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ERSA working paper 446

July 2014

Economic Research Southern Africa (ERSA) is a research programme funded by the National Treasury of South Africa.

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July 24, 2014

Abstract

Although informal finance forms a large part of their financial sector, nearly all low income countries exclude informal transactions in official monetary data. Usually, informal finance data are nonexistent and occasionally, they are available only from surveys that often occur at irregular intervals and mostly with incomparable data. Using two survey datasets, indigenous knowledge, and elements of Friedman's data interpolation technique, this study constructs monthly time series of informal credit and interest rates for Malawi. The study argues that datasets constructed in this manner may be used with minimal loss of substance in place of the actual but nonexistent data.

JEL codes: Z13, E43, E44, E51

Keywords: Informal financial sector, low income countries, interpolation

1 Introduction

While the informal financial sector (IFS) is virtually non-existent in most high income countries, a large IFS co-exists alongside the formal financial sector (FFS) in a majority of low income countries. Several studies have shown that the IFS in low income countries is large (see for example African Development Bank, 1994; Chipeta and Mkandawire, 1991) and growing (see for example Chipeta, 1998; Soyibo, 1997; Bagachwa, 1995; Aryeetey, 1994; Chipeta and Mkandawire, 1991). According to the African Development Bank (1994), 70 percent of the total population in Cameroon and 80 percent in Zambia take part in informal financial activities. In addition, 85 percent of rural households in Niger and over 80 percent of smallholder farmers in Zimbabwe have access to informal credit; and 60 percent of the population in Ethiopia and 52 percent in Senegal participate in rotating savings and credit associations (African Development

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Bank, 1994). In Malawi, Chipeta and Mkandawire (1991) observed that in 1989, the IFS was larger than the FFS when measured in terms of credit extended to the private sector. They arrived at the same result by comparing savings mobilised by the formal and informal financial sectors. Field surveys carried out in Nigeria by Soyibo (1997), in Ghana by Aryeetey (1994), in Malawi by Chipeta and Mkandawire (1991) and in Tanzania by Bagachwa (1995) established that the IFS grew faster than the FFS in the reform years 1990-1992 (Chipeta, 1998).

Given its sheer size, it is apparent that the IFS plays a non-trivial role in the operations of the financial sector in the low income countries. However, nearly all low income countries do not include informal financial transactions in official monetary data. Usually, there are no data at all, and occasionally the only available data are from a once-off survey. Even where data from more than one survey are available, the surveys are usually at irregular intervals and often, the data are not comparable. To the extent that official monetary data do not include informal financial transactions, the volume of aggregate financial transactions is underestimated, bringing into question the timing and effect of monetary policy on economic activity.

This paper seeks to bridge the gap created by the IFS data unavailability in the low income countries by proposing a non-traditional data interpolation approach, with Malawi as a case study. Using two survey datasets, elements of indigenous knowledge and principles of the Friedman method of interpolating time series from related series, the study constructs a time series of IFS credit and interest rates for Malawi that bear close resemblance to the actual but nonexistent data. This is the first study that we are aware of that employs elements of tradition and customary values to construct a time series of IFS data from survey data. The paper argues that datasets constructed in this manner may be used, with minimal loss of substance, to guide policy in place of the actual but absent data.

In line with Soyibo (1997) and Chipeta and Mkandawire (1991), we define informal finance as legal but unregulated financial activities that take place outside official financial institutions, and are not directly amenable to control by key monetary and financial policy instruments. Encompassed in this definition is the mobilisation and lending of financial resources by friends, relatives, neighbours, grocers, local merchants/traders, landlords, tenants, grain millers, moneylenders, Savings and Credit Cooperatives (SACCO), non-rotating savings and credit associations (SCAs), rotating savings and credit associations (ROSCAs), cooperative and savings associations (CSAs), and microfinance institutions, among others. While some of these entities are officially registered institutions, others are not. Nonetheless, they are all protected by the law (see Bolnick, 1992; Chimango, 1977).

