ABSTRACT

Title of Document: FORMAL SAVINGS & INFORMAL INSURANCE IN VILLAGES: A FIELD EXPERIMENT ON INDIRECT EFFECTS OF FINANCIAL DEEPENING ON SAFETY NETS OF THE ULTRA-POOR

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This thesis exploits a unique micro dataset that uses a natural field experiment to identify indirect effects of formal savings access on de facto ineligibles residing in the same community. Despite widespread interest in microfinance as a poverty-reduction tool, the indirect effects on the very poor of expanding formal financial services remain largely unexplored. This study examines evidence from a large field experiment which helps fill this gap. It also contributes to an important emerging literature on the indirect impacts of policy interventions in developing countries, often (incompletely) evaluated solely on the basis of how they impact participants and beneficiaries. In developing regions, households vulnerable to extreme poverty often benefit from long-standing local safety nets based on cash gifts and other transfers from relatives and friends, which help them smooth consumption across food-deficits and household shocks. To date, little is known about how these pre-existing practices

are affected as community members begin adopting newly available formal financial services, and there remains much unexplored in the interaction of formal financial markets with informal safety nets. This paper addresses that gap by examining how formal savings expansion affects inter-household wealth transfers, with a particular emphasis on receipts by the most vulnerable. Using a rich panel dataset from Central Malawi that includes over 2,000 households, I find that experimentally boosting local savings uptake in rural areas leads to a strong positive effect on assistance receipts by *non* service-users during peak periods of hunger. The difference is strongest among the most vulnerable households. That is, the entrance of formal savings appears to complement local informal support systems for the highly vulnerable through an *indirect* mechanism, channeling greater wealth to such households during periods of food-deficits. The positive impacts of formal savings expansion on non service-users suggests that formal savings may have substantially greater benefits than would be suggested by focusing exclusively on the impacts experienced by the service-users themselves.

FORMAL SAVINGS & INFORMAL INSURANCE IN VILLAGES: A FIELD EXPERIMENT ON INDIRECT EFFECTS OF FINANCIAL DEEPENING ON SAFETY NETS OF THE ULTRA-POOR

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Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2011

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Dedication

I dedicate this dissertation to my grandfather, Rolland Flory, and to my father, John Flory, who stand as inspirations and reminders to use what I've been given to help improve the lives of others through social and economic development.

Acknowledgements

This dissertation would not have been possible without the key support of many mentors, colleagues, family, and friends over the last several years.

First and foremost I want to thank my advisor Ken Leonard for his excellent supervision and guidance over the years, and for always being there. His unflinching support and confidence in my ideas and abilities have been essential throughout the dissertation process. He has always been willing to talk through problems I encountered, as well as help me brainstorm ideas and refine my thoughts. Ken has often gone to great lengths to help me in my professional development, and has long been the first person I go to for all questions academic, professional, or dissertation-related. His reminders to remain focused on the practical, and his help in learning the difficult lesson of not allowing the perfect to be the enemy of the good, will continue to be invaluable as I advance in my research career.

I also want to thank the other members of my dissertation committee. John Hoddinott's careful reading, incisive comments, and insightful suggestions, led to many improvements which were incorporated in the final draft. Vivian Hoffmann was very helpful as I thought through questions to add to the endline questionnaire, and was always available to discuss ideas and problems. Peter Murrell, generous enough to take time from his responsibilities as chair of the economics department, raised excellent questions about local practices and institutions. Raymond Guiteras provided great comments on the empirical analysis, and very useful references for further guidance.

I would also like to thank the IRIS Center at the University of Maryland, for sending me to Malawi and providing me the opportunity for field research. In particular, I owe enormous gratitude to Geetha Nagarajan, research director at the IRIS Center, and director of the financial services impact assessment in Malawi. Geetha provided terrific support and encouragement over many months in the field, and also as I worked on my dissertation upon my return. I also learned a great deal working under her guidance on the analysis and writing for the impact evaluation reports. I thank Geetha not only for her generous patience as I struggled through my first encounters with the vicissitudes of field-work and survey data-collection and analysis, but also for her insightful comments and suggestions while working on the dissertation.

Many other faculty in the AREC department have also been very encouraging and helpful. Ted McConnell has been very helpful in thinking through my approaches to modeling inter-household wealth flows. Marc Nerlove also helped bring several important empirical questions to my attention.

There are also many friends and colleagues in Malawi to whom I owe a debt of thanks. Aleksandr-Alain Kalanda, CEO of Opportunity International Bank of Malawi, as well as Luckwell Ng'ambi and the entire marketing team at OIBM. Ephraim Chirwa, head of the local data-collection firm, as well as Patrick Msukwa, Monice Kajawa, and Rodney Mkweza, outstanding field supervisors. Also a great thanks to Lonnie Mwamlima and Anderson Moyo, for their excellent interpreting and facilitation of my discussions and meetings in villages, as well as their insights and advice on local practices.

My family and friends have also been a crucial source of support the last few years. My mother Becky, my father John, my brother Matt and my sister Suzanne, have always been there with unyielding encouragement, and an understanding of my relative seclusion during my last few years as I worked to finish the PhD. All of my AREC classmates have also been a great source of support – especially my friend and officemate Dennis Guignet. John Roberts, Simone Pieralli, Upamanyu Datta, Kabir Malik, and Seth Wechsler have also all been there alternately for support and much-needed distraction. Bianca Frogner was also a wonderful friend, constant source of encouragement, and provider of invaluable advice through the dissertation and the latter stages of my PhD years. Thank you.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

Interest in non-credit microfinance services has grown sharply in recent years among development policy-makers and practitioners, as well as among researchers. There is great enthusiasm, for example, over financial instruments such as crop-insurance for poor farmers. Several large aid organizations have also made it their mission to expand access to formal savings across the developing world.[1] In the earlier excitement over micro-credit, the potential benefits of savings and insurance services for the poor were given comparatively little attention. In recent years, however, poverty and development policy has increasingly broadened its focus to include these additional financial technologies in efforts to expand access to capital markets. Yet, even as projects of financial deepening are pushed forward, there remain crucial gaps in our understanding of the full effects. In particular, there is scant reliable evidence on what the encounter of formal finance with pre-existing informal institutions will yield.

Households across the developing world face frequent, often severe, adverse income and consumption shocks, particularly in rural settings. Given that average consumption levels are already low, this can place individuals at risk of dangerously low welfare outcomes. Savings and insurance vehicles can help households smooth consumption across periods of high volatility and better avoid sharp drops in welfare. Over the last two decades it has become abundantly clear such vehicles need not derive from modern economic institutions. On the contrary, communities excluded from formal

[1] The Gates Foundation, for example, has explicitly stated it is one of their primary objectives for its development-related philanthropic endeavors, and has promised to dedicate vast resources to realizing this goal.

financial markets typically have vibrant local safety-net systems and informal financial tools to help smooth consumption and prevent severely low outcomes during hard times.

It is unclear *a priori* how these pre-existing systems will be affected by the introduction of market-based instruments, and whether certain populations will be affected differently than others by the changes that ensue. Local practices key to the welfare of some households may change. This amplifies the uncertainty over the impacts that financial deepening is likely to have. Even if service-users themselves are positively impacted by the new formal financial technologies they adopt (a hypothesis which itself has been challenged), introducing new financial service options could still lead to mixed results overall. For example, use of new financial services may benefit the comparatively wealthy in a village, while very poor non-users may lose access to cash-resources for consumption-support, causing those hit with a shock to pull children from school, forego medical treatment, or reduce food-intake. On the other hand, use of formal services may enhance a household's management and accumulation of wealth, which might be shared with any dependent households.

It is in this context that the expansion of formal savings services, promoted by many in recent years as a major piece of development agendas, must be considered. Large-scale introduction of formal savings in rural areas of developing countries is likely to interact with indigenous institutions which have already evolved to fulfill important economic roles. The interaction could result in unintended consequences for non-users, which may be either negative or positive, and there remains scant evidence to serve as a guide. To date, what little work has been done on micro-savings quite naturally tends to focus on the individual who is taking up the new savings technology, or the new user's

household. This handful of studies concentrate on understanding the direct outcomes on users of things like commitment devices and new wealth management tools, and the mechanisms driving these outcomes.[2] Few studies have considered the broader economic and institutional contexts in which these new product take-up decisions are being made, and none seem to have explicitly considered spillover effects on the *non-using* population.

1.1. Financial Deepening & Informal Risk-Coping Institutions

Townsend (1995) makes an intriguing observation about risk-bearing capacities among the villages he studies in northern Thailand. The village most integrated into markets outside the village had a marked paucity of internal informal credit and insurance mechanisms, and more pronounced negative shocks to consumption for households suffering a severe illness. This suggests that deeper penetration of formal financial markets into villages could in fact weaken local risk-bearing systems and social safety nets, a hypothesis echoed by Besley (1995) and Morduch (1999).

Despite interest in both existing informal insurance arrangements for the poor in villages, as well as the ameliorative potential of financial markets in consumption-smoothing, there are few serious studies on the interaction of the two. Perhaps this is due to a lack of datasets suitable for examining the relationship of formal and informal institutions. Two exceptions are Ligon, Thomas, and Worrall (2000), and Foster and Rosenzweig (2000). The former, a purely theoretical contribution, models the introduction of an enhanced savings technology in the presence of informal mutual

[2] For a review of some of these studies, see for example Karlan and Morduch (2009).

insurance contracts. The latter paper models the simultaneous introduction of formal savings and formal credit in a similar setting, and includes a short empirical analysis, but where identification of effects relies on distance from banks as an instrument. Both studies conclude that the introduction of formal services tend to weaken informal insurance based on inter-household wealth flows. Importantly, both follow the dominant perspective in the literature on informal insurance, assuming transfers are bidirectional, based on the promise of future reciprocation and the notion of *mutual* insurance – an assumption which may not always be valid.

The present study advances this nascent line of research by closely examining impacts of formal services on local safety nets through a cleaner and more direct empirical strategy – the importance of which is underscored by the fact that the results run counter to effects suggested by less well-identified observations. Precision in identifying impacts is improved by this study in at least two major ways. First, the analysis here empirically disentangles the effects of formal savings from that of credit. This is not only important for a more complete and accurate academic understanding of the interaction of formal and informal systems. The reality that expanded formal savings access may precede access to formal credit by extended periods highlights the policy relevance of distinguishing the effects of formal savings from formal credit, as the effects of the former may materialize well before access to the latter is introduced.

Second, identification of causal effects in the present study rests on a more solid foundation than the handful of empirical observations collected thus far. An information intervention, randomized at the community level, raised local formal savings rates in the treated communities. Reliance on a randomly assigned instrument for formal savings

allows analysis of impacts to avoid many of the endogeneity concerns that hinder the sparse collection of current evidence on the effects of formal capital markets on informal insurance.

The present study advances this literature along a few other dimensions which are at least as important, and which have not yet been addressed in the research on this area. This is the only empirical analysis I am aware of which considers heterogeneous impacts of financial deepening on household transfers. By examining effects across households of varying levels of vulnerability to low welfare states, the analyses here shed important light on the different impacts of financial deepening across subpopulations of key policy relevance. In particular, by focusing on how formal savings expansion affects safety nets and outcomes of the poorest of the poor – those typically least in a position to start using formal services – the dissertation centers analysis of the effects of formal capital markets on one of the most crucial populations for anti-poverty policy.

In addition, this is the only study I know of that explicitly examines the effects of financial deepening on *non-eligibles*. By identifying those unable to take advantage of new financial products, the empirical strategy pursued here enables analysis of indirect effects. While identifying an indirect channel of impacts is important from a theoretical perspective, its policy relevance derives from the practical reality of wealth-constrained access to formal services. As the geographical reach of formal capital markets expands, access is likely to grow unevenly at first, with only the wealthier able to take advantage during the early phases of transition towards modern financial markets. As these early phases may in fact endure for protracted periods, it is of crucial policy importance to

better understand what is likely to happen to those excluded from financial access during these initial stages.

1.2. The Importance of Indirect Effects in Development Projects

This study also contributes to an important emerging literature on the local indirect effects of policy interventions in developing countries. A seminal study in this new thread of the project evaluation literature is that by Angelucci and DeGiorgi (2009), who find strong impacts from the Mexican welfare program, Progresa, on households that are *not* eligible to participate in the program. They show that the presence of informal insurance networks and inter-household transfers lead to positive spillover effects onto households that are not direct beneficiaries of the program.

This underscores the importance of accounting for the fact that many village settings are characterized by a greater degree of inter-household interactions than in other scenarios, making it easier for program effects to extend beyond participating households. However, the program evaluation literature is generally focused only on how participants and beneficiaries are themselves affected by a particular program. Depending on whether indirect effects are present, and how they impact the non-treated, this can lead to important over-assessment or under-assessment of program effects, and incomplete or inaccurate impact estimates. The results of the present study demonstrate the clear importance of broader local effects of an additional type of intervention which has become commonplace in the developing world – that of microfinance.

1.3. Overview of Findings

Contrary to suggestions which might be inferred from the limited existing evidence, introduction of formal savings technologies in rural Malawi has a significant *positive* effect on inter-household wealth flows. In particular, in communities where formal savings rates were experimentally boosted by the information intervention, the proportion of households receiving cash-gifts during the high-stress hungry season is nearly 50% higher (a difference of about 10 percentage points, from 21% to 31%). When restricting to the most vulnerable households, for whom the impact is clearly identifiable as indirect, the difference in proportion of those receiving cash gifts grows to 180% (a difference of about 18 percentage points, from 10% to 28%). Instrumental variables estimates indicate that, for every one percentage-point increase in the proportion of households in a community using formal savings, the worst-off households experience a three percentage-point increase in the probability of receiving a cash gift.

This substantial cross-sectional difference in cash-gift receipts by the most vulnerable is accompanied by a commensurate two-year increase in informal loan receipts. Villages assigned to the formal savings encouragement exhibit increases in the proportion of highly vulnerable households receiving loans from friends and relatives ranging from 14.4 to 22.4 percentage points, relative to changes in the non-encouraged areas. This is similar in scale to the 18 percentage-point difference observed for cash gift receipts.

Moreover, increased assistance-receipts by the worst-off are associated with significant welfare impacts. Living in communities that received the savings encouragement caused a two-year improvement in at least three key welfare indicators

among the highly vulnerable. The worst-off households in treated villages are more likely to exit the worst food-security category and enter one of the three less severe categories, the increase in probability ranging from 11.8 to 16.3 percentage points. They also experience a 1.3 to 1.4 reduction in a continuous food-insecurity score, representing a 10-12% improvement over baseline values for this food-security indicator. In addition, the worst-off households living in savings-encouraged communities experienced a relative drop in the likelihood of reporting that any members of the household were recently unwell, the effect ranging from 12 to 17.4 percentage points.

These results on the experience of rural households in Central Malawi have important policy implications. First, as they derive from a well-identified study of the impacts of formal savings on intra-village transfer practices, they provide compelling evidence not only that formal savings affects inter-household transfers, but that the effects can be quite large. Second, they demonstrate the clear presence of an indirect effect from the entrance of formal savings on inter-household transfer receipts and welfare outcomes, among households that are *not* formal-savers. Third, they show that the worst-off households in a community can be particularly sensitive to changes stemming from the expansion of formal savings. Finally, in contrast to the handful of observed associations between more developed financial markets and weakened informal safety nets which have peppered the literature thus far, these results show formal savings can in fact have a positive impact on inter-household transfers. It would be premature to infer a universal positive indirect effect on transfer receipts among the worst-off, since long-term effects may differ from those over the short period of this study, and important variations in preferences or social

norms across different settings may affect outcomes. Nevertheless, the substantial positive impacts documented through this dissertation demonstrate a clear and significant potential for an ameliorative role to be played by formal savings, even on the non-users of such services.

These results also highlight the failure to account for key factors in how institutional change from the introduction of financial markets is often conceptually framed. In conjunction with a simple framework which allows for unidirectional transfers, the results presented here suggest the commonly accepted theoretical underpinnings of transfer-based insurance practices are too narrow. That higher local savings rates causes an influx of assistance-receipts by non-saving households is not easy to reconcile with the view that transfers are predicated simply on self-insurance motives. Indeed, the observed increase in transfers runs counter to key implications from the sparse existing theoretical work on this question.

In addition, contrary to how they are often treated in the literature, the findings suggest that inter-household transfers are not all equal. The high sensitivity of transfer receipts by the worst-off to local savings adoption indicates an important heterogeneity. That the experience of rural households in Central Malawi is at odds with the little existing research on the interaction of formal and informal institutions demonstrates just how little we still know about the transition process. There is still much to be learned about informal insurance and consumption support practices and market-based mechanisms, and how these very different types of institutions are likely to interact. The present study helps address this gap, at a time when institutions of modern finance are encountering informal village-level institutions with growing frequency.

1.4. Outline of the Dissertation

The dissertation is organized as follows. Chapter 2 explores in greater depth the literatures to which this dissertation contributes, and the ways in which this study helps push these literatures forward. Chapter 3 describes the empirical setting, the data-collection process, and important characteristics of the dataset and its households. It also defines key variables used in the following analyses.

Chapters 4, 5, and 6 comprise the key analytical chapters. Chapter 4 describes the identification strategy on which this study turns, an information intervention designed to encourage formal services use, randomly assigned at the community-level. Analyses then show that the intervention increased formal savings use, while leaving formal credit use unchanged.

Chapter 5 explores the central finding of the study, that increases in local formal savings rates raises inter-household cash gifts, particularly assistance receipts by the most vulnerable. It begins by developing a simple theoretical framework for analyzing the effects of formal savings services penetration in different contexts. In an attempt to broaden the theoretical approach that has dominated the literature on informal insurance institutions, a simple innovation allows for transfers which are unidirectional ("charitable gifts") rather than bidirectional ("mutual insurance"), as is commonly assumed. The model illustrates how the entrance of superior savings technologies can lead to different effects when transfers are of one type or the other. Empirical analyses then explore the reduced form effects of the information intervention, before proceeding to an instrumental variables analysis of the effects on the only group for which the channel of

effects are clearly identified – the highly vulnerable.[3] The analyses of this chapter are limited to cross-sectional data, as the information on cash-gifts was only gathered in the second and final wave of the survey.

Chapter 6 moves on to a panel analysis of related types of transfers for which there is data in both years of the survey. These analyses show impacts on transfer receipts by the highly vulnerable on a scale similar to the response of cash gifts. The chapter then examines welfare impacts associated with these changes. Chapter 7 concludes and indicates directions for future investigation.

[3] Note that the clear presence of an indirect effect means that the instrument cannot identify effects among formal savings-eligible households as coming from a direct or indirect effect. Any effects among savings-eligible households might be driven by own use of formal savings or instead by others' use of formal savings.

Chapter 2. Development Projects, Risk, & Consumption in Villages: The Expanding Frontier Between Capital Markets and Pre-Modern Institutions

This chapter explores the current status of scholarship in the main areas to which my research contributes, as well as explains how my research relates to recent developments and advances our understanding in these areas of enquiry. One literature this study helps advance is the scholarship on local informal methods used to protect against low consumption and its negative welfare consequences. Households across the developing world face frequent, and often severe, adverse income and consumption shocks, particularly in rural settings. The central focus of the dissertation – assistance receipts by the very poor from other households – constitutes one of the most crucial safety nets available in many village-settings, especially for those living on the margins and producing close to subsistence. In particular, I contribute to a thin strand within this literature which attempts to understand a relationship of ever-growing relevance as financial deepening proceeds apace across the developing world: the interaction of market-based institutions for wealth management and risk-coping with indigenous non-market methods which fulfill similar functions. I focus on an issue that has received surprisingly little attention: the impact of formal capital markets on informal insurance institutions – and the empirical effects of formal savings in particular, which, to the best of my knowledge, is a unique contribution to this strand.

My research also contributes to a growing number of studies highlighting indirect effects of policy interventions, and in particular the possibility of spillovers of development projects on non-target populations. Though still relatively few, these studies

serve as an important warning to researchers that accurately assessing the full impacts of interventions requires accounting for the possibility of local spillovers, which may be positive or negative. They also stand as an important reminder to policy-makers and practitioners to remain aware of second-order consequences of development programs. In the case of negative local externalities, true total benefits from a program might diminish substantially, possibly to the extent that net effects are in fact counter to policy objectives. In the case of positive spillovers, the full benefits of the intervention may be much larger than what would be measured by focusing solely on direct participants or beneficiaries.

This has already been shown in the context of indirect treatment impacts on fellow pupils and neighboring schools in the case of deworming in Kenya (Michael and Kremer, 2004) and in the context of indirect benefits of welfare payments to rural households in Mexico on non-beneficiaries (Angelucci and DeGiorgi, 2009). The present study in Central Malawi demonstrates the importance of these considerations in the context of a different type of intervention – microfinance programs, and projects to expand access to formal financial services.

