



Determination of The Futures Contract Specifications That Would Make Zimbabwe Agricultural Commodity Exchange Thrive

Progress Shungu*

Department of Finance, University of Limpopo, Private Bag 1106. Sovenga, 2707. South Africa.

Email: pshungu302@gmail.com

Abstract: *The background of organized commodity exchanges dates back to the 17th century when grain merchants in Japan stored rice in warehouses for future use. The concept propounds that futures contract should have a good contract design in order to enhance performance of the commodity exchange. However, there is no consensus on the importance of contract specifications on commodity exchange. The increasing role of the agricultural commodity exchange and financial sector, on both economic development and poverty alleviation, has seen the concept being applied more on the financial sector than before; this has been further aggravated by world financial crisis, hunger and its consequences. In this regard, Zimbabwe is no exception, by the year 2002, the Zimbabwe Agricultural Commodity Exchange ceased to operate due to number of issues; but chief among them has been cited as poor contract specifications. The paper presents the findings of the study that was conducted to determine the futures contract specifications that would make Zimbabwe agricultural commodity exchange thrive again. It applies both primary and secondary data in gathering the necessary information, to assess the causal relationship between contract design and exchange market (Price quotations, trading system, trading hours, contract sizes, delivery days and exchange fees). The study extended the knowledge of commodity and financial sectors to the stakeholders. The research was motivated by the fact that, most nascent commodity exchanges. The study showed that contract design affect commodity exchange; poor contract design would cause the business activities, to “shut doors. Field research was beneficial to obtain an in-depth understanding of the contract designs from local experts in the commodities markets. Therefore, in order to improve commodity exchange, good contract designs must be implemented, this includes improving trading system, trading hours, contract sizes. On the hand, the Reserve Bank of Zimbabwe should ensure or put in place robust supervisory and regulatory policies.*

Keywords: *contract design, commodity exchange, thrive*

INTRODUCTION

The background of organized commodity exchanges dates back to the 17th century when grain merchants in Japan stored rice in warehouses for future use. Then in the 19th century, US launched the Chicago Board of Trade's, which first traded derivatives contract in agricultural products (CBOT, 1982). London Metal Exchange, New York Mercantile Exchange (COMEX/Nymex) and Brazilian Mercantile & Futures Exchange (BM&F) are today's largest exchanges in terms of level and volume of activities. The main rationale for the establishment of this exchange was the reduction of transaction costs and organizing a physical market place where buyers and sellers could be sure of finding a ready market (Koranchelian, 2005). For more than a century, commodity exchanges remained largely confined to industrialized nations but in 1990s with market liberalization and increasingly affordable information technology, they mushroomed around the world and came to Africa.

According to the history of contract market innovation, Silber (1981) argued that most futures contracts fail because they do not attract sufficient market participants, sixty-eight percent of exchange-traded commodity contracts introduced between 1960 and 1977 failed. Pennings and Leuthold (1999) debated that in 1990s US, 340 contracts approved by the Commodity Futures Trading Commission succeeded. Well-established exchange with widely traded contracts can absorb unsuccessful ones (Garcia &

Leuthold, 2004). One attribute of an attractive contract is its design/specifications. There are several examples of markets failed due to poor contract design, National Mortgage Association (Johnson & McConnell, 1989), Minneapolis Grain Exchange's (Thompson, Garcia & Wildman, 1996) and Chicago Mercantile Exchange (Powers, 1967). Thus, failure to design an attractive contract would lead to the failure of that contract and the exchange itself.

While many of the commodity exchanges introduced in Asia and Latin America seemed to have taken root, the record in Africa is less encouraging except for South Africa. Despite initial signs of success, Zambia and Zimbabwe suspended their operations following unusual price hikes and subsequent government intervention. Although they continue to exist with donor and government support, the Kenyan Agricultural Commodity Exchange (KACE) and the Uganda Commodity Exchange (UCE) both have never been able to attract sizable trade volumes. The Zimbabwe Agricultural Commodity Exchange (ZIMACE) had a thriving forward market for agriculture commodities, wheat and maize. However, the declaration by the government that all maize and wheat were to be sold through The Grain Marketing Board (GMB) saw an end to the forward trading on the grain.

Following the closure of ZIMACE in 2002, Zimbabwe's financial and agricultural sectors faced some challenges in mobilizing financial resources required in funding agricultural products. The small-scale farmers were succumbed to the private buyers, millers who often offer very low prices for the commodities. Fortunately, the government on 2011 announced re-launched of the Commodity Exchange of Zimbabwe after more than a two years of planning although not yet started up to date. The paper assumed that a good contract specific would attract market participants and safeguard any possibility of failure on the re-launched of the commodity exchange market in Zimbabwe. Price quotations, trading system, trading hours, contract sizes, delivery days and exchange fees were used to assess and analyse futures contract specific conditions that would make the Zimbabwean commodity exchange viable again.

2. Literature Review

According to Brower (2007), successful exchanges are not homogeneous in terms of their structures and charters, but support the contract designs and exhibit a diverse range of characteristics (Virtual Metals Research and Consulting, 2005). Empirical studies conducted by the United Nations (UNCTAD) 2010 statistics showed that 8.9bn contracts are financial derivatives (interest rate, equity indices, foreign currency and individual equities) dominated the exchanges, with 91% of trading volume, leaving just 9% for commodities. Of which 9%, consists of agricultural commodities, energy products, precious and non-precious metals. Peter Robbins (2011) argued that it is feasible to introduce the commodity exchange especially in emerging markets like Africa and particularly Zimbabwe.

