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# Money market trading patterns in the absence of a central bank: Evidence from Zimbabwe's banking sector

Godfrey Muponda\*, Samuel Gumbe, Tatenda Ganha

*Department of Business Studies, University of Zimbabwe, Zimbabwe*

## Abstract

The purpose of this study was to explore the trading patterns exhibited by market participants when the central bank cannot act as a lender of last resort to the financial institutions. The study hypothesized that the absence of the central bank as a major participant in the market severely compromised the liquidity of the market. It was found that the money market in Zimbabwe was highly illiquid, having failed all the three tests of liquidity: tightness; immediacy and depth. The market was characterized by high costs, narrow range of securities, lack of heterogeneity in market instruments and participants. However, trading was fairly frequent, with most transactions carried out on a weekly basis.

**Keywords:** Liquidity; Tightness; Immediacy; Depth

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\* Corresponding author. E-mail address: [smgumbe@gmail.com](mailto:smgumbe@gmail.com)

## 1. Introduction

The money market is an integral part of the financial market as investors wishing to construct “complete” portfolios usually do so using a combination of both money market (short-term) and capital market (long-term) securities. The money market is also a mechanism through which financial institutions manage their liquidity positions and clear their transactions (Mustafa, 2009; Imam, 2004). It is also used by the central bank to implement its monetary and fiscal policies through the issuance of Treasury Bills. The existence of a wide range of instruments that are readily available to participants in the money market is therefore a critical ingredient in the functioning of the financial market as a whole. The major participants in the money market are financial institutions acting as intermediaries that borrow and lend short-term funds, independent brokers who act as market makers as well as the central bank of the country (Madukaand Onwuka, (2013).

In March 2009, the Reserve Bank of Zimbabwe (RBZ) was forced to abandon the national currency (the Zimbabwe Dollar) and replace it with a multi-currency regime, mostly based on the South African Rand and the United States Dollar. This was as a result of soaring inflation levels in the economy at the time. Fashoyin (2008) reports that in April 2006, the inflation rate in Zimbabwe was officially being reported at around 1 000 per cent and by October 2007 it had officially gone up to 10 000 per cent. By January 2008 it was being officially reported at 100 000 per cent and by June 2008 the inflation rate was being unofficially reported to be over one million per cent. At that time the Reserve Bank of Zimbabwe (RBZ) admitted that it had lost control of the growth rate of the broad money supply and therefore control over the inflation rate. In January, 2008, the RBZ reported in its monthly bulletin that the money supply growth rate was way out of its targeted level of 500 per cent per year set in December 2007 and was now at the rate of 64 118 per cent.

After the replacement of the national currency, the RBZ could no longer play its role as the lender of last resort. Banks in Zimbabwe also subsequently started to experience an unprecedented level of non-performing loans due to the generally severe liquidity crisis in the economy, forcing them to be conservative in their lending activities. As a result, most banks were reluctant to overexpose themselves through increased lending to the private sector (RBZ, 2009). As banks in Zimbabwe are at the core of the money market, the problems that they were facing were also felt in the money market and reflected by high borrowing rates.

The RBZ became very illiquid and seriously undercapitalized and therefore incapacitated to administer the money market, resulting in banks resorting to the use of a self-regulated interbank market in which only banks with healthy balance sheets could borrow and lend among themselves without the interference of RBZ (Chagwiza, 2014). This lack of investment instruments forced banks to hold significant balances either in cash or in real time gross settlements (RTGS). The RBZ (2014) estimated that the lack of activity in the money market resulted in surpluses in the form of idle RTGS balances rising from US\$120 million in 2009 to US\$500 million in June 2014. The absence of a properly functioning money market meant that banks were not willing to take risks among themselves, especially in a market where acceptable collateral was limited or not available at all (Njanike, 2010).

The banking sector in Zimbabwe, as is the case in other markets, is an integral part of the financial system, with commercial banks playing a significant role in the domestic money market. The Zimbabwean banking sector is very small, however, consisting only of sixteen commercial banks, three building societies, two merchant banks and sixteen asset management companies (RBZ, 2013).

