned variables, the survey also revealed that there are an array of variables that can also lead to an unstable currency, investor and labour shortage.

3.1   Research method

The research is descriptive in nature. Leedy & Ormrod (2005: 179-216) state that this type of research involves identifying the distinctiveness of an observable fact or delving into possible parallels in the midst of two or more phenomena. Crafford (2007: 81) states that descriptive research always probes a situation as it is. Crafford (2007: 81) contends that descriptive research does not involve altering or transforming the state of affairs under examination. In accordance with Leedy & Ormrod (2005: 179-216), Crafford (2007: 81) and Zikmund (2003: 55) state that descriptive research seeks to clarify answers to 'who, what, where and how' questions. As such, this approach suitably

addresses the main objectives of this research, which sought to clarify the following:

- Who or what caused hyperinflation in Zimbabwe?
- What the impact of hyperinflation is in the Zimbabwean construction sector, and
- Whether hyperinflation alone led to the collapse of the Zimbabwean construction industry?

A pilot study consisting of a convenience sample of contractor and client representatives from Zimbabwe (now resident in Gauteng, the Eastern Cape and Western Cape provinces) was conducted in order to collect data from the definitive subjects of the research to serve as a lead for the pending larger study. Bryman & Bell (2003: 328-340) avow that pilot studies are always desirable to conduct before administering a self-completion questionnaire. In total, 20 respondents were asked to respond to the questionnaire, which was administered via email. The pilot study questionnaire's objective was to ensure that the questionnaire was properly phrased; could be answered within a reasonable period; was easy to understand, and did not have any unforeseen problems in content, structure or format.

Sixty percent of the respondents successfully completed the pilot study questionnaire. The responses obtained were used as a means to improve on the questionnaire. The pilot study revealed the following problems with the questionnaire:

- The questionnaire was too long and needed to be abridged, and
- Some questions where ambiguous and needed to be rearticulated.

Consequently, a refined questionnaire fit for data collection from the target population was produced. The questionnaire consisted of four segments:

- Segment one consisted of questions relating to the respondent's demographic background;
- Segment two consisted of questions pertaining to the evolution and effects of inflation as well as the alternative causes of Zimbabwe's economic woes as detailed in the literature review. Respondents were asked to rate the level of evidence of their opinions *vis-à-vis* inflation and the alternatives on a Likert scale;

- Segment three entailed the determination of the importance of sub-problem variables. Respondents were asked to rate the level of importance of each of the parameters on a Likert scale, and

- Segment four consisted of a general comments section where respondents were asked to express their views in response to open-ended questions pertaining to the evolution and effects of hyperinflation in the Zimbabwean construction sector.

3.2   Population

The sample population consisted of registered contractors and construction clients with a construction economics background (qualification or experience or both). The list of contractors was obtained from the Construction Industry Federation of Zimbabwe. This list was used to confirm whether these contractors were still operating in Zimbabwe and, if so, the contact details of former representatives now resident in South Africa were solicited to create a redefined mailing list. Similarly, a list of registered construction clients mainly in the form of financial institutions was obtained from the Reserve Bank of Zimbabwe (RBZ) website. The clients were also solicited for contact details of their ex-representatives now resident in South Africa. In total, the number of contractors and clients on the redefined mailing list was 80 and 11, respectively.

3.3   Data analysis

The primary data obtained from the questionnaire was converted to nominal data by means of rescaling. Researchers who draw on Likert scales ought to rescale the data obtained to enable them to decipher the data in a more accurate and clear-cut manner since Likert scales do not produce interval data. The rescaling was conducted discretely for the evidence survey and the importance survey. The re-scaling procedure used was as follows:

- Arrange the constructs on the rows and the rating scale on the columns;
- Generate the frequency count from the response data set;
- Perform a correspondence analysis of the data set;
- Choose a 2-axis solution for simplicity and request the eigen value and column plot reports, and
- Using the eigen values of the first two axes, find the Euclidean distance between the scale points.

Tables 1 and 2 illustrate the results of the rescaling.