2.1 Commodity futures

Futures contracts are legal agreement to buy or to sell a given quantity and quality of a commodity (underlying asset) at a specified time and at a specified price (CBOT, 1982). The underlying asset may be an agricultural commodity, a metal, mineral, energy or commercial commodity, a financial instrument or a foreign currency.

2.2 Contract design

In financial literature, Duffie, Darell, and Jackson, (1986) argued that the success of a futures contract is heavily dependent on both its Contract design and the characteristics of the underlying asset's spot market (Black, 1986). For physically settled contracts, it is important that the delivery provisions correspond to dominant industry practice (Gray 1965; Williams 2001). It includes factors such as lot size, delivery locations, delivery timing, grade of the asset, and the price differentials associated with deviations from the standardized terms. Poor design can favour either buyers or sellers (Thompson, Garcia & Dallafior, 1996), at the expense of another participant. In the case of cash-settled contracts, the choice of the underlying value is important. However, an assessment of the importance of contract designs in the futures contracts seem to have been under looked.

Importance and Key Characteristics of contract design

2.2.1 Price quotations

Where an exchange offers contracts denominated in local currencies, such as exchanges in China, the spheres of influence are limited to arbitrage opportunities and local participants (Gray, 1987). Those exchanges offering contracts denominated in dollars, irrespective of the currency of their location, such as the LME aluminium contract, which quoted in dollars, naturally extend their spheres of influence and have the potential to appeal to a wider market. Gray (1987) argued that a futures contract must reflect the commercial movement of the asset both closely and broadly enough to avoid price distortions resulting from specifications in the futures contract.

2.2.2 Trading system

In developing markets, most trades are conducted on a trading floor (Open Outcry) and this is typical of the local stock exchange, ZSE. However, due to technological advancement and high computer literacy levels, most developed markets like CBOT conduct their trades electronically. Open outcry in either trading pits or LME-type rings, or purely electronic means, seem to work in all instances; in those cases, where open outcry has been converted to screen trading, already successful contracts continue to trade successfully (Brower, 2007).

2.2.3 Trading hours

The advent of electronic trading appears to have rendered the physical location of an exchange and time zone in which it operates much less important (Brosen & Fofana, 2001). The Ring trading on the LME occurs during relatively limited periods throughout the business day in European time. The fact that LME contracts can be traded off-exchange implies that the exchange is accessible on a continuous basis, irrespective of time zones, although there are prolonged periods during a 24-hour cycle when trading is thin and illiquid (Fofana, 2001).

2.2.4 Contract sizes

Contract sizes across commodity exchanges indeed do differ. Consider a wheat contract that has 50 metric tons on SAFEX, 136 metric tons on CBOT and 5000 bushels (about 130 metric tons) on The Minneapolis Grain Exchange (exchange websites, 2012). In Japan, when Tokyo Grain Exchange established the non-GMO soybean contract specifications, the contract size of the non-GMO contract was set to be one-third the size of the conventional soybean contract (Parcell 2002). Rashid and Garcia, (2010) reiterated that the size and quality of standardized contracts must be appropriate for traders, making it fungible and usable as collateral in the banking system.

2.2.5 Delivery days

In Japan and America, U.S. grain, oilseed futures and the non-GMO Soybean futures contract has a delivery period that begins one day prior to contract expiration and this contract specification does not appear to hamper delivery (Parcell, 2002). Williams et al. (1998) contributed a portion of the success of the Mungbean futures contract to a delivery window beginning the first day of the contract expiration month. In contracts allow for first delivery at the beginning of the contract expiration month

2.2.6 Exchange fees

Similar contracts offered by competing exchanges will attract business away from each other if their fee structures offer a participant a particularly attractive financial advantage (Garcia, 2010). CBOT, recently waived fees to market participants for a period of 3-4 months in an attempt to attract business away from COMEX/Nymex; a strategy that affects competitor (Sahadevan, 2002).

3. Research Objective

In this study paper, the ultimate aim of the researcher was to assess and then determine the futures contract specifications that would make the recently re-launched Comez thrive. In order to achieve this goal, primary data was used and to supplement this, secondary data from some existing and thriving commodity exchanges was also assessed; hence the project is a combination of both primary and secondary data.

The study explains the instruments used as a way of justifying their validity and reliability. The chapter is presented in the following chronological order; Research design, Population and sampling procedures, Sources of data, Research instruments used, Data collection procedures, Data presentation and analyses plans and Conclusion of the chapter

3.1 Population and sampling procedures

The researcher to improve reliability of the conclusion used two sets of population. That is, use of *sample existing commodity exchanges* and use of *potential commodity exchange participants*.

