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Author: Alve Högman

MICROSAVINGS EFFECTS

ON CONSUMPTION SMOOTHING

A CASE STUDY OF SOUTH AFRICA

Supervisor: Ranjula Bali Swain

ABSTRACT

Until this day, microsaving has been the "forgotten half of microfinance". The research has begun, however, there is still a long way to go and the demand for more research and initiatives regarding microsavings is huge. This study explores if access to deposit facilities (microsavings), provided by MFIs, leads to smoother consumption patterns for poor rural households. Based on data from a case study of South Africa, the findings are positive as the MFIs contribute to the financial markets. However, these contributions compete on a market still dominated by informal services. The first step towards improvement of the situation is to incorporate the existing financial services provided by MFIs into households' strategies for coping with insecure and volatile income. This would smooth consumption, and assist them in managing their own financial situation independently. The second step is to develop new services to compete with the existing informal services, but also to introduce services suited for short- and long-term saving activities, which could provide better means for smoothing consumption.

Keywords: Microsavings, consumption smoothing, microfinance, and rural poor households

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Alve Högman

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Uppsala, Sweden

ACRONYMS

ASCA	Accumulating Savings and Credit Association
LCH	Life-Cycle Hypothesis
MFI	Micro-Finance Institution
NGO	Non-Governmental Organization
PIH	Permanent Income Hypothesis
PRA	Participatory Rural Appraisal
ROSCA	Rotating Saving and Credit Association
SCG	Saving and Credit Groups
SHGs	Self-Help Groups
SIDA	Swedish International Development Cooperation Agency
UNICEF	United Nations Children's Fund
UNDP	United Nations Development Programme

CHARTS AND MATRICES

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1 Introduction

In 2006, Muhammad Yunus (Yunus) and the Grameen Bank, were jointly awarded the Nobel Peace prize. Yunus started by providing small loans to local villagers during his time as an economics professor at the Bangladesh University (Nobelprize.org 2009). The idea of small loans to low-income households is not an innovative one. It has existed for some time, as state-run banks have tried to provide loans to poor households, although, these are associated with inefficiency, corruption, and millions of dollars wasted on subsidies. Today, Yunus is recognized for his work and part of a growing business, called microfinance, that had 65 million customers in 2002 (Aghion and Murdoch 2005). The aim of microfinance is to provide financial services through microfinance institutions[1] (MFIs) to low-income households. Evaluations of implemented microfinance projects all over the world strongly suggest that it is a successful strategy to decrease poverty (Morduch 1999). Nevertheless, the potential and possibilities for progress are huge as, today, there are still large numbers of poor households facing scarce access to financial services (Rutherford 1999).

A large proportion of the poor are living in rural areas, which make them vulnerable to weather changes and natural calamities, fluctuations in prices of their production, and diseases. To avoid a large drop in consumption it is crucial to consider consumption smoothing options. Some of the different options are credit, insurance and saving (Morduch 1995). This study will direct its attention to savings[2], i.e. microsavings.

Initially microfinance focused on microcredit, and microcredit and microfinance were seen as synonymous. In more recent theory microsaving has been raised as an important strategy that has been overlooked. Vogel (1984), for instance, called savings "the forgotten

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[1] A MFI is an organization providing financial services to low-income households. This is a broad definition including a variety of suppliers. All of these organizations differ in methodology, purpose, legal structure and so on. However, what unites them is that they all provide financial services to customers that are poorer and more vulnerable than traditional bank clients (CGAP 2009).

[2] In the context of savings, economic agents include individuals, households, groups, enterprises and institutions. This study has chosen to direct its attention to the poor rural household. Therefore, the coming sections will be in the perspective of the poor rural household.

half of microfinance". Almost a quarter of a century has now passed and this is still considered to be true (Berg 2008, Gomez-Soto 2007; Robinson 2001).

In order to promote household welfare it is vital to provide safe savings services. The idea is to put aside income during good times, which aggregate capital for bad times. In earlier efforts by microfinance institutions there was little or no attention paid to generating savings among poor households. There has been a common misunderstanding that the poor in developing countries have not had significant saving capacity. The reason for this opinion was that their low income should generate low saving capacity. Nevertheless, recent experiences show that poor households are both willing *and* able to save if provided with adequate saving institutions. Even though it was mostly implemented through informal[3] services there were also initiatives from cooperatives and deposit taking MFIs (Collins and Morduch 2008, Morduch 1999; Rutherford 1998).

Consequently, it is essential to investigate savings in the context of poor households. In addition, it is important to understand how poor households deal with fluctuations in income. The strategies adopted by poor households could take a number of forms. This study focuses on consumption smoothing adopted by poor households to cope with fluctuations. The idea of consumption smoothing is to accumulate income during high earning periods for spending it in times of low earning periods. This would intuitively give a smoother pattern in consumption, i.e. consumption smoothing. Consumption smoothing is simply expressed as the way poor households insure themselves against fluctuations in the presence of risky and volatile income. This study directs its attention to a specific part of these smoothing strategies, namely savings and its effect on consumption smoothing. Furthermore, in this study the focus will fall on microsaving institutes' clients in South Africa. The specific area chosen, as case study, is the rural area of the province KwaZulu-Natal. This province is facing similar challenges to those of South Africa as a whole, i.e. social, economic, and demographic development (StatsSA 2004).

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[3] Formal savings are defined as savings with providers subjected to general laws and to specific banking regulation and supervision (commercial, development, savings and postal banks). Semi-formal savings are with registered providers only subjected to general laws which are not constrained by bank regulation and supervision (financial NGOs, cooperatives and credit unions). Informal savings are neither subjected to any laws nor registered (rotating savings and credit groups and self-help groups) (CGAP 2009).

Thus, the main focus is the access to savings services for poor rural households and its effect on consumption. The purpose is to explore if access to deposit facilities (microsavings), provided by MFIs, leads to smoother consumption patterns for poor rural households.

1.1 Motivation

Poor households face scarce supply of financial services and they have to pay a high price to access them. This has often been seen as high interest rates on loans. What is less known is that poor households have to pay a high price for being able to save as well. In the informal sector, which often functions as the provider of financial services to poor household, savings are associated with high risk and low or non-existent interest rates. It is not uncommon that poor households accept negative interest rates on their deposits. Negative interest rates are often the result of a deposit-taker charging a fee for handling and keeping the money safe for a certain period. After the given period the depositors collect their money minus the costs of the deposit-taker's fee (Rutherford 1998). Wright (1997) argues that this is often because of the strong illiquidity preferences amongst poor households. These preferences are often due to the self-imposed need for structured and committed saving systems that prohibit them from withdrawing in response to trivial need. Therefore, poor households accept negative interest rates to accumulate capital with structured and committed informal savings services because of their illiquidity preferences.

Poor households that have access to formal financial services could diversify their risk and increase their potential to raise their level of income. However, limited access to financial services is common in poor areas. Townsend (1995) shows that households within villages earn their income in many different ways, which are exposed to different risks and the income of households in villages does not move in unison as could be expected. Instead, the variation within the village is surprisingly large. This suggests that households should group together and share risks if they are risk averse. Furthermore, if this is the case, households' consumption would follow the consumption of the risk-sharing group's average consumption. Data shows that households have documented risk sharing even though it is not fully perfect

with risk pooling. Townsend (1995) suggests that improving financial systems is advantageous and would lead to faster and more uniform growth.

In spite of the demand for savings services, the past decades of research and implementation have mainly focused on microcredit. Authors like Deaton (1992) and Gersovitz (1988) have long argued for the importance of saving, but until this day the research has only begun and there is still a lot in the field that demands further attention. The transition from microcredit to microfinance is needed to understand the complex nature of financial services provided to poor households in developing countries. This study is therefore motivated by the literature that stresses further research within savings services to the poor (de Aghion and Morduch 2005; Berg 2008; Devaney 2006; Gomes-Soto 2007; Wisniwski 1998; Zeller 1999).

Furthermore, this study has selected South Africa as its case study. South Africa is a country that has developed relatively well and should, with its democratic structure and economic activity, be an ideal environment for microfinance initiatives. The government places poverty alleviation high on the political agenda. Therefore, with the political engagement as a base, the conditions are good for finding solutions that could significantly decrease poverty. Although, the financial markets in South Africa reveal the legacy of apartheid. There is an underdevelopment of financial services, especially in the rural areas. Research has shown that the development of financial services to the poor has decreased instead of increased, contrary to what the government intended with its policies. It is therefore of importance to develop services and to reach the rural and unfairly treated clients (van de Ruit, 2001).

Currently 38 percent (16.71 million) of South Africa's population live in rural areas. Despite the high percentage of people living in rural areas the financial services are extremely limited (Nigrini 2005). Since agriculture is a crucial economic activity in developing countries there is a need to facilitate and provide services that are in demand among the rural poor households (Vermaak 2001).

In conclusion, this provides the study with both an economic, political, and research interest in conducting saving related studies in the context of poor rural households.

1.2 Outline

The next section, section 2, presents the literature review of the research conducted on the subject. It further provides details on the economic environment of poor household and looking into key factors of the economic environment: income, production, consumption, and savings services. The theoretical model is described in section 3. The methodology is described in section 4. The results are presented in section 5, together with the analysis. Section 6 provides a conclusion with recommendations.