Table 1:   Rescaling of evidence survey results

Likert scale of evidence		Eigen Value		Cum. Percent retained	
		Axis 1	0.31437	57.34	
		Axis 2	0.10358	76.23	
		Axis 1 co-ordinate	Axis 2 co-ordinate	Euclidean distance	Adjusted scale
1	No evidence	1.288	-0.78		1.0000
2	Poor evidence	1.076	0.674	2.1890	3.1890
3	Reasonable evidence	-0.064	0.247	1.1723	4.3613
4	Good Eevidence	-0.131	-0.055	0.4567	4.8181
5	Very strong evidence	-0.342	-0.049	0.1819	5.0000

Table 2:   Rescaling of importance survey results

Likert scale of importance		Eigen value		Cum. Percent retained	
		Axis 1	0.06118	45.21	
		Axis 2	0.03427	70.54	
		Axis 1 co-ordinate	Axis 2 co-ordinate	Euclidean distance	Adjusted scale
1	Not important	1.436	-0.947		1.0000
2	Of little importance	-1.425	-1.132	1.9626	2.9626
3	Somewhat important	-0.447	0.349	1.5085	4.4712
4	Important	0.041	-0.044	0.4899	4.9611
5	Very important	0.064	-0.005	0.0389	5.0000

The moderate cumulative percentages retained in Tables 1 and 2 indicate that very little data was lost during the rescaling exercise. The mean rating percentage for evidence is 87%. This value was obtained by dividing the adjusted scale value for 'Reasonable evidence' of 4.3613 by 5 (Very strong evidence). Similarly, the mean rating percentage for importance is 89%. As such, variables on the evidence and importance scales that are rated above the mean ratings of 87% and 89%, respectively indicate that most respondents agree that the particular variables (relating to the said questions) address the survey inquiry/s adequately. The higher the ratings are

above the mean, the stronger the consensus by respondents' *vis-à-vis* the variable in question. The opposite is also true. As such, the interpretations section will only comment on the top three ranked variables, as these variables will most likely be rated above or close to the mean. As a result, the interpretations section will reveal the fundamental variables that have a bearing towards the support or lack of support thereof of the hypothesis.

4. Response rate

Ninety-one (91) questionnaires were posted to contractors and clients. Eighty (80) questionnaires were sent to contractors and eleven (11) were sent to clients. As a supplementary measure to try to boost the response rate, the questionnaire was, in addition to being dropped off with the respondents, simultaneously advertised via email as having an on-line survey option to the respondents. The respondents were then left to choose which response option suited best. All in all, thirty-two (32) questionnaires were returned with, and including, the second call to respondents for responses. Two questionnaires that were returned on time were spoilt (illegible and incorrectly answered, respectively) and were not included in the response-rate calculation. Of the fifty-nine (59) outstanding questionnaires, 52 questionnaires remained unanswered after the deadline date, whereas the remaining questionnaires were reported to have been completed but where either missing or misplaced by the respondents. When comparing the number of completed questionnaires to the sample size prescribed by Krejcie & Morgan as cited in Crafford (2007: 84), the results obtained are shown below:

Table 3:   Analysis of response rate

	Sector	Population (No.)	Required sample size (No.)	Informative questionnaires returned (No.)	Response rate of sample (%)
Contractors	100	80	23	28.75	
Clients	11	11	7	63.64	
Total	111	91	30	32.97	

This represents a 32.97% effective response rate on the survey.

4.1   Response sample

The response rate of the study is 32.97%. Contemporary built environment survey response rates range from as little as 7% to as much as 40% in general. As such, comparing the study response rate with the abovementioned contemporary study response rates, it would appear that the study response rate would suffice for the relevant hypothesis tests to be conducted satisfactorily.

5.   Findings

The foremost secondary objective sought to determine whether hyperinflation resulted in the lack of a stable national currency in Zimbabwe. As such, the research question read, "How evident is it that each of the variables listed below are lacking as a result of hyperinflation in the Zimbabwean construction industry." Ordinal data obtained from the survey was converted to interval data by means of re-scaling as described earlier. This procedure resulted in the computation of the means (also translated to percentage scores) of the stated variables. Table 4 indicates the rescaling results in rank order.

