Poverty Alleviation in Rural Namibia through Improved Access to Financial Services

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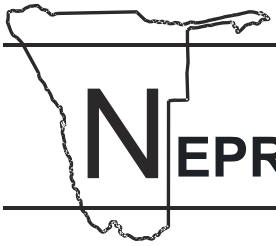
January 2006

NEPRU WORKING PAPER NO.109



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NEPRU Working Paper ISSN 1026-9258

First published in 2006 by the Namibian Economic Policy Research Unit,
P.O. Box 40710, Ausspannplatz, Windhoek, Namibia

Acknowledgements

The authors would like to express their gratitude to the various individuals who provided information on financial sector theory and practice in rural Namibia. The authors would also like to thank the individuals who provided their comments that were useful in writing this working paper.

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Abstract

This paper analysed whether improved access to financial services could contribute to poverty alleviation strategies among the rural population in Namibia.

Using data from the FinScope survey conducted in 2003 and the preliminary Namibia Household Income and Expenditure Survey 2003/2004 report, a censored regression model was applied to financial service usage by household heads in Namibia using the monthly income for each head of a household as a proxy for poverty. An Ordinary Least Squares model was also applied to financial service usage by household heads in Namibia using the food consumption ratio in each of Namibia's 13 regions as a second proxy for poverty.

When income is used as a poverty measure, this paper found that improved access to financial services is associated with higher levels of income for the household head in rural areas. This relationship is consistent in an overall sample consisting of both urban and rural populations. In addition, a disaggregated analysis of household heads points out that several financial products are inferior goods, which are defined as those whose use decreases as income rises. These inferior goods include debit cards, garage or petrol cards and transaction or transmission accounts. Finally, the use of informal micro lenders seems to be present among low-income households in rural areas. This relationship cannot be rejected conclusively even at higher levels of income.

When the food consumption ratio is used as a poverty measure, this paper found that poor regions are associated with a higher probability of household heads that have never had access to financial services. Also, poor regions are associated with a lower probability of household heads that currently have access to financial services. Finally, access to financial services may not be a sufficient solution to alleviate poverty among those that are severely poor in Namibia.

The policy implication of this paper is that improved access to financial services can contribute to poverty alleviation among the poor in rural Namibia. However, when designing poverty alleviation strategies that focus on improving access to financial services in rural Namibia, it is important to understand how informal networks operate. This will avoid the danger that pushing more formal alternatives that may erode the benefits derived by those accessing financial services from these informal providers and make them more vulnerable to the adverse effects of poverty. Unfortunately, improving access to financial services in not as potent when the households are severely poor.

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List of Abbreviations

ATM	Automated Teller Machine
FCR	Food Consumption Ratio
HPI	Human Poverty Index
LIMDEP	Limited Dependent Variables
MAWF	Ministry of Agriculture, Water and Forestry
MTI	Ministry of Trade and Industry
NAD	Namibia Dollars
NHIES	Namibia Household Income and Expenditure Survey
UN	United Nations
NGO	Non-Governmental Organisation
OLS	Ordinary Least Squares
USD	United States Dollars

1. INTRODUCTION

Various non-economic factors have created a dual society characterised by inequality in Namibia. With the majority of those adversely affected by these non-economic factors residing in the rural areas, a poverty alleviation strategy is one approach that could be used to correct these imbalances.

Poverty alleviation is defined as reducing the fluctuations of income levels between poor and non-poor scenarios. It is not the same as poverty reduction, which is the process of moving households from a poor to non-poor scenario, permanently. Although, poverty alleviation can be criticised for not being as noble as poverty reduction it is an important first step.

This paper recognises that poverty alleviation is important to all individuals in a developing country context, including those in marginalised, urban areas. However, it focuses on the rural areas of Namibia because that is where the majority of the segment of the population that was previously disadvantaged resides.

One effective tool to alleviate poverty is increasing access to financial services. This increased access reduces poor households' vulnerability to risk caused by fluctuations between various poverty scenarios, which are one important factor that contributes to their breaking the vicious cycle of poverty.

This paper investigated whether a link exists between poverty alleviation in the rural areas of Namibia and increased access to financial services. Specifically, it tested two separate null hypotheses. The first was that there is no or at best a negative relationship between improved access to financial services and poverty measured by household heads' income. The second was that there is no or at best a positive relationship between improved access to financial services by household heads and poverty in each region measured by the food consumption ratio (FCR).

Following this introduction, which serves as Section one, the rest of this paper is organised as follows. Section two will provide a brief background on poverty in the context of Namibia's rural population. Section three will outline issues and players in the provision of financial services in Namibia's rural areas. Section four will describe the methodology used to achieve the objective of this paper. Section five will then proceed to present and discuss the results arising from an application of the methodology. Section six will then summarise the main conclusions and policy recommendations arising from this research effort.

2. BACKGROUND

Poverty has many dimensions, varies across time and from one society to the next.

Economists often distinguish between absolute and relative poverty. Absolute poverty is defined in the Copenhagen Declaration as "a condition characterised by severe deprivation of basic needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information." It is exacerbated by a combination of low per capita incomes and highly unequal distribution of that income Relative poverty is defined as the minimum economic, social, political and cultural goods needed to maintain an acceptable way of life in a particular society (Todaro, 2000).

Economically, poverty refers to a circumstance characterised by a lack of wealth, material goods and resources. Socially, it describes a state of social exclusion, dependency and the ability to live what is termed a "normal" life in society.

Other dimensions of poverty include poverty of access and power. The term poverty of access is often used to describe the lack of access to basic infrastructure and services. Poverty of power often relates to the lack of access to information, inhibiting the poor from fully participating in economic activities.

2.1. Measuring Poverty

The extent, location and characteristics of poverty need to be known if it is to be tackled effectively. This requires poverty to be measured, which is done in various ways.

One measure of poverty evaluates whether or not a person's consumption or income level is below an established minimum level necessary to meet basic needs. This minimum level is termed the "poverty line" and has mostly been measured in relation to money. According to the World Bank it represents those living below 1 United States dollar (USD) or USD 2 a day.

Another measure is poverty severity, which is the depth and distribution of poverty among individuals in any nation. This measure is captured by the poverty severity index that gives a weight to the poverty gap.[1]

Yet another measure is poverty incidence, which is often referred to as the poverty headcount index. It gives the percentage of the population living below the poverty

[1] The poverty gap is defined as the sum of the difference between the poverty line and the actual income levels of all people living below that line (Todaro, 2000).

line. The United Nations (UN) has developed a measure of poverty, termed the Human Poverty Index (HPI) which it presents in its Human Development report.

Two national surveys have been conducted in Namibia to measure poverty based on the income measure. The first was conducted in 1993 and was titled the Namibia Household Income and Expenditure Survey (NHIES) (National Planning Commission, 1994). The second was conducted in 2004 and a preliminary report has been published that provides an updated analysis of poverty in Namibia (National Planning Commission, 2006).

The NHIES also uses the FCR to measure poverty. It is defined as the percentage of food and beverage consumption of the total household consumption, as a crude indicator of poverty (National Planning Commission, 2006). If FCR is more than 60 percent then a household is considered poor. If it is more than 80 percent then a household is considered severely poor. Based on the FCR profile in Namibia, Omusati has the highest number of poor people while Omaheke has the highest number of severely poor people. Also, rural areas have a higher percentage of poor and severely poor people compared to urban areas. This is illustrated in Table 1 below.