3.2. Research Methodology

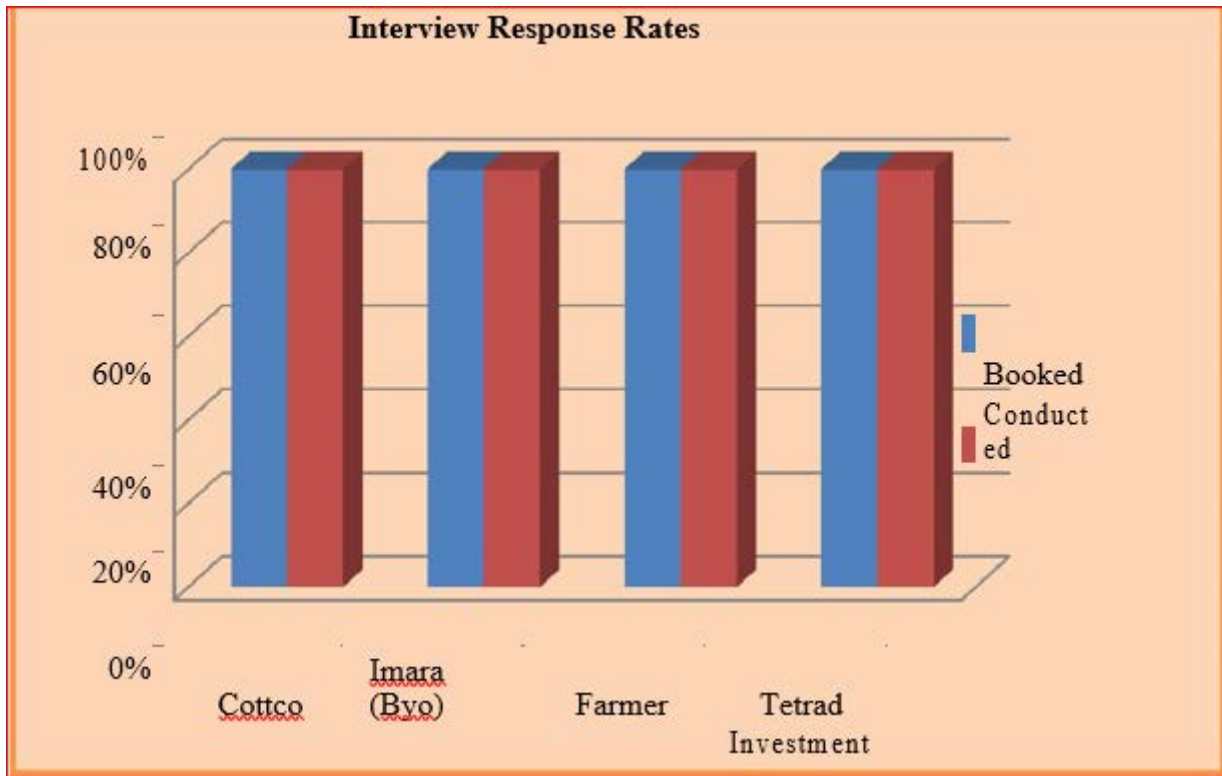
5.1 Research strategy, sampling and data collection

In the study, the research design was outlined, which was a qualitative survey through interviews and questionnaires were carried out. For the purposes of this study, bar charts, tables and pie charts were used where appropriate among other techniques to present the findings of the research.

4. Data Presentation

The response rates from the interviews are summarised in figures 4.1 of which Farming constitute 25%, Agro-processing 16.67%, Investment 16.67%, Stock broking 33.33% and Other (NMB Bank) 8.33%. Sample beneficiaries were considered a true representative of the target universe

Figure 4.1: Interview response rate



Source: Primary Data

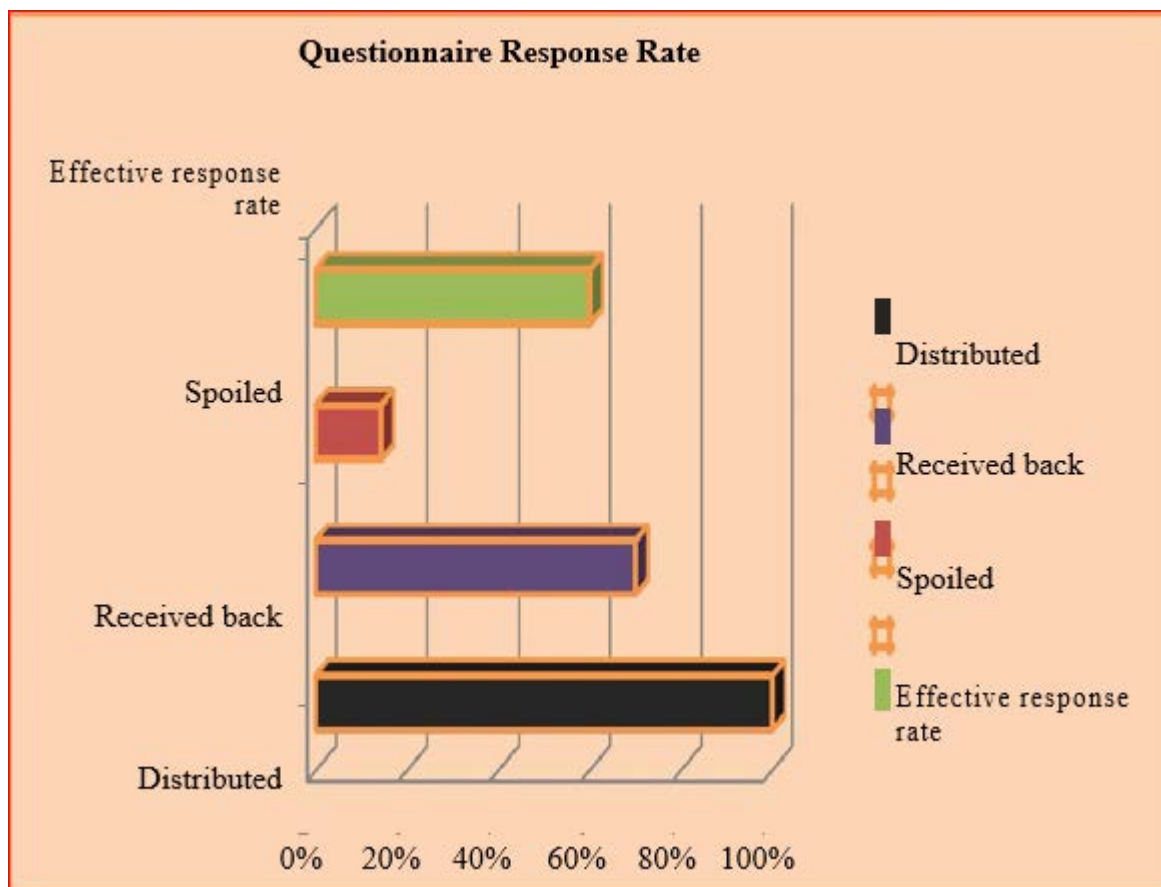
From the table 1 and figure 4.2 below 100% questionnaires were distributed, the researcher received an average of 70.00% response rate, 10% of the questionnaires were incompletely and spoiled, thus reducing the effective response rate to 60.00%, which might be caused by the techniques used to gather data or the data its self.