Table 4:   Variables that are lacking due to hyperinflation

Question-naire reference	Variable descriptions	%	Rank	
Q7.8	Stable currency	98.24	1	
Q7.6	Profitable rate of return on construction project investments	97.75	2	
Q7.2	Private sector investment	97.69	3	
Q7.1	Government investment	97.63	4	
Q7.3	Individual investment	96.47	5	
Q7.9	Meaningful wages and salaries	95.76	6	
Q7.5	Security of investment	95.75	7	Above average
Q7.11	Abundant supplies of ancillary or secondary construction resources	94.30	8	
Q7.10	Abundant supplies of materials and fossil fuels	91.75	9	
Q7.7	Large labour force	91.21	10	
Q7.4	Quick return on investment	90.92	11	

Table 4 indicates that all of the top three ranked variables are rated above the mean rating of 87%, implying that a number of elements besides the stable currency are lacking in Zimbabwe because of hyperinflation. The top three ranked variables in descending order are:

- Rank 1 (above average): Lack of a stable currency - This is one of the major symptoms of severe hyperinflation (Oyediran, 2006: online). This was one of the worst effects of hyperinflation in Zimbabwe (Gono, 2005: 35).

- Rank 2 (above average): Profitable rate of return on construction project investment – As inflation rises, interest rates also rise, thereby reducing profitable rates of return in industry (Boyd & Champ, 2006: 35).

- Rank 3: Private sector investment (above average) - Inflation exerts a negative influence on investment returns, which discourages investment in an inflationary environment (Cumming, 2003: online).

The above average rating of all top three variables indicates that hyperinflation does indeed primarily lead to an unstable currency. In the same context, the results reveal that there are other fundamental elements that become scarce because of the existence of an unstable currency. Theoretically, an unstable currency renders construction cost management useless as budgeting and general cost management become difficult or impossible to accomplish in real terms. In such a scenario rates of return decline and investors move their portfolios to other markets. Fatefully this process is occurring in the Zimbabwean construction sector hence the collapse of the construction industry. The 'lack of a stable currency' was ranked highest among the three variables. This supports the first secondary objective.

Similarly, the subsequent secondary objective sought to determine whether the unchecked money supply of Zimbabwean dollars caused hyperinflation. As such, the research question read, "How evident is it that each of the variables listed below has caused hyperinflation in Zimbabwe." The Table overleaf indicates the rescaling results obtained.

Table 5: Prospective hyperinflation-causing variables

Questionnaire reference	Variable descriptions	%	Rank	
Q2.2	The Zimbabwe government and the RBZ arbitrarily printing money	93.88	1	Above average
Q2.5	President Robert Mugabe	84.07	2	Below average
Q2.6	Burning money phenomenon	83.94	3	
Q2.3	Sanctions	81.61	4	
Q2.4	Expectations of higher incomes and wages	61.36	5	
Q2.1	Zimbabwe's rate of growth is faster than the planned rate of growth	48.65	6	

The highest ranked variable is also the only variable rated above the mean rating of 87%. This indicates that most respondents agree that this variable has solely caused hyperinflation. Table 5 indicates that the top three ranked variables in descending order are:

• Rank 1 (above average): The Zimbabwe government and RBZ arbitrarily printing money - Gono (2005: 41), Makochekanwa (2007: 1), Coorey, Clausen, Funke, Muñoz, and Ould-Abdallah (2007: 1), and Hanke (2008c: 1) concur and fervently posit that excessive money supply is indeed the sole cause of hyperinflation in Zimbabwe.

• Rank 2 (Below average): President Robert Mugabe – Contrary to suggestions by various scholars that President Mugabe is the cause of hyperinflation in Zimbabwe the respondents are not overly convinced that the President is solely the root cause of hyperinflation in Zimbabwe.

• Rank 3 (Below average): Burning money phenomenon - Respondents rated this variable lowly. It can be argued that this is because the burning money phenomenon (according to some scholars) commenced at the peak of Zimbabwe's hyperinflation and as such, the phenomenon may have only served to exacerbate hyperinflation in Zimbabwe without necessarily starting it.