Table 1: Households by Food Consumption, Region and Urban/Rural Areas

Region	Food consumption ratio (%)				Sample Size
	80-100	60-79	40-59	0-39	
Caprivi	7.1	36.6	28.8	27.5	18,607
Erongo	0.4	5.3	19.6	74.7	27,713
Hardap	4.9	22.7	26	46.5	16,365
Karas	3.1	15.4	24.5	57	15,570
Kavango	8	42.4	29.1	20.4	32,354
Khomas	0.6	3	13	83.4	64,918
Kunene	11.2	25.7	27.5	35.6	13,365
Ohangwena	0.2	22.5	49.6	27.6	37,844
Omaheke	12.4	28	26.3	33.3	13,347
Omusati	1.8	45.4	33.9	18.9	39,248
Oshana	6.1	25.3	29.4	39.2	31,759

Oshikoto	6.1	40.9	26.5	26.5	31,871
Otjozondjupa	3.4	15.3	26.5	54.8	28,707
Namibia	3.9	24	27.3	44.9	371,668
Urban	0.6	6	18.3	75	150,533
Rural	6.1	36.2	33.4	24.3	221,136

Source: National Planning Commission (2006)

2.2. Poverty Reduction versus Alleviation

The achievement of poverty reduction or alleviation provides a measure of success of public policies and programs and is essential for development in a country. Unsurprisingly, this goal is present in almost all development policy statements. Although they are closely linked, the two concepts are not exactly the same.

When the focus is on “income poverty”, poverty reduction is often seen as the process of moving households from a “below poverty line position” to a stable “above poverty line” position (Dreze & Sen, 1989).

Poverty alleviation recognises that income levels fluctuate below and above the poverty line and is the process of reducing dramatic fluctuations in income levels. It is often associated with the minimising of relative poverty because this concept varies over time and from country to country.

2.3. Poverty in Namibia

In 2005, the UN categorised Namibia as a country of Medium Human Development, having a HPI rank of 60 and a value of 33 per cent. This is an improvement from a HPI rank of 64 and a value of 37.7% in its 2004 report. The UN report further showed that 34.9 per cent of the population in Namibia were living on less than USD 1 a day and 55.8 per cent on less than USD 2 a day between 1990 and 2003. For a small country in terms of population, these figures are of great significance and show that poverty is indeed prevalent in the country. However, the UN indicator of poverty in Namibia provides only an aggregate estimate.

According to the 2001 Housing and Population Census report (National Planning Commission, 2003), Namibia’s population stands at 1, 830,330. 67 percent of this overall population resides in the rural areas and are mainly traditional hunter-gatherers, herders and farmers and tend to depend largely on limited livestock grazing and marginal farming. From this category, farmers are the only segment that operates in a somewhat cash economy and farming was reported to be the main source of income for the rural areas (about 46 percent, as opposed to 2 percent in the urban areas).

In addition most rural inhabitants are self-employed. This is exhibited by findings that 70 percent of the households in urban areas depend on wages and salaries as their main source of income, as opposed to 23% in the rural areas (National Planning Commission, 2003).

Namibia's population is 51% female, 52% of whom reside in the rural areas. The rural demographic structure is illustrated in Figure 1 below. The distribution of men and women in rural areas is balanced. In addition, the rural areas have relatively more young people.

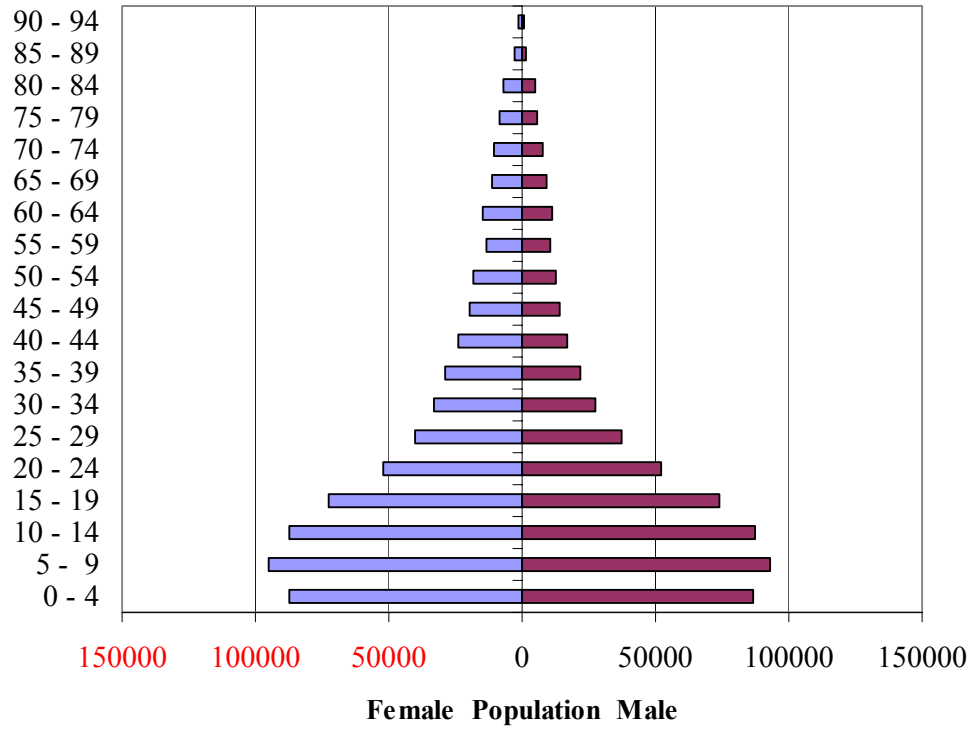

Figure 1: Namibia's Rural Population Pyramid (Housing and Population Census, 2001)

According to Todaro (2000), the most generalised perception about the poor is that they are "disproportionately located in rural areas, that they are primarily engaged in agricultural and associated activities and that they are more likely to be women and children than adult males". In Namibia, this perception is justified.

The effect of discriminatory, socio-political practices in Namibia's colonial history affected different regions, communities and cultures differently and can explain much of the disparities between the rural and urban populations. The literacy rate is often lower in rural areas where 25 percent lack the ability to read and write as opposed to only 10 percent in urban areas. The lack of a strong educational foundation and social capital when coupled with a lack of viable economic activities

in a harsh, dry climate has resulted in decreasing per capita revenues for the rural population. This exacerbates poverty in Namibia's rural areas.

Despite these limitations the poor in Namibia are a viable market for financial service provision. In the urban areas, the value of cash loans provided by micro lenders to help individuals in smoothing their consumption needs was approximately 340.2 million Namibian dollars (NAD) in 2004. In the rural areas, the value of microfinance provided to help individuals meet their various needs was approximately NAD 1 million (Adongo & Stork, 2005). Although the value of the rural market is substantially less than the urban market this amount still demonstrates that a need exists among the rural population for financial services.

3. FINANCIAL SERVICES IN RURAL NAMIBIA

It is often argued that the poor are not without money, but rather lack the ability to accumulate assets, which is vital in wealth creation and breaking the poverty cycle. This is often attributed to the exploitation of the poor due to the lack of market information or the ability to use available information to increase their own incomes. From this perspective, the lack of money can be viewed as more of an indication of poverty rather than its cause.