The yields on the instruments traded are also very high. For example, a report released by the RBZ in 2012 showed that lending rates quoted by banks in Zimbabwe were ranging from 8 per cent to 32 per cent per year, with most banks quoting lending rates at 20 per cent per year (RBZ, 2012). These lending rates were very prohibitive when compared with deposit rates which averaged 4 per cent per year. As a result, the RBZ estimated that approximately two billion United States Dollars was circulating outside the banking sector with a very few individual and institutional investors willing to save, resulting in a liquidity crisis in the banking sector. This problem was also compounded by the lack of confidence by the general public in the sector (Njanike, 2010).

## **2. Literature review**

### **2.1. Characteristics of the money market**

The money market is a wholesale market where securities of large denominations are issued on the primary market and subsequently traded on a secondary market. Participants in the money market consist mainly of commercial banks, non-bank financial institutions such as fund managers and “professionals” in the financial market such as brokers. The government, through the central bank, private corporations and government-sponsored enterprises are also major participants in the money market (Mustafa, 2009).

The instruments traded in the money market have maturities that range from one day to one year with the most common ones ranging between three months or less. The instruments traded are highly liquid, marketable and risk-free. These two factors increase the willingness of investors to commit their funds as they enable the conversion of a security into cash in a short space of time at low transaction cost (Darskuevine, 2010). The existence of a secondary market, which is the market where instruments are resold, increases liquidity in the market. Deep and liquid money markets play an important role in information aggregation and price discovery.

### **2.2. Instruments traded on the money market**

The efficient functioning of the money market requires various instruments to be present so that market participants can choose those securities that suit their short term requirements. The securities traded include: call deposits; certificate of deposit; commercial paper; Treasury Bills; repurchase agreements; interbank loans; bankers' acceptances and short-term municipal securities.

Call deposits are claims on commercial banks by large corporations with excess funds. Funds deposited on call can be withdrawn at any time but a penalty fee may be charged against the withdrawal. A certificate of

deposit (CD) is a certificate issued by a bank as evidence that a certain amount of money has been deposited for a period of time, usually ranging from one to six months and will be redeemed with interest at maturity. CDs can either be negotiable (in which case they are referred to as negotiable certificates of deposits, or NCDs), or non-negotiable depending on the legal specification of the CD (Cook and Thomas, 1998). Commercial paper (CP) is a short-term unsecured promissory note issued by large private corporations as a means of financing their working capital requirements and also by foreign governments as a way of raising short-term funds and is used as a low-cost substitute for bank loans by many large firms (Kacperczyk and Schnabl, 2010).

Treasury bills are short-term securities issued by the government at regularly scheduled auctions in order to refinance maturing issues and to help finance current government deficits and debts. In most cases, Treasury bills make up the bulk of the money market instruments. Similarly, municipal governments also issue their own debt securities in the form of municipal securities in order to finance their own expenditures. A repurchase agreement (Repo) involves the sale of securities coupled with an agreement to repurchase the same securities at a higher price on a later date (Fleming and Garbade, 2003). Repos are closely related to treasury bills in that they are loans backed by collateral security in the form of treasury bills.

An interbank loan is a loan extended from one bank to another bank with which it has no affiliation. The borrowing institution or bank can use the funds to re-lend to its own customers, but often the borrowing bank can supplement its reserves with the borrowed money in order to meet regulatory requirements and to balance assets and liabilities. Interbank loans are issued without collateral attached to them and they are for short term periods mostly overnight (Giulia et al, 2006). Short term interbank rates are useful prices in all economies as they indicate the state of macroeconomic and liquidity conditions and provide a building block for the pricing of financial assets (Nathan and TengTengXu 2009).

A bankers' acceptance (BA) is a borrowing instrument which enables a firm to borrow money using its debtors as collateral for the loan. Once the bank "accepts" the draft on behalf of its client, the draft becomes a liability of the bank. BAs are usually used by importers and exporters and are traded or resold in a secondary market. Time deposits are non-negotiable deposits with a fixed time to maturity with yields that are relatively higher than those on equivalent maturity of negotiable certificate of deposits Darskuviene (2010).

The securities that are found on the domestic money market are also available on the Euro money market (Darskuviene (2010). These include Euro certificate of deposits (Euro CDs); Euro call money; syndicated Euroloans (created when Euro banks form a syndicate to extend a single loan to non-financial institutions) and Euro commercial paper.