Although the results indicate that, President Mugabe's role as a cause of hyperinflation is consequential, literature strongly indicates that the President has a stranglehold on the operations of the Reserve Bank of Zimbabwe. As such, the President's influence

over the Reserve Bank indicates that his role as a collaborative cause of hyperinflation in Zimbabwe is undeniable. Nonetheless the 'Zimbabwean government and the RBZ arbitrarily printing money' was ranked as the most probable cause of hyperinflation in Zimbabwe. As such, the second, secondary objective is supported.

The third secondary objective sought to determine whether hyperinflation has led to high interest rates that have resulted in investor shortages. As such, the research question read, "How evident is it that each of the variables listed below has resulted in investor shortages in the Zimbabwean construction industry." The Table below indicates the rescaling results obtained.

Table 6: Prospective cause of investor-shortage variables

Questionnaire reference	Variable descriptions	%	Rank	
Q4.2	High interests rates induced by hyperinflation	97.51	1	Above average
Q4.6	Low emotional investment drive towards Zimbabwe	89.05	2	
Q4.4	Unstable political and economic climate	82.06	3	Below average
Q4.1	Sanctions	81.43	4	
Q4.5	Downturn in government investment	81.02	5	
Q4.3	Business cycles	76.59	6	

The top two variables are rated above the mean rating of 87%. Table 6 indicates that the top three ranked variables in descending order are:

• Rank 1 (Above average): High interest rates induced by hyperinflation – The Fisher Effect, as described by Duczynski (2000: 1), suggests that high interest rates induced by hyperinflation discourage investment. Cumming (2003: online) concurs and suggests that inflation exerts a negative influence on investment returns, thereby discouraging investment in an inflationary environment. This variable was ranked well above the mean rating, indicating that it is the runaway cause of investor shortages in Zimbabwe.

• Rank 2 (Above average): Low emotional investment drive towards Zimbabwe - Investment decisions hinge on individual emotions (Mambondiani, 2008: online). It can be argued therefore that respondents ranked this variable highly because

of Zimbabwe's regional and international image that has resulted in a great deal of negative sentiment towards the country. As such, this phenomenon in collaboration with high interest rates may well have incensed investors shortages in the country.

• Rank 3 (Below average): Unstable economic and political climate - If a country has an unstable economic and political environment, in the long run the economy collapses characterised by investor shortages among other elements (Richardson, 2005: online). The respondents did not seem overly convinced that this was the main cause of investor shortages in Zimbabwe, hence the lower rating. It can be argued, however, that this indicates how investors often overlook risky socio-political environments for promises of good returns.

Nonetheless, the 'high interest rates induced by hyperinflation' were ranked as the most probable cause of investor shortages in Zimbabwe. As such, the third secondary objective is supported.

The fourth secondary objective sought to determine whether hyperinflation forced labour to emigrate. As such, the research question read, "How evident is it that each of the variables listed below has resulted in labour shortages in the Zimbabwean construction industry." The Table below indicates the rescaling results obtained.

Table 7: Prospective causes of labour-emigration variables

Questionnaire reference	Variable descriptions	%	Rank	
Q5.1	Skilled labour 'Brain drain' induced by hyperinflation	99.51	1	Above average
Q5.2	Unskilled labour migration induced by hyperinflation	96.91	2	Above average
Q5.3	Skilled and unskilled labour migration induced by the 2010 World Cup	87.35	3	Above average
Q5.4	Seasonal construction industry migration to other countries	75.04	4	Below average
Q5.6	Slow replacement of retired or aging workers	65.25	5	Below average
Q5.5	Retirement of baby boomers (baby-making generation)	62.95	6	Below average

All of the top three variables were rated above the mean rating of 87%. Table 7 indicates that the top three ranked variables in descending order are:

- Rank 1 (Above average): Skilled labour 'brain drain' induced by hyperinflation - Chimanikire (2002: 1), Crush & Williams (2001: 3-4) and the International Organization for Migration (2003: 1) suggest that drops in real income, currency devaluation and rising cost of living (after effects of hyperinflation) result in skilled labour brain drain and labour migrations.

- Rank 2 (Above average): Unskilled labour migration induced by hyperinflation – Chimanikire (2002: 1), Crush & Williams (2001: 3-4) and the International Organization for Migration (2003: 1) suggest that drops in real income, currency devaluation and rising cost of living (after effects of hyperinflation) result in unskilled labour brain drain and labour migrations.