Poverty alleviation strategies reduce poor peoples' vulnerability to external shocks. This allows them to plan for the future and obtain better nutrition, improved living conditions and health and education for their children.

Poverty alleviation is one strategy that can be used to increase the ability of the poor to accumulate assets. It can be achieved through increasing financial services, educating the masses to increase their access to information as well as promoting community-based systems to ensure that programs established to protect the poor do exactly that.

The focus of this paper is on assessing alleviating poverty by increasing access to financial services. These services can be used by the poor to create self employment opportunities that allow them to generate income resulting in poverty reduction (Dreze & Sen, 1989).[2] Financial services also provide voluntary savings mechanisms, emergency consumption loans and relatively low-risk income generation activities that are unlikely to create indebtedness resulting in poverty alleviation (Hulme and Mosley, 1997).

3.1. The Importance of Access to Financial Services

Evidence has shown that the provision of financial services in a stable political environment and enabling macro economy is an important component of any effort to improve the livelihoods of the poor in any society. Policymakers and practitioners in Namibia have continued to show interest in increasing access to financial services due its valued contribution to efforts aimed at alleviating poverty in the rural areas. This involves increasing access to savings, credit, insurance and remittance facilities.

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[2] A poverty reduction strategy in rural areas that focuses on creating opportunities for self-employment is affected by adverse climatic conditions in Namibia because the rural population depends on the agricultural sector for its food and livelihood (with the exception of herders and hunters and gatherers). Therefore, the success of this poverty reduction strategy will depend on the ability of the rural population to diversify away from or complement their sources of income derived from agricultural activities.

3.1.1. Savings Facilities

Savings facilities have been shown to be useful in improving low-income household financial management. It enables these households to keep funds for future that can be used to meet emergency consumption needs. This decreases the vulnerability of these households from avoidable shocks and increases their probability of engaging in riskier and higher yielding activities, which could have a positive impact on their incomes (Wright, 1999).

In addition, the safe and convenient savings facilities may enable some low-income households that save in non-cash forms to transform their non-financial assets into the relatively more liquid and high yielding asset that saving facilities represent. This is useful where poor households lack the collateral required by commercial banks to gain access to loans. The increase in savings allows these poor households to build financial assets that can be used as collateral (De Soto, 2000).

Women are among the poorest in many nations due to their often low earning capacity, meagre and unstable financial resources and inability to independently own property (in some countries), which is a hindrance for them to get access to credit and other financial services. Access to savings facilities provides women with financial assets in their own names (Robinson, 2003).

3.1.2. Credit Facilities

Flexible and convenient credit facilities that allow poor households to borrow funds to cover emergencies result in smoothing and stabilisation of household consumption which is crucial in reducing vulnerability.

In addition, credit facilities enable low-income households to keep as well as build their credit history and ratings, which is important for them if they eventually apply for loans from large financial institutions.

3.1.3. Insurance Facilities

Insurance facilities enable the poor to protect themselves against various unforeseeable risks, which reduce their vulnerability.

3.1.4. Remittances

Remittance facilities lower the cost of payment transactions. The reduction in transaction costs frees up limited resources, which can be diverted to other pressing needs. The elderly are a vulnerable group in society. Pension remittances provided to this group assists them in covering their needs when they are less able to generate a stable source of income and protects them from fluctuations between poverty and non-poverty states. In addition, remittances transferred to the poor in

rural areas by their emigrant family members are a valuable source of income that can reduce vulnerabilities.

3.2. Financial Service Providers

Financial service providers in rural Namibia include banks, microfinance institutions, pension schemes and insurance companies.

3.2.1. Banks

Banks in Namibia are either privately or publicly owned. The privately owned banks include Bank Windhoek, First National Bank Namibia, NedBank Namibia and Standard Bank Namibia. The publicly-owned banks include the Agricultural Bank of Namibia (Agribank), the Namibia Post Office Savings Bank (NamPost) and the Development Bank of Namibia. While the private banks are regulated by the Bank of Namibia, through the Banking Institutions Act No. 2 of 1998, the public banks are regulated by their own independent statutes enacted by Parliament.

The financial services provided by these banks contribute to poverty alleviation efforts in rural areas by mostly focusing on debt financing solutions. This is mainly through the network of branches, agencies, automated teller machines (ATMs) and service and mobile centres that are spread throughout the country.

Although most of the banking network is concentrated in urban centres, efforts are being made to reach the rural population in response to pressure from the public and Government and the continued pursuit of profit that can be generated from this untapped client base. This will have the positive effect of ensuring that banks are located close to the rural poor which should enhance the relative ease of access to financial services.

However, the pace of the extension of banking networks into rural areas is limited by various constraining factors. These include:[3]

- Harsh, dry desert climate;
- Sparsely distributed rural population;
- High per unit costs of serving the rural poor due the relatively small size of each transactions;
- Oligopolistic market structure that inhibits innovation due to limited competitive pressure;

[3] For more information see Adongo, Stork & Hasheela (2005) and Adongo & Stork (2005a)

- Limitations to implementing locally suited product innovations by South African parent owners;
- Bank regulation that restrains risky investments e.g. Basel II Capital Accord; and
- Conflicting objectives between the prudential protection of depositors' savings and increasing access to finance.

3.2.2. Microfinance Institutions

Microfinance institutions provide the full-range of financial services but on a smaller-scale. This is suited to the needs of the rural poor. In Namibia, microfinance institutions operating in the rural areas can be distinguished as informal or formal.

Informal microfinance institutions in Namibia are those that are not registered or governed by any legally mandated entity. They include informal groups, unregistered money lenders and burial societies (FinMark Trust, 2003).

Due to the difficulty in establishing standards or enforcing legal provisions for non-compliance informal microfinance institutions are less preferred to formal institutions. Fortunately, not much use is made of informal financial alternatives in Namibia. The FinScope survey conducted in 2003 shows that only 12% of the overall Namibian population use informal financial services (FinMark Trust, 2003).

Formal microfinance institutions in Namibia are governed by the Division of Co-operative Development in the Ministry of Agriculture, Water and Forestry (MAWF), the Namibia Financial Institutions Supervisory Authority and the Ministry of Trade and Industry (MTI) Steering Committee.[4]

As summarized in Table 2 below, formal microfinance institutions include micro lenders, commercial bank branches involved in the provision of microfinance, some non-governmental organisations (NGOs), savings and credit cooperatives and multi-purpose cooperatives providing microfinance

Table 2: Number of Registered Microfinance Institutions in Namibia by Location of Data as at 2005

Institution	Governing Body
Micro lenders, Non-Governmental Organizations and Microfinance Commercial Bank Branches	Namibia Financial Institutions Supervisory Authority

[4] MTI is involved to the extent that microfinance is a key component of its SME program.

Co-operatives [b]	Division of Cooperative Development, Ministry of Trade and Industry Steering Committee, Ministry of Youth, National Youth Service, Sports and Culture [c]
Small Business Credit Guarantee Trust Microfinance Scheme	Ministry of Trade and Industry
Non-Governmental Organizations	Funding agencies

Note: b. Co-operatives can be further separated into Savings and Credit Co-operatives and Multi-purpose Co-operatives involved in the provision of microfinance.

c. Co-operatives are regulated under the Co-operative Act of 1996

Source: Adongo & Stork (2005b).