Table 1: Questionnaire response rate

	Percentage Response
Distributed	100.00%
Received back	70.00%
Spoiled	10.00%
Effective Response	60.00%

Source: Raw Data

Figure 4.2: Questionnaire response rate



Source: Primary Data

4.3 Industry categories

Table 2 and figure 4.3, below show the field respondent, Agro-processing with 16.67%, Farming 25%, Investment 16.67, Stock broking 33.33% and other field 8.33%. The contributions of 80% of the respondents were completed successfully.

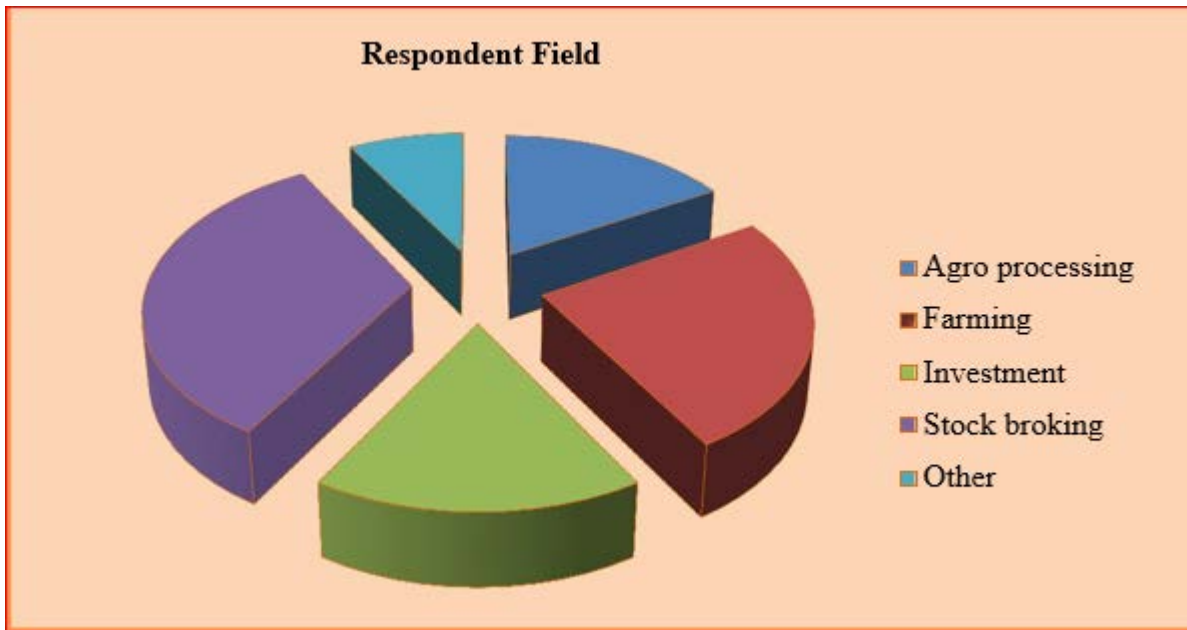
Table 2: Respondents fields

Industry	Agro-processing	Farming	Investment	Stock broking	Other	Total
Contribution	16.67%	25.00%	16.67%	33.33%	8.33%	100.00%

Source: Raw Data

The majority of the respondents came from stock-broking firms with a contribution of 33.33%. They are the ones who usually establish commodities desks at their companies in the presence of a commodity exchange, which will be responsible for the structuring of futures contracts and offering commodity broking services. Farmers also had a considerable contribution of about 25%. The farmers are the ones who would want to hedge against price risks and to afford themselves free and fair-trading of their crops regardless of seasons. This information can be shown by the pie chart below;