2 Literature Review

There are two crucial characteristics of the economic environment of the poor. Firstly, the poor people operate in a mini-economy and secondly, they are exposed to high levels of risk and insecurity. Consequently, the income, production, consumption, and saving/borrowing involve very small amounts of money in each transaction, which result in high transaction costs. Furthermore, high levels of risk and insecurity arise due to idiosyncratic and common shocks[4]. The literature has shown that these two types of shocks are a hardship that most poor households face and result in difficulties coping with the consequences of the shocks (Morduch 1994). Findings suggest that a large proportion of income fluctuation is due to idiosyncratic shocks. Townsend (1995, p. 87) concludes: "...the analysis reinforces the previous conclusion: idiosyncratic shocks are large even across countries in a common region". Idiosyncratic shocks could be insured within the community because the risk could be shared between individuals. However, common shocks are problematic due to their co-variant nature, which not only weakens the individual but the whole community's ability to provide social security networks. A majority of these risks are insured by informal markets. But, in spite of the services offered by informal services, the fluctuations in consumption remain high (Townsend 1995, Murdoch 1994, Matin et al 2002).

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[4] An idiosyncratic shock affects only a particular individual in the community such as loss of income due to sickness, premature death, and theft. Meanwhile, a common shock is defined as affecting the entire community as a whole due to co-variant risk, such as harvest failure, national economic crisis, and natural hazards (Murdoch 1994).

The economic environment of the poor has a number of consequences: first, they limit the interactions between the formal financial sector and the poor; as most of poor households do not have access[5] to the formal sector for various reasons (for example, time consuming transactions, intimidating procedures, and more) (Wright 1997). Secondly, they force the poor to implement risk-coping strategies, for example diversification of economic activities and use of financial services with networks of individuals, groups and agencies. Moreover, the poor use the saving and credit services as substitute for insurance which makes it hard to treat them as separate services (Matin et al 2002).

To understand how scarce access to financial services affect poor households we turn to Morduch (1994) who separates poverty into two classes: chronic and transitory. If a household is poor in every time period then it is chronic, otherwise transitory. Transitory poverty is often due to failure in protection against idiosyncratic shocks. These failures are often caused by lacking and ineffective insurance mechanisms (financial services) in dealing with these shocks. This means that there is a risk that poor households fall into chronic poverty because they primarily have access to informal services that provide inadequate insurance coverage against shocks. The inability for poor households to avoid transitory income fluctuations is affecting their ability to rise out of poverty.

Consequently, fluctuations in income are reinforcing the problem of poverty through several channels. Firstly, with only access to consumption smoothing tools that are costly, i.e. informal, hardship is caused in dealing with fluctuations in income. Secondly, saving in-kind makes the household vulnerable to price changes. Third, households are forced to deplete their assets to be able to deal with fluctuations in order to protect their consumption level (Barrera and Perez-Calle 2005).

The combination of a volatile and low income in a setting where formal financial institutions are scarce makes the development of coping strategies essential. It has been shown that risk-coping strategies are insufficient and that income strategies are only used to a limited extent (Dercon 1999).

Poor people have developed strategies to handle the harsh environment. In the literature there are different ways of distinguishing these strategies. To distinguish the

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[5] Access is defined as the ability of the household to undertake transactions with financial institutions (Wright 1997).

strategies is important as this study deals with the effects of how poor people cope with difficulties. For instance, Dercon (1999) distinguish between two categories: risk-management and risk-coping strategies. However, this study adopts Murdoch's definition. Morduch (1995) defines the different strategies as income and consumption smoothing.

Income smoothing strategies often lead to diversification, by combining production strategies with a low return and risk. As a result, poor households protect themselves against adverse income shocks. However, alternating production is costly for poor households. The households will lose potential profits for lowering their risks (Morduch 1995). In addition, income smoothing has shown to be hard for poor households to achieve. Empirical studies argue that the possibilities for income diversification are limited (Dercon 1999).

Morduch (1994) provides a simple, yet, effective model for illustrating the problematic result of implementing these low risk production strategies (for extensive model see Appendix 2). Murdoch (1994) presents a function of income smoothing under borrowing constraint such as:

$$U'_{\rho h}(\cdot)/[U'_{\rho t}(\cdot) - \delta'_{Yt}(\cdot)] = -(s-l)/(s-h).$$

In this function Morduch (1994) shows that by the increasing constraint on borrowing will have an increasing welfare loss (this is seen by the role of $\delta'_{Yt}(\cdot)$ on the left hand side's denominator). This model provides an understanding of how poor households act when they are provided by incomplete financial services. In the absence of consumption smoothing tools, poor households will exercise caution in production decisions, i.e. smooth income. Morduch argues (1994) for the need of financial development to provide less vulnerability and to enable poor households to increase their expected earnings. The financial constraint could be hidden in the substitution of income smoothing instead of consumption smoothing. By adopting production with low risk, households keep the income stream stable and the need for consumption smoothing is low, even though this plays a crucial role in economic development. This will lead to less visible scarce access to financial services, which provides lower incentives for implementing and developing consumption smoothing tools. Finally, these behaviors described could lead to poverty traps when shocks are bad (Morduch 1994). Income smoothing is important to understand because it is an important part of risk handling,

however, the focus of this study is on consumption smoothing as it is directly linked to financial services.

There is a need to supply poor households with less costly and accessible services to smooth consumption patterns i.e. consumption smoothing tools (Gomes-Soto 2007). Consumption smoothing is accomplished by the use of financial services, either: formal, semi-formal or informal. Volatile transitory income should be smoothed away by the use of financial services, if these services would be fully working in a complete financial market (Morduch 1995).

Within consumption smoothing there are two different strategies of coping with risk: intertemporal consumption smoothing, i.e. self-insurance; and across households consumption smoothing, i.e. risk sharing. The intertemporal strategy is related to this study's purpose as it is forward-looking and achieved by different saving/dissaving behavior, and accomplished by formal, semi-formal and informal financial services. Across households consumption smoothing is risk sharing between households and is effective at any point in time and consists of arrangements of risk-sharing, either by formal institutions such as insurance or informal with cooperation between family and friends. (Gersovitz 1988)

The household could accumulate assets when times are good and use them as insurance in times of distress. Dercon (1999) argues for the strength of intertemporal consumption smoothing, as this strategy could deal with any type of shock. The across household strategies could not deal with shocks that affect all the members. However, intertemporal consumption smoothing could, if sufficient funds have been collected in advance. The improvement of financial services has three desirable key effects on poor households. Firstly, it has the possibility to raise future value of income and as a result increase consumption, future investments, and accumulation of assets. Secondly, it would facilitate for poor households to cope with income risk that would improve nutrition, health and education (Dercon 1999). Berg (2008) argues that less variability in income would be beneficial not only economically but would also lead to less suffering. For instance, people living closer to MFIs have been proven to suffer less from major illnesses. The last effect is the focus of this study: it could decrease the variation of consumption. (Zeller 1999). In conclusion, access to safe savings instruments is useful for poor households in order to smooth their consumption and to improve their situation. Policies stating the need for

supplying consumption smoothing tools to poor households should provide MFIs with incentives to provide more diversified and attractive savings services (Dercon 1999). Berg (2008, p.1) provides this section with a relevant quote to summarize and grasp the context of what this section tries to attain: "...the possibility to save money in a secure place while also earning interest can help low-income households to gain control over their income streams which in turn lead to better consumption insurance against economic shocks".

Throughout the world poor save in multiple forms for a variety of purposes. They save for emergencies, to manage irregular income streams, and for long-term investments opportunities. Suitable microfinance institutions are in great demand at the local level because they permit poor households to accumulate permanent and temporary income safely, resulting in increase of income and securing future use of savings (Robinson 2001).

Stuart Rutherford (CGAP: 2006) states that through his 25 years of research he has found that there is a will to save amongst poor people and it is very uncommon to find any who do not want to save. Rutherford has found even more evidence for this assumption in the research of "*The Financial Diaries*" in Bangladesh. Rutherford (1998) concludes that it is not true that the poor have a different view of savings nor that they have some peculiar need for credit. After all, poor households both have the will and the ability to save; what is limiting them is not the lack of capacity to save but rather the lack of opportunity to do so (Rutherford 1999). Similar work has been conducted in South Africa by FinMark Trust. Findings of lacking financial services to poor households have become a major policy issue for implementers, as half of the adult population lack bank accounts in regulated financial institutions in South Africa (Collins and Murdoch 2008).

Crucial preferences in financial services are the combination of security, convenience, liquidity, confidentiality, access to loans and returns, and that the services are legally recognized. The problem is that the existing informal services do not provide a sufficient combination of these preferences. Some of the biggest disadvantages with informal services are: high transaction costs, deposits are vulnerable to inflation and devaluation, low access to savings, risk of failure in organization/person providing the services and low or even negative interest rates (Robinson 2001).

3 Theoretical Model

The analysis is based on the theoretical framework, developed by Aghion and Morduch (2005). This model provides us with a theoretical understanding of how economical difficulties effect consumption.