Although microfinance represents a potent tool for use in any initiative that aims to alleviate poverty in rural areas in Namibia, most of these institutions are still in their pilot stages. In addition, there are several other constraints that limit the effectiveness of microfinance institutions in reaching the rural poor. These can be distinguished as either supply side or demand side constraints (Adongo & Stork, 2005b).

Supply side constraints in Namibia include:

- Lack of financial sustainability which can be partly attributed to the ceiling imposed by the Usury Act of 1968 but is mostly because most microfinance institutions are still in their pilot stages, have not fully embraced product and operational innovations that would promote cost reduction and because of Namibia's climate and population distribution characteristics;

- Lack of understanding of the financial needs of the rural poor due to the relative financial opacity of the rural poor, which is exacerbated by the lack of institutional capacity in adapting the credit and savings products to the rural poor; and

- Regulatory constraints such as the prohibition for NGOs that are directly involved in providing microfinance services in Namibia from mobilising savings to protect consumers from undue risk.[5]

Demand side constraints in Namibia include:

[5] This highlights the dominant conflicting factor in financial service provision to the rural poor i.e. either to protect the consumer from the adverse effects of overwhelmingly high interest rates or high risk and efforts to increase access to financial services (Adongo & Stork, 2005b).

- Relative inexperience of the rural poor in interactions with formal financial service providers;
- Lack of adequate marketable assets or other forms of collateral when applying for credit to meet emergency needs; and
- Inherent riskiness of the market segment that creates reluctance by financial service providers to extend their networks to the rural poor.

3.2.3. Provident Institutions

Provident institutions in Namibia include medical aid funds, short-term insurance, life assurance and pension funds

There were 482 Pension funds operating in Namibia in 2003. These included retirement annuities, private, administered and foreign funds (NAMFISA, 2003). Pension funds in Namibia provide retirement benefits to the elderly in rural areas. To the extent that these remittances reduce the vulnerability of the elderly with no other source of income they contribute to poverty alleviation in rural areas of Namibia.

Insurance companies are also important in poverty alleviation initiatives in a country. To the extent that micro insurance can be extended to the rural poor, it can provide valuable protection against unforeseeable risks. Casualty insurance provided in flood-prone areas, such as the Caprivi in north-eastern Namibia, can alleviate poverty for subsistence farmers who solely rely on their crop to sustain their livelihood. Property insurance protects the rural poor from the effects of fire, theft of other unforeseen disasters. Finally, life assurance can protect the offspring of a deceased parent from the risk of being relegated to a desperate life characterised by dire poverty.

3.3. Financial Services Usage

The various financial service providers have provided access to their facilities at varying levels throughout Namibia. Figure 2 to Figure 5 below illustrate varying levels of usage by region.

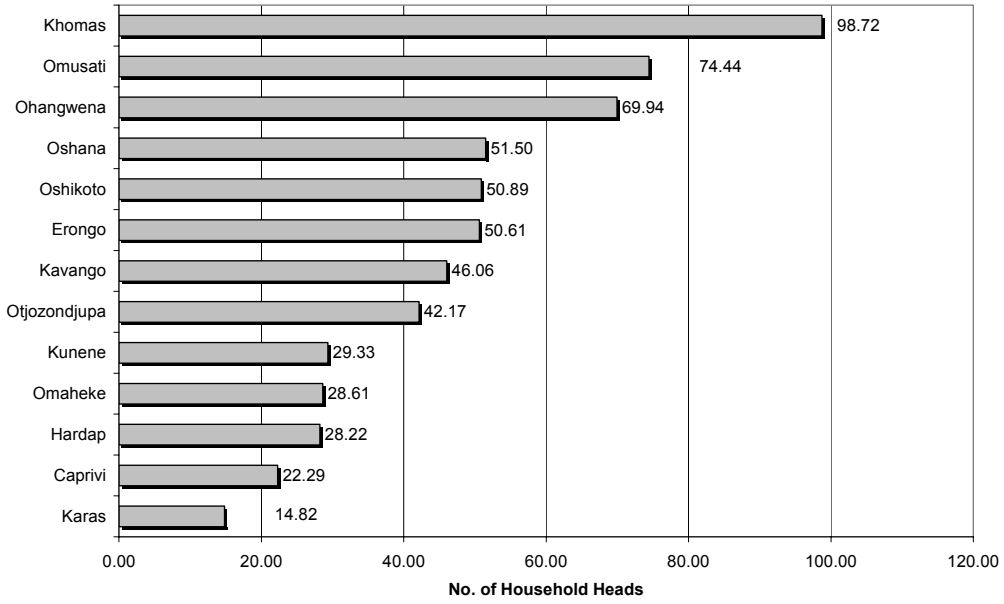

Figure 2: Number of household heads that have never had access to financial Services by Region

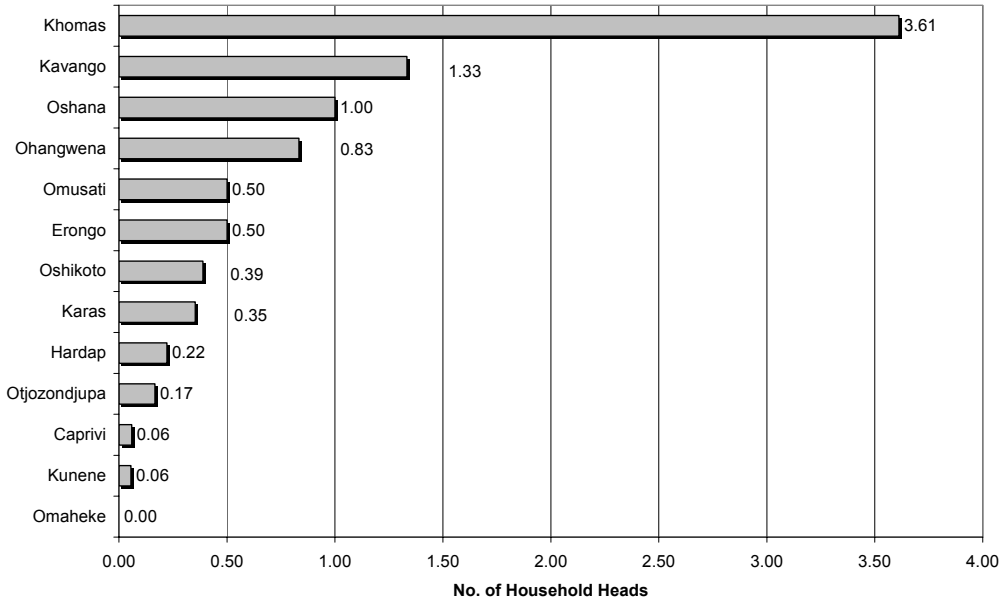

Figure 3: Number of household heads that used to have access to Financial Services by Region