The rest of the paper is organised as follows: Section 2 is a brief review of Malawi's IFS. Construction of Malawi's IFS credit and interest rates in monthly frequency is carried out in section 3. A summary and conclusion follow in section 4.

2 Informal Financial Sector in Malawi

The Second Integrated Household Survey for Malawi conducted in 2004/2005 collected data on, among others, individuals who obtained loans or credit from either a formal or informal financial institution during the 12 months preceding the date of the survey. Summary statistics from the survey, which had a sample of 11,280 households, are presented in Tables 1 to 3. Table 1 shows that only 13.1 percent of the Malawi population received loans during the stated period, with a larger rural proportion (13.7 percent) receiving credit, compared to the urban where only 8.4 percent received loans. Table 1 also shows that just over half of the loans (51.3 percent) were used to purchase farm inputs, while about a third (29.3 percent) were used as business start-up capital. The proportion of people who obtained loans as business start-up capital was larger in urban areas (38.3 per cent) than in rural areas (28.5 per cent); and one in every two persons who received loans in female-headed households used the credit as business start-up capital, compared to one in every four persons in male-headed households (statistics not in the table for space reasons).

Table 2 reveals that 98 per cent of the household loans were obtained from the IFS, while only 2 per cent were from the FFS. It further shows that relatives and neighbours are an important source of informal credit, accounting for 20 percent and 16.3 percent, respectively, of the total IFS loans in the country. Microfinance institutions are another major source of IFS credit, accounting for nearly half (45.3 percent) of all the IFS loans in the country.

It is further shown in Table 3 that only 9.4 per cent of those who did not apply for loans felt that loans are too expensive, while as much as 32.2 per cent reported that they did not know any lender, and some 15.2 per cent self selectively pulled out because they believed their loan applications would be unsuccessful. Only 11.6 per cent reported that they did not need any loans.

3 Interpolation of IFS Data for Malawi

3.1 Introduction

Most macroeconomic time series are constructed out of bits and pieces that must be shaped and rearranged to yield the final series, and one of the most common operations performed in this process is interpolation (Friedman, 1962). Interpolation presumes that data are available for some two dates, and the process involves estimation of the missing data between the two dates. This section presents the interpolation of IFS credit and interest rates for Malawi using two survey datasets: the Chipeta and Mkandawire Survey (hereafter the CM survey) of 1988/89, and the Second Integrated Household Survey for Malawi (hereafter IHS2) conducted in 2004/2005 by the National Statistical Office (Malawi). From these two datasets, IFS credit and interest rates for 1988:1 and 2005:12 were obtained. The interpolation, therefore, was carried out for the period 1988:2 to 2005:11.

The CM survey was conducted in seven districts (out of 24), two cities (out of two), three administrative centres (out of 14), and two townships (more developed administrative centres). The selection of these places represented the first stage of sampling. The second sampling stage involved a random selection of enumeration areas, which used enumeration areas drawn two years earlier in a national population and housing census as a basis. The final sampling stage was a random selection of households. A total of 1,611 households were included in the survey.

IFS credit sources in the CM survey included money-lenders, friends, relatives, neighbours, traders/grocers/local merchants, grain millers, estate owners and employers. Microfinance, however, was not included, and semi-formal financial institutions were pooled together with the FFS. Using the original CM survey dataset, we re-calculated the sub-sectoral distribution of IFS credit and isolated semi-formal financial institutions, including microfinance, as a component of the IFS.

IHS2, on the other hand, was carried out between March 2004 and April 2005, covering a sample size of 11,280 households, drawn using a two-stage stratified sampling procedure from a sample frame based on the 1998 Population and Housing Census enumeration areas (Malawi National Statistical Office, 2005). Each of the 27 districts at the time was considered to be a separate substratum of the main rural stratum (except for Likoma Island District), while the urban stratum included the country's three cities (Blantyre, Lilongwe and Mzuzu), and one municipality (Zomba)¹. Enumeration areas were selected for each stratum on the basis of probability proportional to size, and these constituted the primary sampling units, while the second sampling stage involved randomly selecting 20 households in each enumeration area, with each listed household in an enumeration area having an equal chance of being selected.