At first, saving frequency is important to address because of the differences in result depending on the level of frequency chosen. Deaton (1997) justifies the use of classification in saving behavior. Firstly, low-frequency saving has been a well working phenomena in high-income countries. It has often been associated with the life-cycle hypothesis[6] (LCH) (Aghion and Morduch 2005). This hypothesis has been discussed and criticized in the context of poor households. Evidence from earlier studies shows that the model provides a reasonable prediction for middle and higher-income countries, however, in developing countries where households are constructed differently the model tends to be less effective (Deaton 1997). Poor households consist of a large number of family members, where life expectancy is low. Elderly people seldom live alone in developing countries and the demographics of the household changes over time. Therefore, LCH has a problem with predicting saving behavior in developing countries. Although, in developing countries where economic development has been successful and demographic transition has proceeded, saving behavior moves toward the higher income countries (Aghion and Morduch 2005).

The other part of saving frequency is high-frequency saving. High-frequency saving is the kind of saving this study will address. It is used to fund short-term investments and to smooth consumption over shorter periods, for example season to season. This theory is associated with Milton Friedman's permanent-income hypothesis (PIH). Income goes up and down in households and there are two recorded different changes in income, permanent and transitory. Permanent changes could be for example due to a new work situation where the salary is higher, while transitory is occasionally change, for example a bonus for work well performed. These transitory changes that are positive should, according to Friedman, be saved for later periods where there might be negative transitory changes. Acting in this way

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[6] The LCH examines people over their lifespan and analyses how they use their income. The basic model consists of two periods; one when the person is young and the other after retirement. The person strives to hold the consumption constant over the whole period, i.e. their whole life. Therefore, they are savers during their working years and dissavers after their retirement (Deaton 1997).

would protect the household's consumption over time and have a smoothening effect. Deaton (1997) argues that this kind of saving behavior has been used in macroeconomic literature to represent the short horizon of a few years.

Aghion and Morduch (2005) provide us with a model to consider borrowing and saving in the sense of consumption smoothing. If there is a possibility to perfectly smooth consumption, the marginal utility in the first period (t) should be equal to the expected marginal utility of consumption in the second period ($t + 1$). We make three assumptions: first, including an interest rate for borrowing and saving, which is the same for both borrowing and saving ($r = r_s = r_b$). Second, consumption today may be judged to be more valuable than consumption in the future. Therefore a discount rate, at which future consumption is weighted to current consumption (δ). Third, we can only have an expectation about future consumption, i.e. we make our best guess. Making these assumptions provides us with the model:

(1) $U'_t = (1 + r)/(1 + \delta) \, E_t[U'_{t+1}]$, (expectation is forecasted in period t).

If there is no constraint in borrowing or saving the consumption choices between the two periods should be independent from when the income arrives. The household will choose consumption levels so that the marginal utility of consumption will be equal in all periods. This model works only if we have complete financial markets. Instead, an inclusion of a difficulty in borrowing and saving alters the model to:

(2) $U'_t = (1 + r)/(1 + \delta) \, E_t[U'_{t+1}] + \lambda_{t+1}$

Where λ_{t+1} reveals the amount of difficulties in the financial market, $\lambda_{t+1} \neq 0$. Therefore, λ_{t+1} is the measure of how much consumption choices deviate from the optimal degree of smoothness. In addition, if poor households have scarce supply of financial services the consumption patterns over time will reflect the household's income patterns more closely than desired. If there would be a saving constraint λ_{t+1} would be correlated with your transitory income. Therefore, if poor households would experience high transitory income it

would lead to them being forced to consume more today than they would like to (Aghion and Morduch 2005).

In order to connect to the purpose of the study at hand, there is a need for a minor extension, since it is not obvious to derive from the text by Aghion and Morduch (2005): as poor households face incomplete financial markets the consumption decisions will deviate from the optimum degree of smoothness. If you are fully independent from when your income arrives λ_{t+1} will be equal to zero. So, if poor households would be provided with complete financial markets there would be no difficulties in saving or borrowing. If MFIs could provide safe deposit services to poor households, they would experience a λ_{t+1} closer to zero than if no service would be provided. The market would in the case of additional services, provided by MFIs, move closer to a complete financial market and consequently provide poor households with additional consumption smoothing tools.

4 Methodology

This study has a qualitative approach, both in collection of data and in the analysis. The choice of a qualitative methodology is well thought-out, as the scientific methodology of the *quantitative* kind often fails to collect the complexity, diversity and underlying understanding. The latter reduces causality to more simple chains, rather than the often-existing complexity regarding consumption smoothing and savings- especially in the context of the poor. The complexity of the poor reveals not one objective truth; rather, there are multiple subjective realities and scholars must ask themselves: whose reality counts? This study is therefore directing its attention to the perceived reality of the poor. This is not to say that quantitative methodologies are inadequate, however, there is a difficulty to grasp the reality in a fair way. The data and statistical techniques need to be very sophisticated, which poses a problem due to difficulties in finding models that adequately fit the reality of a very diverse situation over the population, on top of which one can add the lack of statistical data on the poor (Hulme 1997).

The qualitative research needs a base on which the presentation and analysis can be conducted (Lantz 2007). The methodology chosen for the case study is Participatory Rural Appraisal (PRA). PRA is a qualitative survey methodology that has been developed by

organizations such as SIDA, UNDP and UNICEF to create solutions to acknowledged problems. One of the main reasons for the development of PRA is for collaborating with local people in analysis and planning, and it has contributed to the development of action plans and participation strategies. The origin is from a series of qualitative multidisciplinary approaches aiming at increasing the knowledge of local people and their situations. PRA provides a "tool box" from which those most appropriate for the project's/study's framework can be selected. The "tool box" includes interviews and discussions, mapping, ranking, and trend/seasonality analysis.

In this study, the PRA explains the complexity of financial scarcity faced by poor households. It enforces and complements the study and captures an in-depth understanding of the situation in poor households. As the model provided by Aghion and Murdoch (2005) desires to capture the difficulties in smoothing consumption under constraints of savings, i.e. imperfections on the financial markets, we need to capture the measurement λ_{t+1} with the choice of PRA-methodology. This paper has selected seasonality and trend analysis because of the complementary strength in combining the two.

Seasonality analysis is ideal for obtaining information on seasonal flows of income and expenditure, and the demand for credit and savings services. This provides the study with an understanding of seasonality, and maybe most important, insights into some of the risk and pressures faced by clients and how they use MFIs' financial services to respond to these. It also highlights how close income and expenditure follows each other. This grants the author access to discussions around the seasonality and the relation between these four factors. The seasonality analysis shows us whether the consumption is smooth or not and how consumption is related to income, credit and saving. The less the consumption follows the income and the more constant the consumption is in relation to savings (and credits) the closer λ_{t+1} move to zero. The procedure is simple, first, a chart is drawn on a large sketch paper. The participants are then asked to place out scores over the season for the four factors: income, expenditure, credit, and saving (with a minimum of zero and a maximum of five). Once the chart has been completed, the interviewer should check the rationality of the results by looking at each column (Market Research for Micro Finance 2002).

The trend analysis provides us with a reference in time, i.e. the changes in the use/availability of a variety of financial services over time, and what the choices for using them are. The interviewer develops an initial list of financial services - formal, semi-formal and informal - which is available and used in the community. The participants should develop the list further and then score the alternatives to indicate the use level of different financial services. The matrix includes a time axis, which is divided into three periods: this year, last year, and five years ago. When completed, the matrix should be compared both vertically and horizontally (Research for Micro Finance 2002). The literature suggests that more formal/semi-formal and safer services supply the participants with better opportunities to smooth consumption. The trend analysis will provide us with the information of the transformation of services over time. If services provided by the MFI become more and more dominant, in relation to informal services, in the preference of savings services among the participants over time, we can conclude that the introduction of the MFI has contributed to a smoother consumption for the participants, i.e. a λ_{t+1} closer to zero (see Appendix 3 for examples of the selected methodologies: Seasonality and Trend Analysis).

The follow-up questions functioned as semi-structured interviews with questions designed to deepen the understanding of the choices in the PRA-exercises. This was done in order to enhance the above reasoning on the matter of what factors contribute to a smoother consumption among the participants. In the semi-structured interview it was up to the interview subject to freely describe the phenomena. The subject described here which issues and problems he/she see as crucial. The semi-structured interviews collected the subjective data from the representatives of poor households and therefore incorporated their view of the underlying problems. The aim was to understand how the reality is constructed in the perspective of poor households (Research for Micro Finance 2002).

4.1 Data

The case study was conducted in the province of KwaZulu-Natal in South Africa. With 9.4 million people, the province is home to 21 percent of the country's total population (in 2001) (StatsSA 2004). A majority of the population (72 percent) in KwaZulu-Natal earns less than

R2,500 (300 USD[7]) per month, and seven percent of these earn less than R200 (24 USD) per month. In addition, the province has the highest HIV infection rate in the country, with 32 percent HIV positive (Coetzee et al 2002). Furthermore, a vital statistic, which is of specific importance for this study, is the inflation as the inflation could depreciate savings. In the urban areas of KwaZulu-Natal the yearly inflation for the first quarter in 2009 was 10,4 percent and the average for South Africa's rural areas was 10,7 percent. This is quite high, however, as this study directs its attention to seasonal savings (mid-term savings) the main results should not be affected in any larger extent. High inflation would be more problematic if looking at long-term savings (StatsSA 2009). In addition, the organizations that were studied had interest rates on their savings that exceeded the inflation.