A rich literature documents the central problem of risk in rural settings of developing countries. From Zimbabwe to India to China, several studies detail the exposure of village communities to substantial fluctuations in consumption levels due to periodic swings in income and the inherent uncertainty surrounding agricultural livelihoods. Especially among the poorest, who are already consuming at low-levels, negative shocks to consumption can often lead to dire welfare outcomes, many of them

with long-lasting or permanent effects – such as serious illness, lower education levels, physical stunting, and death.

There is also a broad literature on the various responses that, in the absence of formal markets, have indigenously arisen to meet the threats posed by uncertainty. Pre-modern societies not fully integrated into modern market economies exhibit a variety of methods to protect individuals from falling into dangerously low consumption. Variously referred to as "hunger insurance", local "social security", "non-market institutions", and "informal insurance arrangements", these strategies for managing risk and tactics for coping with adverse outcomes generally fall into one of two categories: individual-based approaches that one may pursue in isolation, or interdependent approaches which rely on help from others.

Despite the presence of indigenous non-market practices, however, many households remain exposed to sharp downward swings in consumption, often with very harmful consequences. A growing body of literature explores the ameliorative role that formal financial markets can offer in this context. Highlighting the many problems and limitations of informal safety nets, and the empirical evidence that risk is generally far from efficiently allocated in village settings despite the variety of informal coping methods, many researchers advocate the expansion of formal financial services to help the poor better address their acute vulnerability.

However, despite widespread academic and policy interest in both informal insurance practices on the one hand, and the promise that formal services might offer the poor on the other, there appears to be surprisingly little research on how the two systems impact each other. How formal market systems affect pre-existing practices and thereby

influence the overall risk-bearing capacity of rural communities is a question raised at least as early as Townsend (1995a, 1995b). It is thus perhaps surprising that there remains relatively little research on the interaction between formal financial institutions and informal indigenous institutions for inter-temporal wealth exchanges and risk-management. In particular, little attention seems to have been given to the impact of financial deepening on informal safety nets.

Ligon, Thomas, and Worrall (2000), and Foster and Rosenzweig (2000) represent two exceptions. The models, simulations, and theoretical implications of both provide important insights and lay a solid foundation for rigorous analysis of how formal financial services and informal insurance practices are likely to interact. In addition, the empirical observations of the Foster and Rosenzweig are provocative. Their identification strategy, however, similar to the more casual observations of Townsend (1995a, 1995b), is complicated by the fact that it fails to resolve important endogeneity concerns. In addition, both papers share the fundamental assumption that inter-household transfers are sustained by the promise of future reciprocation, an assumption, as I argue below, which may not be valid in important cases.

My principal focus is a slightly different set of questions than that pursued in these two studies. I examine primarily the effects on safety nets of those who are excluded from market access in an asymmetric setting. The introduction of an asymmetric situation in the context of formal services expansion is, I believe, a novel contribution to this thin literature, and one which takes account of an important practical reality likely to obtain throughout most of the protracted process of financial deepening. In addition, the use of a randomized natural field experiment to identify casual effects

represents a significant improvement over the only other empirical study I was able to find on the effects of formal services expansion on informal practices – that of FR. The present study also represents the only analysis I am aware of which clearly separates the effects of formal savings expansion from that of formal credit services.

Finally, despite the central focus on a slightly different question, the present study's evidence on assistance-receipts both by those excluded from financial access, as well as by the broader community, does in fact address the work of LTW and FR in a more direct fashion. The experience of rural households in Central Malawi appears to be at odds with some of the key conclusions shared by LTW and FR. This suggests the need for theoretical innovation and models which better accommodate the expanded set of empirical data I bring to the literature.

2.1. The Centrality of Risk in Developing Economies, and Common Responses

This study helps advance a rich and important literature on methods in non-modern economies for protecting individuals against poor outcomes in the face of frequent negative shocks. The ubiquitous presence of risk and uncertainty in production and consumption throughout the developing world, particularly in rural areas, is well-known. Incomes of households in villages are not only typically low, but also subject to substantial variation. As agriculture plays such a central role in the incomes of village households, much of this risk stems from uncertainties in agro-climatic conditions such as storms, drought, or floods, as well as threats such as crop disease or pests, which can seriously harm each season's output. In addition, fluctuations of input and output prices, as well as variations in household labor-availability due to sickness or poor health can

affect total output and net revenues, while volatility in the prices of any purchased consumption goods represent additional sources of upward and downward swings in annual or seasonal real incomes. Negative shocks may also derive from violence, political instability, or theft, all of which are more common in settings with low security infrastructure and weak state institutions, which characterize many developing economies. Consumption shocks may also occur, for example funeral expenses arising from unexpected deaths, or medical expenses from severe illness, drawing household resources away from typical goods and services such as food and schooling.

Absent smoothing devices, significant fluctuations of income will translate to large variations in consumption by household members from one period to the next. In good years, this of course means higher than average consumption levels. However, in bad years, this may result in very low consumption and dire welfare outcomes, often with permanent effects – such as physical and mental stunting, chronic illness, or death. Rose (1999), for example, finds in rural India that lack of coping mechanisms to address negative income shocks from poor rainfall leads to choices that harm children, and higher infant mortality rates, particularly among the worst-off households. Foster (1995) shows that vulnerability to income swings can lead to physical stunting; Jacoby and Skoufias (1997) demonstrate the link between fluctuating incomes and reductions in school attendance; and Alderman et. al. (2006) show that vulnerability to low consumption from income shocks can lead to both reduced stature among children and lower human capital accumulation. These types of permanent impacts can also extend beyond those directly affected. Dercon and Hoddinott (2005), for example, find evidence in Zimbabwe and Ethiopia that inability to cope with droughts and other severe shocks can lead to

decreased stature and schooling which have employment and productivity effects which may persist for several generations.[4]

These and related studies generally show that the most severe negative consequences of shocks fall disproportionately on those households with the fewest assets, and often on children. This signals a clear positive role for insurance, which would help farm-households cover downward swings in income and protect them from dangerously low consumption. Yet formal insurance is conspicuously absent from most village-settings.[5]

Nevertheless, in the face of such pervasive and acute exposure to uncertainties in periodic income, a broad variety of non-market methods for minimizing downward swings in consumption have been documented in the literature. When formal market options are lacking, how well households are able to mitigate the negative consequences of risk depends largely on the strength and quality of informal strategies for minimizing uncertainty ex-ante, as well as informal tactics for coping with negative ex-post realizations. Changes which might improve or worsen the set of tools households have at their disposal are likely to have strong welfare consequences – particularly for those households most exposed to risk of severe negative outcomes.

[4]For more on long-term effects of negative shocks, permanent impacts of low-consumption, and links between health outcomes and risk, see also Dercon 2005, Hoddinott and Kinsey 2001, Jalan and Ravallion 2004, Beegle at. al. 2006, Karlan and Morduch (2009) p.57.
[5]For a discussion of the obstacles to formal insurance and their general absence from poor communities and village-settings, see for example Besley (1995), Morduch (2006) and Karlan and Morduch (2009).

Addressing Uncertainty in Isolation

Many of the methods a household might use to either reduce uncertainty, or mitigate negative consequences from the realization of poor outcomes, involve choices a household can make as an isolated unit. Several studies have shown that one strategy households pursue is to adjust production decisions and diversify income-generating activities so as to dampen income volatility. While reducing the scope for variation in realized income (and, more to the point, raising lower bounds for expected income ranges), this often unfortunately lowers efficiency, reduces profits, and diminishes total household incomes over the long-run. Morduch (1995) reviews several ways this practice of "income-smoothing" has been documented in other studies as a method to reduce the risk of low income. He cites, for example, results from Antle (1987) showing that rice farmers in southern India use labor well beyond profit-maximizing levels as evidence that rural households use techniques and inputs that reduce variability of profits but lower net expected returns. Bliss and Stern (1982) find evidence in northern India of fertilizer usage far below profit-maximizing levels, suggesting production choices aimed to minimize potential investment losses (and thus income reductions) in case the crop fails. Morduch (1995) also cites Walker and Ryan (1990) and Bliss and Stern (1982) as providing evidence that households sometimes delay the onset of production to await more accurate weather predictions. While this allows them to limit production and cut potential losses when they know weather is likely to be poor, this practice of waiting again substantially

reduces total expected yields.[6] Morduch (1990) also finds that vulnerability of consumption to income shocks is linked to use of lower-risk, but lower-yielding, crop-varieties. Anecdotal evidence in Central Malawi also suggests that, while farmers know that genetically modified maize may result in significantly higher yields, their concern that it has a higher risk of spoilage prevents them from using it.

Just as wealth level affects the extent of negative impacts on long-term welfare from downward income shocks, wealth level and degree of risk exposure also have an important impact on the negative effects to profits that can result from income-smoothing as response to production uncertainty. Binswanger and Rosenzweig (1993), by considering the impact of risk-aversion on a broad set of agricultural inputs, show that increasing the variation in rainfall timing has a differential impact on households by vulnerability level. Those households in the lowest wealth strata are most likely to shift production toward safer, but less profitable, modes of production. They estimate that raising the coefficient of rainfall timing variation by one standard deviation would have a negligible impact on production decisions and profitability of the richest farmers, as they have adequate auxiliary methods to cope with risk, but would lower incomes among the bottom quartile by 35%. Morduch (1999a) also notes that shocks may send more vulnerable households into a downward spiral into deeper poverty if assets previously used in production are sold off (threatening future income) to protect current-period consumption levels.

While it may help prevent dangerously low consumption swings, this method for handling adverse shocks can thus nevertheless have substantial negative long-run impacts

[6] Bliss and Stern (1982) estimate that delaying production by two weeks can reduce yields by 20% , in the village they study in northern India.

on the poor. Formal financial services deepening may have an important impact in the context of this approach to dealing with risk. Any indirect effects that might worsen a household's choice-set of ex-post risk-coping mechanisms may exacerbate total income losses from any ex-ante income-smoothing of this sort. On the other hand, if indirect effects lead to an improvement in a household's ex-post options for dealing with negative shocks, it may induce movements towards greater efficiencies in production, and higher net incomes among such households. While the present study does not address this possibility explicitly, the data may enable an analysis of this sort, and this represents an opportunity for future research.

Some households also make use of strategies in diversifying their income sources along a spatial dimension. This can range from fairly local approaches, such as intentional plot-fragmentation, to sending household members out to more distant locales in order to generate income from environments subject to less covariate risk. The former (discussed, for example, in Townsend 1995b) may help diversify against variations in crop yields caused by localized events such as pests or crop disease, and even help hedge against weather variations in topographically diverse places.[7] Sending household members further away could also achieve the same goal, by generating crop-incomes from locations distant enough to avoid experiencing covariate weather-based shocks, such as drought or floods. In addition, however, it may provide access to income sources subject to entirely different types of risk, much less correlated with fluctuations in farm-income. Giles (2006) shows that households in rural China, for example, use local off-

[7] See, for example, Townsend (1995b) for an explanation of how high levels of rainfall can be simultaneously good for certain plots farmed by a village and bad for other plots farmed by the same village, depending on where the plot lies.

farm labor markets as well as remittances from migrants working in more distant cities to reduce exposure of consumption to the uncertainties inherent in agricultural production.

In addition to spatial diversification of income sources, individuals also often have at least limited access to trade-offs along a temporal dimension. By sacrificing consumption now, it may be possible to transfer some wealth forward to future periods to help cover any negative income realizations. Paxson's (1992) well-known study of Thailand shows that households save out of windfall seasons, helping them upwardly smooth consumption during hard times. A wide variety of savings instruments have been documented in the literature, ranging from cash at home to livestock and grain storage to durable goods and jewelry (see, for example, Deaton 1992; Rosenzweig and Wolpin, 1993; Fafchamps et. al. 1998).

However, most savings options in village settings typically have important limitations. As Besley (1995) notes, it is often difficult to find assets that yield positive returns for postponing consumption. Illiquidity can be an important problem. For wealth stored in livestock, land, or durable assets, for example, the transaction costs (the opportunity cost of time and other resources, and potentially explicit expenses) associated with finding buyers and selling assets may be significant. Furthermore, covariate shocks can mean that when one household is trying to sell off assets in order to purchase consumables, many neighbors may be doing the same. When markets are fragmented, this can drive local prices for the asset down. It can also exacerbate transaction costs by making it harder to find local buyers for assets in order to convert the wealth to consumption (i.e. the liquidity of the asset may worsen in times of crisis). Thus the hardest time to use such savings instruments may be just when a household needs them

most. Fafchamps et. al. (1998) find, for example, that livestock sales in Burkina Faso are able to make up for only 15-30% of income shortfalls – due in part to these types of difficulties.

Storing wealth in cash, on the other hand, is subject to potentially high risks from inflation (frequent and often acute in many developing-country settings). Both types of risk can cause the value of any savings to depreciate substantially. Saving in livestock, durables, or cash is also subject to risk of theft. Even storing food can carry substantial risk of loss, from spoilage, theft, and being eaten by rodents or other animals.

Indeed, most studies have concluded that wealth-storage mechanisms in rural areas of the developing world, while they do smooth consumption, are rarely ever replete enough to support the constant stream of income that would be predicted by the permanent income hypothesis.[8] In fact, this is one of the major motivations behind current intensified efforts to expand formal savings options across the developing world. Zeller (1999), for example, presents compelling evidence in favor of high-liquidity precautionary savings options.

The use of precautionary savings to insure against future adverse outcomes can also have important drawbacks. As Giles and Yoo (2007) point out, holding savings as a hedge against potential income shortfalls may prevent it from being productively invested elsewhere, for example in human capital. They estimate that in rural China 10% of household savings is attributable to a precautionary motive, and find this climbs to 15% for households below the poverty line.

[8] Deaton (1997), for example, notes that while many empirical studies indicate positive levels of consumption-smoothing, rarely do they ever support the permanent income hypothesis (p. 352).

Responses to Risk Involving Multiple Households

Addressing short-falls in income through assistance from other households is also common across rural communities in developing countries. A rich literature documents an array of methods through which members of rural communities help each other in times of need, and participate in informal systems of social security and hunger insurance.[9] These practices have typically been viewed through the lens of contract-theory and mechanism design, interpreted as informal contractual arrangements between multiple parties for dealing with risk in village-settings. Coate & Ravallion (1993) and Kletzer and Wright (1992) were among the first to formalize inter-household wealth flows as insurance contracts with incentives which make them self-enforcing in the absence of external enforcement mechanisms. When viewed from this perspective, the motivation for one household assisting another is the promise of future reciprocation should rough times strike the giving household; the arrangement therefore constitutes a form of "mutual insurance".

In this context, the main difference between these non-market institutions for coping with risk and formal market arrangements is that the former are non-anonymous agreements (generally between two parties that know each other very well), and they are not supported by codified legal institutions. They also often exploit informational advantages and local enforcement mechanisms which make them more sustainable when

[9]Rather than an exhaustive survey of this literature, I limit the review here to several of the most salient studies, as well as those to which my research is most related. See Besley (1995a, 1995b); Morduch (1999b); Karlan and Morduch (2009) for some surveys of the literature on informal arrangements for risk-sharing and credit in developing economies.

the information flow and external enforcement capacity required to support formal institutions are lacking. In this light, the various forms of inter-household assistance behavior are interpreted as mechanisms that attempt to deal with information and enforcement constraints, such that more efficient outcomes can be achieved.

It is also possible, however, that "behavioral" factors, such as altruism or inequality-aversion play a role in inter-household assistance, and that expected future reciprocation may not always be a prerequisite for offering assistance. In such a context, it may be more appropriate to consider certain types of assistance as contributions to an informal social security system to provide a safety net for the worst-off, rather than as participation in insurance that is *mutual*, per se. Lucas and Stark (1987) made some important early movements in a direction which would accommodate motivations other than expected reciprocation, formalizing a concept of "tempered altruism", or enlightened self-interest, and demonstrating the explanatory power of their model in the context of remittances. However, Cox (1987) finds evidence in survey data from the US which appears to reject altruistic motivations in favor of exchange-based motivations, and argues that the latter is what truly drives private transfer decisions. Since then, the notion that transfers-out are based on expected future reciprocation of transfers has become the dominant paradigm in the literature on inter-household transfers in village settings. Regardless of the underlying motivations of inter-household transfers, in the absence of formal insurance, these arrangements offer individuals additional methods to cope with low income realizations, outside of an isolated strategy of savings and income-diversification.

One of the most commonly cited methods through which households help each other make it through periods of low income is by offering each other loans. Fafchamps (1999) examines the theoretical basis for how low or zero-interest informal credit between friends and relatives can be used to share risk, but also highlights some of the limitations of informal loans as an insurance arrangement. Several empirical studies confirm the importance in practice of informal credit for smoothing consumption across shocks. Platteau and Abraham (1987) were among the first, showing how reciprocal credit arrangements constitute a hunger insurance mechanism in fishing villages in Kerala, India. Townsend (1995a, 1995b) documents reported use of loans from friends and relatives in response to negative fluctuations in income among households in northern Thai villages. Fafchamps and Lund (2003) demonstrate the key role played by zero-interest loans between households in risk-sharing and consumption-smoothing in rural communities in the Philippines.

Informal lending can also provide an underlying framework on top of which mutual insurance can operate. Udry (1994) shows how villagers in northern Nigeria use deviations in loan repayments (in terms of timing and amounts repaid) are used as a means to transfer wealth between households experiencing shocks. For example, a household that borrowed in a previous period but which experiences a negative shock this period might repay its loan later and at a *negative* interest rate. While a household which loaned money out the previous period and experiences a negative shock this period might receive a loan repayment with *extra* positive interest. Such state-contingent loan repayments allow insurance-type assistance to flow between households, embedded in loan repayments.

Often discussed in conjunction with informal loans, and perhaps just as important as a mechanism for insuring against low consumption levels, is the practice of reciprocal gift-giving. Fafchamps (1992) formalizes the notion of mutual insurance through reciprocal gift-exchange across time, interpreting them as a sustainable equilibrium in a repeated game, with information considerations. He argues that such relationships function on a principle of delayed reciprocity, contingent on one household's need and another's ability to help. Several empirical studies show that households experiencing rough times are in fact able to help smooth consumption through receipt of pure gifts, rather than loans, from other households facing better situations. Dercon et. al. (2008), for example, identify a particular type of informal network in some Ethiopian villages (the "Iddir") which provides health-insurance help with medical expenses through a combination of loans and pure transfers. Fafchamps and Lund (2003) find that rural Filipino households are able to mitigate a substantial portion of the consumption effects of negative income shocks through a mixture of informal loans and pure gifts from individuals outside the household. Cox and Jimenez (1998) show that private transfers can also serve an important insurance function in urban settings of developing countries.

Insurance through gifts may not be confined to relationships between individuals residing in the same village. Indeed, gift-assistance relationships that extend outside the village should perform better at insuring against locally covariate shocks, such as drought or flooding. A variety of studies explore the importance of intentional spatial diversification of kinship networks, and remittances received from migrant relatives, in insuring households against low levels of consumption. Paulson (2000) finds evidence from Thailand that location choices of migrants are influenced by motivations to help

insure the households to which they send remittances, choosing areas for which shocks tend to not covary with the province to which they remit. Paulson finds this is particularly true for remitters that support poorer rural households which have less access to formal institutions that could be used to mitigate risk. Lucas and Stark (1987) discuss the importance of risk-sharing as a motivation of remittances in Botswana, while Rosenzweig and Stark (1989) find evidence that some village households in India intentionally marry their daughters out to distant locales to create a spatially dispersed kinship network in order to mitigate income shocks in environments characterized by covariant risk. They find that this practice leads to a significant reduction in food-consumption variability. Giles and Yoo also find that, in rural China, expansion of migration networks lead to reductions in unproductive (e.g. non-invested) precautionary savings used as a hedge against consumption risk.

Given the array of non-market mechanisms to handle risk and engage in mutually beneficial trades to mitigate the effects of negative shocks, it is natural to question whether they are perhaps sufficient to achieve Pareto efficient allocations in the absence of markets. Townsend (1994) shows how the dynamic programming problem for optimal within-village allocations implies that individual household consumption should move monotonically with aggregate village-level consumption, and be unrelated to household income. Testing for efficiency among three villages in southern India, he rejects the hypothesis of perfect risk pooling, but finds it is surprisingly close: while efficient risk allocation predicts zero marginal propensity to consume out of own income, he estimates it is no higher than 0.14. Udry (1994) also finds that the mutual insurance households achieve through state-contingent loan repayments is surprisingly close to efficient. Most

studies, however, find informal insurance is highly imperfect (e.g. Townsend 1995a, 1995b; Deaton 1997; Jalan and Ravallion 1999). The conclusion is that non-market institutions result in allocations that are generally far from efficient, leaving the poor substantially exposed to risk.[10]

One of the major criticisms of informal insurance is that they are typically based on local arrangements, and thus likely to fail in the face of covariate shocks such as droughts, flooding, or other crises experienced by the broader community as well. Other households are unlikely to be able to help if they are simultaneously hit by negative income shocks as well. These and other considerations often lead to the policy implication that formal institutions such as market-based financial services and public insurance provided by the state would increase efficiency in risk-sharing, and should therefore be encouraged.