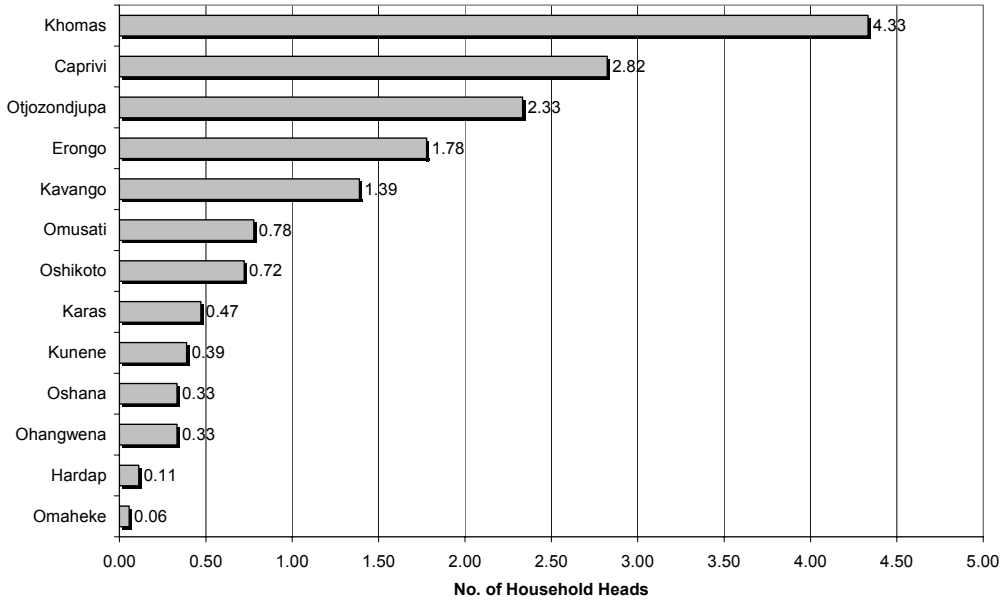

Figure 4: Number of Household Heads that Don't Have Access to Financial Services but another Household Member Does by Region

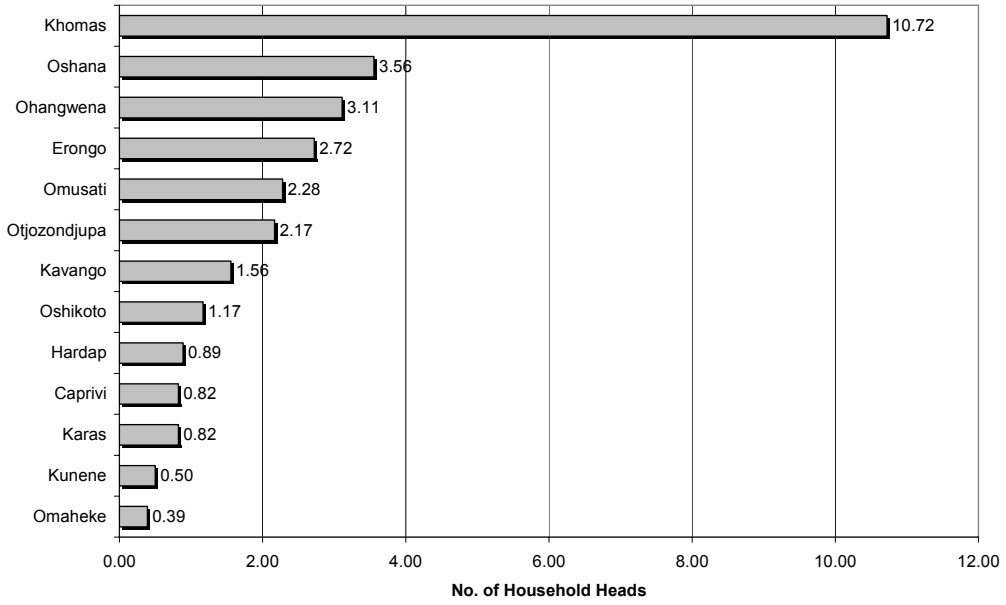

Figure 5: Number of Household Heads that Currently Have Access to Financial Services by Region

3.4. Pro-Rural Poor Financial Policy

To correct income inequalities resulting from non-economic factors attributed to Namibia's history and high unemployment that is most severe among women and

the youth in rural Namibia, the Government has made improving the rural population's livelihood a priority through various policies.

The MAWF currently has two programs aimed at nurturing and supporting the livelihoods of the rural population in Namibia. Through the National Agricultural Credit Program it funds the loan portfolio of the Agribank, which then on-lends this to communal farmers in rural areas as well as provides funding for land restitution.

Through the National Agriculture Support Services Program, MAWF supports the creation of savings and credit cooperatives and multipurpose cooperatives involved in the provision of microfinance. These microfinance institutions help increase financial access and promote a savings culture among the rural population, which is specially suited to the needs of the rural poor (Adongo & Stork, 2005b). MAWF policies and programs are aimed at poverty alleviation by reducing vulnerability from fluctuations that may expose the rural population to risk.

The MTI also supports the rural population through its Small Business Development Policy and associated programs (Republic of Namibia, 1997), which have been updated in a new draft SME policy. The MTI mainly supports small entrepreneurs through the supply of public capital in the short-term with the intention that private financial service providers will enter the market segment in the long-term. To the extent that this policy aims to create self-employment opportunities for the rural population that will permanently move them to a non-poor state, it is more of a poverty reduction than poverty alleviation program.

4. METHODOLOGY

In this section we describe the sample, data, model and its associated variables and the procedure used to achieve the main objective of this paper.

4.1. Data

The data used in this report was drawn from the 2003 FinScope survey, which is representative of the Namibian population (FinMark Trust, 2003). FCR data was drawn from the preliminary 2003/2004 NHIES report (National Planning Commission, 2006). Qualitative data was represented by zero-one dummy variables and rankings where applicable.

4.2. Sample

The original FinScope survey data set consisted of 810 household heads. Where income was used as an indicator of poverty, the sample size reduced to 646 household heads, who reported that they had a source of income (the rest stated that they did not know or refused to answer). The characteristics of the original 810 household heads are summarised in Table 3 below based on whether or not they are rural or urban.

Table 3: Characteristics of FinScope 2003 Survey Respondents

Location	Mean Age	Education	Mean Number of Household Members	Mean Sources of Income	Income below NAD 1000 (%)	Cell phone Ownership (%)
Rural	50	Low	5.9	7	80	10
Urban	37	High	5.1	5.3	50	42

Source: FinMark Trust (2003)

4.3. Hypothesis

The first null hypothesis tested in this paper was that improved access to financial services by household heads is not or is negatively linked to their income.

$$H_0 : \beta_i \leq 0$$
$$H_a : \beta_i > 0 \qquad (1)$$

Equation 1: Hypotheses based on income as a poverty measure

Where:

β_i is a composite vector of independent variables representing different levels of financial product usage.

The second null hypothesis tested in this paper was that improved access to financial services by household heads is not or is positively linked to the FCR in the region where they are located.

$$\begin{aligned} H_0 &: \beta_i \geq 0 \\ H_a &: \beta_i < 0 \end{aligned} \quad (1)$$

Equation 2: Hypotheses based on the food consumption ratio as a poverty measure

Where:

β_i is a composite vector of independent variables representing different levels of financial product usage.

4.4. Model

A censored regression model was used to test the first set of hypotheses stated above that uses income as a measure of poverty because some of the respondents did not answer the question focusing on the cash income that household heads received in the previous month prior to administering the questionnaire while others claimed that they did not know..

Its general form is:

$$MY = f(l, fe, \varepsilon) \quad (2)$$

Equation 3: General Model 1 for Exposure Index[6]

Where:

MY is a qualitative variable indicating the various categories of cash income that household heads received in the previous month prior to administering the questionnaire. The codes used are presented in

[6] For the specific form of this model see Appendix A.