The survey was conducted with the assistance of SaveAct and Kwa-Machi Financial Services Cooperative Limited (Kwa-Machi). SaveAct is a non-governmental organization that provides financial services in South Africa. They provide both credit and savings services and have a foundation of savings for building their operation. Or as expressed by themselves: "SaveAct's model is based on savings as a catalyst for mobilising poor and vulnerable groups into participatory processes, involving people-driven asset building, learning and action" (SaveAct 2007). The interviews were carried out parallel to the evaluation work of SaveAct. These evaluations were conducted regularly throughout the year by the organization. The savings are preformed in so called saving and credit groups (SCGs). The group decides on the size of the share (e.g. one share may consist of R50 (6 USD) or R100 (12 USD) and they save in share units depending on what they can afford that month). The shares are recorded in the individual's record book (a stamp is used to indicate a share). At the end of the cycle they are paid according to number of shares saved plus their share of the communal interest earned from the loans taken during the year. The interest is earned by loans that are only given within the group and recorded in their record book together with the interest to be paid. Trust is an important factor, they select and personally know every member of the group and they know that the interest earned will be divided up amongst them according to shares. SaveAct encourages them not to charge more than ten percent per month and the interest rate agreed amongst the member is written into the constitution. They elect a box keeper, together

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[7] 1 USD = 8.31994 ZAR (Last accessed 2009-05-25, www.ex.com)

with three key keepers, a secretary and chairperson. The moneybox is produced at the meeting and all three key keepers need to be present to unlock the box (SaveAct 2007).

Kwa-Machi provides both saving and loan services in the form of a village bank. Clients are provided with passbooks, which are updated with each transaction, deposits as well as withdrawals. The daily transactions are documented and summarized at the end of the day in what is called a Daily Withdrawal and Deposit Summary. There is an initial demand of R50 (6 USD) for starting a saving account; R20 (2,40 USD) share capital, R10 (1,20 USD) passbook fee, and R20 (2,40 USD) initial deposit (Calvin and de Jong 2008).

A borrower must have stayed in the area for at least two years and be listed as a South African citizen. Both cooperatives and individuals can qualify for saving and loan services. A form for evaluating the client's credibility is used before accepting a loan. Individuals must bring valid ID documents, proof of residence and proof of business premises to be accepted as loan takers. Group loans require three to five members, who all must live in the village and know each other well, with a maximum of two males per group. In addition, all borrowers must demonstrate a saving pattern over a three month period. The interest rate is set at ten percent per month, which is far below informal services in the area, which charge around 20-30 percent per month (Calvin and de Jong 2008).

The sample taken out of SaveAct's and Kwa-Machi's clients represent poor rural household in the model. The sample consists of 75 persons, divided in to fifteen focus groups with five persons each. The fifteen groups were randomly divided into two sub-groups. One half was introduced to the Seasonality Analysis (eight focus groups) and the other half to the Trend Analysis (seven focus groups). This separation gave the advantage of extracting as much as possible from each exercise. As the qualitative research consists of a relative small sample and is, in terms of a statistical framework, not a random sample there is a need to explain the validity of these choices. The validity must be from another perspective than if the sample would have been representative of the population (Lantz 2007). This study will use a strategic sample. A strategic sample consists of formulating a few criterions that are typical for the population. The interview subjects will be selected strategically on the spot according to a few criterions (Teorell and Svensson 2007):

i. The groups should be using the saving service provided by SaveAct or Kwa-Machi.

    ii.   The groups should be members of the SCG, which are constructed out of self selection by the customers (SaveAct) or members of Kwa-Machi with a bank account in the village bank (Kwa-Machi).

    iii.   The groups must have been costumer for at least one year in order to collect the before and after perspective.

Setting up these criterions is useful to attain a sample that represents the population. The population in this study consists of poor rural households provided with financial services by MFIs.   The criterions include a few properties of certain interest. Firstly, SaveAct's and Kwa-Machi's strategy is to provide services to vulnerable poor in South Africa. This would provide us with a sample consisting of poor people that represent parts of poor household, criterion (i). Secondly, the services of interest in regard to this study's purpose are the savings services. As Kwa-Machi provides several services it was important that the interview subjects were using savings services. SaveAct on the other hand is a combined service where you are either in or out, criterion (ii). In addition, criterion (i) and (ii) captures SaveAct and Kwa-Machi as organizations promoting poor people to take part in saving activities. Therefore, SaveAct and Kwa-Machi represent the MFI providing services to poor household. The last criterion (iii) is there to capture a relation to before and after, as there must be a point of reference in order to capture a change.

Problems related to the sample could consist of cultural differences, the surroundings and situation in which the interviews were conducted. The interview was conducted in areas where the cultural differences are large compared to the author's native environment. Therefore, it was important to be open and flexible to the data that was collected. In addition, there will be language difficulties that impede the analysis of the data. A translator was used, which stresses the importance of the analyst being sensitive to misinterpretation. Furthermore, despite the voluntary nature of the interviews, clients could feel forced to leave positive answers about the MFIs. However, in SaveAct's case, as the nature of the services consists more of dependency on the group rather than on this is a minor problem. And even for Kwa-Machi's clients the discussions around problems and possibilities were very open.

Institutional problems consist of SaveAct not only providing a simple saving service but also possibilities to life-skills training and entrepreneurial mentorship. This could make it

hard to only isolate the saving service, which is of interest in this study. This is also the case with Kwa-Machi, and there is a need to be responsive to these hinders.

Furthermore, there are limitations to qualitative methodologies like the PRA. The results are sensitive to misuse; for instance it is tempting to interpret the results in favor of the analyst's purpose. In addition, the result is not necessarily representative of the population. In regard to these downsides the methodology should be used strictly to enhance the in-depth insights of the clients' perspective (Market Research for Micro Finance 2002). All of these matters put a responsibility on the interviewer as well as the interpreter of the data.

5 Empirical Results and Analysis

Given the theoretical model, methodological background, and data, this section presents the results and analysis. The reader is recommended to look at Appendix 1 for a better understanding of the different financial services that is presented below.

5.1 Seasonality Analysis

Income - The months of highest income are during June, July, and December. In June and July the harvest provides the household with income from the sales of the production. The main products are potatoes and maize. In December the income comes from the accumulated savings over the year. The saving institutions both formal and informal pay out their shares during this time of year. Also bonuses for those with work are handed out in December. However, the main income comes from the social grants. These are provided by the state and have a yearly increase after the budget speech in March. The lowest income months are from January until March where the households are waiting for the increase in the social grants and have no income from the farming, see Chart 1.
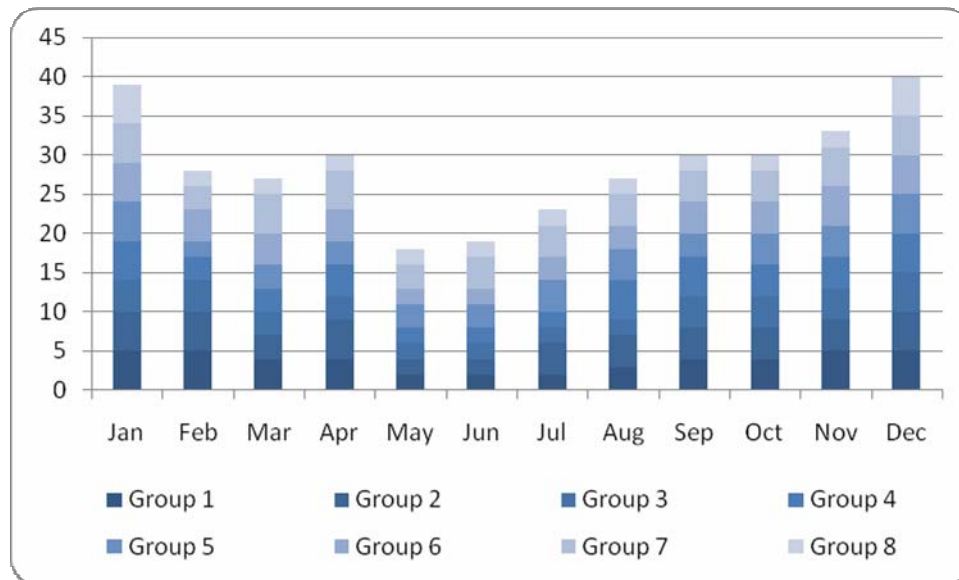
Chart 1 – Seasonality Analysis of Income
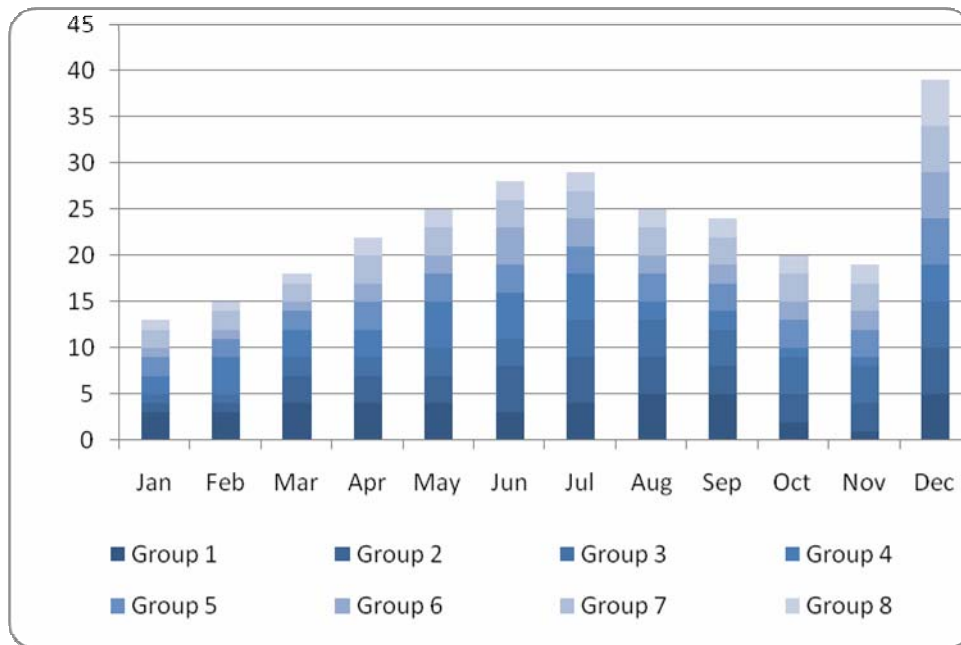
Source: Author's data. Note: Chart is accumulated scores (0-5) for focus groups exposed to Seasonality Analysis