In addition, there is evidence that the size and quality of informal safety nets that households can rely on is correlated with wealth. Morduch (1999a) notes that theory suggests that a system of reciprocal transfers will be more effective for wealthier households, and that this is consistent with empirical evidence from China, the Philippines, and southern India. Dercon et. al. (2008), find that in rural Ethiopia, better-off households, as well as those related to people of high-status, have larger networks of individuals that might help them in the event assistance is needed. Jalan and Ravallion (1999) find that among rural households in China the poorest decile of households are the least well-insured, with 40% of an income shock being passed on to consumption, while

[10] There is some divergence in the literature on this. Banerjee (2005), for example suggests informal insurance mechanisms may in fact leave the poor fairly well-insured. In a more recent survey, however, Karlan and Morduch (2009) conclude from the literature on informal village insurance that poor households are still highly exposed to risk (p.59).

among the richest decile, only 10% of the income shock is passed on to current consumption. If the worst-off households in villages tend to be those with the weakest safety nets to begin with, this may make them especially sensitive to any negative effects on informal insurance practices from policy interventions or the introduction of new services. Furthermore, if it is the case that a higher proportion of the informal insurance-providers for the worst-off households are likely to adopt formal services, the worst-off are additionally likely to be more sensitive to any changes caused by formal financial markets – negative or positive.

2.2. Impact of Financial Markets on Informal Insurance & Social Safety Nets

The presence and strength of non-market institutions in areas where market-based practices have yet to take hold is often attributed in part to the many advantages they have over market mechanisms in village-settings. Stiglitz, (1990), and Arnott & Stiglitz, (1991), for example, discuss the role of "peer monitoring" in these types of settings, referring to the observability of (otherwise private) information that derives from close geographical and social proximity between parties to the informal contract. This is what often allows informal institutions to function where market-based ones fail. In addition to solving informational problems, agents being part of the same community may add moral constraints to behavior, pressuring individuals to comply with social norms, or risk social censure for violating communal expectations (see for example Wade 1988; Fafchamps 1992).

As the transition towards more modern economies proceeds, however, it is likely that many of the informational problems that indigenous institutions help resolve will

become less of an issue, making it easier for formal financial mechanisms to operate smoothly. At the same time, development policy and programs are pushing the expansion of formal financial services into these areas. The natural question then becomes: What will happen to non-market based methods for insuring households against low consumption outcomes as this occurs?

Townsend (1995a, 1995b) poses this question after some provocative observations on the experience of villages in northern Thailand. He notes that the village in his sample most integrated into the external regional economy exhibited a striking absence of local internal credit and insurance mechanisms, and little evidence of inter-household assistance. In addition, households appeared to experience more pronounced negative swings in consumption for certain types of negative shocks, such as illness. This not only raises the possibility that market integration may be linked to a weakening of indigenous non market-based methods to insure households against dire consumption outcomes. It also suggests that it may leave some households in a *worse* position to address the effects of risk and uncertainty.

Besley (1995a) echoes the suggestion that indigenous institutions will disappear as part of the development process, emphasizing more specifically the link between financial markets and informal arrangements, noting that the decline in non-market institutions generally goes hand-in-hand with the development of capital markets. He acknowledges it is unclear whether the expansion of financial markets causes the decline of informal arrangements, or vice versa. However, he cites improvements in monitoring and information technologies, as well as economies of scale offered by formal financial intermediaries, as potential determinants of the change. He also highlights the notion that

the informational structures (e.g. high degree of knowledge about neighbors) and enforcement mechanisms (e.g. community sanctions for violating norms) upon which non-market institutions rely tend to erode as part of the broader transformation to a modern economy. Even more pointedly, Morduch (1999a) notes that improvements in methods to accumulate savings, since it offers a greater degree of self-insurance and thus less reliance on other households, may cause transfer-based social safety nets to break down. In addition, savings as a form of insurance against low future consumption levels is less susceptible to failure in the face of locally covariate risks than reliance on inter-household transfers.

If informal systems insuring households against low consumption were in fact to disappear as formal capital markets develop, it would seem to beg the question: What will happen to those who rely on informal arrangements but may be excluded from formal markets, either during the transition period, or after formal markets are fully present? Yet the first-order question also remains: Do informal institutions in fact break down with financial deepening? Curiously, there has been little serious analysis of what really happens to non-market institutions villagers use to cope with risk, and to those households relying on them, as financial services expand.

It would be premature to use the present setting in Central Malawi to draw definitive conclusions regarding long-term shifts which may result from financial deepening. However, to the extent that this study provides insight into the early stages of such a process, it offers significant clues about potential long-term effects. Equally important, it sheds light on the micro-phenomena of the *transition process* towards more

developed capital markets in rural locales, a process which may be protracted, and during which welfare and poverty outcomes of the poorest may be strongly affected.

There are at least two studies which make serious attempts to examine the consequences of financial service expansion in the presence of informal insurance institutions. Both lay important theoretical groundwork for a more focused analysis of the interaction of formal capital markets with informal wealth exchange arrangements. However, both also lead to theoretical predictions which are at odds with the experience of villages in Central Malawi.

Ligon, Thomas, and Worrall (2000) (henceforth LTW) develop a model which shows the effects of introducing an enhanced storage technology in an environment characterized by mutual insurance transfers with limited commitment, when there is no enforcement mechanism. Importantly, the sole incentive to provide a transfer to another household in their framework is the promise of a future insurance benefit should the need arise. They conclude that introducing improved intertemporal wealth storage technologies is in fact not unequivocally good, but rather that the impact on total welfare is ambiguous due to countervailing effects. In particular, one of their key predictions is that the introduction of storage technologies will tend to *reduce* inter-household wealth flows. They provide a formal foundation for the notion that improved storage options limits the scope of mutual-insurance, by tending to make autarky more attractive to purely self-interested households, thereby encouraging more households towards self-insurance and isolation. As they note, "a household which could transfer income to another facing a bad shock may prefer instead to remain in autarky, and this reduction in mutual insurance due to the introduction of storage can outweigh the beneficial effects," (p.218).

The only other study I have seen that approaches a serious explicit analysis of the effects of formal financial services on local informal insurance practices is a little-cited study by Foster and Rosenzweig (2000) (henceforth FR).[11] Rather than restrict the focus to savings in particular, they model what happens when formal savings and credit technologies simultaneously become available in a village environment with limited enforcement and commitment. Just like LTW, however, they follow Coate & Ravallion's (1993) approach to interpreting inter-household wealth flows as bidirectional over time, that is, as contractual arrangements of *mutual* insurance sustained by a credible future promise of reciprocity. The implications of their model, similar to LTW, indicates the incidence and size of transfers should decrease as a result of the presence of formal financial intermediaries, but with the added qualification that the insurance-capability of the "surviving" transfers improves.

Unlike LTW, FR take a stab at empirically testing the implications of the model, using panel data on villages from India and Pakistan. They appear to find empirical support for their model's predictions. It is unclear to me that they actually find a reduction of informal insurance transfers, despite identifying this as one of the study's conclusions. Importantly, the instrument they use for local rates of financial service is not random. Instead, they use distance from financial services provider (within 5 km or more than 5km away) as an instrument – one for which identification could easily fail for a variety of reasons. For example, households in less remote locales may be more integrated into the formal market economy and more subject to the broad array of transformations that accompany the process of modernization. On the other hand, as often

[11] This study appears practically unknown to the broader literature on informal insurance. It has been cited by only 9 studies since its publication over a decade ago, according to Google Scholar.

noted elsewhere, the endogeneity of institution location choice allows for financial institutions intentionally selecting their locations based on local factors easily correlated with other aspects of household behavior. As another example, if markets are fragmented, changes over time can be experienced quite differently in remote areas and areas more closely linked to urban centers. Ultimately, their identification of effects turns on the assumption that the influence of unosbervables correlated with distance from financial organizations is time-invariant and can be differenced out, which may not be true.

2.3. Indirect Effects of Development Projects & Policy Interventions

The focus of the present study on *indirect* impacts on households from expanded local access to financial services also contributes to an important growing number of studies on local externalities and indirect effects of policy interventions in developing economies. Miguel and Kremer (2004), for example, use evidence from Kenya to show that de-worming projects can have substantial positive spillover effects on health outcomes and school attendance of untreated children, and even children in nearby non-treated schools. They find that failing to account for this seriously underbiases estimates of program impacts. Whereas previous studies based on simple individual-level randomization suggested little educational benefits from deworming, Miguel and Kremer conclude that positive externalities are large enough that the total benefits merit full program subsidization.

Angelucci and DeGiorgi (2009) find positive spillovers in an entirely different type of intervention. Using data from the flagship Mexican welfare program, Progresa, they show that state transfers to rural households improves the consumption levels of non-eligible households in the same villages. They identify the channel as operating through informal insurance, as ineligible households receive more gifts and loans from public welfare recipients, thus providing the perspective from the flip-side compared to earlier studies on the effects of publicly provided insurance. Despite significant indirect impacts, they note that program evaluations generally focus on estimating effects only on the treated, missing these broader and often important local externalities. The very fact that they were able to define an "indirect treatment effect" (ITE) as a new type of

estimate for program impacts is a testament to the tendency for impact assessments to ignore these important second-order effects.

The present study explores how a third type of intervention, microfinance, can also have substantial indirect consequences which bear heavily on policy objectives. The experience of villages in Central Malawi indicates a sharp impact on transfers received by non-using households. Just as in the studies by Miguel and Kremer (2004) and Angelucci and DeGiorgi (2009), positive local spillovers indicate strong secondary benefits accruing even to households which do not take up services.

The findings on spillovers presented in this study thus also form an important methodological contribution to impact assessments in microfinance, an active field in development economics. The existence of local indirect effects warns against evaluations based on comparisons of financial service-users with geographically proximate non-users, even when suitable instruments for uptake are available or randomization of services-use is feasible. As the present study demonstrates, such approaches are likely to yield a biased estimate of true impacts. Just as in Miguel and Kremer (2004), measured total benefits – to the extent that impacts have both positive direct and indirect effects – would suffer from being doubly underestimated. This identification problem has been discussed in other contexts, for example Heckman, Lalonde, and Smith (1999), who discuss the potential biases in job-program evaluations due to negative externality effects on non-participants. In the context of microfinance evaluations, spillovers complicate financial service impact assessments based on local average treatment effects. Due to the clear violation of the stable unit treatment value assumption (SUTVA) arising from

treatment spillovers, the Wald estimator must be interpreted with caution, and may in fact not be a good estimator for true program effects.

2.4. Conclusion

FR represents a rare example of an attempt to empirically assess the effects of formal financial services on informal insurance practices. In a similar vein, a few other empirical studies have examined the effects not of financial services expansion, but of publicly provided insurance and transfers from the government. These studies investigate the extent to which such payments crowd-out private inter-household insurance.[12] Jensen (2004), for example, estimates that the introduction of state pension benefits in South Africa after the fall of Apartheid led to a reduction in private transfers to the elderly on the order of 0.25-0.30 rand for every rand received from the government. Cox and Jimenez (1995 and 1998) estimate that, for each unit of retirement benefits received, private transfers shrink by 17% in Peru and 37% in the Philippines. Cox and Jimenez (1995) present an even more striking example in their estimates of the likely impact of state unemployment insurance, estimating that private transfers to the unemployed would fall by 92 pesos for every 100 pesos offered by the government

These studies strongly suggest that indigenous insurance based on private wealth flows are susceptible to substantial impacts from the introduction of new external insurance options. However, they do not directly address the question of how expanded access to financial services (i.e. market-based savings, credit, and insurance services) will affect informal practices. The empirical literature on this question remains thin. FR

[12] See Morduch (1999a) for a review of some of these studies.

presents a noteworthy exception to the general absence of empirical studies which seriously examine this question, but it does not disentangle the effects of savings and credit, and its identification of effects relies on an assumption which may not hold.

This is one of the most important contributions the present study on the experience of households in Central Malawi provides. It adds to the sparse empirical research on the impact of formal financial service expansion on inter-household wealth transfers, in an empirical framework with a solid identification strategy. Contrary to FR, it isolates the effect of formal savings expansion. Using a randomized experiment, it presents evidence which questions previous theoretical predictions and empirical evidence based on more stringent (and perhaps less realistic) identification assumptions.

In addition, the central focus of the present study on private assistance-receipts by households which are effectively *excluded* from expanded financial access represents a novel contribution that broadens the scope and practical relevance of this thin literature. This asymmetry between agents represents a fundamentally different type of setting, and a new approach. So far as I can tell, both FR and LTW assume uniform access to newly introduced financial services. However, practical considerations suggest the existence of transaction costs means access will in fact be heterogeneous, with wealthier households able to participate in new wealth management technologies while poorer households will be left out. Townsend and Ueda (2006) acknowledge this likelihood in practice in their concept of "wealth-constrained financial access" in a macroeconomic model which endogenizes economic growth, financial deepening, and inequality. The effects of differential access to expanding formal financial services may be of crucial concern for

poverty policy, especially if variation occurs within transfer-networks, and if lack of access is correlated with vulnerability to low consumption levels.

Besley (1995a) highlights that the key component missing from analyses of non-market institutions for risk-sharing, and from our understanding of such institutions, is a theory of institutional formation and adaptation – i.e. a theory for "how institutions are born, grow, change, and develop." While the theoretical work of LTW and FR have helped advance such a theory, there remains much to be done. This study contributes in novel and important ways to the project of developing an integrated theory on institutional change, at the very least from an empirical angle, furnishing evidence on how indigenous practices *respond* to the expansion of modern economic institutions.

Chapter 3. Empirical Setting: Central Malawi

This chapter introduces the empirical setting used to examine the questions this study endeavors to answer. The data come from a two-year household survey in Malawi that I helped oversee during field work in 2008 and 2010. The dataset is large, containing over 2,000 households that were present in both years, and covering the three largest districts in the central part of the country.

As Malawi is one of the poorest countries in the world, with the majority of its population in rural areas with little or no access to formal financial markets, it provides an ideal setting to test the effects of formal financial services expansion on the poor. Moreover, since the survey was conducted during the pre-harvest "hungry" season, it captures the impacts on households during what is generally the most sensitive time of the year. As the climate generally affords just a single crop-cycle per year, most incomes are received during the harvest period, and household resources are highly restricted in the last few months leading up to the next crop's harvest. Collecting data on household transfers and welfare outcomes such as food-security and health-indicators during this highly sensitive period is likely to provide some of the most insight into how welfare outcomes are affected.

The purpose of the survey was to gather data for an impact assessment of a local microfinance organization rapidly expanding access to its services into the thin formal financial environment of rural parts of the country. The vehicle through which service access was expanded is a mobile van-bank, which literally brought the bank closer to villages, by driving there. While the original intent of the data was to ascertain any direct

impacts on clients from adoption of the organization's products offered through the mobile bank, I use the data to examine indirect effects and impacts on informal insurance practices. To that end, I was allowed to add a module to the endline survey which gathered detailed information on inter-household wealth flows.

The chapter is organized as follows. The first section describes key features of rural Malawi relevant to the research questions explored in this dissertation. The second section describes the major features of the data. It details how the data were collected (sampling methodology, geographical distribution, the survey instrument used), a few issues that arose during collection. This section also defines the key variables used in the analyses of chapters 4, 5, and 6. Finally, it provides information on a variety of key household characteristics, and tests for any important selection due to attrition.

3.1. Rural Central Malawi

Rural Malawi provides an ideal setting to assess the importance of formal services expansion on inter-household wealth transfers, and its consequences in the lives of the rural poor. Located in south-central Africa, this landlocked agrarian country of 14 million is among the poorest in the world. In 2005, Malawi was ranked 165 out of 177 countries on the Human Development Index by the UNDP. The same year, about 52% of the population was ranked below the national poverty line, with 22% of the population considered as "ultra-poor" (defined as households whose total consumption falls below minimum thresholds for adequate food consumption), while 28% of the population fell below the international poverty line of $1/day.[13] Malawi has been a major recipient of

[13] Integrated Household Survey 2004-2005.

international aid to help address past food shortages, it is among the top countries in terms of HIV/AIDS prevalence, and also has one of the highest rates of malaria-related and AIDS-related deaths.

With 85% of the population in rural areas, and more than three-quarters of the country's exports from agriculture, the rural sector dominates the economy and society, (Diagne and Zeller 2001). Most of the labor force is engaged in small-scale farming (typically on less than 1 ha per household), and crop production provides 73% of rural incomes. A single unpredictable rainy season, and just one yearly harvest, leaves the country's inhabitants heavily exposed to annual risk of crop failure and leaves households vulnerable to low consumption swings and food-insecurity.

The research area for this study encompasses three of the largest districts in the central region of the country, close to the capital of Lilongwe. Dedza district has the greatest representation, with 46% of the households, while Mchinji district accounts for 30%, and Lilongwe district accounts for 24%.[14] According to the 2005 Integrated Household Survey published by the National Statistics Office of Malawi, average household incomes across the three districts in 2005 were about $400 in Lilongwe Rural (48,056 MK), $360 in Mchinji District (43,138 MK), and $274 in Dedza District (32,907 MK).[15]

Poverty rates in the study districts of Mchinji, Dedza, and rural Lilongwe in Central Malawi show that the Lilongwe (Rural) District has lower than national-level

[14] The capital city is also named Lilongwe, and is located in Lilongwe district. The portion of the sample for this dataset that is located in Lilongwe district is not from Lilongwe city, but rather "Lilongwe rural".
[15] *Malawi Integrated Household Survey (IHS2) 2004-2005 Volume 1: Household Socio-Economic Characteristics* Zomba , National Statistical Office of Malawi; 2005, p75.
Conversion to US dollars for these figures is based on an exchange rate of 120 Malawian Kwacha (MK) per dollar, the exchange rate on June 1, 2005, according to the historical currency converter at: http://wwp.greenwichmeantime.com/time-zone/africa/malawi/currency.htm.

poverty rates, while Mchinji and Dedza Districts have higher than the national rates. Mchinji also appears to have a much higher proportion of ultra-poor than the other two districts.

Table 1. Population & Poverty Rates in Study Area in 2005 (By Nat'l Poverty Line)

District	Number of Households	Poverty Rate	Ultra-Poverty Rate
Malawi TOTAL	2,731,346	52%	22%
Mchinji	86,092	60%	30%
Dedza	135,849	55%	21%
Malawi TOTAL	2,731,346	52%	22%

Source: Integrated Household Survey, 2005

The sample includes seventeen different Traditional Authorities (TAs) – the clan-based administrative unit of the traditional government. TAs are also used by the modern government as the administrative unit just below the district level. Eight of the TAs are in Dedza district, five of the TAs are located in Lilongwe district, and four are in Mchinji district.

Participation in formal financial markets among the rural populace in this area is very low. Information from the baseline survey indicates, for example, that in 2008 only 6.0% of the sampled households had at least one current formal loan, while 11.6% of the households had one or more formal savings accounts. Only 2.8% of the sampled households reported both formal savings and formal credit, so about 14.7% of the sample reported using formal savings accounts, formal credit, or both.

On the other hand, there is evidence of widespread informal financial services use (especially informal loans), and significant incidence of inter-household assistance and wealth transfers. For example, in 2008, 23.6% of the sampled households reported having

at least one current informal loan from a friend or relative. In 2010, over a quarter of the sample reports receiving at least one cash gift from a friend or a relative in the last three months, and about 46% report either receiving a cash gift or a current loan from a friend or relative.

To address the low rates of formal financial service penetration a local microfinance organization, Opportunity International Bank of Malawi (OIBM), began a project in late 2007 to expand access to formal savings and credit services to rural areas. The expansion occurred through a mobile van-bank innovation, rolled out in Lilongwe, Mchinji, and Dedza districts. The mobile bank traveled along paved roads, and had six different stops – three stops along the main highway running 110 km west from the capital city of Lilongwe, and three stops along the main highway running 90 km south. The stops were located in trading centers, and the bank stopped at each one on the same day every week – usually a market day, in order to take advantage of the fact that many villagers from surrounding areas are already in the trading center for other reasons. This not only reduces the transportation component of transaction costs, but also catches people after making sales, when they are more likely to have cash on hand to deposit into savings accounts.