- Rank 3 (Above average): Skilled and unskilled labour migration induced by the 2010 World Cup - A large number of personnel in Zimbabwe left for South Africa due to the huge infrastructure demands of the 2010 soccer world cup tournament (Chisi, 2008: online).

The above mean ratings of the top three variables indicate that, although hyperinflation has resoundingly led to labour scarcities in Zimbabwe, major infrastructural developments in South Africa for the 2010 world cup have also exacerbated the skills shortages. Nonetheless, the 'Skilled labour [brain drain] induced by hyperinflation' was ranked as the most probable cause of labour shortages in Zimbabwe. As such, the fourth secondary objective is supported.

In addition, respondents were asked to rank the levels of importance of the variables that are most affected by inflation as identified in the literature survey. The following Table indicates the results obtained.

Table 8:   Importance level of variables most affected by inflation as ranked by respondents

Questionnaire reference	Variable descriptions	%	Rank	
Q9.9	Meaningful wages and salaries	99.52	1	
Q9.10	Abundant supplies of materials and fossil fuels	99.22	2	
Q9.11	Abundant supplies of ancillary or secondary construction resources	99.22	2	
Q9.6	Good national investment climate (non-construction-related investment)	99.17	4	
Q9.2	Private sector investment	98.76	5	
Q9.7	Profitable rate of return on construction project investments	98.41	6	Above average
Q9.3	Individual investment	97.45	7	
Q9.1	Government investment	97.43	8	
Q9.12	Low inflation or absence of hyperinflation	97.23	9	
Q9.5	Security of investment	96.42	10	
Q9.4	Quick return on investment	96.12	11	
Q9.8	Large labour force	95.74	12	

Table 8 indicates the rankings of the variables that are of critical importance to the Zimbabwean construction industry. All the variables were ranked above the mean rating of importance of 89%. The top three ranked variables in descending order are:

- Rank 1 (Above average): Meaningful wages and salaries - This is in line with Inglehart *et al.* (2004: 3-8) who suggest that work is done primarily for a decent income such that one has no 'qualms about money'. It is evident that this is a very important aspect for the Zimbabwean construction sector.

- Rank 2 and 3: Abundant supplies of ancillary or secondary construction resources and abundant supplies of materials and fossil fuels (tied at second place) (Above average) - Nasir (2008: 3-4) and Rono (2000: 5-11) state that the construction industry is a resource-consuming industry. As such, it is important for the industry to have an abundant supply of resources (human and ancillary) at hand in order to function optimally.

The ranking results indicate that wages and salaries are fundamental over all else in the industry. The top three ranked variables of the gap analysis between importance and evidence in descending order are:

•   Abundant supplies of materials and fossil fuels;

•   Quick return on investment, and

•   Abundant supplies of ancillary or secondary construction resources.

In addition to the ranking, a gap analysis was conducted to highlight the gaps that exist between the ratings of importance and evidence of the variables most affected by inflation. Table 9 indicates the results of the gap analysis.

Table 9:   Gap analysis between importance and evidence of variables

Variable descriptions	Importance (%)	Evidence (%)	Current gap (%)	Rank	
Abundant supplies of materials and fossil fuels	99.22	91.75	7.47	1	
Quick return on investment	96.12	90.92	5 20	2	
Abundant supplies of ancillary or secondary construction resources	99.22	94.30	4.92	3	
Large labour force	95.74	91.21	4 53	4	Above average
Meaningful wages and salaries	99.52	95.76	3.76	5	
Private sector investment	98.76	97.69	1 07	6	
Individual investment	97.45	96.47	0.98	7	
Security of investment	96.42	95.75	0 67	8	
Profitable rate of return on construction project investments	98.41	97.75	0 66	9	
Government investment	97.43	97.63	-0.20	10	

The gap analysis indicates that, although these 3 variables are crucial to the Zimbabwean construction industry, they are unfortunately also absent. As a result, although there are wide gaps in all 11 variables, these 3 variables take priority (large gaps) and as such have to be addressed with immediate effect in this particular order if the Zimbabwean construction industry is to be resurrected.