Expenditure - December through February are high expenditures times consisting of the festive season, i.e. Christmas and New Year, in December, and the school fees and purchase of uniforms for the children in January and February. In addition, there is an increase in expenditure during April because of Easter where the households have high expenditures for food and gifts. During May, June, and July the expenditure is low because the households can live off the harvest from the agriculture, but also because the festive seasons and school start are over. At the start of August through October the planting season starts, which invokes expenditure on purchasing seeds and rental of tractors to plough the land. In November the preparations for the festive season start, which increase the expenditure, see Chart 2.

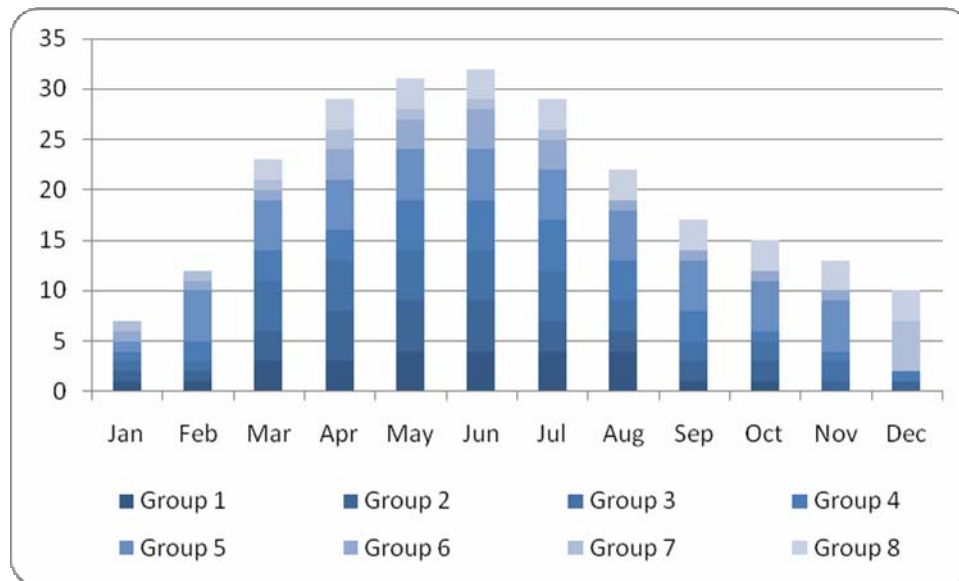*Chart 2 - Seasonality Analysis of Expenditure*

Source: Author's data. Note: Chart is accumulated scores (0-5) for focus groups exposed to Seasonality Analysis

Saving - The highest saving activity is during the harvest season where the households have low expenditure because they can live off the farm production and the income that is generated by the sales. March is also relatively high in saving activity because of the increase in social grants after the budget speech. Around the festive season the saving activity is low because of the high expenditure associated with these times. A decrease can also be seen from August through October because of the planting season where expenditure is high. The saving activities are conducted through the local semi-formal services (SaveAct and Kwa-Machi), which are considered to have a high transparency and low default rate. However, the majority of savings are still conducted through informal services. They have decreased over time as the household can clearly see the results of using the semi-formal services, which have provided them with opportunities that were not there before. The savings are mostly used for the festive and planting season, and school expenditures for the children but they also facilitate

for renovation of houses, purchase of food during hard times, purchase of furniture and so on, see Chart 3.

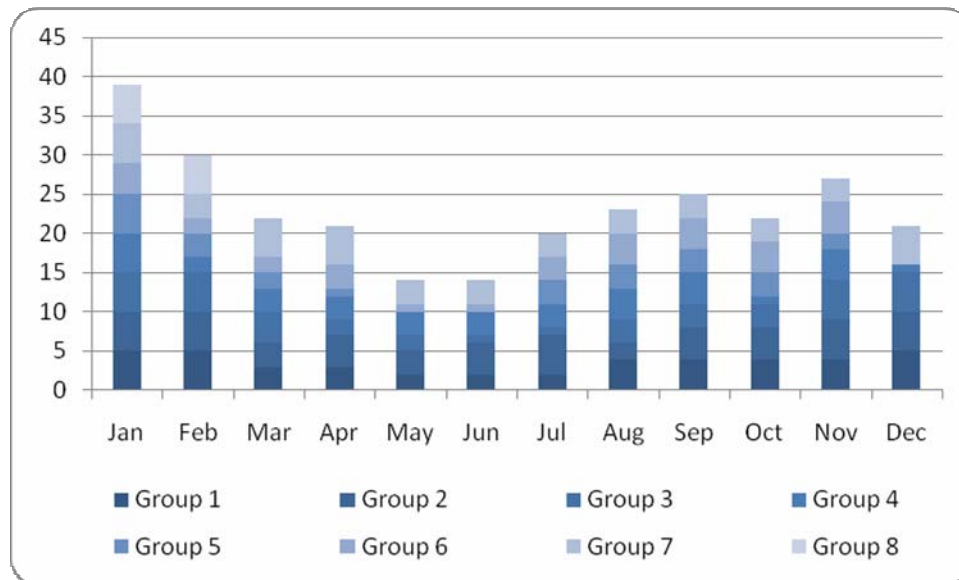*Chart 3 - Seasonality Analysis of Saving*

Source: Author's data. Note: Chart is accumulated scores (0-5) for focus
groups exposed to Seasonality Analysis

Credit - As seen above, all the economic factors of the households are affected by the festive and planting season, and so is credit. During the festive season there is a high demand for credit. At some periods this demand is so high that the semi-formal services, that are preferred among households, cannot provide sufficient credit needed. This forces the households to search for credit outside the regulated forms of credit to loan sharks and likewise that takes higher interest rates. During the harvest season (May, June and July) the household experiences the lowest demand for credits because they can live off the production from the farming. The increase in the social grants during March also provides a welcome income source that lowers the need for credit, see Chart 4.
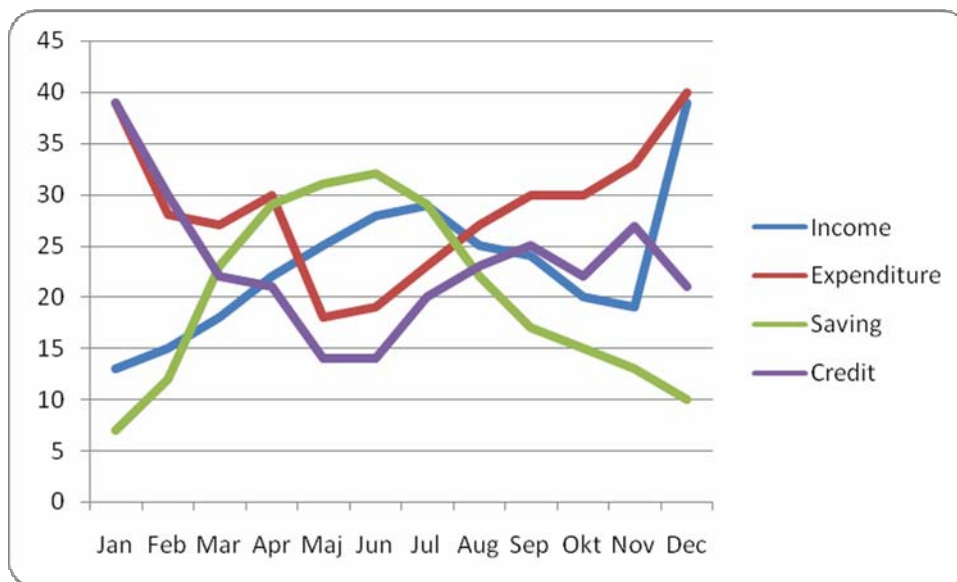
Chart 4 - Seasonality Analysis of Credit

Source: Author's data. Note: Chart is accumulated scores (0-5) for focus
groups exposed to Seasonality Analysis

The season follows certain patterns where the festive and planting season dominates the economic behavior of the households. The relation between income, expenditure, saving, and credit are unambiguous, see Chart 5. Income is based on regular income streams from social grants and in some cases remittances from relatives, however, topped-up with transitory income from farming activities and part-time jobs. During periods of high transitory income there is high saving activity, as the surplus is transferred to the savings services provided in the community. On the other hand, when income is low, the saving frequency decreases. This is often seen during the planting and festive season. At these specific periods also increases the demand for credit. So, when income is low and also expenditure is high the increase in use of credit services is transparent. Most importantly, the results show that savings are used for smoothing the volatile income and expenditure. The households accumulate capital especially around the harvest season to deplete the savings when expenditure is high during the festive

and planting season. Additionally, savings are used to store income in access for emergency needs.