This expansion of formal services into the thin formal financial environment of rural Malawi provides the basis for this research project on the interaction between formal savings markets and local indigenous safety-net systems.

3.2. The Data Sample

The data come from two years of a household survey I oversaw as part of an independent impact assessment of the microfinance organization's services on client-household welfares.[16] The impact assessment's intent was to determine whether, and by how much, the average user of financial services benefits by becoming a client of the microfinance institution. However, I use the data we collected to examine a very different set of research questions and hypotheses. Specifically, I examine how the expansion particularly of formal savings impacts *non*-service users, with specific emphasis on the community's highly vulnerable households.

The baseline data (i.e. the first wave of the panel) was collected over February-April of 2008, during the pre-harvest "hungry" season when food-stocks are low for the most vulnerable households. This was before any significant take-up of the microfinance organization's services. While the mobile van-bank first began operations in August of 2007, there was little to no marketing, awareness of the existence of the mobile bank was low, and it was already well after the high-income harvest period when people are comparatively flush with cash.[17] [18] The second round of data was collected during the same period of 2010, following two years of intensive marketing of the bank's services.

[16] The IRIS Center of the University of Maryland was hired by the Bill and Melinda Gates Foundation to perform an impact assessment evaluating the effect of the bank's services on client-household vulnerability, food security, and other welfare outcomes. I was hired to oversee the data-collection process and analyze the data.

[17] Malawi has a single growing season. Most farming households receive the majority of their annual income during one single period of the year – the harvest period, which in Central Malawi usually lasts from late April into June.

[18] The low awareness about the existence of the microfinance organization's mobile van-bank is supported by information I collected in focus-group discussions in 2008, and is also confirmed by the very low incidence in the baseline data of households using the organization's financial services.

Sampling Methodology and the Survey Instrument

Community sampling was performed following a matched-pair design, wherein one member of each pair was randomly assigned to a community-level information-treatment, the other member to a control group. Each pair consists of two village-clusters, a cluster being defined by enumeration areas (EAs) – sampling units defined by Malawi's National Statistics Office (NSO) that typically include 2-4 villages[19]. Lists of EAs taken from the NSO were first categorized based on radial distance from the mobile van-bank stop: (i) within 5km; (ii) 5-10 km; and (iii) 10-12 km. Distance was measured from a central point in the EA, so some villages actually lie as far as 14 or 15 km from the bank stop. The EAs were then further split into two population categories based on NSO data: high versus low.

At least two enumeration areas were then randomly sampled from each population-distance group around each of the six bank stops to form a pair for that stratum. The sampling frame included a rule stipulating a minimum distance of at least 3 km between the two EAs in any pair, to help minimize spillovers from information-treated communities to non-treated communities. A total of 60 pairs were sampled from the NSO lists (120 clusters total). Within each cluster (EA), typically 2 to 4 villages were randomly selected for sampling. Finally, within each pair, one of the EAs was randomly selected to receive the intensive marketing treatment to encourage adoption of the bank's

[19] For very large villages, the EA may consist of only one village; in a few cases, the EA might include as many as 5 villages. Both of these cases are rare in the data.

financial services. Figure 1 shows the sample size in each district, broken down by the distance of the EA from the trading center where the mobile bank stops. [20]

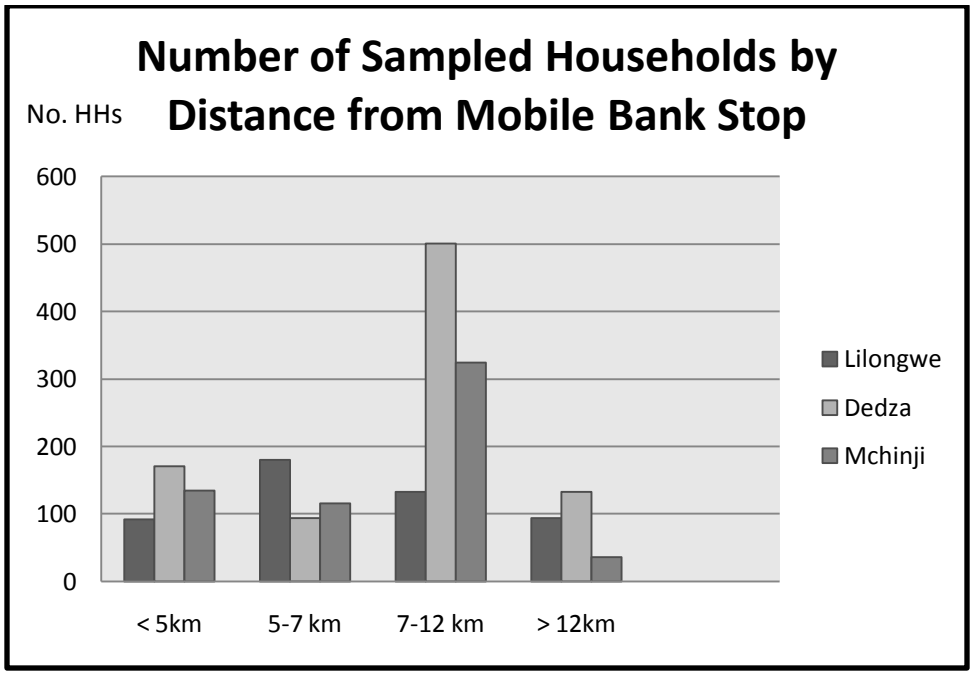

Figure 1. Number of sampled households in each distance category from the bank stop. The first column in each category represents Lilongwe District, the second Dedza District, and the third Mchinji District.

Table 2. Number of sampled households by District and Distance Category

	< 5km	5-7 km	7-12 km	> 12km	Total
Lilongwe	92	180	133	94	499
Dedza	171	94	501	133	899
Mchinji	135	116	324	36	611
Total	398	390	958	263	2009

[20] Due to variations in population density, a larger percentage of our sample comes from Dedza district (1043) than either Lilongwe (688) or Mchinji (728). Additionally, since two of the mobile bank stops in Mchinji District are relatively close to the Zambian border (west) and a mountain (north), the population (within Malawi) living 10 km from the call point was very small, leading to a limited sample size for that area.

Within each cluster, 20-23 households were sampled. As typically 2-4 villages were sampled from each EA, about 6-10 households were selected from each village. The first method for sampling households entailed making a census listing of all households in the village, and then randomly selecting households from this list. The randomization mechanism consisted of writing each household's number on a piece of paper, balling it up and dropping it into a bag, then having a member of the community draw blindly from the bag.

In cases where the village was very large, rather than make a full census, a "random walk" sampling procedure was implemented using the following protocol.[21] The total number of households in the village was divided by the number of households to be sampled from the village (usually 6-10) to obtain a sampling interval equal to ***X***. (For example, if the village had 100 households, and the required sample was 10, the sampling interval was 10). With the assistance of a local key informant (such as an assistant to the village chief), the field supervisor of the interviewing team would identify the center of the village as a sampling starting point (SSP). The team (composed of 4-6 interviewers) would then start at the SSP, each facing a different direction. For each interviewer, a number ***n*** was randomly selected from 1 to ***X***. The interviewer would then walk in that direction an interview the $\boldsymbol{n}^{th}$ household he or she encountered. When the interview with that household was completed (or if no one was home), the interviewer then continued in the same direction until he or she reached the $\boldsymbol{X}^{th}$ next household, and sampled that one.

[21] Note that this may help minimize the risk of omitting more marginal households in large villages, as village informants (e.g. chiefs and assistants) may have a higher probability of failing to include such households among the roster of those to be potentially visited – especially when the village is large. For smaller villages, the risk of such types of omission is plausibly lower. Also note that there is no known pattern to the layout of households in the village along socioeconomic status with respect to its geographical center. Distributions of household characteristics in the data confirm that sampling was orthogonal to household characteristics.

For example, if the sampling interval was 10, and an interviewer drew the number 7, the first household he would sample would be 7 households away from the SSP in the direction assigned to him, and the next household he would sample would be 17 households away from the SSP in that same direction.

Insofar as generating a truly *representative* sample of the local community, the random walk sampling procedure is potentially inferior to randomly selecting from a village census-listing.[22] It is conceivable, for example, that a certain sub-population of the community might be over- or under-represented in the sample, compared to their actual proportion in the local population. This sampling method, and any representational biases it might create, nevertheless remains fully orthogonal to the instrument for formal savings adoption. As the survey teams were unaware that a treatment would even occur anywhere, sampling is completely independent from treatment assignment, and any biases that might result are purely at the level of how accurately the sample represents the full population of each sampled community.

Interviews typically lasted between 1.5 and 2.5 hours.[23] Refusal rates were quite low, with over 97% of sampled households agreeing to participate in the interview. No monetary incentive was offered for the interview, nor any gifts given at the end in exchange for the time spent with the interviewer. Yet the survey took place during a time of the year when labor demands are relatively low, and people typically seem happy to discuss with outsiders not from the village. Households were sampled only in 2008; there

[22] As noted in the previous footnote, however, a village-census approach has its own risks in this regard, if certain households are ever accidentally or intentionally omitted.

[23] Variation in interview time-length depended mostly on factors affecting the amount of information to be collected from the household, and to a lesser extent by things such as old age or poor health of respondents. Information increases with the size of the household (since there are several individual-level variables), extent of financial services used (since there are many variables for each instance of financial-service usage), quantity of shocks experienced (as there are several variables at the shock-level), and the variety of income-generating activities (due to multiple questions related to each activity).

were no new households sampled for the second wave of the survey in 2010. (Attrition is discussed further below.)

The survey instrument used to gather data for the baseline (2008) was a 30-page structured questionnaire with eleven sections including household demographics, economic activities, poverty status, food security, physical assets, income, use of financial services, shocks experienced and mechanisms used to cope with shocks, and social capital.[24] The questionnaire design was based on several different sources, including World Bank Living Standard Measurement Surveys and USAID food-security questionnaires. It was translated into the local language, *Chichewa*, and back-translated for verification. Adjustments were made after several days of pre-testing in the field.

With the exception of the new module that I added on inter-household transfers, the content of the endline (2010) questionnaire was essentially identical.[25] The format of the survey instrument, however, changed from a paper-based survey to a computer-based survey using small (approximately 12-inch) ultra-mobile personal computers (UMPCs). This was one of the first known household surveys of this scale in a developing country to use computer-based data-collection.[26] The major differences from paper-based survey were that greater up-front preparation was needed on our end (to ensure the software functioned properly during the interviews), training of interviewers required several extra

[24] The survey instrument for both years (2008 and 2010) is attached as an appendix. It is also available upon request in the local language, *Chichewa*.

[25] A few minor adjustments were made to shocks and financial services section in order to capture greater detail, and minor portions of other sections were cut in order to shorten the interview. See the appendices with the survey instruments for greater detail.

[26] Interviewers were all university-educated, with at least basic exposure to computers, skills ranging from basic computer literacy to competence of the sort required to run complicated statistical analysis packages. In addition, the computers were equipped with a stylus and included touch-based questionnaire screens with advanced hand-writing recognition technology, so that typing was not required if the interviewer preferred writing. The software guided the interviewer from one question to the next after each question was answered. Thus, no knowledge of computers beyond the basics provided during training was actually required.

days of training in the computer software, data-management and quality-control checks were considerably enhanced, and that question non-response is minimized (since the software leads the interviewer through the interview-process). We were careful to design the software so that implementation of the computer-based survey mirrored the data-collection process for paper-based surveys as closely as possible. For example, options for "Not Applicable", "Don't Know" and "Refused to Answer" were included where appropriate; interviewers were able to review the information they entered before moving to the next screen; and interviewers reviewed the completed questionnaire each evening with their field supervisors for quality-checks, just as in the 2008 paper-based household survey.[27]

Data Problems, Data Loss at Unit of Observation Level

Due to unforeseen sampling issues, data management problems, and complications with the information intervention in one location, four pairs had to be dropped. The final remaining panel contains 112 clusters (about 325 villages), with a total of 2,006 households. Villages are located at radial distances from the mobile bank call-point ranging between 0 and 14 kilometers.

Fortunately, there was strong continuity among the interviewers across the two waves of the survey, and much of the institutional knowledge was preserved. The same survey firm used, under close supervision in both years by its director (economist Dr.

[27] In fact, a pop-up window appeared after completing each screen of survey questions, which encouraged the interviewer to verify that he or she had entered the information as they had intended, before proceeding to the next screen in the survey. The questionnaire-review process required some tricky trouble-shooting due to complications in the software and risk of data-loss, but we were able to create solutions by the end of the first week of the survey that allowed the same quality-control reviews that were used in the baseline.

Ephraim Chirwa), with the same overarching field supervisor (Dr. Peter Mvula). Also, 30% of the interviewers in round 2 also participated in round 1, such that each survey team had at least 2 members present from the first year of the survey. In addition, the top team supervisor and several of the top interviewers who had leadership roles in the baseline, also participated in the endline data-collection.

Missing Values for Certain Variables

There were several hiccups during the first 1-2 weeks of the survey due to issues related to collection of data through computers. The application sometimes shut down mid-interview or post-interview during quality-control checks by interviewer team supervisors, causing certain sections of data to be erased. We resolved the problem during the 2nd week, on different dates for each survey team (depending on when and where we could meet them), by updating the software and re-training them on techniques for computer use during the interview and post-interview for quality control checks. This resulted in higher incidence of randomly missing data for some variables during the first 1-2 weeks.

Due to a problem in the computer software which were unable to fix immediately, the data for the first 10 days of the survey is missing the date of the interview. However, information on which week of the survey is included. For these households, I therefore create a proxy date-variable, using the middle date for the week of the survey that the interview occurred in.

There are a few missing values for the inter-household transfers questions that are central to this study. These variables (explained in detail in the next section) include

things such as cash gifts and in-kind gifts. It is not clear why this occurred, as the computer program was supposed to disallow progression in the interview if any of these fields were blank. It is not likely this was due to refusal to answer or lack of knowledge about household transfers, since there is an option for the interviewer to indicate "refuse" or "don't know". It is most likely this was caused by computer errors or data-transmission problems orthogonal to household and location characteristics. In any case, the proportion of missing values is quite low. In the final panel dataset of 2,006 households, 17 households (0.9%) are lacking a response both for all three of the transfer-receipt variables – (i) whether anyone received a cash gift; (ii) whether anyone in the household received help paying fees or expenses to a third party; (iii) whether anyone in the household received an in-kind gift. Half of these occurred during the first week, the rest were spread out fairly evenly over the remaining 9 weeks of the survey.

It is important these missing values are not unevenly distributed across households of differing vulnerability category (explained in greater detail below). Fortunately, they are fairly evenly spread across wealth levels (one household is in vulnA, only one household in vulnG, the rest are evenly split between vulnC and vulnD, the two largest categories in the sample). There are an additional 10 households missing a response for just the in-kind gift question, all of which were interviewed during the first week, spread across different wealth-levels (2 from vulnA, 3 from vulnC, 5 from vulnD, none from vulnG). That is, 27 households (1.3% of the sample) are missing a response for whether anyone in the households received an in-kind gift in the last 90 days, two-thirds of which were interviewed during the first week, but with fairly even representation among the different wealth-levels.

The 27 households missing a response for the in-kind gift receipt question are also missing a response for the four transfers-out questions, and they are the only households missing a response for the transfers out question. That is, for the questions of whether anyone in the household (i) gave a cash-gift to someone outside the household, (ii) helped pay fees/expenses to a third party on behalf of anyone outside the household, (iii) gave an in-kind gift to some outside the households, or (iv) gave a cash loan to anyone outside the household, there are 27 households missing a response (1.3% of the sample). Two-thirds of these are in the first week of the survey, the remaining 9 evenly spread across the remaining weeks of the survey. They are fairly evenly spread across wealth levels (3 in vulnA, 10 in vulnC, 13 in vulnD – of which 11 are in vulnF, and only 1 in vulnG).

Information on number of times someone in the household was ever refused a gift is missing for the first 10 days of the interview, due to a computer software error. Again, since this was due to a computer error, and uniform across households interviewed the first 10 days of the survey, it should be orthogonal to household and location characteristics.

The financial services variables are missing for a few households due to failure to categorize the service as formal or informal. For example, certain savings accounts are neither defined as formal or informal. In such cases, there is a missing value for whether the household has formal savings. This occurs for 4 different households, which represents 0.2% of the entire sample, or which would represent 2% of the sample of households with formal accounts (e.g. if these accounts were to be classified as formal).

Definitions of Key Variables

Savings & Loans Variables

A "savings account" is defined as any monetary savings device external to the household. There is a wide variety of possible external agents in the research area with whom households might store their cash. Locations reported by households in the baseline (2008) survey, for example, include five commercial banks (OIBM, National Bank, Standard Bank, NBS Bank, First Merchant Bank), two para-statal banks (Malawi Rural Finance Company and Malawi Savings Bank), savings and credit cooperatives (sometimes known as SACCOs), as well as several NGOs present throughout Africa (including, for example, Care, Pride, Foundation for International Community Assistance or FINCA, Concern Universal Microfinance Organization). Several households also report keeping cash at the home of a friend or relative, storing it in a friend's or relative's bank account, or participating in a rotating credit and savings association (rosca). [28] It is worth noting, however, that the incidence of roscas in this area is surprisingly low compared to many other developing country settings (reported by only about 0.5% of households in the baseline).[29]

In general, keeping cash at organizations was initially quite sparse in the research area, and anecdotal evidence as well as qualitative data I drew from focus group discussions in several villages indicate low levels of knowledge about financial institutions. In this context, it is unclear to what extent most village residents would differentiate between cash deposits at an NGO, a cooperative, or a commercial bank, and

[28] For further details on formal and informal financial institutions of central Malawi, see Adelman and Nagarajan (2009), Meagher (2010), and McGuinness (2008).
[29] The paucity of roscas in Malawi has been discussed elsewhere, e.g. Fafchamps and Gabre-Madhin (2001) .

whether the differences matter to them. Existence as an organization external to indigenous village institutions is therefore used as the central criterion for differentiating between a "formal" savings account and an "informal" account. By this definition, all of the cash-storage methods mentioned above are defined as a formal account, with the exception of: (i) cash kept at a friend's or relative's home, (ii) cash contributed to a rosca, or (iii) cash kept in a friend's or relative's formal savings account. Instead, these are defined as "informal savings accounts".

A formal loan is similarly defined as any loan from an organization external to the village community – i.e. an organization that did not evolve from within the community as part of the village's indigenous institutions. The full list of potential lenders includes the organizations already mentioned above, plus local money-lenders, local grocery stores, MARDEF, Green Wing Capital, Blue Bank, and some church organizations. With the exception of loans from friends, relatives, informal money-lenders, grocery stores, and roscas, all the other loans are defined as "formal".

Variables on Inter-Household Transfer-Assistance Received or Given

The main source of data on household transfers consists of a module that I added to the endline (2010) survey, which asks detailed questions about inter-household transfers. The variables derived from this module thus only exits in the endline cross-section.

The cash-gifts variable comes from a question which asks about gifts of 50 Malawi Kwacha (about $US0.30) or more, received over a 90-day recall period preceding the interview. Interviewers were intensively trained on the difference between a "gift"

and a loan, the latter carrying with it an expectation of repayment of some type of wealth in the future. In addition, the module with questions on gifts came after a module in which detailed information was already gathered on loans. Interviewers were trained to distinguish between the two and collect information on each only in their respective parts of the questionnaire. Due to concerns about the length of the interview, details were not gathered on all gifts received. Instead, each household was asked whether any household member received a cash gift (exceeding 50 MK) from someone outside the household (over the last 90 days), as well as how many times such gifts were ever received during this period. Additional details were then gathered only for the most recent gift, as well as the largest gift (if the most recent was not the largest). These details included the value of the gift, the month of receipt, round-trip travel-time to request and receive the gift, and the perceived wealth-level of the giving household compared to that of the receiving household.

The data also include information on any instances in which an individual external to the household helped a household member pay fees or expenses to a third party. This enabled us to capture wealth transfers which are in principle equivalent to a cash donation, yet which occur through a different path. Just as for the cash gifts, this variable is limited to assistance exceeding 50 MK, over the last 90 days. The same details are gathered for these types of assistance as for cash gifts (value, month received, travel time, and relative wealth status of giver), also just for the most recent occurrence and the highest-valued occurrence.

In-kind gifts are also recorded, as wealth transfers may just as easily occur through donations of food and other physical goods to other households. As in the case

for the other two types of assistance receipts, only assistance over the last 90 days exceeding 50 MK was included, and the additional details were collected only for the most recent and the highest-valued assistance-receipts.