Table 4 below

Table 4: Incomes for Respondents Surveyed in 2003 by Rank

Last Month's Income	Code
Don't know or Refused	0
Up to NAD 1, 000	1
NAD 1,000 to NAD 4,999	2
NAD 5,000 to NAD 9,999	3
NAD 10,000 to NAD 19,999	4
NAD 20,000 or more	5

Source: FinMark Trust (2003)

l is a qualitative variable indicating whether the household is located in a rural or urban area. It is operationalised using zero-one dummy variables.[7]

fe represents an exposure index that is operationalised as the average of the levels of usage of the individual financial products in f described in Equation 4 below.

ε denotes the error term.

The disaggregated form of the model above was also used to conduct a more in-depth analysis of the link between specific financial products and cash income received by household heads in the previous month prior to administering the questionnaire. This is stated below as:

$$MY = f(l, f, \varepsilon) \qquad (3)$$

Equation 4: General Model 1 for Disaggregated Vector

Where:

l and ε are the same as in Equation 3 above

f is a qualitative variable indicating the level of usage of various financial products including an ATM card, post office savings account, savings or transaction account, mortgage bond or housing loan, current or cheque account, debit card, credit card, garage card or petrol card, transaction or transmission account, fixed deposit account, vehicle finance, bank loan, call account, personal overdraft facility, business overdraft facility, loan from formal microlender, loan from informal microlender, membership of a savings group, NGO loan or savings account, store loan account and co-operative loan or savings account, respectively.

[7] This paper includes households in urban areas to control for sample selection bias.

The codes used to represent the different levels of the usage of the financial products listed in the paragraph above were modified from those used in the 2003 FinScope survey to enable the utilisation of the statistical technique chosen to obtain the results that are analysed in the next section. These adapted codes are presented in Table 5 below.

Table 5: Usage of Financial Services in Namibia in 2003

Financial Product	Code [a]
Don't know or Not Answered	0
Never had	1
Used to have	2
I don't have it but others in the household have	3
I have it now	4

Note: a The codes have been modified from the 2003 FinScope Survey

Source: FinMark Trust (2003)

Two ordinary least squares (OLS) regression models were used to test the second set of hypotheses stated above that uses the FCR as a measure of poverty.

The general form of the first regression model is:

$$FCR_p = f(fe, \varepsilon) \qquad (3)$$

Equation 5: General model 2 for poor household's exposure Index[8]

Where:

FCR_p indicates a FCR of between 60% and 80% for each of the 13 regions in Namibia.

fe represents an exposure index that is operationalised as the average of the levels of usage of the individual financial products in f described in Equation 4 above.

ε denotes the random error term.

The general form of the second regression model is:

[8] For the specific form of this model see Appendix A.

$$FCR_{sp} = f(fe, \varepsilon) \qquad (3)$$

Equation 6: General model 2 for severely poor households' exposure Index[9]

Where:

FCR_{sp} indicates a FCR of above 80% for each of the 13 regions in Namibia.

fe represents an exposure index that is operationalised as the average of the levels of usage of the individual financial products in f described in Equation 4 above.

ε denotes the random error term.

4.5. Procedure

Limited Dependent Variables (LIMDEP) version 7.0, which is an econometric software, was used to test the two sets of hypotheses stated earlier in this section by applying the OLS technique.

Where income was used as a proxy for poverty, OLS was applied to first to the aggregated financial usage exposure index and then to a disaggregated vector of variables capturing financial product usage for the overall respondent sample. Then the same model was tested on the lowest quintile of the sample respondents with income of NAD 1000 or below, who represented the poor.[10] The three processes were repeated for a sub-sample consisting of only the rural population to determine if there were any differences in this group because this was the relevant target group for this study.

The results obtained from applying the methodology presented in this section and an associated discussion is presented next.

5. RESULTS AND DISCUSSION

The methodology described in the previous section was first applied to the first set of hypotheses, which uses income as a measure of poverty. It was then applied to the second set of hypotheses that uses FCR as a measure of poverty. This section presents the application of these results and discusses these findings.

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[9] For the specific form of this model see Appendix A.

[10] Strictly speaking, the standard definition of poverty based on income is receiving USD 1 or 2 a day. However, since there was no other alternative the paper used this as a general indicator.

5.1. Income as a Poverty Measure

Model 1 was applied to the aggregated financial usage exposure index for the overall sample and for a sub-sample consisting of respondents residing in the rural areas. The sub-sample analysis was important to determine if there were any differences between the results obtained for the overall sample and that of the rural population, which was the focus of this paper. The results are presented in Table 6 below.

Table 6: Regression Results for Financial Usage Exposure Index

Variable	Coefficient		Standard Error		p-value	
	Overall	Rural	Overall	Rural	Overall	Rural
Constant	-0.113394	-0.3069898	0.090152648	0.12741693	0.2085	0.016
fe*	1.043102588	1.111956501	0.073568677	0.12028271	0.0000	0.000
Overall: Log-likelihood Function = - 501.64444						
Rural Sub-Sample: Log-likelihood Function = - 554.0794						

Note: * significant at the 5% level; ** significant at the 10% level

The coefficient for the financial usage exposure index fe is positive both for the overall sample consisting of both urban and rural respondents and for the sub-sample consisting solely of the rural respondents. These results reject the null hypothesis that improved access to financial services is not or is negatively linked to higher income.

The interpretation of these findings is that a higher income is related to a higher exposure to financial services. However, the results do not enable us to discern whether it is the higher financial exposure that results in higher income or vice versa. This would require a causality analysis. However, because of the absence of time series data on poverty in Namibia this will have to be deferred until an adequate data series has been generated from future FinScope surveys.

Model 1 was then applied to the disaggregated vector composed of various financial products for the overall sample and for a sub-sample consisting of rural respondents. The results are presented in Table 7 below.

Table 7; Tobit Regression Results for Disaggregated Vector

Variable	Coefficient		Standard Error		p-value	
	Overall	Rural	Overall	Rural	Overall	Rural
URB	0.5967284	N.A	0.081729133		0.0000	

RUR	0.4879117212	N.A.	0.070957089		0.0000	
ATM	0.1239636197	0.1941161022	0.020178705	0.029576528	0.0000	0.0000
POSAV	0.05148086707	0.08196640698	0.016767892	0.022716289	0.0021	0.0003
BNKSAVTR	0.03682482162	0.06164780501	0.018692937	0.030086159	0.0488	0.0405
MRGHSE	0.06062729214	0.001494772803	0.028693636	0.071637917	0.0346	0.9834
CURRCHK	0.1607067531	0.1199348246	0.025896051	0.045355386	0.0000	0.0082
DBTC	-0.1053750103	-0.176776943	0.038755092	0.079286459	0.0065	0.0258
CRTC	0.07553912333	-0.03804418976	0.028693272	0.057632008	0.0085	0.5092
GARCPETC	-0.2037039326	0.2741150611	0.060702345	0.16098580	0.0008	0.0886
TRNSTMS	-0.1198479781	-0.1519857235	0.028378471	0.059501981	0.0000	0.0106
FXDEP	0.01520100515	-0.02220777281	0.023364905	0.038978648	0.5153	0.5689
VEHFIN	0.2151799962	0.1820527857	0.04666221	0.10594725	0.0000	0.0857
BNKLOAN	0.01947079821	0.1539712137	0.032948287	0.076155255	0.5546	0.0432
CALLAC	-0.0219858432	-0.1326819719	0.038173116	0.081254587	0.5646	0.1025
OVDRAFTP	0.1387475422	0.1207963787	0.033718387	0.064546474	0.0000	0.0613
OVDRAFTB	0.0120453564	-0.02347869319	0.047267712	0.076349081	0.7989	0.7584
MICLN	0.05501322815	-0.05555137975	0.049167523	0.14757851	0.2632	0.7066
INFMICLN	-0.1221615411	-0.1690649061	0.058728282	0.16280740	0.0375	0.2991
INFSAVCLB	0.03357278918	0.04279511251	0.052822266	0.088603312	0.5251	0.6291
NGOLNSAV	0.08164106443	0.3423725943	0.043235218	0.10027538	0.0590	0.0006
STRACC	0.02006746379	0.11386126	0.01954022	0.032213406	0.3044	0.0004
SACCOLNSV	0.01096065538	-0.01007683392	0.050712652	0.091814461	0.8289	0.9126
OTH	-0.0159616633	-0.03055356844	0.074681549	0.07867487	0.8308	0.6978
Overall: Log-Likelihood Function						
Rural Sub-Sample: Log-Likelihood Function = -171.63						