In Malawi, agriculture is the mainstay of the economy, accounting for about 36.27 percent of the country's gross domestic product (GDP) (2007 estimate), and nearly 80 percent of the country's exports (2006 estimate). The sector employs approximately 84.5 percent of the labour force and generates about 82.5 percent of foreign exchange earnings (Malawi Government, 2004). The economy is monoculture, with tobacco production generating roughly 60 percent of the country's total export earnings. This paper, therefore, presumes that Malawi's economy can be generalised as comprising two broad economic sectors - agricultural and non-agricultural.

3.2 Construction of IFS Credit Time Series

Suppose economic agent j obtains credit ($c_{jt:i}^*$) at time $t : i$ (where t is a year counter and i is a month counter) in the IFS either for agricultural ($c_{jt:i}^A$) or other non-agricultural activities ($c_{jt:i}^0$). Further assume that data are available

¹In 1988, there were only two cities in Malawi, viz., Blantyre and Lilongwe. In 1998, the country had one more city, Mzuzu. As at June 2011, the country had four cities, including Zomba.

only for two end-points (c_{j1}^* and c_{jT}^* ; c_{j1}^A and c_{jT}^A ; c_{j1}^0 and c_{jT}^0 , where T is the total number of observations including end-points). Let $\sum_{j=1}^n c_{jt:i}^* = C_{t:i}^*$; $\sum_{j=1}^n c_{jt1}^A = C_{t:i}^A$; $\sum_{j=1}^n c_{jt1}^0 = C_{t:i}^0$. The values $C_{1988:1}^*$ and $C_{2005:12}^*$ are calculated by taking informal financial sector credit allocated to individuals in the sample, and, assuming it is a representative sample, extrapolating it to the entire economically active age group (16-49 years). Effectively, this takes out children (those less than 16 years old, according to the United Nations definition) and the elderly (those aged 50 years and above). $C_{1988:1}^A, C_{1988:1}^0, C_{2005:12}^A$ and $C_{2005:12}^0$ are calculated analogously. A linear interpolation of $C_{t:i}^*$ is given by:

$$C_{t:i+1}^* = C_{t:i}^* + (C_T^* - C_1^*)/T \quad (1)$$

and a linear interpolation of $C_{t:i}^A$ and $C_{t:i}^0$ are given by:

$$C_{t:i}^A = \delta_{t:i} C_{t:i}^* \quad (2)$$

$$C_{t:i}^0 = \varphi_{t:i} C_{t:i}^* \quad (3)$$

where $\delta_{t:i}$ is the share of IFS credit to the agricultural sector and $\varphi_{t:i}$ is the proportion of IFS credit allocated to non-agricultural activities at time $t : i$. The ratios $\delta_{t:i}$ and $\varphi_{t:i}$ are calculated by taking a linear trend from the known values $\delta_1, \delta_T, \varphi_1$ and φ_T , as given by:

$$\delta_{t:i+1} = \delta_{t:i} + (\delta_T - \delta_1)/T \quad (4)$$

$$\varphi_{t:i+1} = \varphi_{t:i} + (\varphi_T - \varphi_1)/T \quad (5)$$

Agricultural activities are assumed to be influenced by the seasonal pattern of the agricultural sector. In Malawi, agriculture is on the whole rain-fed and rainfall is generally predictable. From historical trends as well as observation of certain changes in their environment, farmers are able to predict with a relatively high degree of certainty when the first rains will fall, and when the rainy season is expected to end. It is believed, for instance, that after shedding their leaves in summer, fig trees start growing fresh leaves just before the start of the rainy season. It is also held that the first rains (pre-season rains, locally known as *chizimalupsa*) do not indicate the start of the rainy season, but rather that the rainfall season is about to begin. These rains, which are normally experienced in late October, generally two to three weeks before the onset of the real planting rains in November, act as a warning for farmers to speed-up land preparation activities to be ready to plant with the onset of the rains (United States Agency for International Development, 1987).