Data was also gathered on instances of *giving* any of these three types of assistance. For each type of assistance (cash-gifts, in-kind gifts, and help paying fees or expenses to a third party), respondents were first asked whether any household members provided a value exceeding 50 MK in the type of assistance to anyone outside the household, and if so, how many times over the last 90 days. Follow-up details were again limited to just the most recent assistance of each type, as well as the highest-valued assistance of each type. The additional details included the month the assistance was given, the value of the assistance given, and the perceived relative wealth status of the recipient compared to the giving household (travel times were not asked).

Finally, data was also gathered on cash loans given out from each household. (While the baseline survey did collect data on informal loans received from other households, there was no attempt to gather information on loans out.) Again, the recall period was 90 days, and the threshold amount was 50 MK. In addition to the same questions as above (how many times a household member loaned money to someone outside the household, the date and amount of the most recent loan given, and comparative wealth level of recipient), the data includes amounts repaid. This enables analysis of the prevalence of any interest rates on these loans, and any impacts from the formal financial markets expansion on interest rates charged by households extending loans to other households.

Food Security : Discussion of Measurement & the Variables I Use in this Study

The survey included a module on food security, with three sections: (i) a section measuring security of food-access along a 21-point scale, (ii) a section on food-access coping tactics used, and (iii) a section on dietary diversity. All three sections are directed towards the main food-preparer of the household.

I rely heavily on the first, the food-insecurity access scale, so it merits some further explanation. The food insecurity scale comes from the USAID Household Food Insecurity Access Scale (HFIAS) for Measurement of Food Access, a tool developed and tested over several years by USAID's Food and Nutrition Technical Assistance (FANTA) project as a low-cost and minimally invasive method for measuring important dimensions of household food-insecurity.[30] The HFIAS survey tool was created in 2007 in order to meet the need for "relatively simple, but methodologically rigorous, indicators of the access component of household food insecurity…that can be used to guide, monitor, and evaluate program interventions."[31]

Initially based on the approach used to estimate the prevalence of food insecurity in the United States, the method was adapted to fit developing-country contexts. It is based on the idea that certain universally predictable responses arise from the experience of food-insecurity, and that these reactions can be captured through a survey and quantified in a scale. The group details a variety of field studies which verify the performance and validity of this method in different developing country contexts. They note that the measures constructed through the HFIAS scale are strongly correlated with other common indicators of food consumption and correlated with indicators used by

[30] For a complete description of the Household Food Insecurity Access Scale, see Coates, Swindale, and Bilinsky, 2007.
[31] Coates, Swindale, and Bilinksy (2007), p. 1.

voluntary organizations used to monitor their food-security interventions. Importantly, measures derived from the HFIAS method have been found to be sensitive to changes in a household's situation over time, which helps make them useful for assessing impacts of interventions. Coates et. al. also describe a study of 22 different applications of pre-cursors to this or similar scales which identified important universal commonalities across cultures in the experience of food-insecurity, which were integrated into the HFIAS scale.

It is important to note the HFIAS tool provides information on *food-access*, but not food-utilization. That is, its objective is to estimate the status of a household's ability to *obtain* food of sufficient quality and quantity, as well as changes in that status. Questions of how food is used within the household once obtained fall under the purview of food-utilization, rather than access. Measurement of this aspect of food-insecurity is better done through other approaches, such as anthropometrics.

The version used in the IRIS survey was slightly adjusted (it excluded, for example, a question on subjective perceptions of anxiety about ability to procure adequate food). It is comprised of 7 main questions: the first three intended to measure dimensions of the *quality* of food households are able to acquire, the last four intended to measure the extent to which the household is able to obtain food of sufficient *quantity*. The recall period is 30 days. Each main question asks whether a particular event occurred over the last 30 days; if so, a follow-up to that question asks how often it occurred. Interviewers were trained to ask the frequency as an open-ended question, then indicate the response in the questionnaire as 1-2 times in the last 30 days, 3-10 days in the last 30 days, or more than 10 times in the last 30 days. Table 3 lists the questions asked. The first

three questions measure perceptions about quality of food that households have access to. The remaining four questions measure perceptions about quantity of food to which the household has access.

Table 3. Questions Used to Construct the HFIAS Food-Security Measures

Quality-Related Questions	
1	In the past month (30 days), were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?
2	In the past month (30 days), did you or any household member have to eat a limited variety of foods due to a lack of resources?
3	In the past month (30 days), did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?
	Quantity-Related Questions
4	In the past month (30 days), did you or any household member eat less in either the morning or the evening meal than you felt you needed because there was not enough food?
5	In the past month (30 days), did you or any other household member have to eat fewer than your normal number of meals in a day because there was not enough food?
6	In the past month (30 days), did you or any household member go to sleep at night hungry because there was not enough food?
7	In the past month (30 days), did you or any household member go a whole day and night without eating anything because there was not enough food?

The HFIAS method and the information it gathers allows for the construction of several different indicators to quantify the intensity of a household's experience of food-insecurity, or the depth and breadth of food-insecurity among a given population. It can be used for example to determine the percentage of households that ever (yes/no) experience a particular condition (i.e. one the seven main questions in Table 3) over the last 30 days, or instead the percentage that experience each particular condition at each of the four possible levels of frequency (never, rarely, sometimes, often). The HFIAS also enables analysis by food-insecurity domain (insufficient quality vs. insufficient quantity),

allowing identification, for example, of households that ever (yes/no) experienced either of the two types of insecurity of food-access.

However, the two measures that I use most extensively are the Household Food Insecurity Access Scale Score (HFIAS score) and Household Food Insecurity Access Prevalence (HFIAP). The first, the HFIAS score, is a 0-21 point scale with 0 being least food insecure and 21 being most food insecure.[32] Lower scores therefore indicate better food security. Scores are generated through a simple sum of the frequency-level with which each of the 7 possible food-insecurity conditions occurred in the last 30 days. If the response to one of the main questions indicated that the condition occurred "often" during the recall period (i.e. more than 10 times), the household received a 3 for that condition. If the condition occurred between 3-10 times, the household received a 2, if it occurred 1-2 times, the household received a 1; if never, the household received a 0.

While useful in that it provides a more continuous measure of food-insecurity, one which is more sensitive to marginal adjustments in food-security status over time, the HFIAS score is admittedly a bit crude. For example, while intended to be ordinal, it is not necessarily intended to be cardinal: a score of 9 is unambiguously worse than a score of 7 in this scale, but it is not clear whether the difference between 9 and 7 is equivalent to the difference between 7 and 5 in terms of measuring the differences in severity of food insecurity. The difference between 7 and 5 may be less (or greater) than that between 9

[32] The IRIS questionnaire omitted 2 of the original 9 questions in USAID's set of questions. Hence, while there scale is from 0-27, our scale is from 0-21. One omitted question would have asked "In the past 30 days, did you worry that your household would not have enough food?" This question does not pertain to the domains of food quality or quantity, but rather to "anxiety" with respect to sufficient food-acquisition, and it was determined this did not add enough to the food-security measures to warrant the added time-cost to the interview. The other question omitted was: "In the past 30 days, was there ever no food to eat of any kind in your household, due to a lack of resources?" The baseline questionnaire included a few questions on a household's food-stocks, which would have partially replaced function of this question, but that question was removed from the endline questionnaire.

and 7; the HFIAS method is silent on this issue. It might make more sense to weight certain conditions more heavily than others, in order to create a more "informed" continuous index of food-insecurity experienced. However, without greater theoretical guidance for the construction of a more refined index, I choose to follow the method already outlined by the HFIAS tool. Its clear disadvantages notwithstanding, it appears to perform well, and its simplicity makes it attractive.

Fortunately, the HFIAS tool also provides a categorical indicator which does attach greater weight to more severe experiences of food-insecurity in a logical fashion: the Household Food Insecurity Access Prevalence (HFIAP) indicator. While this variable is less sensitive to incremental changes, the meaning of the difference between one value and another is fully transparent, and comparisons across households or over time more straightforward. The HFIAP groups households into 4 categories of food-access insecurity: food secure (assigned a value of 1), mildly food insecure (2), moderately food insecure (3), and severely food insecure (4). The more severe food-insecurity conditions that a household says occurred, and the more frequently conditions occurred, the higher the score.

Generally speaking, mildly food insecure households have enough in terms of quantity of food, but may have occasional poor food quality (or frequent occurrence of the most mild restrictions on food quality). Moderately food insecure households tend to have more frequent serious problems with food quality, and occasional problems with adequate quantities of food. Severely food insecure households have serious difficulty obtaining even sufficient quantity of food.

More specifically, to be classified as "food secure", a household must say that none of the food insecurity conditions asked about ever occurred – i.e. the reply no to all seven of the main questions. A household is considered "mildly food insecure" if it reports experiencing some of the conditions indicating a restriction in the *quality* or diversity of foods consumed, but generally experiencing them only *rarely* (i.e. 1-2 times in the last 30 days). To be considered "moderately food insecure", a household would have to experience restrictions on food-quality "sometimes" (3-10 times per 30 days) or "often" (more than 10 times), and/or indicate that the two less severe questions on quantity-restrictions questions (questions 4 and 5) occurred "rarely" or "sometimes". Finally, any of the following would lead a household to be classified as "severely food insecure": reducing meal size (question 4) or meal number (question 5) "often", or ever experiencing the two most severe conditions (going to bed hungry, or going a full day and night without eating). This system for categorizing households, summarized in Table 4 below, ensures that each possible set of responses to the HFIAS questions places a household in a unique category.

Table 4. Categorization of Households by HFIAP

Question		**Frequency**		
Number	**Type**	**Rarely** (1-2 times)	**Sometimes** (3-10 times)	**Often** (10 or more times)
1	Qual	Mild	Mild	Mild
2	Qual	Mild	Moderate	Moderate
3	Qual	Mild	Moderate	Moderate
4	Qty	Moderate	Moderate	Severe
5	Qty	Moderate	Moderate	Severe
6	Qty	Severe	Severe	Severe
7	Qty	Severe	Severe	Severe

This table is a modified version of that which appears in Coates et. al. (2007), adjusted to fit the IRIS-questionnaire.

Dietary Diversity

The food security module also included a series of questions aimed to measure the diversity of household members' diets. The recall period for these questions was shortened to the last 7 days prior to the survey interview. Just as for the other questions in the food-security module, these questions were asked of the main food preparer of the household. The measures of diet diversity developed are based on food-categories defined by Arimond and Ruel (2004), who create a 7-point scale which is a simple sum of consumption from 7 different food groups which they identify (starchy staples, legumes, dairy, meats (incl. eggs), vitamin-A-rich fruits and vegetables, other fruits and vegetables, and fats). In an analysis evaluating this score as a predictor of anthropometric outcomes for young children across 11 countries (including Malawi), they find it does quite well. The IRIS scale runs from 0-12, however.

Finally, the food-security module also included a section on coping tactics employed by the household over the 30 days prior to the interview in order to access food.[33] Each household was asked how often it made recourse to the following actions in order to obtain food over the last month: sale of livestock to buy food, sale of other assets to buy food, borrowing food from friends or relatives, borrowing cash from friends to buy food, borrowing cash from relatives to buy food, purchasing food on credit, gathering wild food or hunting, harvesting immature crops, sending household members to east somewhere else outside the home, sending household members to beg, restricting consumption by adults so children can eat, restricting consumption by non-working

[33] The literature often refers to these as "coping *strategies*". I intentionally choose to call them tactics instead, as many of these actions are perhaps better understood as short-term or immediate *responses* to urgent situations, rather than part of a pre-consuidered plan for acquiring food, or any longterm "strategy" per se.

household members in favor of working members, receipt of food-aid from outside organizations such as the government or NGOs or religious organizations, relying on cash gifts from friends or relatives in order to purchase food, migrating to earn money in order to purchase food, working extra. The potential responses for how often each of these activities was done included: never, 1-3 times in the past 30 days; 1-2 times per week; 3-6 times per week; every day. I also make use of the data gathered from this section in analysis of the welfare effects experienced by households as a result of increases in local savings prevalence.

Defining Vulnerability

I classify households by level of vulnerability to hunger and low welfare outcomes with the use of baseline (2008) variables on food-security status, assets, education, distance from major roadways, and gender of household head. The primary indicator is the household's 2008 HFIAP food-security score. Recall that, as the survey was conducted during the pre-harvest "hungry" season, these scores are likely to reflect conditions during the most intense period of vulnerability to low food-intake. The HFIAP score is based on data on food-intake over the 30 days preceding the survey interview. The food insecurity section is a slightly modified version of the USAID Household Food Insecurity Access Scale for Measurement of Food Access (Coates, Swindale, and Bilinsky, 2007). Scores are generated by examining the frequency with which each of 7 possible food-insecurity conditions occurred in the last 30 days.

The Household Food Insecurity Access Prevalence (HFIAP) score is a food sufficiency indicator largely reflecting caloric intake. The HFIAP score groups households into 4 categories – food secure, mildly food insecure, moderately food insecure, and severely food insecure. Mildly food insecure households usually have enough food, but may have poor food quality at times. Moderately and severely food insecure households have problems with adequate food intake (or serious lack of access to quality food).

This measure by itself, however, is too broad to identify those households of highest vulnerability – nearly 40% of the sample falls into the highest food-insufficiency category (HFIAP=4). In addition, random variability in household consumption introduces noise into this as a measure of vulnerability, as some households may simply

have had a bad year during the baseline and are not as vulnerable on average as this simple measure would predict. Measurement error in the food-security questions introduces further noise. To better zero-in on vulnerability, I therefore add distance from the van-bank stop as a proxy for distance from major roads, possession of a cell-phone, literacy, and whether the household is female-headed. Possession of a cell-phone is a proxy for wealth-level, and literacy is defined as whether the household has any members that can read. Table 5 shows the definition for each classification, and indicates the number of households in the final full panel in each category. Categories A-D are mutually exclusive; after category D, each successive category is a subset of the preceding category. (That is, G is a subset of F, F is a subset of E, E is a subset of D.)

Table 5. Definition of Vulnerability Categories

Vulnerability Category	Definition	No. of C-HHs	No. of T-HHs
Category A	2008 HFIAP = 1 Household classified as "food-secure" in 2008.	77	80
Category B	2008 HFIAP = 2 Classified as "mildly food-insecure" in 2008.	61	55
Category AB	Category A & B Combined	138	135
Category C	2008 HFIAP = 3 Classified as "moderately food-insecure" in 2008.	417	413
Category D	2008 HFIAP = 4 Classified as "severely food-insecure" in 2008.	443	463
Category E	2008 HFIAP = 4, 3+km Classified as "severely food-insecure" in 2008, located 3 or more kilometers from the bus-bank stop.	429	434
Category F	2008 HFIAP = 4, 3+km, no cell phone Classified as "severely food-insecure" in 2008, located 3 or more kilometers from the bus-bank stop, does not have cell-phone	415	427
Category G	2008 HFIAP = 4, 3+km, no cell phone, illiterate Classified as "severely food-insecure" in 2008, located 3 or more kilometers from the bus-bank stop, does not have cell-phone, and either: (i) no HH member is literate in Chichewa; or (ii) household head is female.	141	131

Note that A,B,C, and D are mutually exclusive. But E is a subset of D, F is a subset of E, and G is a subset of F.

Characteristics of the Final Panel Dataset

Table 6 shows descriptive statistics on a variety of key household characteristics in the sample. Most variables should be self-explanatory. The variable "Relative Supporter" is a dummy for whether the household reported in the baseline that they can rely on a relative for support in times of need, and the variable "Friend/Nbr Supporter" is a dummy for whether they reported in the baseline being able to rely on a friend or neighbor. The HFIAP-Score is a 4-point food-security indicator that forms the basis for vulnerability-categories. The HFIAS-score is a 21-point food-security indicator. (For both indicators, higher values imply less security.) Category A through Category G are household vulnerability indicators, defined in the next section, such that these take a value of 1 if the household belongs to the category. Unless otherwise indicated, the reported values are percentages of households in the sample for which the indicator variable is true.

Table 6. Descriptive Baseline (2008) Statistics on Households in Final Panel

	Overall		Lilongwe		Dedza		Mchinji	
	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
Head is Male	0.852	0.355	0.850	0.358	0.849	0.358	0.859	0.348
HH Size (People)	5.2	2.0	4.9	1.8	5.2	1.9	5.5	2.2
Head's Age (Years)	41.6	13.9	41.3	14.3	40.7	13.0	43.4	14.8
Head Has Some Schooling	0.794	0.405	0.804	0.398	0.798	0.402	0.779	0.415
Head Has PSLC or Higher	0.248	0.432	0.203	0.402	0.231	0.422	0.309	0.463
Has Literate Members	0.856	0.352	0.837	0.370	0.834	0.373	0.903	0.296
Durable Assets (USD)	180.82	1009.02	115.68	312.20	132.43	322.99	305.01	1761.01
Total Assets (USD)	1095.52	2681.48	1014.41	1542.66	841.49	1670.72	1542.22	4162.72
Has Cell phone	0.119	0.324	0.096	0.295	0.123	0.329	0.133	0.339
Has Salaried Member	0.148	0.356	0.096	0.295	0.175	0.380	0.149	0.356
Has Business	0.255	0.436	0.284	0.451	0.265	0.441	0.219	0.414
Land (Acres)	2.66	1.88	2.73	2.04	2.57	1.62	2.74	2.10
HFIAP Score (1-4)	3.24	0.87	3.36	0.75	3.24	0.89	3.13	0.93
HFIAS Score (1-21)	7.91	4.63	8.17	4.26	8.20	4.75	7.27	4.66
Bank-Stop Distance (km)	8.04	3.22	7.75	3.20	8.21	3.17	8.01	3.31
Has Formal Acct	0.108	0.311	0.136	0.343	0.081	0.273	0.128	0.334
Has Formal Loan	0.062	0.241	0.048	0.214	0.065	0.247	0.067	0.251
Relative-Supporter	0.710	0.454	0.749	0.434	0.707	0.455	0.684	0.465
Friend/Nbr-Supporter	0.789	0.408	0.856	0.352	0.777	0.417	0.756	0.430
Category A Households	0.078	0.268	0.040	0.195	0.083	0.276	0.101	0.302
Category B Households	0.058	0.233	0.044	0.205	0.055	0.229	0.072	0.259
Category C Households	0.413	0.493	0.430	0.496	0.396	0.489	0.426	0.495
Category D Households	0.451	0.498	0.486	0.500	0.466	0.499	0.401	0.490
Category E Households	0.430	0.495	0.470	0.500	0.442	0.497	0.380	0.486
Category F Households	0.419	0.494	0.445	0.497	0.440	0.497	0.368	0.483
Category GH Households	0.135	0.342	0.138	0.345	0.149	0.356	0.113	0.317
Number of HHs (qty)	2,009		479		919		311	

Except where indicated in parentheses, units are proportions. Conversion rate for dollars used is about 141.5 kwacha to the dollar. Literacy is defined as being able to read and write in Chichewa

About 85% of the households are male-headed, with little to no variation across the three districts. The mean number of household members is 5.2, with household sizes a bit smaller in Lilongwe (4.9) and a bit larger in Dedza (5.5). The average age of household heads is 41.6 years old, with ages slightly higher in Mchinji and slightly lower in Dedza. For the majority of households (79%), the head had at least some years of schooling, but a much smaller proportion actually finished primary school (25%).[34] Just over 86% of the households have at least one literate household member (defined as being able to read and write in Chichewa). Mchinji appears better educated on average than the other districts, with a higher proportion of heads that finished primary school (31%), and a higher proportion of households with at least one literate member (90%).

I use two different asset variables. The first is the total value of the household's durable assets, excluding the value of any buildings, but including things like furniture, tools, bicycles, any appliances, and any micro-business assets (e.g. local beer-brewing materials). The second measure includes self-reported estimates of land-value, livestock, any cash savings deposits, and the value of all structures owned by the household. The mean value of durable assets is about $ 181 US, while that for total assets is $1,095 US. There is a very high degree of variation in both of these values, however. (The respective median values are about $50 for durable assets and $542 for total assets.) Mobile phone ownership is also likely be a strong indicator of wealth – particularly the upper spectrum, indicating having surpassed a certain relatively high wealth threshold. This is especially likely to be true in 2008, when mobile phone penetration rates were still quite low, and typically only the relatively wealthy would have them. Overall, 11.9% of households

[34] Finishing primary school is defined as having graduated and earned the PSLC certificate.

possessed a mobile phone. By all three measures, the average wealth level tends to be higher in Mchinji.

Table 7 below shows the most common sources of income. While about a quarter of the households reported operating small non-agricultural businesses in the baseline, the majority derive their income primarily from farming. The average amount of land is owned is about 2.5 acres (the median is 2.0). The main staple crop is maize, while tobacco is the most significant cash crop. Other crops include groundnuts (peanuts) and vegetables. The most commonly reported businesses include trading in produce or groceries, brewing and selling beer, petty trading, food processing, street-food sales, collecting and selling firewood.