### 2.3. Measuring market liquidity

Market liquidity can be defined simply as the ability of market participants to buy or sell securities quickly and at low cost (Chordia, Sarkar and Subrahmanyam, 2003). However, market liquidity has several dimensions: tightness; immediacy and depth (Fleming, 2003; Botha, 2008; Sarr and Lybek, 2002). Tightness refers to the existence of low costs. This would be reflected in low bid-ask spreads in an order-driven (dealer) market together with low transaction costs. Immediacy refers to the speed with which orders can be

executed and settled, thus reflecting the efficiency of the trading, clearing and settlement system. Depth refers to the existence of abundant orders that are large in volume with minimal impact on prices. Market depth may also refer to the frequency with which trades are executed (Gray and Talbot, 2007). Deep money markets can result in a more effective and non-wasteful use of liquidity and also provide the central bank with a broader range of monetary policy instruments (Singh, 2009).

### 3. Statement of the problem

The banking system in Zimbabwe plays a dominant role in the financial market and therefore liquidity tends to accumulate in the banking system and is not spread out across the rest of the market. Market participants in well-developed financial markets have access to a wide range of money market instruments at their disposal. This enables them to take appropriate positions in the capital markets and thus construct optimum and complete investment portfolios (Arukaevu, 1998). By contrast, the money market in Zimbabwe is shallow, with very little trading activity, and narrow, with very few instruments available to market participants. The central bank also provides direction for all other market participants, particularly banks in that they are influenced by the rate at which they borrow from or deposit with the central bank (Gray and Talbot, 2006). In particular, banks need to be able to anticipate the actions of the central bank. Thus market rates are influenced by the *expected* rate applied to the transactions of banks with the central bank and also the *probability* of the use of Treasury Bills by the central bank in controlling the money supply. The lack of clear direction from the central bank therefore severely constraints the trading patterns of Zimbabwe's money market participants such as banks.

### 4. Purpose and objectives of the study

The purpose of this study was to identify the trading strategies for money market participants in Zimbabwe, given the highly illiquid nature of the market. Based on the hypothesis that an optimum trading strategy is premised on the existence of a highly liquid financial market, the study had the following objectives:

- To establish the extent to which Zimbabwe's money market can be said to be "illiquid" and the factors that contribute to its illiquidity.
- To establish the trading strategies used by money market participants under conditions of market illiquidity.

### 5. Research questions

The study proceeded on the basis of the following research questions:

- What is the range of financial instruments being traded in Zimbabwe's money market?

- What is the general nature of the trading environment in terms of frequency, size and volume of trades, methods used to effect trades as well as information dissemination?
- What are the general characteristics of the securities traded in terms of average maturities and collateral?

## 6. Significance of the study

This study is important in that it contributes to knowledge on investment portfolio construction under conditions of market illiquidity.

## 7. Methodology

Though the money market in Zimbabwe has several participants, the study was based on data collected from commercial banks only as, like in most emerging financial markets, banks are the most dominant sector of the financial markets in Zimbabwe. All the sixteen commercial banks in Zimbabwe were included in the study. The study was also restricted to Harare where all the head offices of the banks are located. Data was collected using a questionnaire administered to the head of the treasury department in each of the sixteen commercial banks.

## 8. Presentation and discussion of the findings

### 8.1. Instruments being traded

The respondents were asked to list the instruments that they were trading in and their responses are summarized in Table 1 below.

The results in Table 1 show that the market was active in only 50 percent of the possible range of money market instruments. There was very little activity with respect to most instruments such as commercial paper, certificates of deposit and repurchase agreements and no activity at all with respect to securities found on the Euro money market. Bankers' acceptances were the most popular, with all the respondent banks trading in these securities. It was also reported that all the banks were advancing loans in the form of bankers' acceptances in order to use them as collateral when borrowing in the money market since the Central Bank was not issuing enough Treasury bills. Most of the respondents were also active on the interbank market (eighty-one percent). In general, interbank deposits are most actively traded when the central bank is able to act as the lender of last resort in case of a deficit on the interbank market. However, these results show that the interbank market was vibrant even in the absence of the active participation of the Central Bank which had suspended its function as the lender of last resort in March 2009 when the multi-currency system was introduced. Thus, the interbank interest rate was being determined purely from the

self-regulating competitive lending and borrowing activities of the banks without the outside influence of the Central Bank.