Against this background, we use rainfall data to construct weights for trending the agricultural component of the IFS credit. Monthly rainfall data collected at six weather stations (Bvumbwe and Ngabu in the Southern Region, Dedza and Nkhotakota in the Central Region, and Mzimba and Karonga in the Northern Region) are used. These weather stations were purposefully selected to cover a lowland and a highland in each region. Bvumbwe, Dedza and Mzimba represent the highlands, while Ngabu, Nkhotakota and Karonga represent the

lowlands in the Southern, Central and Northern Regions of the country, respectively. Using average rainfall observations for the six weather stations, the rainfall weights ($\omega_{t:i}^{\tau f}$) are calculated for each year, separately, according to the following formula:

$$\omega_{t:i}^{\tau f} = X_{t:i}^{\tau f} / \sum_{i=1}^{12} X_{t:i}^{\tau f} \quad (6)$$

where $X_{t:i}^{\tau f}$, the weighting variable, is the amount of rainfall at time $t : i$. The weights enter the computation formula for trending the agricultural component of IFS credit with a one month lag, on the premise that a decision to borrow for agricultural use is made to accommodate a one month time-lag for processing of the loan and purchasing of the agricultural inputs. The final interpolation of IFS agricultural loans computed separately for each year, therefore, is given by:

$$C'_{t:i}{}^A = \omega_{t:i-1}^{\tau f} \sum_{i=1}^{12} C_{t:i}^A \quad (7)$$

It is expected that borrowing and lending for non-agricultural use is influenced by agricultural activities in the rural areas, and industrial performance in the urban areas. For this reason, the non-agricultural component of IFS credit is trended using a weighted average of tobacco production (tp) as a proxy of total agricultural production, and the index of industrial production (ip) as a proxy for industrial performance.

While agricultural production has been volatile, and varying with rainfall, Malawi's industrial activity has on the whole been struggling, with its contribution to GDP falling over the years, and being consistently below 10 per cent of GDP throughout the study period (1988:1 to 2005:12). Notwithstanding the poor performance of the country's industrial production, it is expected that IFS transactions that take place in urban centres where agriculture is not the main economic activity, will be reflected in the performance of Malawi's industrial production, which dominate urban economic activity. Since only a small proportion of the Malawi population is urban-based (less than 20 per cent), the use of the index of industrial production to capture urban economic activity is justifiable. Calculated separately for each year, the tobacco production and index of industrial production weights, are given by the following formulae:

$$\omega_{t:i}^{tp} = X_{t:i}^{tp} / \sum_{i=1}^{12} X_{t:i}^{tp} \quad (8)$$

$$\omega_{t:i}^{ip} = \Delta X_{t:i}^{ip} / \sum_{i=1}^{12} \Delta X_{t:i}^{ip} \quad (9)$$

where $\omega_{t:i}^{tp}$ and $\omega_{t:i}^{ip}$ are tobacco production and index of industrial production weights; and $X_{t:i}^{tp}$ and $\Delta X_{t:i}^{ip}$ are the weighting variables, namely tobacco production and change in the index of industrial production, respectively. Realising that the ratio of industrial production to agricultural production may not have remained the same over the years, the annual proportions of tobacco production and manufacturing (as proxies for agricultural and industrial production, respectively) in GDP, (S_t^{tp}) and (S_t^{ip}) respectively, are used to calculate a weighted

average of the two weighting variables over the sample period, as given by:

$$\omega_{t:i}^0 = (S_t^{tp}/(S_t^{tp} + S_t^{ip}))\omega_{t:i}^{tp} + (S_t^{ip}/(S_t^{tp} + S_t^{ip}))\omega_{t:i}^{ip} \quad (10)$$