Figure 4.3: Respondent field



Source: Raw Data

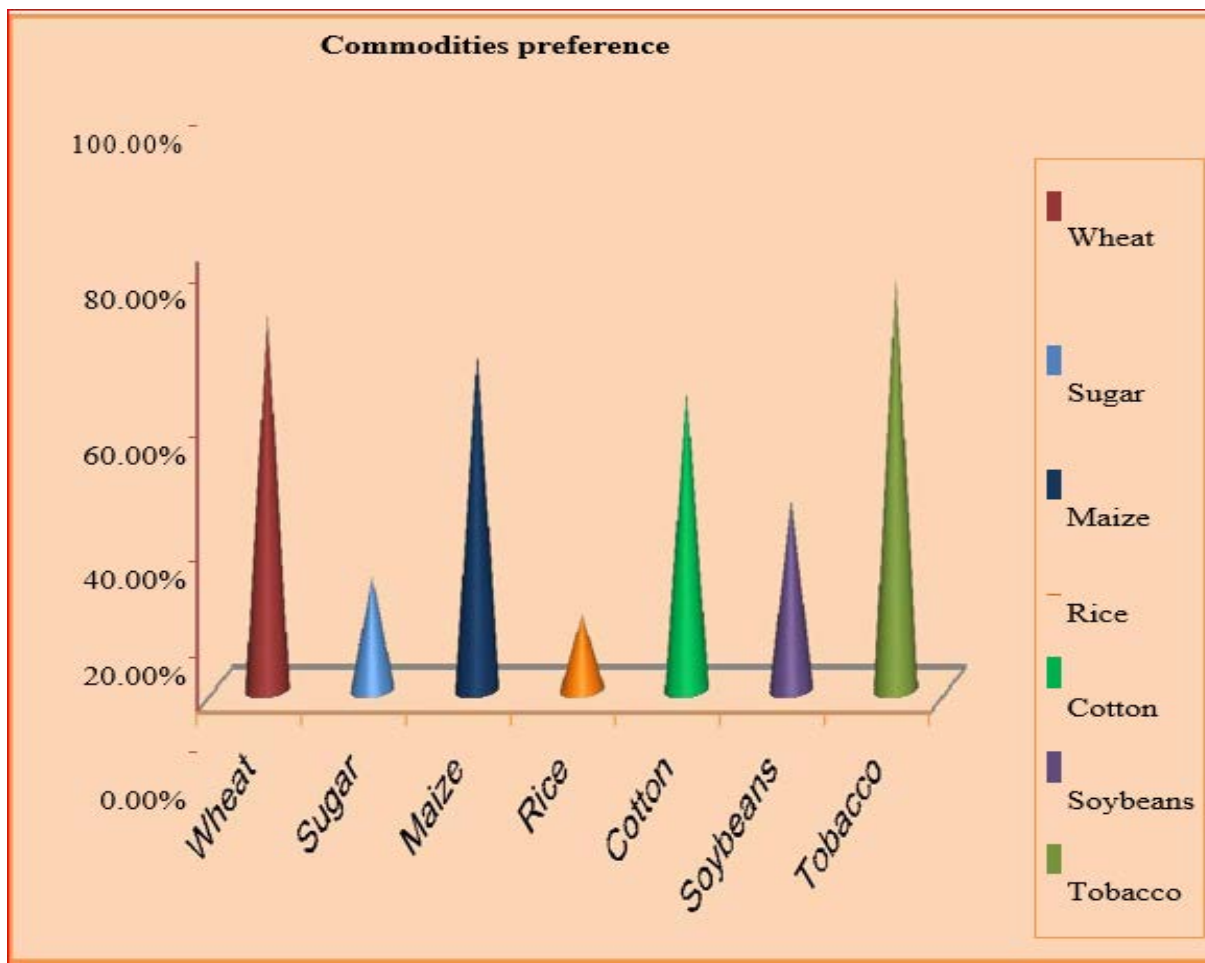
Table.3: Commodities selection

Commodity	Wheat	Sugar	Maize	Rice	Cotton	Soybeans	Tobacco
%ge response	83.33%	25%	75%	16.67%	66.67%	41.67%	91.67%

Source: Raw Data

From the table 3 and figure 4.4, showed that most respondents were in favour of four grains namely wheat, maize, cotton and tobacco which received response rates of 83.33%, 75%, 66.67% and 91.67% respectively. Other grains such as rice, soya beans and sugar were not given considerable interest for listing and received low response rates of 16.67%, 41.67% and 25% respectively. Study favoured grains that are produced in large quantities by most farmers in Zimbabwe. Tobacco was not included in futures contracts due to its difficulties to determine quality and taste Black (1986).