The flows of economic activity during the season are extremely various. The need for the household over the season differs according to what seasonality factor that is active at the moment. The prediction of the literature review that income is volatile is also present in these results. The income is based upon a basic, yet, low transfer from government grants. Furthermore, the income is insecure due to failure and occasional income from farming production and part-time jobs. In addition, the previous false notion that economic activity, especially in savings, is not present among poor households is falsified with these data. Another important result is that expenditure does not follow income, which invoke that financial instruments are present. This notion is supported by the statements from the households. They argue that the financial instruments supplied in the community provide protection against the volatile and insecure income, and high expenditure.

*Chart 5 – Seasonality Analysis of Income, Expenditure, Saving, and Credit*

Source: Author's data. Note: Chart is accumulated scores (0-5) for focus groups exposed to Seasonality Analysis

5.2 Trend Analysis

The households use the banks for receiving their earnings and social grants. They felt forced to open bank accounts as they are compelled to hold accounts in order to receive social grants and salaries. This explains the small increase over time in the formal services. Some of the households deposited the revenue from their farming production before the introduction of the semi-formal institutions, however, most of the households had no saving activity in the formal banks. A good preference seen with the formal banks was that they were safe. However, they have high fees and complicated procedures, and were seen as inaccessible.

Preferences that are seen as advantageously with the semi-formal services are that they are safer and providing more sophisticated services than the informal services, coupled with more accessible services than provided by the formal institutions. The households experience a better economic situation as their use of semi-formal services increased. Even though, the households have lower use-frequency of the semi-formal services compared to the informal services.

Chart 6 -Trend Analysis of Formal and Semi-formal Services
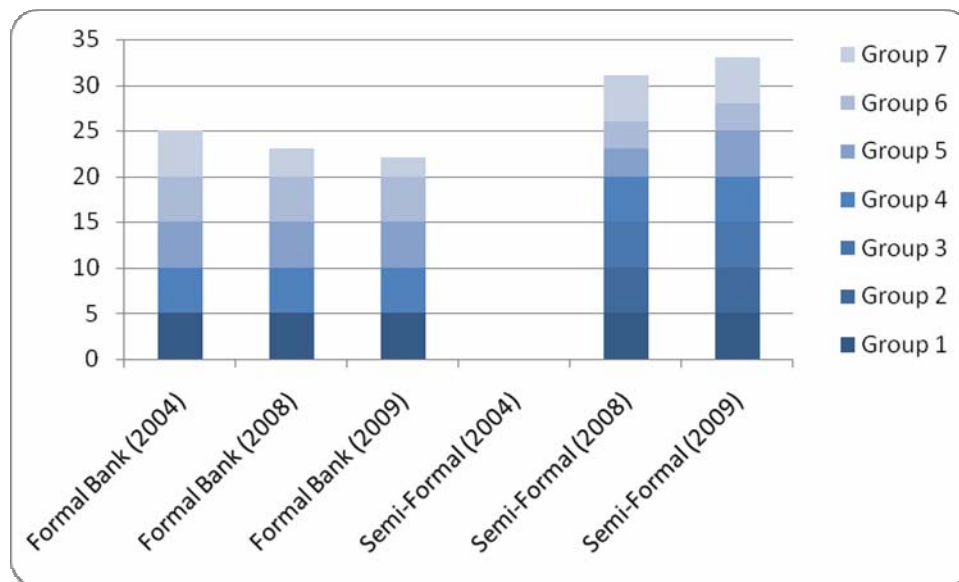
Source: Author's data. Note: Chart for Trend Analysis is the accumulated use
(0-5) for groups exposed to this exercise.

The informal services dominate the market and stokvels is one of the most common services used by the households in this data set. A stokvel is similar to an event-specific saving strategy, however, with a shorter time-frame. Every month households contribute a fixed amount of money that is used in the end of the year to purchase food or invest in a common business opportunity, however, this behavior was less common. They are forced to contribute every month to obtain the share out of food in the end of the year. The use of stockvels date back far in history. Some households have even increased the use of stockvels as food prices have increased and none of the households have any intention leaving them. A common comment on the stockvels was: "It has always been in the community and we are used to the procedures".

Another event-specific saving strategy that was common was burial societies. Households contribute to the burial society every month. The risk of someone passing away is high and use of the burial societies provides security. Burial societies have been in the community as long as they can remember and they have no intention leaving them as it is considered to be useful and important. In addition, they rather use the burial society instead of the formal services provided by the bank because the local burial society has roots in the community and are less complicated to access. The bank services include a lot of forms and formal processes that are considered to be complicated. The burial society is also considered to be relatively safe as it is based on trust between members in the community.

To be saving at home is not usual because the money is used for other savings possibilities and expenditure. Another reason for the low use of saving at home is because it is considered to be very unsafe. There is a high risk of robbery if you keep your money at home. In addition, keeping money at home also attracts neighbors and relatives to ask for loans and gifts.

Likewise to other informal services, they have a long history of using ROSCAs and have no intention of leaving them. The reason mentioned is tradition and that are used to the procedures. In addition, ROSCAs are seen as contributors of the community assisting them to obtain lump sums. A common use of ROSCAs, by households, is for school fees, festivities, and renovating their houses. The use of these services is often motivated by insufficient services

provided by formal and semi-formal institutions. ROSCAs are considered to be a fairly safe way to save. However, it has a higher default rate compared to the formal and semi-formal institutions. Furthermore, ROSCAs are problematic as they have fixed pay-outs and there is the risk of them not corresponding to the need of the household, which force them to utilize other services.

ASCAs have often coercive constitutions which forces the households to borrow. As the interest rates from the loans are accumulated in the end of the year, it is seen as a positive conduct. The interest rates were in some cases connected to the local food stockvels which provided them with more money.

The use of loan sharks to obtain credit has decreased over time. There is a common mistrust towards loan sharks and a majority does not use loan sharks and have not used it before either. Households feel sufficient cover from the other services present in the community and have in general a negative attitude against loan sharks.

Similar to the loan sharks, households had moderate use of relatives as sources for credit and the highest use is recorded before the entrance of the semi-formal institutions on the market. The use was even before this entrance relatively low and later on substituted by semi-formal institutions when introduced to the community.
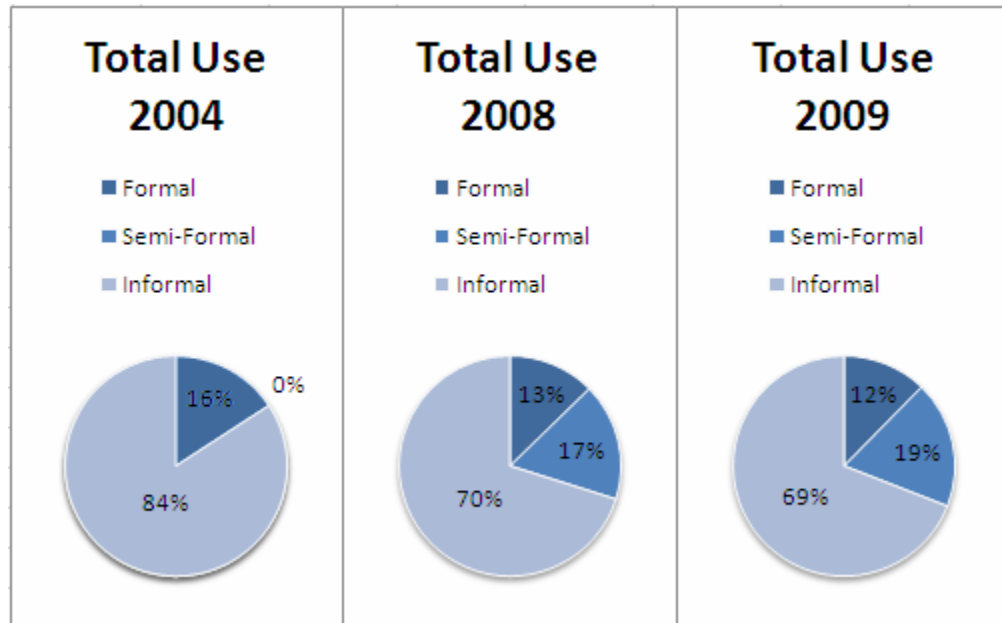
Char 7 – Trend Analysis of Informal Services
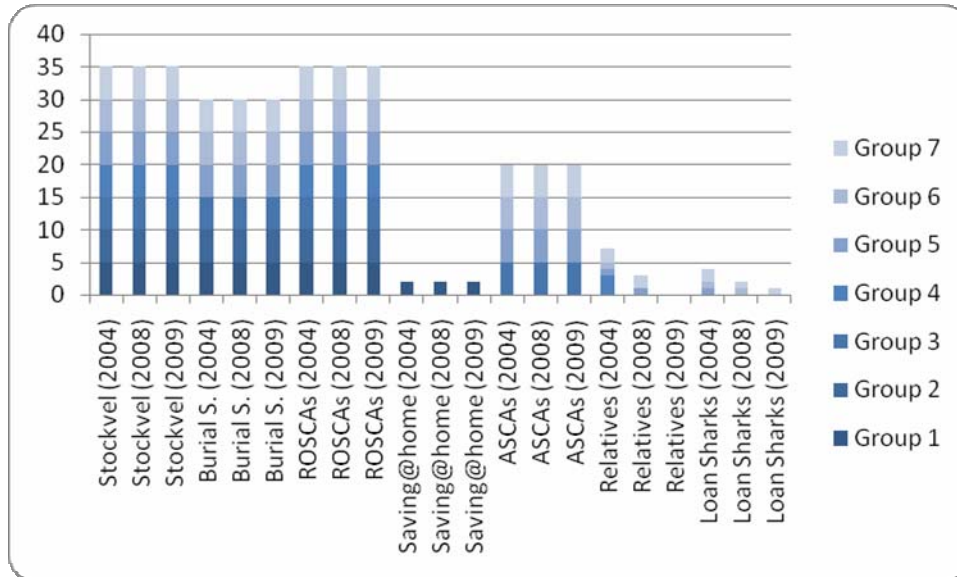
Source: Author's data. Note: Chart for Trend Analysis is the accumulated use
(0-5) for groups exposed to this exercise.