The final interpolation of IFS non-agricultural loans, accordingly, is calculated for each year separately, as given by:

$$C'_{t:i}{}^0 = \omega_{t:i}^0 \sum_{i=1}^{12} C_{t:i}^0 \quad (11)$$

Summing up the credit for agricultural and non-agricultural activities, the final interpolation of aggregate IFS credit is obtained, as given by:

$$C'_{t:i}{}^* = C'_{t:i}{}^A + C'_{t:i}{}^0 \quad (12)$$

The aggregate IFS credit series (sum of IFS agricultural and non-agricultural loans), is seasonally adjusted using TRAMO (Time Series Regression with Autoregressive Moving Average (ARIMA) Noise, Missing Observations, and Outliers) and SEATS (Signal Extraction in ARIMA Time Series) with a forecast horizon of 12 months. Seasonal adjustment removes cyclical seasonal movements that are common in time series observed at monthly frequency. The underlying trend component of the series is, however, retained. While TRAMO performs estimation, forecasting, and interpolation of regression models with missing observations and ARIMA errors in the presence of possibly several types of outliers, SEATS performs an ARIMA-based decomposition of an observed time series into unobserved components (Quantitative Micro Software, LLC, 2004). Total IFS loans (TIFSL) and the seasonally adjusted series (SIFSL) are presented in Figure 1.

To ascertain that the interpolated IFS credit is indeed measuring credit in the IFS, two variables were identified, which are *a priori* expected to be correlated with IFS credit. Firstly, the ratio of currency to total deposits (*CDR*) is expected to be positively correlated with credit in the IFS. An increase in IFS credit is likely to result in increased cash transactions, thus increasing the cash deposit ratio. Similarly, the reverse is expected to hold. The ratio of total deposits to cash (*DMR*) is expected to be negatively correlated with IFS credit. An increase in IFS credit is likely to cause a decline in the ratio of total deposits to cash as economic agents withdraw deposits to transact in the IFS, which is predominantly a cash market. Due to data constraints, we use narrow money (M1) as a proxy for cash. Measuring the size of the informal financial sector by the ratio of informal to formal financial sector credit, a zero-order correlation matrix confirms these *a priori* theoretical expectations. Table 4 shows that the size of IFS credit is positively correlated with the cash to total deposits ratio and negatively correlated with the total deposits to cash ratio, and the correlation coefficient is significant at 1 percent level in both cases.

3.3 Construction of IFS Interest Rates

The IFS is known for its fragmentation into a number of sub-sectors. The village merchant, for instance, may agree to lend money only to those who buy regularly

from his shop; a landlord may also give credit only to those who work for him; while friends, relatives and neighbours may only lend to each other. Effectively, the credit market is broken up into small ‘credit islands’ (Basu, 1997), where credit sources may include friends, relatives, neighbours, employers, estate owners, money-lenders, community funds, microfinance institutions, grain millers and traders/local merchants/grocers. There is no reason, however, to believe that these sub-markets are mutually exclusive. The market segments are likely to have interlocking spaces serving clients in more than one sub-market, making the concept of market fragmentation complex. For simplicity, we assume the IFS is a fragmented market consisting of several independent credit markets.

Prior to drawing informal sector interest rates for Malawi, it is imperative to acknowledge that the IFS operates within a framework of the following stylised facts:

1. Lending rates in semi-formal and formal financial institutions change together in the same direction. The semi-formal financial institutions simply add a mark-up on the average base lending rates, to take into account lending risk.
2. Lending rates charged by employers and estate owners also follow the pattern of FFS interest rates. The former, however, are set at a level that is lower than the latter, because employers and estate owners feel they have a social obligation to provide for certain needs to their employees/tenants.
3. Interest rates on loans extended by money-lenders, friends, relatives, neighbours, traders/grocers/local merchants and grain millers are determined by custom and traditional values (see Chipeta and Mkandawire, 1991; Chimango, 1977), and they tend to be rigid. Generally, friends, relatives, neighbours, traders/grocers/local merchants and grain millers, do not charge any interest on loans given out (see Chipeta and Mkandawire, 1991) as a way of promoting a camaraderie tradition (*achibale*). Malawi tradition holds that people that live close together in a society are effectively *achibale*, and each member of *achibale* feels bound by tradition to promote it. Moneylenders, on the other hand, charge 100 per cent interest per period of time, usually a month. This rate of interest arises from an indigenous practice of borrowing male livestock to fertilise one’s female stock (Chipeta and Mkandawire, 1991; Chimango, 1977). After the animals have bred, the borrower is expected by tradition to give back the borrowed stock plus one of the offspring as a gesture of gratitude. A similar approach is followed by individuals who may want to brew traditional opaque beer, but have no millet. A plateful of millet is borrowed and after the beer has been sold, two platefuls are expected to be returned to the lender as a profit-sharing informal arrangement. It is believed that it is from this tradition, that moneylenders demand 100 per cent interest per period of time on credit given out. Thus, in the words of Chimango (1977), ‘every pound makes another pound’ in moneylending, a practice that is referred to as *mwala-ku-mwala* (translated ‘a stone for a stone’). However,