Figure 4.4: Commodities Preference



Source: Raw Data

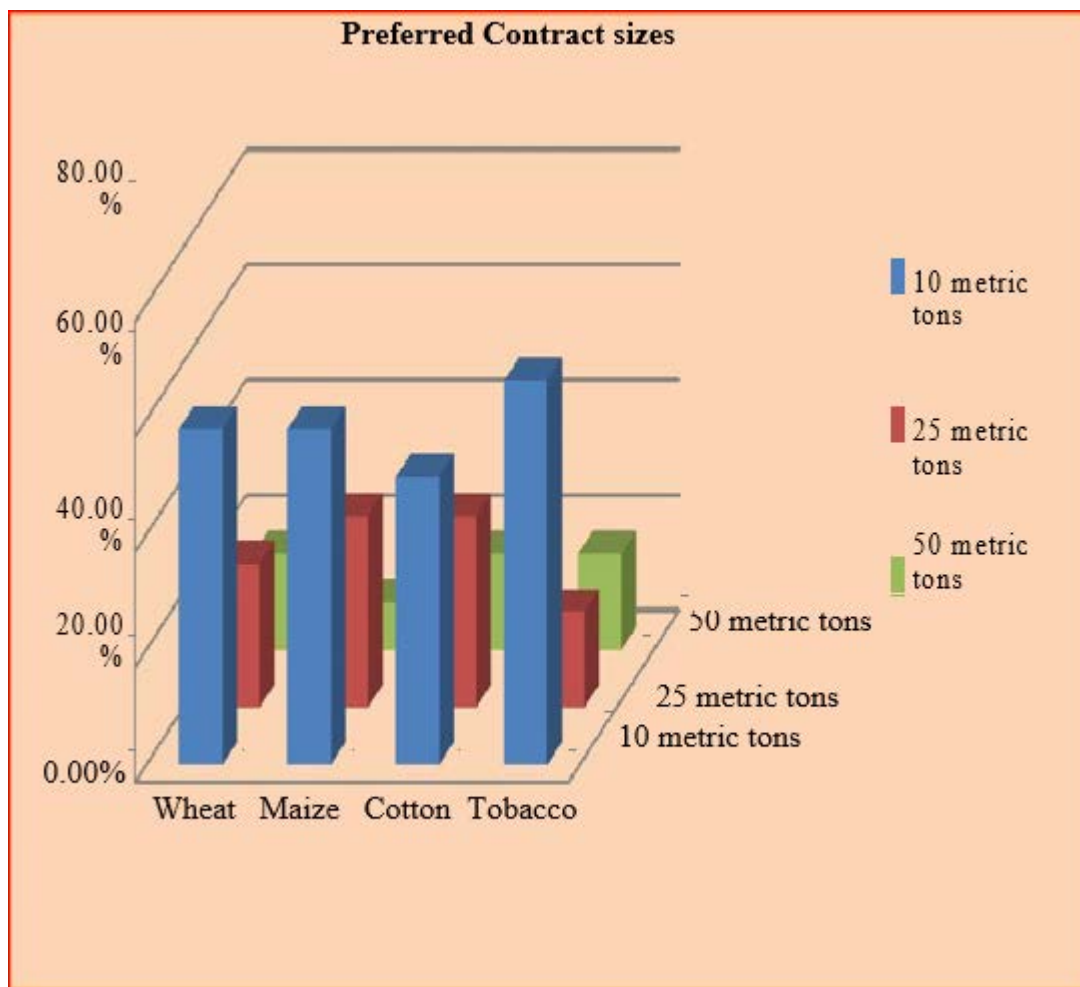
Table 4: Preferred contract sizes

	<=10 metric tons	25 metric tons	>=50 metric tons
Wheat	58.33%	25.00%	16.67%
Maize	58.33%	33.33%	8.33%
Cotton	50.00%	33.33%	16.67%
Tobacco	66.67%	16.67%	16.67%

Source: Raw Data

From the analysis of the results in table 4 and figure 4.5, contract size of less or equal to 10 metric tons dominated the responses. Most respondents for all the four grains had an above 60% preference for contract size of 10 metric tons or below. This was mainly because most respondents were in favour of a smaller contract size that would fit all exchange participants regardless of their size in terms of production especially on the part of the farmers.

Figure 4.5: Preferred Contract Sizes



Source: Raw Data

Business days and trading hours for commodities

All the respondents agreed on a trading week that starts on Monday and ends on Friday. The actual time of starting trade were mixed up as other respondents' preferred starting time was 1000hrs while others preferred 0900hrs, 1100hrs among others. However, the starting time of 1000hrs received an overwhelming response with about 60% of the respondents concurring to this starting time. For the ending time, most respondents preferred 1200hrs; it accounted 80% of the respondents.

Best price quotations for listed commodities

Table 5: Currency quotations

Currency	USD	ZAR	BWP	OTHER
Percentage of respondents	75.00%	16.67%	8.33%	0.00%

Source: Primary Data

Nearly all respondents agreed to the use of the USD as the preferred currency for all price quotations on the local exchange despite having bond notes in the market. The USD received 75% preference by respondents. However, some respondents preferred the ZAR while only 8.33% went for the BWP. This was mainly because the selected three currencies, that is, USD, ZAR and BWP are the most widely used foreign currencies in Zimbabwe with the USD dominating in usage. This information can be shown by the pie chart below;