**Table 1.** Money market instruments that were being traded

<b>Instrument</b>	<b>Number of banks trading the instrument</b>	<b>Percentage of total</b>
Treasury Bill	10	56%
Commercial Paper	2	13%
Certificates of Deposits	2	13%
Repurchase agreements	1	6%
Interbank loans or deposits	13	81%
Short term Municipal securities	0	0%
Call deposits	8	50%
Bankers' Acceptances	16	100%
Syndicated loans	0	0%
Euro Commercial Paper	0	0%
Euro Time Deposits	0	0%
Euro certificate of deposits	0	0%
Euro call money	0	0%
Euro Notes	0	0%

It was also found that fifty-six per cent of the respondents were trading in Treasury Bills even though the Central Bank was not issuing these securities on a frequent basis. The explanation given was that most of these Treasury Bills were not being traded on the domestic money market but were being traded via correspondent banks which invested in the Treasury Bills issued in foreign money markets for these local banks. Thus, there was an active "foreign market" for these securities. The vibrancy of this part of the money market could be attributed to the availability of the internationally convertible United States dollar which was being used in place of the local currency (Zimbabwe Dollar) currency.

The very insignificant trades in other securities such as certificates of deposit, commercial paper and call deposits could be attributed to the liquidity problems affecting other participants and entities outside the banking system, particularly corporate firms. Certificates of deposit and call money are generally used in the management of cash resources by such entities whereas commercial paper is issued for the purpose of financing working capital requirements. There was also very insignificant activity in respect of repurchase agreements. Since these securities are closely tied to the availability of Treasury Bills, which are used as collateral security in the agreement, the general non-availability of Treasury Bills could be the explanation for the absence of repurchase agreements on the market.

## 8.2. Frequency of trading

The respondents were requested to indicate the frequency with which they carried out transactions in the three most-traded securities and their responses are shown in Table 2 below.

**Table 2.** Frequency of trading

	Daily	Weekly	Monthly	Quarterly	Annually	Bi-annually	TOTAL
<b>Bankers' Acceptances</b>	27%	53%	20%	-	-	-	100%
<b>Interbank Loans</b>	20%	60%	17%	3%	-	-	100%
<b>Treasury Bills</b>	-	-	-	-	62%	38%	100%

Most transactions were being carried out on a weekly basis, with 53 percent trading bankers' acceptances and 60 percent of the interbank loans having weekly maturities. These trading frequencies reflected that these instruments did not have a deep market with respect to frequency of trading although not all banks were participating in this market. Treasury Bills were being traded on an annual basis by most participants with a few trading on a bi-annual basis. Thus, the market for these securities was also shallow.

## 8.3. Size and volume of trades

Another determinant of market depth is the size and volume of the trades executed in a market. The findings with respect to the size of trades (in United States dollars) are shown in Table 3 below.

**Table 3.** Size of trade (USD)

INSTRUMENT	SIZE OF TRADE (USD)		
	500,00 - 1,000,000	1,000,000 – 5,000,000	Over 5,000,000
T-Bills	7%	37%	56%
Interbank loans	67%	27%	6%
Bankers' Acceptances	20%	30%	50%

Most of the large trades were being effected in bankers' acceptances and Treasury Bills, with more than fifty percent of the respondents averaging trades of more than \$5 million per transaction in these securities. Trades in interbank loans were on average being effected at less than \$1 million per trade for sixty-seven percent of the respondents. When compared to other markets such as the Eurocurrency market where the



minimum trade size is \$10 million, these trades were very small, indicating that the market for the few traded instruments was not deep enough.

#### 8.4. Average maturities of instruments traded

As a further measure of the depth of the market, the respondents were also asked to provide information pertaining the average maturities on the three most actively traded securities, namely, T-Bills, BAs, interbank deposits or loans and bankers' acceptances and their responses are shown in Table 4 below.