In addition, an open-ended question was presented to the respondents to establish how in their view the Zimbabwean construction industry could be revived. The responses were ranked according to the generic groupings established *via* categorisation using Ms Excel. Table 10 presents the results obtained.

Table 10:   Open-ended question

Variable description	%	Rank	
Create stable socio-economic environment	100.00%	1	*Above average*
Form new government	50.00%	2	*Below average*
Increase infrastructure expenditure	50.00%	3	
Remove sanctions	25.00%	4	
Adopt or use foreign currency	0.00%	5	

Table 10 prescribes the creation of a stable socio-economic environment as the best remedy for the revival of the Zimbabwean construction industry. This is in line with Richardson (2005: online) who suggests that a stable socio-economic environment is the key to Zimbabwe's overall economic revival. There is also considerable emphasis on the merits of the formation of a new government and a construction industry infrastructure package as measures whereby the construction industry may be revived.

6.   Conclusion

The research sought to address three primary issues, which are fundamental to the understanding of the collapse of the Zimbabwean construction industry and its ultimate resurrection. The first objective was to determine the cause of hyperinflation in Zimbabwe. After ranking and analysis of the data it was established that the Zimbabwean government and the RBZ arbitrarily printing money are the root cause of hyperinflation in Zimbabwe. As such, the first objective was achieved.

The second objective sought to investigate the relationship between hyperinflation and the collapse of the Zimbabwean construction industry. The data analysis revealed that hyperinflation resulted in the following:

•   Lack of a stable national currency;
•   Lack of investors, and
•   Lack of labour.

As such, hyperinflation distorts markets of all forms (currency, investor, labour, materials and fuel markets), a phenomenon that results in shortages that lead to the eventual collapse of industry and hence the economy at large. The research also revealed that hyperinflation has an antagonistic relationship with the construction industry, in other words, as hyperinflation increases, construction activity decreases because of a lack of key variables required by the industry to function optimally. Scientifically, it can be concluded that hyperinflation shares an inverse relationship with the construction industry. The establishment of this relationship led to the achievement of the second objective. The third objective sought to determine whether hyperinflation is responsible for the collapse of the Zimbabwean construction industry. After ranking, it was established that hyperinflation has mainly resulted in business closures and stunted economic growth, two major factors that have also resulted in scarcity of construction projects. These variables, combined with the hyperinflation-induced market distortions described above, have indeed led to the collapse of the Zimbabwean construction industry. As such, the third objective was achieved.

6.1   Benefits

The study has added to the limited body of knowledge of inflation and its determinants in Africa and Zimbabwe, in particular. In addition, the gap analysis identified variables that are crucial to the construction industry. The antagonistic relationship that exists between hyperinflation and the construction industry was also exposed. The revelation of the dynamics of this relationship in this study may be used as a blueprint to develop tools or expertise to solve or mitigate hyperinflation in Zimbabwe and elsewhere.

6.2   Future research

The study presented a number of debatable issues that at face value ought to be investigated further. Chief among these issues is the effect of a new national government as remedy to hyperinflation. Similarly, the merits of a construction industry stimulus (increase in infrastructure expenditure) in a hyperinflationary environment needs to be investigated in order to ascertain whether this prescription can apply to a hyperinflation-ravaged construction sector, as stimulus packages are effective in certain non-construction sectors. More importantly, however, the research acknowledges that in January 2009, the Zimbabwean government gave legal tender status to the South African Rand and the United States Dollar (Kairiza, 2009: online). This process, often coined 'Dollarisation'

consisted of the replacement of the useless Zimbabwe dollar by the Rand and United States Dollar and had the effect of stopping hyperinflation in Zimbabwe, thereby causing the country to enter into deflation of -2.34% and -3.26% in January and February 2009, respectively (Kairiza, 2009: online). Although the research alluded to dollarisation, its effects on the Zimbabwean construction industry are not investigated. As such, this presents an area of interest that warrants further study. Collectively, these areas of study would add to the limited body of knowledge pertaining to the counteraction of hyperinflation in general and in particular *vis-à-vis* the construction industry.

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