Figure 4.6: Currency Quotations



Source: Raw Data

Table 6: Delivery Location Preference

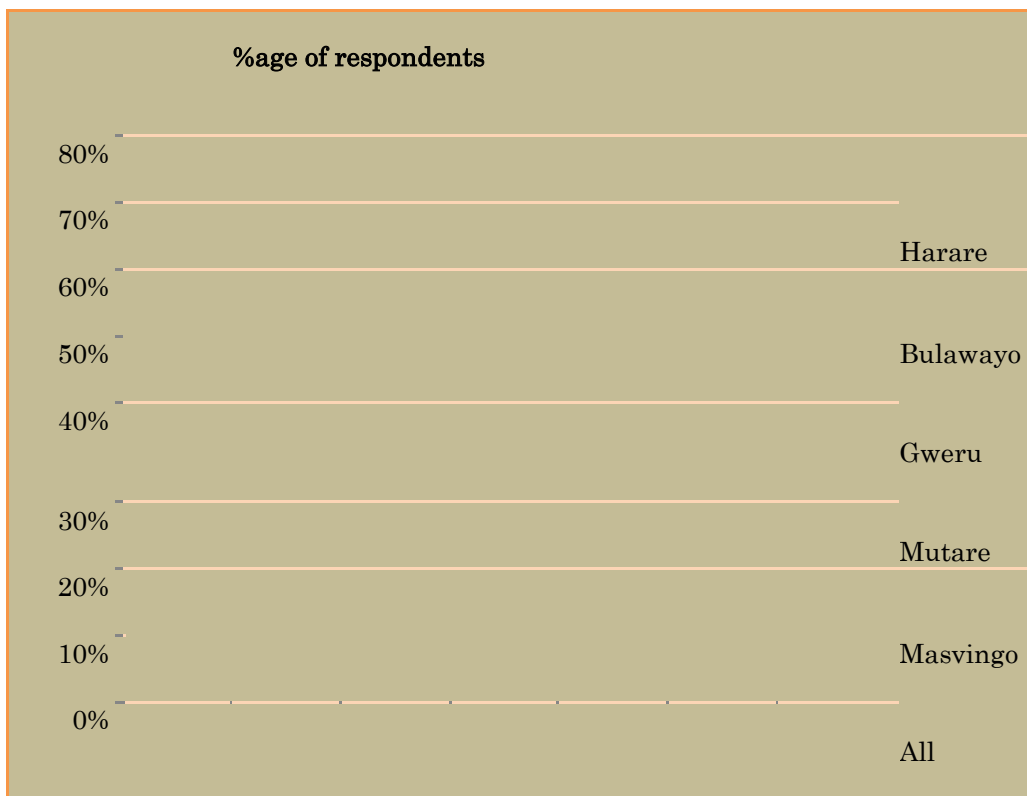
Location	Harare	Bulawayo	Gweru	Mutare	Masvingo	All
Responses	30.00%	0	0	0	0	70.00%

Source: Primary Data

Most respondents (70.00%) were in favour of **ALL** the five cities to be set as delivery points. The reasons mainly linked to transportation costs to Harare. However, a few respondents accounting for about 30.00% seemed to prefer Harare arguing that, for ease supervision and transparency. In addition, they argued that setting up delivery points in all the five major cities might be a challenge, citing costs related to the establishment of warehouses and trained staff.

From the figure 4.7 below the dominating 90% response rate from the study showed that clients favoured Harare than any other city. Figure 4.7 showed the results.

Figure 4.7: Delivery location preference



Source: Raw data

4.6.2 Chicago Board of Trade analysis

The Exchange

Below is **Table 8** show the contract specifications that are currently used in USA at the CBOT, one of the oldest, largest and most thriving commodity exchanges in the world.

CBOT Contract specifications analysis

Because of the level and volume of activities at CBOT, the **contract sizes** for its commodities are very big. Though given as bushels per contract on the exchange, the contracts equivalence in metric tons for corn, wheat, soybeans and rice are 127, 136, 136 and 100 metric tons per contract respectively. The sizes are ideal for the exchange since these commodities are produced in large quantities due to mass production aided even by other foreign participants who are found taking part on the exchange. Since the futures contracts at CBOT attract many participants across the globe, the sizes are the most ideal to allow the efficient flow of trades and to allow a manageable number of transactions.

Table 4.8: Futures contract specifications – salient features

Futures Contract	Corn	Wheat	Soybeans	Rice
Trading System Code	CORN	REDW	BEAN	RICE
Trading hours	Open Outcry (Trading floor) 0930 to 1315 Mon - Fri	Open Outcry (Trading floor) 0930 to 1315 Mon - Fri	Open Outcry (Trading floor) 0930 to 1315 Mon - Fri	Open Outcry (Trading floor) 0930 to 1315 Mon - Fri
	Electronic platform 1800 to 0715 and 0930 to 1315 Sun - Fri	Electronic platform 1800 to 0715 and 0930 to 1315 Sun - Fri	Electronic platform 1800 to 0715 and 0930 to 1315 Sun - Fri	Electronic platform 1800 to 0715 and 0930 to 1315 Sun - Fri
Contract size	~127 metric tons	~136 metric tons	~136 metric tons	~100 metric tons
Contract months	March (H), May (K), July (N), Sept (U) & Dec (Z)	March (H), May (K), July (N), Sept (U) & Dec (Z)	Jan(F), Mar(H), May (K), July (N), Aug(Q), Sept(U) & Nov (X)	Jan (F), March (H), May (K), July (N), Sept (U) & Nov (X)
Settlement method	Physical Delivery	Physical Delivery	Physical Delivery	Physical Delivery
Price quotations	Cents/bushel	Cents/bushel	Cents/bushel	Cents/bushel
Last Trading Day	The business day prior to the 15th calendar day of the contract month.	The business day prior to the 15th calendar day of the contract month.	The business day prior to the 15th calendar day of the contract month.	The business day prior to the 15th calendar day of the contract month.
First Delivery day	1 st business day of the delivery month.	1 st business day of the delivery month.	1 st business day of the delivery month.	1 st business day of the delivery month.
Last Delivery Day	Second business day following the last trading	Second business day following the last trading	Second business day following the last trading	Seventh business day following

	day of the delivery month.	day of the delivery month.	day of the delivery month.	the last trading day of the month.
Exchange Fees	~\$2.00/contract	~\$2.00/contract	~\$2.00/contract	~\$1.50/contract

Source: Secondary data

5.1 Summary

The failure of many futures contracts due to poor contract design was the main motivation to carry out this research project. Thus, after noting that a lot of developing and developed countries try to establish commodity exchanges but resulting in contract designs or some other factors inhibiting the thriving of such an exchange, the study found great need to assess the contract design that would support the thriving of a commodity exchange.