Note: * significant at the 5% level; ** significant at the 10% level. N.A. is used for not applicable. The constant in this regression is dropped to avoid perfect multicollinearity.

Rather than focusing on each individual financial product we will discuss those which are negatively related to higher income and are significant at least at the 10% level.

First in this category is the debit card. From the data, it seems that as incomes increase this financial product becomes less desirable in both the overall sample

and rural areas. Therefore, improving access to financial services may be important using this product at the very low levels of income where the rural poor are found but should include a strategy to move household heads to other financial products as their consumption needs increase.

Second is the garage card or petrol card. From the data, this also becomes less desirable as income increases both in the overall sample and in the rural areas. This could be because as more income is received the desire to purchase consumer items such as petrol can be easily done through cash.

Third is the transactions or transmissions account. From the data, this product also becomes less and less desirable as income increases both in the overall sample and in the rural areas. This can be explained by the fact that individuals with higher incomes are better able to manage their household finances than those in the lower income segment. Therefore, the need for a transactions or transmission account is replaced by the need for financial products that are more targeted towards wealth creation e.g. fixed deposit accounts, which although has the expected positive sign is not significant even at the 10% level.

Fourth is the micro loan from informal (unregistered) sources. This financial service seems to be significantly less desirable in the overall sample only. For the rural population we cannot reject the null hypothesis that use of informal micro loans is significantly equal to or less than zero. Therefore, it seems that in the rural areas, the informal micro lender is still an important financial service provider even with higher incomes.

Based on model 1, which focuses on income as a measure of poverty, there is evidence that improved access to financial services has an important role to play in poverty alleviation efforts in rural Namibia. However, because of the importance of existing financial services offered by informal micro lenders these need to be understood before alternatives are pushed that may make the rural population accessing financial services through these informal sources more vulnerable.

5.2. Food Consumption Ratio as a Poverty Measure

Model 2 was applied to the aggregated financial usage exposure index among poor regions in Namibia. The results are presented in Table 8 below.

Table 8: Regression Results for Financial Usage Exposure Index among the Poor

Variable	Coefficient	Standard Error	p-value
Constant	-0.03458198382	1.2833580	0.9792
$\ln nh^*$	0.8879172928	0.37442385	0.0451

$\ln uth$	-0.1055182616	0.21744121	0.6405
$\ln ohh$	-0.04574938864	0.18955442	0.8154
$\ln ihn$ **	-0.8192166676	0.42850893	0.0923

Note: * significant at the 5% level; ** significant at the 10% level

The coefficient for the financial usage exposure index, fe, for household heads that have never had access to financial services in poor regions is positive and significant at the 5% level. These results reject the alternative hypothesis that improved access to financial services by household heads is negatively linked to the FCR in the poor region where they are located. The interpretation of this finding is that there is evidence in Namibia that poor regions are associated with a higher probability of household heads that have never had access to financial services.

The coefficient for the financial usage exposure index, fe, for household heads that currently have access to financial services in poor regions is negative and significant at the 10% level. These results reject the null hypothesis that improved access to financial services by household heads is not or is positively linked to FCR in the poor region where they are located. The interpretation of this finding is that there is evidence in Namibia that poor regions are associated with a lower probability of household heads that currently have access to financial services.

Model 2 was then applied to the aggregated financial usage exposure index among severely poor regions in Namibia. The results are presented in Table 9 below.

Table 9: Regression Results for Financial Usage Exposure Index among the Severely Poor

Variable	Coefficient	Standard Error	p-value
Constant	1.889080129	2.5021338	0.4719
$\ln nh$	0.01094344090	0.69713362	0.9879
$\ln uth$	0.1837519429	0.21605867	0.4198
$\ln ohh$	0.2072676273	0.35750835	0.5780
$\ln ihn$	-1.352768362	0.74833599	0.1083

Note: * significant at the 5% level; ** significant at the 10% level

None of the coefficient for the financial usage exposure index, fe, for household heads in severely poor regions is significant even at the 10% level. The interpretation of this finding is that in Namibia access to financial services may not be a sufficient solution to alleviate poverty among those that are severely poor.

Based on model 2, which focuses on FCR as a measure of poverty, there is evidence that poor regions in Namibia are associated with a higher probability of household heads that have never had access to financial services and a lower probability of household heads that currently have financial services. Model 2 also indicates that improving access to financial services may not be a sufficient solution to alleviate poverty among the severely poor. However, the results do not enable us to discern whether it is the higher financial exposure that results in a lower FCR or vice versa. This would require a causality analysis. However, because of the absence of time series data on poverty in Namibia this will have to be deferred until a data series has been generated from future FinScope surveys

6. CONCLUSION

This paper focused on analysing whether improved access to financial services could contribute to poverty alleviation strategies among the rural population in Namibia. Using data from the FinScope Survey conducted in 2003 and the preliminary NHIES 2003/2004 report, an empirical methodology was adapted to achieve this main objective. This methodology used income and FCR as a measure of poverty.

When income is used as a poverty measure, improved access to financial services is associated with higher levels of income for the household head in rural areas. This relationship is consistent in an overall sample consisting of both urban and rural populations. In addition, a disaggregated analysis of household heads points out that several financial products are inferior goods, which are defined as those whose use decreases as income rises. These inferior goods include debit cards, garage or petrol cards and transaction or transmission accounts. Finally, the use of informal micro lenders seems to be present among low-income households in rural areas. This relationship cannot be rejected conclusively even at higher levels of income.

When FCR is used as a poverty measure, poor regions are associated with a higher probability of household heads that have never had access to financial services. Also, poor regions are associated with a lower probability of household heads that currently have access to financial services. Finally, access to financial services may not be a sufficient solution to alleviate poverty among those that are severely poor in Namibia.

The policy implication of this paper is that improved access to financial services can contribute to poverty alleviation among the poor in rural Namibia. However, when designing poverty alleviation strategies that focus on improving access to financial services in rural Namibia, it is important to understand how informal networks operate. This will avoid the danger that pushing more formal alternatives that may erode the benefits derived by those accessing financial services from these informal providers and make them more vulnerable to the adverse effects of poverty. Unfortunately, improving access to financial services in not as potent when the households are severely poor.