with close relations, moneylenders may reduce the rate of interest to 50 per cent per period of time, called mwala-ku-nchenga (translated ‘a stone for sand’), reflecting the simplicity adopted in their accounting system.

To compile the series of IFS interest rates, two further important simplifying assumptions are made. Firstly, we assume total credit in the IFS varies according to the interpolation carried out in the previous section. Secondly, we postulate that the proportion of credit attributed to each market segment changed from the position reported in the CM-survey to the case in IHS2 (see Table 5) following a linear trend.

From the known values of the proportions of total IFS credit attributed to each sub-market in the 1988/89 CM-Survey and the 2004/2005 IHS2, a linear interpolation of the proportions at monthly frequency is given by:

$$\phi_{t:i+1}^j = \phi_{t:i}^j + (\phi_T^j - \phi_1^j)/T \quad (13)$$

The proportion of total IFS loans attributed to sub-market j at time $t : i + 1$ (where t is a year counter and i is a month counter) is ϕ . Suppose the price of loans (interest rate) for sub-market j at time $t : i$ is given by $p_{t:i}^j$. Sector-wide interest rates for the IFS ($IR_{t:i}$) are given by:

$$IR_{t:i} = \sum_{j=1}^n (\phi_{t:i}^j p_{t:i}^j) \quad (14)$$

where n is the number of market segments. A plot of the interpolated IFS interest rates alongside FFS interest rates (see Figure 2, below) shows several interesting relationships. First, nominal IFS interest rates are consistently higher than FFS interest rates, in agreement with the stylised facts of IFS interest rates.

Second, variations in FFS interest rates are larger than variations in IFS interest rates, since interest rates in most IFS market segments are dependent on tradition and customary values, which do not change with time or developments in macroeconomic fundamentals. Third, it is clear that the correlation between the formal and informal financial sector interest rates depends on the size of the semi-formal financial sector. Given the size of the semi-formal financial sector (e.g. microfinance institutions, employers/estate owners and community funds), formal and informal financial sector interest rates may or may not move together in the same direction. The larger the semi-formal financial sector relative to the indigenous financial sector, the higher the correlation between IFS and FFS interest rates.

4 Summary and Conclusion

This study set out to construct IFS credit and interest rates for Malawi using two separate survey datasets, elements of tradition and customary values, and principles of the Friedman method of interpolating time series from related series. The objective is to enhance understanding of the financial sector in

low income countries through inclusion of IFS data in official monetary data. Presently, it is clear that exclusion of informal financial transactions in official monetary data considerably underestimates the volume of financial transactions, bringing into question the accuracy of the expected effects of monetary policy on economic activity. This study proposes that with minimal data points, our understanding of indigenous knowledge, and some tools of economics such as principles of the Friedman method of interpolating time series from related series, we can construct time series that are nearly equal to the required but non-existent historical data. Using the CM-Survey and IHS2, indigenous knowledge, and principles of the Friedman's technique of interpolating time series, this study constructs a monthly time series of informal credit and interest rates for Malawi. The paper argues that datasets constructed in this manner may be used to guide policy with minimal loss of substance in place of the actual but nonexistent data.