5.2.1 Appropriate Zimbabwean agricultural commodities for listing

The research showed great interest in the listing of four major agricultural commodities, which are tobacco, topped the list followed by wheat, maize and cotton.

5.2.2 Suitable contract sizes

The study showed that, smaller contract size is attractive to most market participants especially farmers in emerging markets like Zimbabwe who are mainly A1 and communal farmers.

5.2.4 Currency which may best be used in price quotations

The USD\$ received an overwhelming support with over 75% in favour of this currency. Despite such a huge subscription to the USD, other individuals preferred the ZAR and the BWP.

5.2.3 Delivery location preference

From the general observation and analysis of the responses received back, most respondents were in favour of all the five cities to be set as delivery points

5.2.5 Appropriate and suitable business days and trading hours for Zimbabwean investors

About 60% of the respondents were in favour of trading days of Monday to Friday and close for weekend and Sunday. In terms of trading times, most respondents were in agreement to the starting time of 1000hrs and ending at 1200hrs every trading day.

6 Suitable local commodity exchange fees for each commodity futures contract

To excite trade and promote active participation by various market participants, most respondents voted for a small fee to be charged by the local exchange. A fee of \$1 per contract received the majority vote.

5.3 Recommendations

Futures contract design can be so harmful to the thriving of a commodity exchange while a well-structured contract can be a major contributor to the success of any exchange.

Recommendations to various stakeholders

(i) To the Farmers

The study suggests that well-organised primary level farmer organisations would facilitate collecting marketing and therefore the use of the exchange, thereby producing significant financial benefits to small-scale farmers.

(ii) To the Commodity Exchange of Zimbabwe (Comez)

Comez should be heavily responsible for all the commodity contracts that would be traded on the exchange. The structure of the contracts, legal framework, and dispute resolution should be the major concern of Comez to ensure a successful and thriving commodity exchange.

(iii) The Government (Ministry of Finance)

The government must discipline those who manipulate the market for their own benefit and provides the necessary legal and regulatory framework for the smooth functioning of the system.

(iv) To the Brokers

There may be need to establish a commodities desk at their offices so as to facilitate trade on the exchange by acting as an interface between farmers and buyers. The commodities desk should focus on three major aspects, (1) research in agriculture, (2) structuring contracts, pricing of futures, and (3) providing broking services

5.4 Areas of Further Research

The study recommends an assessment and determination of other commodities futures contracts namely currency futures, metal futures among others. For further researches, the study also recommends the employment where applicable, of some statistical tests and models in making such conclusions on a

commodity exchange.

References

- Carlton, D. (1984), *Futures Markets: Their Purpose, Their History, Their Growth, Their Successes and Failures*, Journal of Futures Markets, 2(4), 237-71.
- Catania, P. J., (1998) Commodity Trading Manual, Chicago Board of Trade, 21(CD).
- Cluny, C., J., (1993), *The Role of Liquidity in Futures Market Innovation in The Review of Financial Studies*, 6(1), 57-78.
- Commodity Futures Trading Commission (1997); "Economic purposes of futures trading" Washington.
- Corkish, J., Holland, A., and Vila A., F. (1997), *The Determinants of Successful Financial Innovation: An Empirical Analysis of Futures Innovation on LIFFE*, Bank of England.
- Gray, R.W. (1978), "Why Does Futures Trading Succeed or Fail: An Analysis of Selected Commodities." Readings in Futures Markets: Views from the Trade. Edited by A.E. Peck, Chicago Board of Trade.
- Parcell, J.L. (2001), "An Initial Look at the Tokyo Grain Exchange Non-GMO Soybean Contract." Journal of Agribusiness, 19 (1)85-92.
- Pennings, J.M.E., and R.M. Leuthold., (1999), "Commodity Futures Contract Viability: A Multidisciplinary Approach." Presented paper at NCR-134 Conference on Applied Commodity Price Analysis, Forecasting, and Market Risk Management, ed. T.C. Schroeder, pp. 413-424. Dept. of Ag. Econ., Kansas State University.
- Powers, M.J. (1967), "Effects of Contract Provisions on the Success of a Futures Contract," Journal of Farm Economics, 14(2):833-43.
- Sandor, R. L (1991): Chicago Board of Trade Clean Air Futures for Emissions Allowances Program Risk Management. *Financial Exchange* 10(4) 585-603, 9-10.
- Silber, W. (1981) *Innovation, Competition and New Contract Design in Futures Markets* in Journal of Futures Markets,3 (1) 123-55.
- Thompson, R.R., P. Garcia, and D.L. Wildman. (1996) "The Demise of the High Fructose Corn Syrup Futures Contract: A Case Study." Journal of Futures Markets, 16 (2):697-724.
- Tomek, W G and Peterson. (2001) "Risk management in agricultural markets: A review", *The Journal of Futures Markets*, 21 (1), pp.953-985.