The households use different services because of several reasons. One is that the use of different services diversifies their risks. Holding a portfolio consisting of several services insure them against default. Secondly, the households use different services because they prefer high frequency of pay-outs. Including several services in their portfolio give them the opportunity to receive more payouts over the year. It has to do with the timing. The households require several pay-outs a year to cover their needs. The financial services are seen as complements to each other. The flow of money moves from service to services depending on the needs for that time. The household diversify as they do not want to put all their money in to one "basket". The change over time is seen in Chart 8, where a slight decrease in formal services is recorded due to their inaccessibility and high fees. The use of semi-formal services among the households has become more important and is also seen by the households as future holders of even more. However, informal services still dominate the market. Even if the semi-formal services are preferred they lack the possibility to compete with the informal services. The households see the various services provided as good complements on the market.

Chart 8 - Total Use of Financial Services

Source: Author's data. Note: Chart for Trend Analysis is the accumulated use (0-5) for groups exposed to this exercise.

The MFIs have contributed to an increase the financial activity in the communities studied. This has lowered the measurement λ_{t+1} as the market has been complemented by services that are comparably safer and have higher interest rates on savings than the informal services. The surplus in income has been more extensively saved in the MFIs over the past years, which invokes a λ_{t+1} closer to zero. Both of the organizations (SaveAct and Kwa-Machi) have provided competitive services and conquered parts of the financial market in the community. However, they are far from the only provider and the contribution to lowering λ_{t+1} could increase with taking up the competition with the informal services and the development of services that are compatible with the needs of the poor households. A summary of the results from the seasonality and trend analysis are presented in Matrix 1 below.

Matrix 1 – Summary of Seasonality and Trend Analysis

	High Months	Low Months	Sources	Trend
Income	June-July December	January-March	Social Grants predominantly, farming and part-time jobs	Income streams are constant and low during the year from the social grants, topped up with farming and part-time jobs. This makes the transitory income uncertain.
Expenditure	September-February April	May-July	Food, expenditure for the festive and planting seasons, renovation of houses	The demanding times of the festive and planting season increases the expenditure over what the income can bear. This creates a high demand for saving and credit possibilities.
Savings	April-July	December-February	Formal (Banks and Post-Banks) Semi-Formal (Kwa-Machi and SaveAct) Informal (ASCAs, ROSCAs, Burial Societies and Stockvels)	The preferred semi-formal services provide the households with more beneficial opportunities to save compared to the low transparency and high risk associated with informal services. However, still, semi-formal services cannot provide sufficient services to remove the part-dependency on informal services, such as: ROSCAs, ASCAs and Burial Societies.
Borrowing	January-February	May-July	Semi-Formal (Kwa-Machi and SaveAct) Informal (ASCAs, Relatives and Loan Sharks)	As with savings, the semi-formal services are preferred because of higher transparency, lower interest rates and risk. However, still, semi-formal services cannot provide sufficient services to remove the part-dependency on informal services to cover the expenditures.

6 Conclusion

All the factors (economic environment, income, production, consumption, and saving/borrowing) concerning the financial environment of poor rural households are extremely interdependent. Thus, the situation is complex and difficult to grasp in a separate context, i.e. in only looking at isolated factors.

The households in the rural areas are exposed to risk and insecurity because of idiosyncratic and common shocks. In addition, they face scarce access to formal financial services. Income is volatile and uncertain, which affects the possibility to obtain a smooth consumption. Furthermore, scarce access to savings services impedes the ability to avoid consumption drops because of volatile and uncertain income, i.e. the ability to smooth consumption. Access to savings services, including formal, semi-formal and informal, facilitates smoother consumption through saving current income for future needs. However, as the literature suggests, informal services are often associated with high costs and risk. Therefore, households would benefit from accessing formal and semi-formal services for smoothing consumption. The link between savings services and consumption is therefore a crucial part to investigate. Consequently, safer deposit services, supplied by MFIs, should provide poor rural households with smoother consumption patterns.

This study shows what part of the literature predicted: poor rural households seek and engage in financial transactions frequently and through a variety of financial services. What was most striking was the high level of use of informal services, even after the introduction of the MFIs on the market. The MFI appears to have a competitive advantage in terms of offering safe deposits and services at a lower cost. However, as the informal services still dominate the market it invokes that the poor households' needs are not adequately met by services from the semi-formal/formal institutions. The MFIs have been able to shift the portfolio of services held by the poor households towards a less risky and more diversified one. The MFIs seem to have replaced only the most risky and costly informal services such as loan sharks. So, in terms of smoothing consumption the MFIs provides a positive effect and moves λ_{t+1} closer to zero as they complement the financial markets in the rural areas and move them toward a more complete market. However, it is only a small step and the work still has a long way to go. What is lacking in all providers services is means for short-term and

long-term savings. The focus is concentrated to mid-term saving, which leaves a large gap in the financial market for poor rural households.

The first step towards improvement of the situation is to incorporate the existing financial services provided by MFIs into households' strategies for coping with insecure and volatile income. This would smooth consumption, and assist them in managing their own financial situation independently. The second step is to develop new services to compete with the existing informal services, but also to introduce services suited for short- and long-term saving activities, which could provide better means for smoothing consumption.

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Appendix 1

Formal savings are the most inaccessible to poor household. These services are safe and have a well-developed variety of savings services. However, formal savings services are associated with high transaction costs due to a number of factors, such as geographical distance, unsuitable preferences of the services, inconvenient office hours, and intimidating and complex procedures. The implemented government intervention in the market has often been unsustainable one-way transfers of government funds. Consequently, these attempts have been sporadic and mismanaged, which tend to make them unsuitable sources of saving possibilities for poor households. As a result, poor clients have moved towards informal savings to supply their needs for savings services. Informal savings services exist in a broad range of types. Nevertheless, they suffer severe limitations. Some of the most common informal savings services are: savings in-kind, deposit collectors and group-based savings (Sadoulet 2006).

In-kind savings is a form of nonmonetary asset, such as livestock. These assets could easily turn in to cash in need of sudden expenditure. However, they are indivisible, which make them unsuitable for small demands of cash. Furthermore, when households are exposed to common shocks it gives a surplus of sale on markets resulting in loss of value. Other disadvantages with saving in-kind are decapitalization of productive assets when forced to sell production inputs in times of distress, and complications in hiding assets from family and neighbors (Sadoulet 2006).

An additional form of informal savings is provided by deposit collectors. There a two types of deposit collections: deposit collectors that store individual savings and group-based systems, where the collector holds the accumulated savings of a group to later distribute the total amount to its individual members. Two main advantages are the accessibility and security of the deposits. With often-daily visits from the collector the local knowledge is high, resulting in low transaction costs. Safety is secured by the reputation of the deposit collector who is dependent on good references. Nevertheless, clients using these services have records of high losses due to fraud. Furthermore, as stated in the introduction, these services do not

come free of charge. As a result, clients experience negative interest rates on their savings, which leads to depreciation of their savings (Sadoulet 2006).

The last form of informal savings is group-based savings. This form includes services such as rotating saving and credit associations (ROSCAs), accumulating savings and credit associations (ASCAs) and event specific funds. ROSCAs date back as far as the 15th century. A ROSCA follows a specific structure, where the members contribute regularly, an agreed fixed amount, to a common pot. At every gathering one person receives the total accumulated amount. This proceeds until every member has received the pot once, which ends the cycle. This generates a fast growth of savings. In addition, this also provides every member with a positive interest rate, except for the last member in the cycle, as they all receive the savings in advance of what they would if they saved individually. However, the savings collected and redistributed to one of the members arrives regardless of this individual's needs at that time. In addition, the savings are fixed, irrespective of the needs for savings. Consequently, this makes the ROSCA system ill suited for long-term savings and as a mean to insure against shocks (Sadoulet 2006).