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Table 1: Percentage Distribution of Persons who Received Loans by Reason – 2005

Reason for obtaining Loan	Malawi	Place of Residence	
		Urban	Rural
Business start-up capital	29.3	38.3	28.5
Purchase of land	0.5	0.9	0.5
Purchase of inputs for food crops	26.3	15.2	27.2
Purchase of inputs for tobacco	20.7	1.8	22.3
Purchase of other cash crop inputs	4.3	2.7	4.4
Purchase of non-farm inputs	16.9	37.4	15.2
Other	2.0	3.6	1.9
Proportion that received loans	13.1	8.4	13.7

Source: Malawi National Statistical Office (2005)

Table 2: Percentage Distribution of Loans to Households by Source – 2005

Credit Source	Malawi	Place of Residence	
		Urban	Rural
Relative	20.0	8.2	20.9
Neighbour	16.3	12.0	16.7
Grocer/Local Merchant	2.1	0.0	2.3
Moneylender	8.8	4.9	9.1
Employer	2.5	5.7	2.2
Religious Institution	3.1	2.4	3.2
Malawi Rural Finance Company	21.1	4.3	22.5
SACCO	3.4	8.9	2.9
Non Governmental Organisations	17.7	39.4	16.0
Other Informal	2.9	5.3	2.7
Total IFS Credit	97.9	91.1	98.5
Bank/Formal	2.0	8.9	1.5

Source: Malawi National Statistical Office (2005)

Table 3: Reasons for Persons not Applying for Loans – 2005 (Percentage Distribution)

Reason for Not Applying	Malawi	Place of Residence	
		Urban	Rural
No need for loans	11.6	16.7	10.9
Believed loan would be refused	15.2	14.4	15.3
Too expensive	9.4	19.0	8.0
Too much trouble	15.6	16.7	15.4
Inadequate collateral	6.2	6.7	6.1
Do not like to be in debt	8.4	6.1	8.8
Do not know any lender	32.2	19.0	34.2
Other	1.4	1.2	1.4

Source: Malawi National Statistical Office (2005)

Table 4: FFS / IFS Correlation Matrix

	IFSCR	CDR	DMR
IFSCR	1.0000		
CDR	0.2034***	1.0000	
DMR	-0.2123***	-0.9959***	1.0000

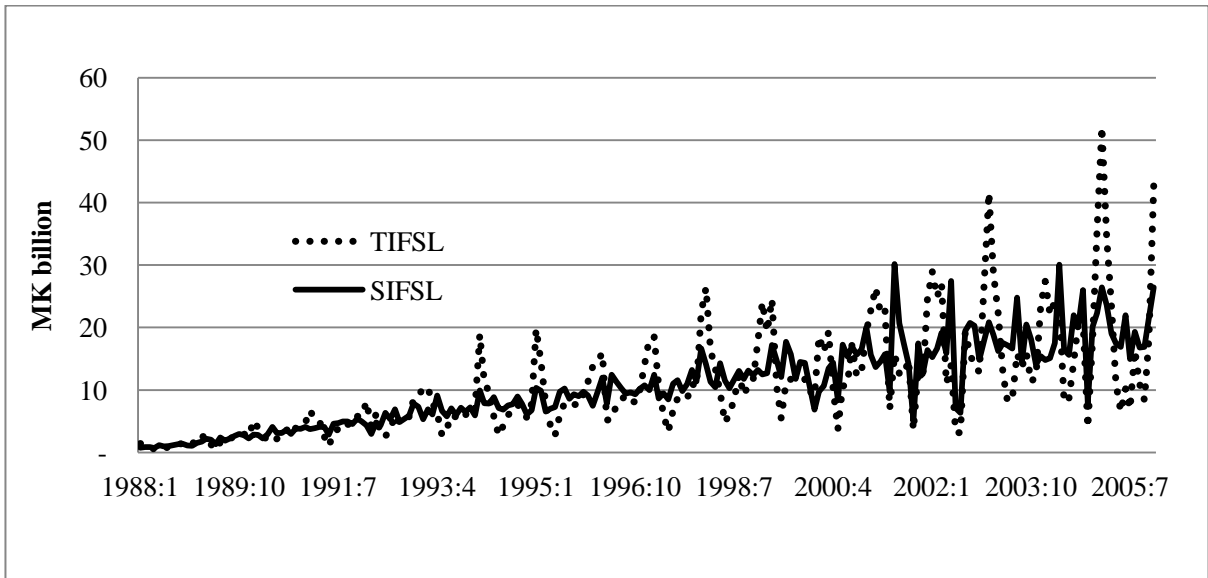
*** denotes significance at 1 percent level; IFSCR is IFS credit