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7. Appendix A

The specific form of model 1 for the overall sample used in this paper is:

$$MY_i = \beta_0 + \beta_1 l + \beta_2 fe + \varepsilon_i$$

Equation 7: Specific form of Model 1 for overall sample

Where:

MY is a qualitative variable indicating codes of the various amounts of the household head's cash income for the previous month prior to administering the questionnaire.

l is a qualitative variable indicating whether the household is located in a rural or urban area. It is operationalised using zero-one dummy variables.

fe represents an exposure index that is operationalised as the average of the levels of usage of the individual financial products in f

ε denotes the error term.

i denotes each household head; for i = 810 in overall sample and i =422 for rural sample.

The specific form of model 1 for the disaggregated vector of variables used in this report is stated below:

$$MY_i = \beta_0 + \beta_1 URB + \beta_2 RUR + \beta_3 ATM + \beta_4 POSAV + \beta_5 BNKSAVTR + \beta_6 MRGHSE + \beta_7 CURRCHK + \beta_8 DBTC + \beta_9 CRTC + \beta_{10} GARCPETC + \beta_{11} TRNSTMS + \beta_{12} FXDEP + \beta_{13} VEHFIN + \beta_{14} BNKLN + \beta_{15} CALLAC + \beta_{16} OVDRAFTP + \beta_{17} OVDRAFTB + \beta_{18} MICLN + \beta_{19} INFMICLN + \beta_{20} INFSAVCLB + \beta_{21} NGOLNSAV + \beta_{22} STRACC + \beta_{23} SACCOLNSV + \beta_{24} OTH + \varepsilon_i$$

Equation 8: Specific form of Model 1 for disaggregated vector

Where:[11]

MY is a qualitative variable indicating codes of the various amounts of the household head's cash income for the previous month prior to administering the questionnaire.

URB indicates that the household head is located in an urban area;

RUR indicates that the household head is located in a rural area;

ATM denotes access to an atm card;

$POSAV$ denotes access to a post office savings account;

$BNKSAVTR$ denotes the access to a bank savings or transaction account;

$MRGHSE$ denotes the holding of a mortgage or housing loan from a bank;

$CURRCHK$ denotes access to a current or checking account;

$DBTC$ denotes access to a debit card;

$CRTC$ denotes access to a credit card;

$GARCPETC$ denotes access to a garage or petrol card;

$TRNSTMS$ denotes access to a transaction or transmission account;

$FXDEP$ denotes use of a fixed deposit account;

$VEHFIN$ denotes access to vehicle financing facilities;

$BNKLN$ denotes access to a bank loan;

$CALLAC$ denotes access to a call account;

$OVDRAFTP$ denotes access to a personal overdraft facility;

$OVDRAFTB$ denotes access to a corporate overdraft facility;

$MICLN$ denotes access to loans from formal (registered) microlender;

$INFMICLN$ denotes access to loans from informal microlender;

$INFSAVCLB$ denotes access to an informal savings club e.g stokvel or motshelo;

[11] A correlation matrix of the variables indicated the absence of severe multicollinearity between the variables.

$NGOLNSAV$ denotes access to loans or savings facilities from a NGO;

$STRACC$ denotes access to a store credit account;

$SACCOLNSV$ denotes access to loan or savings facilities offered by a savings and credit cooperative;

OTH denotes other financial services;

ε_i denotes the error term.

The specific form of model 2 used in this paper for poor regions is:

$$FCR_p = \beta_0 + \beta_1 nh_i + \beta_2 uth_i + \beta_3 ohh_i + \beta_4 ihn_i + \varepsilon_i$$

Equation 9: Specific form of Model 2 for poor regions

Where:

FCR_p indicates a FCR of between 60% and 80% for each of the 13 regions in Namibia.

nh represents household heads that have never had access to financial services.

uth represents household heads that used to have access to financial services.

ohh represents household heads that don't have access to financial services but other members of their household do

ihn represents household heads that currently have access to financial services.

ε denotes the error term.

The specific form of model 2 used in this paper for severely poor regions is:

$$FCR_{sp} = \beta_0 + \beta_1 nh_i + \beta_2 uth_i + \beta_3 ohh_i + \beta_4 ihn_i + \varepsilon_i$$

Equation 10: Specific form of Model 2 for severely poor regions

Where:

FCR_{sp} indicates a FCR of above 80% for each of the 13 regions in Namibia.

nh represents household heads that have never had access to financial services.

uth represents household heads that used to have access to financial services.

ohh represents household heads that don't have access to financial services but other members of their household do

ihn represents household heads that currently have access to financial services.

ε denotes the error term.

8. Appendix B

Table 10: Descriptive Statistics for Overall Sample

Variable	Mean	Standard Deviation
MY	1.1605	0.8577
URB	0.479	0.49987
RUR	0.52099	0.49987
fe	1.12565	0.447
ATM	2.2506	1.3993
POSAV	1.8185	1.2804
BNKSAVTR	1.9543	1.45357
MRGHSE	1.1185	0.9118
CURRCHK	1.1901	1.0097
DBTC	0.979	0.67687
CRTC	1.1235	0.9125
GARCPETC	0.891358	0.49527
TRNSTMS	1.0346	0.8431
FXDEP	1.25679	1.04567
VEHFIN	0.94321	0.5939
BNKLN	1.127161	0.834887
CALLAC	0.95556	0.6214
OVDRAFTP	1.05185	0.78759
OVDRAFTB	0.91235	0.51765
MICLN	0.92469	0.55635
INFMICLN	0.90988	0.5002
INFSAVCLB	0.9	0.512996
NGOLNSAV	0.95679	0.56635
STRACC	1.5012	1.2172

SACCOLNSV	0.91852	0.5246
OTH	0.04568	0.317

Note: The number of observations for the overall sample is 810.

Table 11: Descriptive Statistics for Rural Sample

Variable	Mean	Standard Deviation
MY	0.91469	0.7406
ATM	1.6943	1.2209
POSAV	1.5829	1.156
BNKSAVTR	1.604	1.2567
MRGHSE	0.8886	0.5422
CURRCHK	0.98815	0.79628
DBTC	0.8673	0.4789
CRTC	0.9123	0.61985
GARCPETC	0.82701	0.40299
TRNSTMS	0.8744	0.5976
FXDEP	1.12559	0.914834
VEHFIN	0.8697	0.42997
BNKLN	0.936019	0.541118
CALLAC	0.86256	0.47259
OVDRAFTP	0.93839	0.628685
OVDRAFTB	0.8863	0.5031
MICLN	0.85071	0.4181
INFMICLN	0.8602	0.4041
INFSAVCLB	0.87441	0.51658
NGOLNSAV	0.90758	0.405999
STRACC	1.175356	0.93877
SACCOLNSV	0.87441	0.4476
OTH	0.05687	0.3468
fe	0.9753	0.36256

Note: The number of observations for the rural sample is 422

Table 12: Descriptive Statistics for Food Consumption Ratio Variables

Variable	Mean	Standard Deviation
$\ln FCR_{sp}$	1.08348994	1.32160335
$\ln FCR_{p}$	3.01136603	0.810068277
$\ln nh$	3.72231603	0.528901404
$\ln uth$	-0.846327368	1.19877456
$\ln ohh$	-0.408023103	1.27296698
$\ln ihn$	0.448148308	0.907074108