A similar system is ASCAs. The difference is that the members are not compelled to withdraw their savings according to a fixed agreement, which are added to the total pot and in the end redistributed. In addition, members have the opportunity to borrow at fixed interest rates agreed to in advance, or they can choose not to borrow at all during the whole period of the ASCA. The biggest advantages with an ASCA compared to a ROSCA are that it is more flexible in savings and loans, and that larger amounts of savings could be accumulated over time. This facilitates for insurance against shocks. With the flexible system of the ASCA members can borrow for emergencies and also fund large investments. However, the transparency of the ASCA is far less than the ROSCA. The time frame of the ASCA impedes the transparency as the funds accumulate over an unspecified period of time. This leads to high risk of fraud as difficulties in bookkeeping could be used for an individual's personal gain (Sadoulet 2006).

Finally, event specific funds supply the purpose of long-term savings. These are similar to the ROSCA system, however, with an aim that has a longer time frame. Members pay a continuous fee, which pays out upon the occurrence of a specific event, for example a

wedding, burial costs or fire damage. However, the funds are only accumulated for the specific event making them extremely illiquid (Sadoulet 2006).

As we can see, all of the informal services are often associated with risk, low access and high transaction costs. This has stimulated and provided incentives for the semi-formal institutions. We can group the semi-formal institutions in groups of three: credit unions, self-help groups (SHGs) and MFIs (Sadoulet 2006).

Credit unions are similar to ASCAs though they are larger and permanent. The deposits finance the loans. The interest rate earned yearly is returned to a common pool and redistributed over the members in proportion to their average share. The size of the organization and frequency of the deposits demand high management capacities, and careful regulations and supervision to minimize risks of mismanagement and discrimination. They lack the possibilities of accessing financial support from outside, which results in low pressure to maximize efficiency and safety. Consequently, this stresses the importance of supervision to protect the small depositors. Hence, depositors often lack the capacity for collecting information and monitoring the credit union's activity (Sadoulet 2006).

SHGs are smaller versions of credit unions or, likewise, ASCAs supported by a NGO. The growth of the SHGs is often financed from interest payments by borrowers. The outside interest and supervision from the NGO tends to reduce the risk of security issues that an ASCA usually face. The small size of the SHGs allows them to avoid the difficulty of regulations often associated with the larger credit unions, although, their dependency on outside support tends to undermine their sustainability. The SHGs are strongly supervised and directed by the supporting NGO, which makes their dependency on the NGO so important that they often do not survive without it (Sadoulet 2006).

As mentioned before, MFIs have been biased toward the belief that poor households are too poor to save. In addition, regulations have been difficult to overcome in terms of evolving the credit services to a broader financial institution. MFIs aiming to legally accept deposits face costly restrictions due to unsuitable regulations. As savings are a good source of funds for credits some successful MFIs have transformed their institutions to commercial banks. However, the subsidized MFIs impede the competition with such transformations. Furthermore, these subsidies affect the markets in more ways than just competition. The withdrawal of funds from outside support could undermine the confidence of the whole

sector, leaving the poor with unsecured financial services or worse, destroying the entire industry. MFIs are considerably safe but often do not respond to the demand of flexibility. There is a need to address the difficulties associated with liquidity and risk management, as well as satisfying reporting and information systems functioning as financial intermediaries (Sadoulet 2006).

Appendix 2

Income Smoothing Model for Poor Households

Imagine a poor household that acts in two periods, period t and t+1. Income given in the end of period fist period (t) is Y_t at the same time as consumption in period t takes place (C_t). The second period (t+1) income is known to be Y_{t+1}. The only way to protect consumption is through borrowing or saving. In the first period the household face a production decision. The household decide how much of the share of resources ($0 \leq \beta \leq 1$) to allocate to an absolute safe production with a positive return of s, the balanced is allocated to a risky but more profitable production activity. The risky production activity has two possibilities: either a high return (h) or a low return (l). Each state has the probability of 0.5 ($\rho_h = \rho_l = 0.5$) and $(h + l)/2 > s > 0$. This provides us with two outcomes in period t. Income is either high $Y_t = Y_{\rho_h} = \beta s + (1 - \beta)h$, or low, $Y_t = Y_{\rho_l} = \beta s + (1 - \beta)l$. Suppose that the production had a low outcome in the first period, the household maximize consumption in the two periods $U(C_t) + U(C_{t+1})$ subject to the constraint of assets the next period $(Y_s - C_t)(1 + r) + Y_{t+1}$, where r is the interest rate. The optimal consumption is chosen by the household by the standard condition $(1 + r)U'(C_{t+1}) = U'(C_t)$, which provides us with the net borrowing of $b_{\rho_l}^*$. The lifetime utility for respective outcome (l or h) is then $U_{\rho_l}(\cdot)$ and $U_{\rho_l}(\cdot)$. This situation is under no constraint, the ability to borrow and save is under a perfect market conditions. Assume instead that the household is only able to borrow a fraction (α) of the income in the second period (Y_{t+1}). We will have a borrowing constraint if $\alpha Y_{t+1} < b_{\rho_l}^*$. In this case $U'(C_t) > U'(C_{t+1})(1 + r)$ and we will record a welfare loss from the inability to borrow in

order to protect consumption levels in the first period. This welfare loss is captured by the function:

$$\delta\left(Y_{\rho_i}; \alpha, Y_{t+1}\right) = U_{\rho_i}(\cdot) - \left[U\left(Y_{\rho_i} + \alpha Y_{t+1}\right) + U\left(Y_{t+1} - \alpha Y_{t+1}[1+r]\right)\right] > 0.$$

By using the envelope theorem, which often is commonly used to solve maximization problems in microeconomics, an increase in the first period income reduces the effect of the borrowing constraint such as $\delta'_r(\cdot) \leq 0$. The question is now how the households optimize their risk-taking. If the borrowing constraint only binds when the outcome is low, i.e. when shocks are bad, the households maximize its utility according to $\max_{g} 0.5 U_{\rho_h}(\cdot) + 0.5\left[U_{\rho_i}(\cdot) - \delta\left(Y_{\rho_i}; \alpha, Y_{t+1}\right)\right]$. By using the first order condition to simplify the expression we derive:

$$U'_{\rho_h}(\cdot)/\left[U'_{\rho_i}(\cdot) - \delta'_{Y_i}(\cdot)\right] = -(s-i)/(s-h).$$

We can see that by the increasing constraint on borrowing we will have an increasing denominator. This is seen by the role of $\delta'_{Y_i}(\cdot)$ on the left hand side's denominator. This model provides an understanding of how poor households act when they are only provided by imperfect financial services. Poor households will in the absence of consumption smoothing tools exercise caution in production decisions, i.e. smooth income.
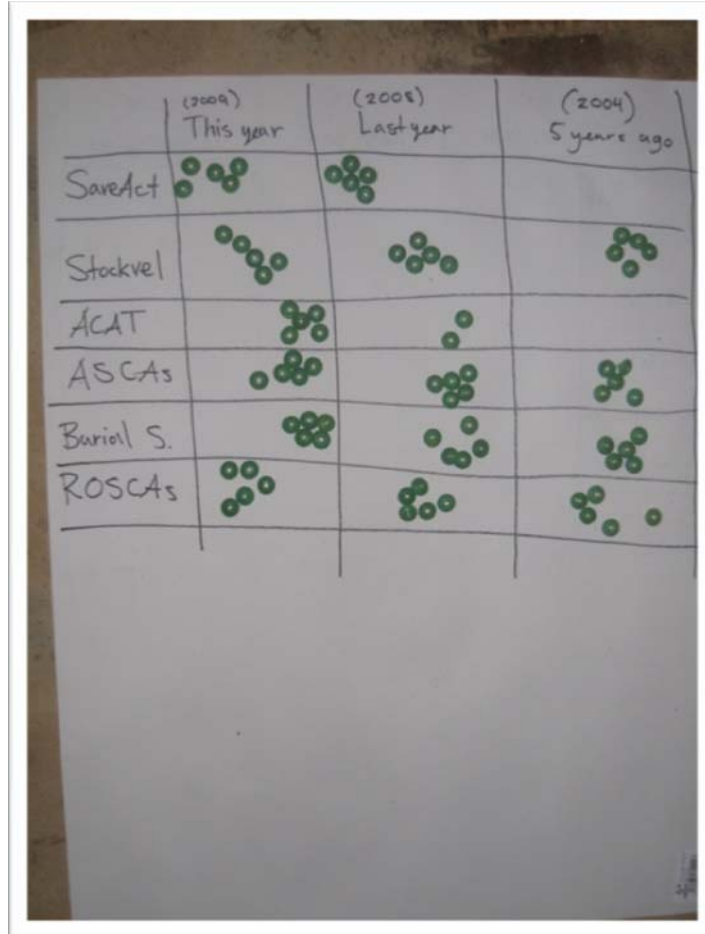
Appendix 3

Picture 1 – Example of Seasonality Analysis Exercise

Source: Author's picture

Picture 2 – Example of Trend Analysis Exercise

Source: Author's picture