Among household heads, the reported main occupations were farming (82%), salaried profession (8%), household business (5%), and wage labor (4%). Nearly all households (99%) reported at least some level of farming, about 72% of the sample reported some level of animal husbandry over the year leading up to the interview in 2008, and at least 47% engaged in some form of casual daily wage labor (*ganyu*).[35]

Table 7. Income-Generating Activities of Sampled Households

	(% of households reporting)
Farm Work	99%
Animal Husbandry	72%
Non-Agricultural Business	26%
Salaried	15%
Ganyu (casual Day-Labor)	47%

[35] Information on whether anyone in the household engaged in any casual-wage labor (or *ganyu*), is drawn from a household labor module, which only gathers data on labor over the last 30 days prior to the interview. So this figure is a lower bound of the estimate of households that engaged in *ganyu*. *Ganyu* labor is typically informal work for cash, e.g. working for a friend or neighbor in their fields or mending or building physical structures.

The mean value for the 4-point food security indicator Household Food Insecurity Access Prevalence (HFIAP) was 3.24, indicating quite low overall levels of food-security, particularly with respect to food quality. This is perhaps not surprising, as the survey was conducted during the pre-harvest "lean" or "hungry" season, a period of heightened vulnerability, when food-stocks may run low for many households. Table 8 shows the percentage of households in each of the four categories. Forty-five percent of households were severely food insecure, meaning that they have significant problems with food access. An additional 41% of households were moderately food insecure, meaning that they have frequent problems accessing quality foods or some problems accessing food at all. Six percent fell into the mildly food-insecure category, and only 8% of households were categorized as food secure.

Table 8. Household Food Insecurity Access Prevalence (HFIAP) in 2008

HFIAP	Overall	Lilongwe	Dedza	Mchinji
Food secure	8%	4%	8%	10%
Mildly food insecure	6%	4%	6%	7%
Moderately food insecure	41%	43%	40%	43%
Severely food insecure	45%	49%	47%	40%

The sample average for the more refined 21-point Household Food Insecurity Access Scale (HFIAS) was 7.9, with a high degree of variation within districts. For the household diet diversity score (HDDS), high values indicate greater diet diversity, so that higher scores for this indicator are actually better rather than worse, unlike the other two indicators. The mean value for this variable was 7.1. As was the case for the asset variables, the sample in Mchinji appears mildly better-off on average, with a slightly

higher proportion of households in the better-off food-security categories than the other two households, a lower average HFIAS score, and better diet diversity scores.

The distance variable measures the radial distance (i.e. "as the crow flies") from a central point in the village cluster to the closest regular stop for the van-bank. (Recall that the bank's stopping points were located in six different trading centers located along the main highway.) Households in the sample were located on average about 8 km from the closest stop by this measure.

While over a third of the households (38.1%) report use of some sort of financial service external to the household, this is heavily dominated by informal services – particularly informal loans. Only 14.2% of the sample reports current use of formal services – 10.8% have formal savings accounts, 6.2% have current formal loans, and 2.7% have both a formal savings and a current formal loan. A small proportion, 2.2% of the sample (45 households) have informal "savings accounts" (e.g. cash kept at a friend's or relative's house, or cash contributions to a rosca). The bulk of financial service use is comprised by informal loans, as 25.6% of all households report at least one current informal loan. Most of these were current loans from friends or relatives, held by 24.1% of the sample.

Almost a third of the sample (31%) reported a current loan of some type. Among households with current loans, 17.4% had formal loans only, 80% had informal loans only, and 2.6% had both informal and formal loans. Only 13% of the sample reported use of an external cash-storage method. Of these households, 82.8% had only a formal savings account, 16.9% had only an informal account, and only one household had both an informal and formal cash savings method.

Among households reporting current informal loans, the mean number held was 1.2; 85% had only one, 14% had two, and 1% had 3 or more. Among those with informal cash-savings mechanisms, 98% of the households reported only one such informal savings "account". Among households with current formal loans, none of them had more than one formal loan. Among the 217 households reporting formal savings accounts, the mean number of formal accounts held by the household was 1.2; 86% held only one formal account, 13% held only 2 accounts, and 1% held 3 or more accounts. The average account balance is MK 16,290, but with a wide dispersion. The median is MK 4,000, the first quartile MK 1,000, and the third quartile MK10,000. Average loan sizes from formal and informal sources were about US$122 and US$14, respectively. The majority of formal loans were group-based loans.

Characteristics of the Attriters

Table **9** reports the baseline characteristics for those households which attrited from the sample, and includes a column indicating any significant differences between the attriters and non-attriters. Attrition appears to have been disproportionately heavier among slightly better-off households in the sample, though not unreasonably so. Rates of failure to re-interview in 2010 were significantly higher from semi-urban areas – particularly the two *bomas* (the administrative centers of Dedza and Mchinji Districts) – most likely due to higher mobility among people located in such areas. For example, while only 4.5% of all households in the baseline lived in a community located within 1 km of the mobile bank stop, 14.1% of attrited households came from these areas, compared to 3.0% among the non-attrited group (significant at the .01-level, not shown in table).

Most other differences across attrited and non-attrited households appear likely to be driven from the fact that attrition was higher among those in closer proximity to urban areas. Attrited households are on average smaller (4.8 vs. 5.2 mean size), their household heads are younger (37.2 vs. 41.7 yrs old), and there is some evidence that their heads are slightly more educated (31.7% of attrited HHs had heads with PSLC degree or higher, compared to 24.8% among non-attrited). Attrited households were more likely to possess a mobile phone, with 21% of them having one in 2008, compared to 12% of non-attrited households.

Table 9. Descriptive Baseline (2008) Statistics on Attrited Households

	Overall			Lilongwe		Dedza		Mchinji	
	Mean	s.d.	Diff	Mean	s.d.	Mean	s.d.	Mean	s.d.
Head is Male	0.844	0.364		0.872	0.336	0.800	0.401	0.884	0.322
HH Size (People)	4.8	2.0	***	4.8	2.4	4.8	1.8	4.7	1.8
Head's Age (Years)	37.2	12.6	***	36.4	14.1	37.4	11.0	37.5	13.5
Head Has Some Schooling	0.831	0.376		0.802	0.401	0.819	0.386	0.874	0.334
Head Has PSLC or Higher	0.317	0.466	***	0.151	0.360	0.319	0.468	0.463	0.501
Has Literate Members	0.874	0.332		0.814	0.391	0.869	0.339	0.937	0.245
Durable Assets (USD)	39492	169998		15375	41790	33897	122268	69866	271891
Total Assets (USD)									
Has Cell phone	0.215	0.411	***	0.116	0.322	0.221	0.416	0.295	0.458
Has Salaried Member	0.202	0.402	**	0.116	0.322	0.241	0.429	0.221	0.417
Has Business	0.325	0.469	***	0.279	0.451	0.269	0.445	0.453	0.500
Land (Acres)	2.39	1.59	**	2.83	2.03	2.15	1.42	2.35	1.32
HFIAP Score (1-4)	3.11	0.98	* (ranksum)	3.31	0.80	3.08	1.05	2.99	0.99
HFIAS Score (1-21)	7.03	4.92	***	7.66	4.33	7.29	5.26	6.05	4.80
Bank-Stop Distance (km)	7.16	4.15	***	8.10	3.92	7.33	4.25	6.05	3.97
Has Formal Acct	0.176	0.381	***	0.118	0.324	0.179	0.385	0.223	0.419
Has Formal Loan	0.058	0.235		0.058	0.235	0.062	0.242	0.053	0.224
Relative-Supporter	0.684	0.466		0.709	0.457	0.717	0.452	0.611	0.490
Friend/Nbr-Supporter	0.782	0.413		0.849	0.360	0.772	0.421	0.737	0.443
Category A Households	0.113	0.318	**	0.058	0.235	0.138	0.346	0.126	0.334
Category B Households	0.086	0.281	*	0.035	0.185	0.097	0.296	0.116	0.322
Category C Households	0.374	0.485		0.442	0.500	0.317	0.467	0.400	0.492
Category D Households	0.426	0.495		0.465	0.502	0.448	0.499	0.358	0.482
Category E Households	0.371	0.484	**	0.419	0.496	0.393	0.490	0.295	0.458
Category F Households	0.340	0.475	***	0.419	0.496	0.372	0.485	0.221	0.417
Category GH Households	0.132	0.339		0.186	0.391	0.152	0.360	0.053	0.224
Number of HHs (qty)	326			86		145		95	

Except where indicated in parentheses, units are proportions. Conversion rate for dollars used is about 141.5 kwacha to the dollar. Literacy is defined as being able to read and write in Chichewa

Among attrited, 20.2% had a salaried household member, while only 14.8% among the non-attrited households did. Attrited are more likely to have a household business, with 32.5% compared to 25.5% among non-attrited. They are also more likely

to be users of formal savings services (again, probably due to a higher proportion of them living closer to more urban environments, and perhaps due to the higher prevalence of salaried household members): 17.6% of attrited households report formal savings accounts in 2008, compared to 10.8% among non-attrited. Attrited households have on average *less* land than non-attrited (2.4 acres, compared to 2.7 acres among non-attrited).

Not surprisingly then, the attrited appear to be slightly less vulnerable on average. Attrited households had mildly better food-security scores in 2008, with a mean HFIAP score of 3.1 (compared to 3.2 among non-attrited, significant at the .10-level using a Wilcoxon rank-sum test), and mean HFIAS score of 7.0 (compared with 7.9 among non-attrited). The attrited are mildly more representative of the non-vulnerable household categories. Among attrited households, 11.3% of were in vulnerability category A, 8.6% in category B, 37.4% in category C, 45.1% in category D . The analogous percentages for non-attrited are 7.8%, 5.8%, 41.3%, 42.6%.

The attriters still represent a fairly diverse group, however, drawing from all sections of the 2008 sample. For example, while significant, average distance from mobile bank-stop is only7.2 km among attrited, 8.0 among non-attrited. There appears to be no significant difference in the distributions of total value of durable assets between each group (whether through t-test or Wilcoxon rank-sum). More than three-quarters (79.8%) of the attrited group lived in clusters located 3 or more kilometers from the mobile bank-stop. There is no evidence of differences in literacy rates, social capital, or formal credit use between the attrited and non-attrited; and the attrited still represent a broad spectrum of the vulnerability-types. Finally, there is no significant difference in the

proportion of the highly vulnerable household-type (category G) across attrited and non-attrited; they account for just over 13% of either group.

3.3. Conclusion

This chapter explained the empirical setting this dissertation uses to examine the indirect effects of formal savings use on the highly vulnerable non-users. It has described the major features of the longitudinal data used for analysis. It also detailed the data-collection process, and defined key variables to be used in the analysis.

This chapter has also highlighted key features of the setting which make it particularly amenable to an analysis of the indirect effects of formal financial services expansion on safety nets based on inter-household transfers. The initial shallow presence of formal finance is confirmed by the low penetration and usage rates measured in the baseline data. In addition, there is a strong presence of inter-household financial assistance, with over a quarter of the sample reporting recent loans from other households in 2008, and nearly half of the sample reporting recent cash-gifts or loans from friends or relatives in 2010. Finally, the fact that the survey took place during what is generally the most vulnerable period of the year – the pre-harvest lean season, when household resources are stretched to their thinnest – means that the data is likely to capture impacts on those transfers which are most likely to have substantial welfare effects.

To accurately ascertain the impacts of financial deepening in this context, we designed a large-scale natural field experiment to exogenously boost formal savings rates among half the sample. The next chapter describes the experiment, based on an information intervention, the random assignment of which enables causal identification of the effects of formal services expansion. The chapter details the instrument we

constructed, how it fits into the ordinary experiences of village communities in the area, and the randomization process. It then examines the effects the instrument had on formal services adoption in the communities where it was randomly assigned.

Chapter 4. Exogenously Boosting Access Through a Natural Field Experiment: Encouragement Via Marketing

In some ways, the ideal financial services impact assessment relies on a strict randomization of access. For the research questions I explore, for example, analysis would have been much simpler if a subsample of the communities in the overall sample had been randomly given improved access to the bank's services. This would have provided a very clean and simple group of treated communities against which an appropriate random selection from other communities would have served as a clean and simple control.

However, strict randomization in the social sciences is often not practical, nor always ethical. In addition, when analyzing human behavior, in settings where randomization is unnatural, it may actually even be harmful to accurate identification of causal effects. Given that formal financial service expansion often proceeds through increased proximity of financial institutions to potential users, it is typically difficult to randomly select those to whom you provide improved access to. This was certainly the case in the present research setting, where expanded access was through a mobile van-bank that brought the bank closer to all communities in the area.

Comparing the communities in this area to controls drawn from other parts of the country would run the risk of important location-based heterogeneity which can strongly bias results.

Another alternative would have been to deny access to the randomly selected controls. This has ethical complications, however, particularly if it is believed that these services may improve welfare outcomes of the poor, if the whole point of the project is to expand access to the poor, and the access has essentially already been provided. To make extra efforts to prevent some from using as service that may benefit them, even if the ultimate goal is to improve outcomes, puts the researcher on ethically questionable ground. Denying access also would have imposed important costs on the microfinance institution. On the one hand, staff would have needed to be trained to identify excluded communities, make sure to disallow people from those areas from completing the application process, and find acceptable ways of explaining to them that they would have to wait up to two years while others could start using services immediately. On the other hand, the bank would have had to turn away many potential depositors and their capital. These considerations aside, the institution was unwilling to randomly deny access to potential clients, and so this was not an option.

It is important to note, however, that it is not clear randomly disallowing access is superior even from a research perspective. At least a few members of almost all of the control communities would have learned of the bank's expansion of access and tried to start using its services.[36] Had they been denied access while those in neighboring villages were allowed, and without any reasonable rationale for doing so, this would certainly

[36] This much is clear from the positive take-up rates even in those areas which did not receive the information campaign.

have been perceived by individuals in the control villages is strange and probably unfair. This would have clearly disrupted the naturalness of the experimental setting, and it is hard to predict what the resulting impacts on behavior might be. A simple example might be that perceptions of discrimination against the community would increase local solidarity, and somehow affect inter-household assistance.

The method we settled on was an encouragement in the form of an intensive information campaign that we designed to serve as an instrument for service take-up. This approach has the virtue of leaving the naturalness of the setting intact, as the presence or absence of an encouragement is more subtle than village-based denial of services-access, and also as there are more natural explanations even if the presence or absence is noticed (the bank has limited resources, they might visit other communities later, etc.). It also aligned very well with the objectives of the microfinance institution. No denial of access to potential clients was required, and it also enabled them to test a new marketing strategy (one which they subsequently expanded to other parts of the country, as they liked it so much).

This chapter describes the information intervention and assesses its performance as an instrument for local formal savings rates. The first section describes the research that informed the intervention, and how it was implemented. Section II discusses the exclusion restrictions which must hold in order to interpret changes caused by the intervention to be operating through the channel of increased local formal savings rates. It explores the ways they may be violated, and argues that it is reasonable to assume the assumptions hold, so that the instrument may be validly omitted from the second stage of the instrumental-variables regressions in Chapter 5. Section III explains the procedure

followed to randomize communities into information-treated and information-control, and tests for balance across the samples. Section IV describes the expected effects of the intervention ex-ante, and Section V analyzes the actual effects of the information campaign on financial services adoption.

4.1. Creating & Implementing the Information Intervention

Qualitative Research to Inform Method & Content of Intervention

> ***"Dedza [boma] is too far to get to! It costs too much to access your money there. It's no longer worth it!" – Focus Group participant, Nanseta Village, Dedza District, February 2008.***

Two different types of Focus Group Discussions (FGDs) were held, each with the aim of acquiring a different type of information to help guide creation of the information intervention. The objective of the first type of FGDs was to gather data to help determine the form of the encouragement, and the objective of the second one to determine its content. Information obtained in one type of FGD was often useful for the objective originally intended for the other type of FGD. Information was also cross-checked with other FGDs.

In order to determine the form that the information-intervention should take (i.e. the delivery method for the encouragement to adopt financial services), several focus group discussions were held in representative communities in the research areas in

February of 2008 (shortly after the launch of the baseline survey). Each focus group consisted of about 10-12 people, with an equal mix of men and women. Participants in these discussions were not informed that we were affiliated with any particular organization. In some cases, the participants were randomly sampled, while in others they were a representative convenient sample, selected from community members who happened to be present and available at the time of the discussions.[37] Requests to participate were rarely, if ever, refused. (The discussions were held during a period of low labor demand, and individuals were often curious to interact with a foreigner and appeared to appreciate being asked their opinions.)

Discussions in these groups were guided by questions intended to ascertain the following: (i) community members' current extent of knowledge about formal financial services and their availability; (ii) how people acquired any information they do have about formal financial services; (iii) the quality of the information they currently have; (iv) what sources of extra-village information community members typically rely on and consider trustworthy for other spheres of activity; (v) subjective perceptions about the best way to increase knowledge about formal financial services in the community and reasons for why. Typical questions asked include: What financial organizations can people living here use, and what do they use them for? How do people in this community learn about financial services and their availability? From what sources do people in this village obtain other types of information about services and activities outside the village?

[37] When the FGD was scheduled enough in advance, random sampling of participants was feasible. If scheduled on too short a notice, we were forced to work with whoever was present and available at the time. In such cases, every possible effort was made to ensure participation by people representing a variety of wealth, education, and age levels.

Among these, what is the most common way that people in the village get information from outside the community?[38]

Some important consistent themes emerged from these discussions. One was that people generally had very low levels of awareness of formal financial services and knowledge about them, and sometimes knowledge that people did have was incorrect. In one village, for example, participants knew mostly just about the availability of certain types of savings accounts and wiring services provided by the post office in a trading center about an hour away on foot (the most common method of transportation). Information they had on any financial services from further afield came predominantly from one or two people in the village – men who traveled far enough and often enough to have such types of information, and who they said owned formal accounts in Dedza boma (several hours away). Some discussion participants also expressed significant mistrust of financial organizations, and a concern that financial services could be a guise used by others to swindle people of their money.

Another common theme was that these areas typically already receive regular informational visits by various types of representatives from outside the community whose job it is to disseminate new knowledge. The most common examples cited were agricultural extension officers, and nutrition or health workers, sent by the government to provide information about new products on the market, health issues, provide vaccinations, etc. Participants in at least one village also mentioned regular visits by forestry experts. In some instances, agricultural extension officers were cited as a source

[38] The full set of pre-established questions is in Appendix ***X1***. These questions are better understood as a guide, however, rather than a structured group interview. Digressions from these questions in the natural flow of the discussion were often pursued in order to maximize the amount of useful information unearthed during these discussions.

for minimal information on formal financial services, such as how to set up formal accounts or how to apply for formal loans at certain institutions.

Finally, perhaps based on their experiences with visits by these other highly informed outsiders, when asked about effective methods for spreading knowledge about financial services, most individuals in the FGDs expressed a strong desire to have regular access to some sort of "expert". They wanted someone who they could ask questions regularly, someone from whom they could learn more about the specific value or usefulness of financial services to them. Other suggestions for effective ways to spread knowledge about formal financial services included holding one or a few classes in the village for the entire community to attend, or intensively training a few members of the community to serve as local educators or fixed information-resources in the village. These options tended to be less valued, however, than repeated visits by an outside expert, as there seemed to be a strong preference for regular access to reliable information "from the source".

The second type of focus group discussions were held to gather information to help determine the content to be included in the encouragement. For these, individuals were sampled from known clients of OIBM, the institution whose services were being evaluated by the impact assessment. The goal was to learn from them what types of information were most pivotal in their decision to start using formal financial products, and what their most serious concerns and questions were before adopting them. Having been identified and contacted through OIBM staff, the participants in these FGDs clearly knew that discussion facilitators were somehow associated with the financial organization. They were informed them that we were a third party, assisting OIBM, and

that the goal of the discussion was to determine the best ways to explain its financial products and services to potential new clients in other villages. For these discussions, men and women were met with separately.[39]

Typical questions included: How did you first learn of the financial organization? Is there anything you could have been told when you were first learning of the organization that would have helped you better understand the financial services available to you? Were there any difficulties or points of confusion in the application process? Is there anything you wish you had known earlier in the process, or that would have helped you had you known it sooner? What are the most important or valuable aspects of savings (or credit) services to you?

In addition, after probing to generate a list of things that clients wished they had known about the savings (or credit) services prior to starting use of the service, each FGD was guided through a rapid appraisal exercise. Each of the pieces of information was listed, and the group ranked them from most important to least important.