Table 5: IFS Credit Distribution by Market Segment and Interest Rates in Malawi

Credit Source	Interest rates (1988/89)	Proportion of IFS credit	
		CM-Survey	IHS2
Friends, Relatives and Neighbours	0.00	21.55	37.08
Grocers/Traders/Local Merchants/Grain Millers/Other	0.00	2.16	2.15
Money-lenders	720.00	2.10	8.99
Community Funds/SCAs/SACCO/ Religious Institutions	137.40	9.63	6.64
Microfinance	20.00	38.00	39.63
Employers/Estate Owners	7.40	26.20	5.52

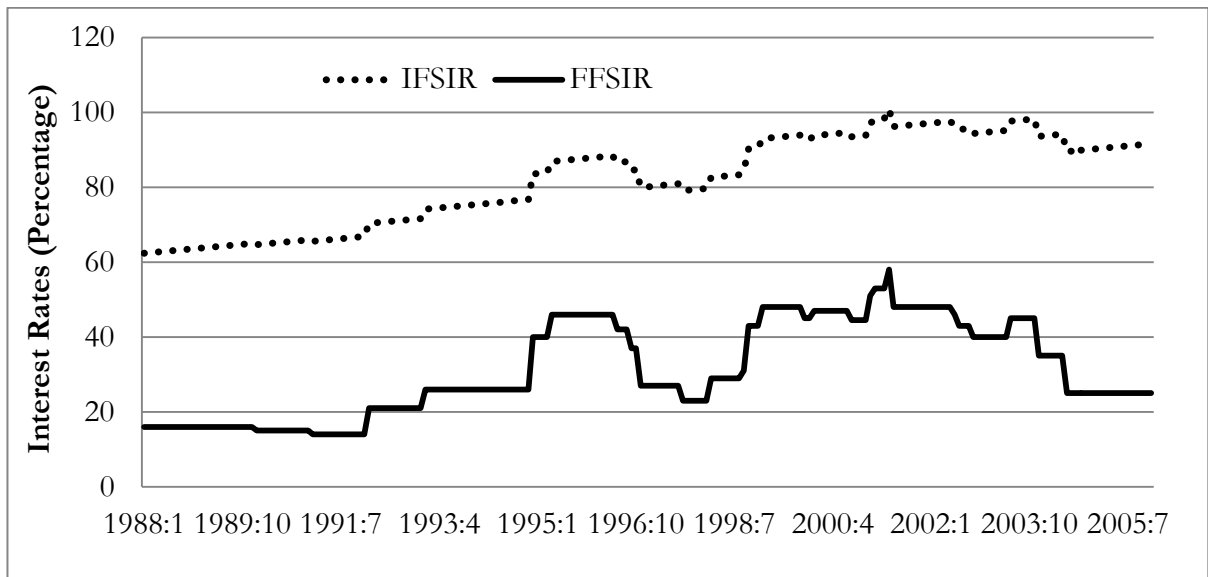
Source: Chipeta and Mkandawire (1991); Malawi National Statistical Office (2005); author's calculations

Figure 1
Total IFS Loans (TIFSL) and Seasonally Adjusted Total IFS Loans (1988: 1 to 2005: 12)



Source: Author's calculations.

Figure 2
FFS Interest Rates and Interpolated IFS interest rates



Notes: IFSIR represents informal financial sector interest rates; and FFSIR formal financial sector interest rates.