**Table 4.** Average maturities of securities

Average Maturity	Type of Security		
	T-Bills	Bankers' Acceptances	Interbank Loans or Deposits
7 Days	2%	23%	48%
3 Months	6%	46%	21%
6 Months	10%	11%	7%
12 Months	45%	1%	3%
6 Months and 12 Months	26%	9%	5%
3 Months, 6 Months and 12 Months	11%	10%	14%

Though the securities had varying maturities ranging from 7 days to 12 months, the shortest maturities were reported in the interbank loans and deposits where 48 percent of the respondents had maturities of 7 days. Treasury bills were being held for longer periods as more than 71 percent of the respondents reported maturities of between 6 months and 12 months.

#### 8.5. Collateral used when lending or borrowing funds in the money market

The absence of the Central Bank from the market as a lender of last resort meant that Treasury Bills could also not be used as collateral in the issuance of securities such as repurchase agreements. For this reason, the respondents were asked to report on the collateral they were actually using in their trades and the results are summarized in Table 5 below.

**Table 5.** Collateral used in trades

Bankers' Acceptances	Treasury Bills	Bonds	Shares	Property
100%	20%	6%	3%	3%

These findings indicate that all the respondents were using bankers' acceptances as collateral and a few (20%) were also using Treasury Bills, though these were foreign bills. Various forms of other "unconventional" security were also being used, such as bonds, shares and property. Thus, the Zimbabwean money market was resorting to other forms of collateral in the absence of instruments that are normally issued by the central bank and was using many types of collateral that are not normally used in other money markets. Thus, safe collateral such as Treasury bills was not being widely used.

### 8.6. Methods of effecting trades and information dissemination

It was found that only three methods were being used to effect trades: telephone; e-mail and personal visits.

**Table 6.** Methods of effecting trades

	<b>Personal Telephone</b>	<b>E-mail</b>	<b>Personal Visits</b>
<b>YES</b>	100%	67%	20%
<b>NO</b>	0%	33%	80%

Most of the trades were being effected through personal telephone calls and e-mails, as reported by 100 percent and 67 percent of the respondents respectively. Some were even using personal visits as a way of effecting trades. These findings indicate that trading activity and market making in Zimbabwe were severely restricted by inadequate information management systems. This lack of immediacy contributed further to the illiquidity of the market.

Information asymmetry was also found to be a great hindrance to the proper functioning of the money market. Respondents were asked to indicate how they got to know about the availability of different instruments in the market. The majority of the respondents (53 percent) indicated that they were relying on information from other dealers with regards to the availability of instruments whilst others (43 percent) were using newspapers and the rest (6 percent) relied on information from friends and other personal contacts. This resulted in high information asymmetry in the market.

## 9. Conclusions

The money market in Zimbabwe was found to be highly illiquid, having failed to pass all the three tests of liquidity: tightness; immediacy and depth. Transaction costs were high due to information asymmetry and difficulties in effecting trades, an indication of limited market tightness. Because the market is dominated by banks, it is largely an order-driven dealer market. Lack of tightness in the market tends to widen the gap between bid and ask prices for securities. This could be the possible explanation for the wide gap between

deposit and lending rates. There was also lack of immediacy since orders could not be executed efficiently enough due to inadequate information management methods in the trading, clearing and settlement system. The orders were found to be small and infrequent on average, restricting the depth of the market.

The range of securities was found to be narrow, with only one main instrument, the banker's acceptance, being traded. The reason for the dominance of this instrument was the absence of T-bills. As a result, the majority of the banks resorted to trading in bankers' acceptances instead of making normal loans. The few T-bills that were being traded were foreign with trades being effected through their correspondent banks investing in foreign money markets on behalf of local banks. The malfunctioning of the market inhibits it from performing its role of mobilizing short-term funds for investors, particularly those from the productive sector.

Lack of heterogeneity in market instruments and market participants is a major hindrance to the proper functioning of the financial market in general and the capacity of the economy to attract foreign investment.

## 10. Recommendations

It is apparent from these findings that there is an urgent need for the central bank (RBZ) to regain its role as the lender of last resort in order to allow market participants outside the banking sector to borrow and lend using locally-issued Treasury bills as collateral. This would require international support in recapitalizing the central bank. Once this has been achieved, the product range could be increased with the introduction of other instruments such as repurchase agreements, commercial paper and derivatives.

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