Some of the key factors that participants identified as instrumental in their decision to adopt use of formal financial services included things such as fully understanding the fees structure of different services, discovering that fees and minimum balances were actually low enough for them to be able to use the services, fully understanding the application process (such as what passes as acceptable identification).[40]

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[39]This did not appear to have an important effect on the types of information provided. For the first type of FGD (to inform the method of the information-intervention), it was observed that the presence of men in the discussions did appear to have a mild impact on some women's willingness to voice their opinions. However, the effect was varied, did not appear particularly strong, and the interpreter (a woman) was adept at putting them women at ease and pulling them into the conversation. Nevertheless, to be careful, the second type of FGD was segregated by gender, to ensure all relevant information could be gathered.

[40] Identification documents can be quite costly and difficult to obtain in these areas. Birth certificates are not common, and while individuals can apply for certain types of ID at local government offices in the administrative centers of their district (the boma), the fees are non-negligible, as are the time and travel-

There were also several issues that clients wished had been cleared to them earlier on. These included things such as what would happen to their money in case of death, and also what would happen to any debts they may owe. Several people wished they had better understood the fees for maintaining savings accounts. Others wished they had better understood how the collateral needed in order to receive loans was determined. The findings from these discussions were then combined with pre-existing marketing materials of OIBM to create the content of the information intervention.

The Information Intervention

After consolidating the findings from the qualitative background research, I worked with the marketing team of OIBM to integrate what we learned into a plan for an information intervention that would meet both the institution's goals as well as our research objectives. Together, we fashioned an "intensive marketing campaign", based on face-to-face interactions with a field based representative from the bank. This format of regular informational visits by a bank representative mirrored other commonly used methods to disseminate information to village communities in the area, and was in accord with the suggestions of community members themselves for the best way to provide information on financial services.

The 60 village-clusters assigned to the information treatment (56 clusters in the final panel, after dropping the 4 problematic pairs) were divided into eighteen different groups of about 3-4 clusters each. Field-Based Promotional Assistants (FBPAs) were then hired to be responsible for each group of information-treated clusters. In general, the

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costs to visit the offices. One early advantage of OIBM was the possibility of using one's fingerprint as sufficient identification, which appealed to many customers.

FBPAs came from communities in central locations with respect to the clusters in their group, typically from a larger trading center, often located along the main highway. All FBPAs were required to have at least a high school diploma; to be able to read and write fluently in English, as well as speak Chichewa and English fluently; and to have strong communication skills.

After being hired, the FBPAs participated in a two-day intensive training, held only once for all of them together. The training focused on details of the financial services offered through OIBM's mobile bank, common questions of potential new users, and how best to explain the services to people unfamiliar with financial products. The FBPAs were instructed to remain within the boundaries of the enumeration areas assigned to the information-treatment. Each was given the same set of materials to be brought to the village with them on each visit, and the same reference guide for information on the financial services and answers to frequently asked questions.[41] (Appendix 7 includes a copy of the training manual and reference guide used by the FBPAs.) In addition to their salary, each FBPA was paid a weekly transportation allowance, which most of them used to purchase and maintain bicycles to be used to travel along the dirt paths to get to the villages where they were working.

[41] In addition to a manual for the training, they were also given complete lists of frequently asked questions, informed by the focus group discussions with clients and non-clients. Each FBPA also brought to the village a few copies of three different types of posters, to be posted outside in central locations of the village (e.g. a "poster tree" or near the chief's home), as well as a stack of fliers to distribute to village residents.

4.2. The Exclusion Restriction: Could the Instrument Have Had a Direct Effect?

The focus group discussions on how people in rural communities obtain trustworthy information from sources outside the village informed a marketing campaign that mirrored these methods of information dissemination. The backbone of the campaign consisted of the periodic visits from the FBPA, who brought informational materials, talked with members of the community, and left posters and other promotional materials in each village assigned to the marketing treatment. (See Appendix 7 for a copy of the training manual and information disseminated.) The goal was to exogenously induce higher take-up rates in the marketing village clusters than in non- marketing clusters.

The exclusion restriction required for the encouragement to be able to function as a valid instrument relies on the assumption that the only way periodic informational visits by bank representatives changed villagers' behavior, such that it differed from the non-encouraged clusters, was in their decision about whether to adopt formal services. That is, the validity of the instrument requires that these visits by themselves did not directly influence the outcomes of interest (e.g. inter-household transfers) through a channel other than the uptake of financial services. This would be violated, for example, if the information intervention affected other behaviors in the community besides service-adoption, or altered other community-level variables, in ways that affected the outcomes of interest. The assumption that the exclusion restriction holds is valid if the only change that the marketing campaign introduced to marketing areas was to expand individuals'

information sets and that the only effect of more information was to induce more households to adopt.[42]

The exclusive goal of the campaign was to provide information on the institution's products, with the hope that this would cause households to realize that it was to their benefit to open up savings accounts. As the bank is a savings-driven institution, its goal was to expand its client base, and the sole responsibility of FBPAs was to bring in more clients to the bank – i.e. recruit more formal savers. Their job consisted entirely of teaching locals about financial products and why they might find those offered by the bank useful.

For the exclusion restriction to be violated, either (i) the information-content itself would have had to affect choices besides the financial services adoption decision; or (ii) the form the intervention took – periodic visits by the FBPAs – would have had to introduce elements to the marketing clusters not also present in the non-marketing clusters. With regard to the second possibility, it is not clear what visits by the FBPAs would introduce to communities other than information. Their sole job was to provide information on the bank's services and recruit new clients, and they were incentivized to do so as broadly and rapidly as possible. They were also present in each village only once every few weeks, sometimes only for a few hours,[43] preoccupied with the goal of teaching, convincing, and recruiting new clients.

[42] As discussed elsewhere, one explanation for why more information should lead to adoption of services is that the information intervention can be seen as a random reduction of information-acquisition costs for those in the marketing clusters.

[43] The FBPAs typically walked or bicycled to the communities where they worked. Travel times could be as long as a few hours in many cases, which often left only a few hours during the day to interact with community members.

It is possible that tangential elements are somehow incidentally introduced by these types of visits to villages by outsiders from urban areas. Nevertheless, it is unlikely this would have caused any systematic differences between the encouraged and non-encouraged clusters. Most of the village clusters (marketing and non-marketing) are all located within 10 km of a major highway. The periodic presence of non-locals whose job it is to bring outside information to the communities is not unusual.[44] It is quite common, for example, for agricultural extension officers and nutrition and health extension officers, to make informational visits to these villages in order to educate people about new techniques, practices, and available services[45]. This is just as true in the non-encouraged clusters as in the encouraged clusters. Insofar as the form it took, the marketing campaign therefore does not introduce anything new or unusual.[46]

Each FBPA was responsible for as many as 20-30 villages, and as much as a month might pass between visits. Given these circumstances, it is perhaps more likely that the survey interview itself (as it involves extended contact with a village outsider, i.e. the interviewer, in a 1.5-3 hour discussion of intimate details about the households) might have some sort of tangential effects of the sort that could be caused by the form of information intervention. Yet this was of course administered both in the treated and control areas. Taking all these factors into consideration, it is therefore unlikely that the

[44] This is actually a nice virtue of fashioning the encouragement in the way that we did – it fits right in with other commonly experienced "interventions" in these communities, which minimizes the risk that it did anything new to the marketing-areas (not also being experienced in the non-marketing areas), besides the provision of information on formal financial services.

[45] This was, in fact, the primary inspiration for how I designed the encouragement. After learning that this is the standard way that villages commonly receive information from outside, I intentionally fashioned the information intervention to mimic these pre-existing methods.

[46] While it might be argued that the campaign does add another set of visits, and this might matter if such visits do indeed have tangential effects, any marginal impact the mere periodic presence of FBPAs might have on local outcomes is minimal compared to decades of visits by government extension workers, aid organizations, and others. In addition, for this to have any bearing on the exclusion restriction's validity, it would have to be the case that these visits not only have some effect, but have an effect on the outcomes of interest.

work of the FBPAs could have introduced anything to marketing areas not also already present in the non-marketing areas – besides the provision of information on financial services.

The second way that the encouragement could have had a direct effect is that the information-content itself could have somehow affected behaviors other than the financial services adoption decision. There is no clear reason to expect that more information about formal financial products would, by itself, lead to changes in inter-household assistance behavior. While detailed knowledge among those who actually *use* the services may be relevant to choices about assisting others (e.g. individuals realize they have higher rates of return by using formal savings), in most cases knowledge about services should be irrelevant to non-users. In particular, there is no reason to expect that simply knowing the details about formal savings and credit products should cause someone who does not use such products to start giving more assistance to others.

To the extent that marketing might contain non-informational components intended to persuade (framing, etc.), any effects from such components are still likely to only affect the adoption decision and not have lasting impacts on other behaviors. This is especially true given the short-term and infrequent nature of the visits by FBPAs. While any aspects of the marketing that might have been more subjective or emotive could conceivably influence a decision of whether to adopt, they are unlikely to have lasting influences on long-standing personal habits or responses to the pressure of engrained social norms.

Even if non-informational components of the marketing did somehow have lasting direct effects on behavior, they would likely be in the opposite direction of the

effects I find. It is perhaps possible, for example, that the bank's implicit – and often explicit – emphasis on the importance of building one's own personal wealth as an avenue to financial independence and future personal prosperity might be passed on by the FBPAs and operate as an ideological influence on behavior.[47] This could potentially influence the behavior of all households in the community – regardless of whether they start using formal services – encouraging them to share less and focus more on the accumulation of personal or household cash resources and other assets. Again, however, it is unlikely that a handful of visits to the community over several months would be enough for ideology to have a large or immediate impact on long-standing social practices and individual habits. Nevertheless, to the extent that this is a possibility, such an effect would bias estimated impacts of formal savings uptake towards less assistance to other households. This would make it even harder to detect the patterns I find in the data, and would therefore suggest my findings are a lower bound of the true effects.

4.3. Randomization Procedure & Balance Across Treatment and Control

Recall from Chapter 3 that community sampling was performed following a matched-pair design. Each pair consists of two village-clusters. Clusters were first stratified by distance from each of the six mobile-bank stops, and by population. Two clusters were then randomly sampled from each population-distance group around each

[47] Such an affect would be at the level of altering preferences themselves. While not entirely outside the realm of possibility, this type of effect would most likely require much more frequent and extended exposure in order for new ways of thinking to counter long-standing social practices and individual habits.

of the six bank stops to form a pair for that stratum. In some cases, more than one such pair was sampled from a given population-distance group.

One member of each pair was then randomly assigned to the community-level information-treatment, the other member to a control group which received no information treatment. The sampling frame included a rule stipulating a minimum distance of at least 3 km between the two clusters in any pair, to help minimize spillovers from information-treated communities to non-treated communities. The randomization procedure included a similar condition stipulating at least 3 km between any information-treatment and control clusters not from the same pair.

Balance Across Information-Treated & Information-Control

Table 10 reports descriptive statistics on several important household dimensions of the baseline sample, restricted to the 56 treatment-control pairs in the final sample. As the statistics are from the baseline sample, it includes the 341 households that attrited and which are not part of the final full panel. The table presents overall figures, as well as split by marketing and non-marketing communities. The variable "Relative Supporter" is a dummy for whether the household reported in the baseline that they can rely on a relative for support in times of need, and the variable "Friend/Nbr Supporter" is a dummy for whether they reported in the baseline being able to rely on a friend or neighbor. The HFIAP-Score is a 4-point food-security indicator that forms the basis for vulnerability-categories. The HFIAS-score is a 21-point food-security indicator. (For both indicators, higher values imply less security.) Category A through Category G are household vulnerability indicators, defined in the first chapter, such that these take a value of 1 if the household belongs to the category. Unless otherwise indicated, the

reported values are percentages of households in the sample for which the indicator variable is true. The column of differences indicates statistically significant differences based on two-sided t-tests for most variables, but Mann-Whitney U-tests for household size, HFIAP, and HDDS, with standard levels of significance indicated.

Table 10. Descriptive Baseline Statistics on HHs in Final Sample, by Treated-Control Clusters

	Overall		Info-Control		Info-Treated		Signif
	Mean	s.d.	Mean	s.d.	Mean	s.d.	
Head is Male	0.851	0.356	0.838	0.369	0.864	0.343	*
HH Size (People)	5.1	2.0	5.0	1.9	5.2	2.0	**
Head's Age (Years)	41.0	13.8	41.1	13.9	41.0	13.8	
Head Has Some Schooling	0.799	0.401	0.787	0.409	0.810	0.392	
Head Has PSLC or Higher	0.258	0.438	0.243	0.429	0.273	0.446	
Has Literate Members	0.858	0.349	0.860	0.348	0.857	0.350	
Durable Assets (USD)	195.02	1037.58	180.41	1198.18	209.46	849.70	
Total Assets (USD)							
Has Cell phone	0.133	0.339	0.121	0.326	0.145	0.352	*
Has Salaried Member	0.156	0.363	0.145	0.352	0.167	0.373	
Has Business	0.265	0.442	0.259	0.439	0.271	0.445	
Land (Acres)	2.62	1.85	2.61	1.65	2.63	2.01	
HFIAP Score (1-4)	3.22	0.89	3.21	0.88	3.23	0.90	
HFIAS Score (1-21)	7.79	4.68	7.83	4.68	7.75	4.68	
Bank-Stop Distance (km)	7.92	3.38	7.85	3.52	7.98	3.24	
Has Formal Acct	0.118	0.322	0.101	0.301	0.134	0.341	**
Has Formal Loan	0.061	0.240	0.061	0.240	0.061	0.240	
Relative-Supporter	0.707	0.455	0.710	0.454	0.704	0.457	
Friend/Nbr-Supporter	0.788	0.409	0.800	0.400	0.777	0.417	
Category A Households	0.083	0.276	0.080	0.272	0.086	0.281	
Category B Households	0.062	0.241	0.067	0.250	0.056	0.230	
Category C Households	0.408	0.492	0.415	0.493	0.400	0.490	
Category D Households	0.448	0.497	0.438	0.496	0.457	0.498	
Category E Households	0.421	0.494	0.418	0.493	0.425	0.495	
Category F Households	0.408	0.492	0.403	0.491	0.413	0.493	
Category GH Households	0.135	0.342	0.138	0.345	0.132	0.339	
Attrition	0.140		0.140		0.139		
Number of HHs (qty)	2335		1161		1174		

Except where indicated in parentheses, units are proportions. Household size, HFIAP-score, HDDS-score tested via rank-sum tests.

The randomization was fairly successful at achieving a balance across the clusters administered the information treatment and those that served as controls. Age of the household head, as well as indicators on education-level of the household appear the same across the randomization. There are no apparent differences in asset levels, the types of income-generating activities they engage in (e.g. salaried employment, own business), or the amounts of land owned. Food-security outcomes do not differ across treated and control communities, nor doe how remote the communities are, ability to rely on relatives and friends for support, and usage rates of formal credit.

Importantly, there are no differences between clusters assigned to receive the information intervention and the information-controls in the percentage of households in any of the vulnerability categories. In particular, there is no difference in the percentage of the sample accounted for by the "highly vulnerable" category.

There is a mild, but statistically significant, difference in terms of household size. Treated-areas have a mean household size of 5.2, compared to that of 5.0 in control-areas, a difference of 4%; the median number on both is 5 members. Areas receiving the information intervention also have a slightly lower percentage of female-headed households: while 14% of the sample in treated areas is comprised of female-headed households, 16% of those in control areas are female-headed ($p=0.08$).[48]

Of greater concern is that it appears formal savings was already more prevalent in the clusters assigned to receive the marketing, prior to the marketing campaign. That is, while the randomization appears successful at achieving a balance between encouraged

[48] Both of these differences disappear when dropping the quarter of the sample comprised by Lilongwe district, where the randomization appears to have been a little less effective at resulting in a balance across the information-treated and control clusters.

and non-encouraged clusters along most household dimensions, it failed to achieve a balance in local prevalence of formal savings use. As this is the pivotal community-level dimension for the analysis, this is a potential cause for concern.

However, upon closer examination of the data, the higher pre-intervention incidence of formal savings in the encouraged areas does not appear to be systematic. It is driven by differences in Lilongwe district – particularly from the upper tail of the distribution. For almost all (90%) of the 27 village clusters in Lilongwe district, the reported baseline percentage of households with formal savings accounts was 25% or lower (the mean was 12.7%). However, three clusters had levels of incidence reported at 43% or higher (43%, 50%, and 55%). All three of these outliers happened to be assigned to receive the information intervention. The matched village cluster which happened to be assigned to control for each had proportions of 0%, 14% and 25%, respectively. Assuming the randomly assigned status was independent across each matched pair, the probability that this would occur is .125, low but clearly plausible. Given the skewed distribution of formal savings prevalence in Lilongwe, it would appear we were simply unlucky with the randomization on the dimension of formal savings.[49] (As discussed in section 4.5 below, the baseline difference in formal savings in Lilongwe poses a minor complication for the effects of the information intervention on local formal financial services use. However, as the analysis in section 4.5 will show, the complication is easily addressed, lends itself quite easily to simple robustness checks, and may in fact not

[49] Had the randomization resulted in opposite assignment within just the first pair alone (the one for which the difference is 43% vs. 0%), the difference in formal savings between treatment and control in the baseline would disappear entirely, the significance dropping to a p-value of 0.354, the magnitude dropping from 3.4 to 1.4 percentage points.

matter at all, depending on which model is the appropriate specification for the change in formal services use.)

4.4 Ex-Ante Expected Effects of the Information Intervention

The information intervention's anticipated effect was to increase use of financial services of a particular organization (OIBM) among households in the community. However, it is also possible the information provided might have induced individuals to start using services of other financial organizations operating within the vicinity as well. Once the information has been provided and the financial literacy of village residents boosted, OIBM has little direct control over whether individuals will in the end choose their products, or those of another organization. While not very helpful to the impact assessment of OIBM in particular, this actually serves the purposes of my analysis quite well, as the hypotheses I investigate concern the impact of formal services in general (rather than those of a specific organization). When analyzing the effects of the information below, I therefore test for its impact on formal financial services usage in general, irrespective of the financial organization.

While the content of the intervention was designed to encourage uptake of all the bank's financial products, expansion of access to services other than formal savings was such that the campaign ultimately served as an encouragement specifically for formal savings. During March and April of 2008, discussions with OIBM field-based micro-banking officers revealed that access to formal credit is expanded through a very particular process. The micro-banking officers are OIBM staff, stationed in trading

centers where the mobile bank stops, whose responsibility it is to oversee extension of the local lending operations of the bank, and facilitate introduction of new borrowers. They explained that communities are brought into the network of areas with access to loans on a village-by-village basis that access tends to expand outward in concentric circles from the bank's stop, and that it proceeds somewhat slowly, due to limited resources and personnel.

In order to start lending to new customers in a village, the micro-banking officer must first visit the village and get to know its leaders in order to develop a reliable local basis on which to judge credit-worthiness of individuals in the community wishing to take out loans. The officer must then return to the village at a later date in order to hold a "sensitization" meeting for anyone in the community interested in applying for loans. After this, a period of 4-8 weeks follows during which the homes of prospective clients in the community are visited to confirm they already have a business (as loans are intended to help existing businesses grow), and to further assess their risk as borrowers. The officers also talk with village leaders and other community members to better evaluate the "character" of the prospective client. The micro-banking officer typically makes at least 5-6 trips to the village during this period.

As this process is quite involved and requires a non-negligible investment of time and energy on the part of the micro-banking officer, they tend to prioritize areas with higher economic activity – areas with wealthier farmers, active businesses, and higher cash-flows. Moreover, they generally start with those closest to the mobile bank's stop and those locations which are easiest to get to. The cluster-pairs sampled for the research,

however, and the random assignment to information-treatment, takes none of these factors into consideration.

The bank therefore follows an expansion plan for access to credit in a manner completely orthogonal to the information campaign. It is of course possible that micro-banking officers could potentially take advantage of groundwork laid by the FBPAs in certain communities, following them by a few months and starting to extend loan operations in those communities. However, micro-banking officers often indicated long lists of higher-priority communities that they had already identified as relatively high-income or business-oriented, suggesting their plans were to capitalize on such areas first before anything else. My prior expectation before analyzing the endline data was therefore that the information intervention would affect formal savings adoption rates, but have little to no effect on local access and use of formal credit.

Another strong prior expectation with regard to the information intervention's effects has to do with distance. The more remote a community is, the more likely it is the information is filling an important gap, and the higher its expected marginal effect. This is not only because more remote areas are likely to be less connected to information networks and further removed from information flows pertaining to formal markets in general, but also because they are simply located further from the mobile bank's stop. In areas close to the bank's stop, households are likely to already have some level of information about the bank and its services, simply due to living in close proximity to its regular weekly location. Additional knowledge and information provided by the FBPAs may still be useful, but is likely to have a substantially smaller marginal effect than in distant areas which perhaps would have

never even heard of the bank absent the information intervention. As distance from the bank's stop and major highways increases, the value of information on financial services in general, and knowledge about this bank in particular, are likely to increase, and with it the marginal impact of the marketing campaign.

Finally, it is important to consider that the effects of the information intervention on local financial services usage levels can operate through two different channels, which may have differing behavioral outcomes in the end. On the one hand, the marketing campaign can induce non-users to adopt formal financial technologies (e.g. to open a formal savings account). On the other hand, it may also *prevent* current users from *dis-adopting* (e.g. closing a formal savings account already previously owned).

It may very well be the case that it does not matter whether usage rates are higher due to induced adoption, or instead due to prevented dis-adoption, and that all that matters is the ultimate level of use. However, it is not clear a priori that the behavioral effects of each of these marketing-induced actions should be identical. It may be the case that use of formal services affects the behavior of households that already (pre-marketing) self-selected into service-use *differently* than it affects households exogenously encouraged into its use. This might occur, for example, if previous users and induced users are systematically different types of households, such that formal services use affects their behavior differently. If so, exogenously boosting the level of adoption may have qualitatively different outcomes, or similar outcomes but of differing magnitudes, than exogenously decreasing the level of dis-adoption. In any case, the possibility of a difference in the ultimate behavioral

consequences of the two types of induced behavior warrants at least a consideration of the effects separately, to complement the simpler analysis of total level of users.

In the following section, I therefore examine the information instrument's effects from both perspectives. First, I assess its impact on adoption rates and dis-adoption rates separately, under the hypothesis that adoption is the pivotal behavior of interest. I then assess its impact on the overall level of service-use, which accounts for any dissuasive effect the marketing has on dis-adoption. The may be a simpler approach, though as will be seen, it raises some complications, and there is no clear theoretical reason that it is any more appropriate as the variable of interest in the following analyses.

4.5. Assessing the Instrument: Effects on Local Formal Financial Services Use

I now proceed to an analysis of the instrument's effects on financial services use. The information intervention's anticipated effect was to increase use of a particular organization's financial services among households in the community. However, since the information provided might also induce individuals to start using services of other financial organizations near the area, and my goal is to investigate the impact of formal services in general (rather than those of a specific organization), I look at changes in savings and credit use at any financial organization.

Note that looking at the effects on just the overall prevalence of formal services use combines two different possible effects – the effect of the information intervention on new adoptions, as well as any effect it has on preventing disadoption. I therefore first examine the instrument's effect on adoption and disadoption

separately, under the hypothesis that higher local usage rates from new adoption has different impacts on inter-household transfers than higher usage rates that stem from preventing decreases in usage by already-users. This would be the case, for example, if formal service-use affects the transfer behavior of households that had already (pre-marketing) self-selected into service-use *differently* than it affects the behavior of households exogenously encouraged into its use. (For example, those already using formal services prior to the advent of the mobile bank and the administering of encouragement may be systematically different types of households, and formal services may affect their behavior differently. Alternatively, if duration of service use affects its impact on household behavior in any way, the key variable of interest may be new service-users).

In the second set of analyses, however, I ignore this possibility, and look only at the effects of the instrument on the local prevalence of formal services use. That is, these analyses ignore whether service use is from prevented disadoption among already-users or from adoption by previous non-users. As will be seen, this second approach raises some complications requiring a deeper look at the data.

Table 11 below reports results from a simple OLS regression of the adoption (or quitting) of formal savings services on a dummy indicating assignment to intensive marketing, with fixed effects at the cluster-pair level, and standard errors clustered at the village-cluster level.[50] The left-hand side variable is a simple 0-1 indicator for whether the household has at least one formal savings account in 2010. This is equivalent to regressing the mean of the response variable for each cluster (i.e. the percentage of

[50]Pairs were sampled on the basis of common characteristics, and it is plausible that the different pairs experience the expansion of formal services access via the van-bank differently. For example, those located closer to major highways may be more responsive to the expanded access than those pairs that are further away, regardless of whether they encouraged or non-encouraged.

households in the cluster with formal savings) on the dummy for information intervention, accounting for pair-level fixed effects, and explicitly correcting for heteroskedasticity across clusters due to the variation in number of households (FGLS).

Columns 1 and 2 show results when the sample is restricted to those households which did not have formal savings accounts in 2008. The estimated coefficient for the marketing dummy therefore represents the increase in the proportion of previous non-savings users that adopt savings, due to the marketing campaign. The first specification (column 1) includes all village-clusters, regardless of distance from the van-bank's stop (including being located right at the stop). The second (column 2) restricts the sample to those clusters for which both members of the cluster-pair are located three or more kilometers from the closest van-bank's stop. The rationale for splitting the sample in this manner is that the intensive marketing campaign may have smaller effects in areas close to the bank's stop, since such households are likely to already have a high degree of information about the bank and its services, due to living in close proximity to its regular weekly location.

For the other two specifications (columns 3 and 4), the sample is restricted to those households which did have at least one formal savings account in 2008. Here, if the dependent variable takes a value of zero, it means the previously formal-saving household stopped use of formal savings sometime over the two-year period. Thus, the coefficient on the dummy in these regressions represents any effect the marketing instrument had on the proportion of previously using households that stopped formal savings use.

The results in columns 1 and 2 indicate the marketing instrument had a significant effect on the proportion of previous non-saving households that *adopted*

formal savings, significant at the .05-level. Note that both the magnitude and significance of the instrument's estimated effect on adoption increases with distance from the bank-stop, which is consistent with the expectation that information on services is increasingly effective in more remote locations. Among all clusters, the marketing increased the percentage of previous non-saving households that adopted by about 3.1 percentage points (p=.03), while among clusters three or more kilometers away, the effect is an increase of 3.7 percentage points (p=.01). To put these figures in context, the overall proportion of previously non-saving households that adopted formal savings in the non-encouraged clusters is 9.4%. So these changes represent a 33% increase and 40% increase respectively. The results shown in columns 3 and 4 reveal that marketing encouragement had no significant effect on the proportion of previously saving households that ceased use of formal savings accounts over the two-year period.

Table 11. Effects of Marketing on *Adoption and Disadoption* of Formal Savings

	Start Use of Formal Savings		Stop Use of Formal Savings	
	(1)	(2)	(3)	(4)
	All Distances	3+km	All Distances	3+km
VARIABLES	Has Formal Svgs	Has Formal Svgs	Has Formal Svgs	Has Formal Svgs
Mktg Dummy	0.0306**	0.0371**	0.0441	0.0298
	(0.0288)	(0.0129)	(0.490)	(0.655)
Constant	0.0645***	0.0588***	0.319	0.323
	(0.000373)	(0.000980)	(0.355)	(0.361)
Pair Fixed Effects	Y	Y	Y	Y
Clustered SEs	Y	Y	Y	Y
FSAV in 2008	N	N	Y	Y
Observations	1,784	1,593	217	169
R-squared	0.064	0.066	0.270	0.308

Cluster-Robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1. Columns 1 & 2 restrict sample to households without formal savings in 2008, columns 3 & 4 restrict sample to households with formal savings in 2008.

Table 12. Effects of Marketing on *Adoption and Disadoption* of Formal Credit

	Start Use of Formal Credit		Stop Use of Formal Credit	
	(1)	(2)	(3)	(4)
	All Distances	3+km	All Distances	3+km
VARIABLES	Has Formal Loan	Has Formal Loan	Has Formal Loan	Has Formal Loan
Mktg Dummy	-0.00708	-0.00693	0.00782	-0.0752
	(0.416)	(0.430)	(0.948)	(0.619)
Constant	0.101***	0.101***	0.328	0.383
	(0.000693)	(0.000751)	(0.440)	(0.353)
Pair Fixed Effects	Y	Y	Y	Y
Clustered SEs	Y	Y	Y	Y
FCRED in 2008	N	N	Y	Y
Observations	1,860	1,651	120	93
R-squared	0.038	0.035	0.396	0.419

Cluster-Robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1. Columns 1 & 2 restrict sample to households without current formal loans in 2008, columns 3 & 4 restrict sample to households with formal loans in 2008.

Table 12 shows results from similar regressions, but which examine instead whether the instrument had any effect on changes in households' starting and stopping the use of formal *loans*. Here the response variable is whether the household reported a current formal loan in 2010. Similar to the case for the formal savings regressions, the

first two columns represent estimations with the subsample restricted to those households not reporting a formal loan in 2008. The coefficient on the marketing dummy in these estimations represents any effect of the information intervention on the percentage of households that report a formal loan in 2010, among those that did not report one in 2008. The last two columns represent estimations restricting the sample to those households that did report a formal loan in 2008. Here, the coefficient on the marketing represents the effect of the information intervention on the percentage of households that report a formal loan in 2010, among those that did report one in 2008. The marketing instrument is clearly insignificant in both cases, regardless of the distance of the cluster.

From the perspective of adoption and disadoption, then, the instrument has no significant effect on changes in household behavior with respect to use of formal credit or stopping the use of formal savings. However, it does have a significant impact on starting use of formal savings, raising local adoption rates by 3.1 percentage points (from 9.3% to 12.4%) across the whole sample, 3.5 percentage points (from 9.3% to 12.8%) across the clusters one or more kilometers from the bank's stop, and 3.7 percentage points (from 8.7% to 12.4%) across clusters three or more kilometers from the bank's stop. The instrument's failure to affect formal credit use, while affecting formal savings, is consistent with prior expectations based on the fact that the bank expands access to credit in a manner independent from the intensive marketing campaign.

I now look simply at the overall prevalence of formal financial services use across all households, regardless of whether the households self-selected into financial service use pre-marketing. This ignores whether the endline differences in formal financial services use is driven by adoption or disadoption. Table 13 below reports results from

regressions where the left-hand side variable is again a 0-1 indicator, regressed on a dummy for the information intervention, with pair-level fixed effects, and standard errors clustered at the village-cluster level. The coefficient on the dummy for marketing now represents the effect of marketing on the proportion of the *entire* community (not restricting to previous users or non-users) that has a formal savings account. For the first specification, the response variable is a household-level indicator for whether anyone in the household had one or more formal savings accounts in 2008. For the second specification, the response variable is a household-indicator for having one or more formal savings accounts in 2010. In both of these regressions, the pair-level fixed effect accounts for any pair-level characteristics which might affect the overall percentage of households in the community that have formal savings.

For the third specification, the response variable is a household-indicator for any *change* in whether anyone in the household has a formal account, over the two-year period. In this regression, the pair fixed effect accounts for any pair-level characteristics that have an independent effect on how the local prevalence of formal savings changes over the two-year period. (For example, if pairs located closer to the bank-stop are more sensitive to the increased access the van-bank provides and have larger two-year increases in the percentage of users than pairs located further away.) The first three columns in the table use the entire sample, the last three restrict the sample to those pairs for which both clusters are located three or more kilometers from the bank-stop.

Table 13. Effects of Marketing on *Local Proportion* of HHs with Formal Savings – All Districts

	All Distances			3+km		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	FSAV in 08	FSAV in 10	Chg in FSAV	FSAV in 08	FSAV in 10	Chg in FSAV
Mktg Dummy	0.0316**	0.0443***	0.0143	0.0383***	0.0551***	0.0185
	(0.0373)	(0.00928)	(0.291)	(0.00613)	(0.00153)	(0.211)
Constant	0.0947	0.0845***	-0.0115	0.0894	0.0759***	-0.0148
	(0.294)	(0.00321)	(0.920)	(0.331)	(0.00434)	(0.896)
Pair Fixd Eff	Y	Y	Y	Y	Y	Y
Clustered SEs	Y	Y	Y	Y	Y	Y
Observations	2,005	2,005	2,001	1,766	1,765	1,762
R-squared	0.108	0.101	0.036	0.096	0.105	0.034

Cluster-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 14. Effects of Marketing on *Local Proportion* of HHs with Formal Savings – Dedza & Mchinji

	All Distances			3+Km		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	FSAV in 08	FSAV in 10	Chg in FSAV	FSAV in 08	FSAV in 10	Chg in FSAV
Mktg Dummy	0.0170	0.0444***	0.0283*	0.0172	0.0487***	0.0323*
	(0.317)	(0.00846)	(0.0695)	(0.233)	(0.00268)	(0.0522)
Constant	0.106	0.0844***	-0.0227	0.106	0.0810***	-0.0258
	(0.226)	(0.00345)	(0.839)	(0.227)	(0.00361)	(0.816)
Observations	1,527	1,526	1,523	1,338	1,336	1,334
R-squared	0.093	0.091	0.038	0.056	0.078	0.038

Cluster-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

The first thing to note in Table 13 is that the marketing instrument appears to have no significant effect on the change in the overall percentage of households in the community with formal savings, even when restricting to the more remote distance threshold where the instrument is more effective. At first glance, this would seem worrying. However this is closely linked to the fact that formal savings rates in Lilongwe District cause a significant difference in formal savings prevalence between the marketing clusters and the non-marketing clusters, even in 2008, prior to the marketing campaign.

Section 4.3 already discussed the fact that the random draw of communities and treatment assignment in Lilongwe District resulted in higher baseline formal savings rates in its treated communities. It also turns out that the effect of marketing on the *change* in prevalence of formal savings over the 2-year period is not significant in Lilongwe, and is in fact mildly negative. This may be due to the fact that households in Lilongwe district are closer to the capital city (and the bank's headquarters). Their greater proximity to the modern economy of the capital and its more highly developed financial infrastructure may mean they already began with a comparatively high level of information about financial services. This would dampen the effect of the information campaign on financial services adoption.

Another strong possibility is that the econometric models for the regressions in Table 13 for the change in percentage of formal services users are too simple and misspecified due to an important missing determinant. It is plausible that the initial-period level of formal savings prevalence (the percentage of households in the community with formal savings accounts before the marketing intervention) should affect the rate of change. This might occur via two possible opposite effects. First, if adoption exhibits any "learning by observing" or "copying" patterns, or if community members have increasing trust as they see more neighbors using formal financial

services, one would expect higher period-one prevalence rates to lead to higher two-year *changes* in the prevalence in that area.[51] For example, a community with only 1% of the population using formal services may take many years to reach a penetration rate of 5% without any outside intervention, simply due to very low local levels of awareness and/or trust with regard to the services. On the other hand, a community that starts out with penetration rates of 15% might reach a prevalence rate of 20% or 25% within just one or two years, as more and more people notice, trust, learn about the services and the benefits they would provide.

Secondly, however, it may also be that there is a latent "capacity" within a community for the penetration rate of formal services, determined by the wealth levels of its inhabitants. If a substantial portion of the population (say ***X***) is below the wealth threshold at which use of formal services provides net benefits, then one would expect the maximum penetration rate to be 100-***X***. It may also be the case that the closer the penetration rate gets to the maximum capacity, the slower usage spreads, since those (among the population that would actually benefit) who are last to adopt are likely to be the most resistant and slowest to be convinced. Regardless, the existence of a latent capacity would cause one to expect that higher period-one prevalence rates would lead to lower absolute values for the 2-year *change* in prevalence rate.

If either of the above is the case, I should be including the initial local incidence of service use in the regressions for change in percentage of financial service users.[52] Appendix 4,

[51] Just as can be the case in other types of technology adoption, use of a new savings technology by relatives and neighbors may spur the use of adoption by new users, such that the rate of expansion will be higher among those communities that already have comparatively higher rates of penetration, and lower among those communities with very low penetration (or communities with none at all). For example, in villages where no one has ever had a formal savings account, people may be much more suspicious of its utility – and even the security of their savings – whereas in villages where a quarter of the population has already recently started using formal savings, non-users may be less reluctant to start.

[52] It is worth mentioning that a linear regression is not entirely appropriate for a response variable that is a percentage, as it allows for predicted values outside the range of (0,1). I also tried running a Logit on the prevalence of formal savings in the baseline, and found almost identical results on the differences (though a few pairs had to be dropped from the regression).

Tables A.4.1 and A.4.2, do in fact show that initial usage levels have a significant effect on the change in local usage over the two-year period. Results for two different specifications show that, when controlling for baseline penetration rates, the impact of the marketing encouragement on the change in proportion of households in the village cluster that are formal savers is positive and significant, even in Lilongwe. (See Appendix 4.)

The regressions reported in Tables 13 and 14, however, are the simplest specification one might imagine, and represent the most conservative estimates of the instrument's effect. It very well may be the that communities in Lilongwe are simply less responsive to the marketing due to being closer to the capital and its financial organizations. Since the most conservative approach would suggest that the information treatment did not have a significant impact in Lilongwe, I restrict the sample to Mchinji and Dedza districts (76% of the sample) and proceed with the analysis.

Table 14 shows the results from the same regressions reported in Table 13, but for the sample restricted to these two districts. As the coefficient estimates show, there is no difference between marketing and non-marketing clusters in local prevalence of formal savings in the baseline, but there is a highly significant difference in the endline. The regression on the change in local prevalence of formal savings shows that the marketing resulted in a 2.8 percentage-point increase overall ($p=.07$), and a 3.2 percentage-point increase when restricting to the more remote village clusters ($p=.05$). As the average prevalence among non-marketing clusters in the endline was 12.2% overall and 10.4% in the more remote clusters, this represents a boost in the increase of local formal saving use by 23% and 31%, respectively.

I repeat the same estimation exercise as above, for use of formal credit. The response variables in this case are based on a 0-1 variable for whether a household has a current formal

loan. The results are reported in Tables 15 and 16 below. (These are analogous to Tables 13 and 14, but that here the response variable is whether the household has a current formal loan.) The estimated coefficient on the marketing dummy is nowhere close to significant in any of the regressions. (Results for the more elaborate specification, with initial formal credit usage levels included as controls, are reported in Appendix 4, Tables A.4.3 and a.4.4. These results also show coefficient estimates on the marketing dummy which are nowhere near significant.)

Table 15. Effects of Marketing on *Local Proportion* of HHs with Current Formal Loans - All Districts

	All Distances			3+km		
VARIABLES	(1) FCRED in 08	(2) FCRED in 10	(3) Chg in FCRED	(4) FCRED in 08	(5) FCRED in 10	(6) Chg in FCRED
Mktg Dummy	-0.00317	-0.00322	-0.00250	-0.00636	-0.00916	-0.00414
	(0.707)	(0.738)	(0.820)	(0.458)	(0.319)	(0.689)
Constant	0.123***	0.128***	0.00198	0.125***	0.132***	0.00328
	(9.30e-07)	(2.69e-07)	(0.821)	(3.45e-07)	(2.37e-08)	(0.692)
Observations	2,003	1,983	1,978	1,901	1,882	1,877
R-squared	0.072	0.052	0.041	0.077	0.044	0.050

Cluster-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 16. Effects of Marketing on *Local Proportion* of HHs with Current Formal Loans – Dedza & Mchinji

	All Distances			3+km		
VARIABLES	(1) FCRED in 08	(2) FCRED in 10	(3) Chg in FCRED	(4) FCRED in 08	(5) FCRED in 10	(6) Chg in FCRED
Mktg Dummy	-0.00356	0.00339	0.00357	-0.00789	-0.00637	-0.000404
	(0.726)	(0.762)	(0.793)	(0.427)	(0.524)	(0.974)
Constant	0.123***	0.122***	-0.00283	0.126***	0.130***	0.000320
	(1.98e-06)	(5.96e-06)	(0.794)	(5.17e-07)	(2.05e-07)	(0.974)
Observations	1,524	1,511	1,506	1,456	1,444	1,439
R-squared	0.078	0.053	0.044	0.084	0.043	0.054

Cluster-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

These results show that the instrument has no significant effect on changes in local prevalence of formal credit. However, when restricting to the 75% of the sample comprised by Dedza and Mchinji districts, the instrument does have a significant impact on changes in local prevalence of formal savings. The information intervention raises the local proportion of households using formal savings rates by 2.8 percentage (or 23%) points across the whole sample, and 3.2 percentage points (or 31%) across clusters three or more kilometers from the bank's stop. The instrument's failure to affect formal credit use, while affecting formal savings, is consistent with prior expectations based on the fact that the bank expands access to credit in a manner independent from the intensive marketing campaign.

I also run the same regressions as above on a sample restricted to the non-vulnerable category of households – those for whom the marketing is expected to be most effective. Tables 17-20 below are exactly the same as Tables 13-16 above, except that the sample is restricted to households NOT in category G. The results differ little, except that the absolute magnitudes and significance of the instrument's effect on the change in the percentage of households using formal savings is now higher. In particular, when restricting to Dedza and Mchinji, for clusters beyond the 3 km threshold, the marketing campaign raises the percentage of non-vulnerable households in the community which are formal savers by 4.0% (p=.03). This represents a 34% increase over the matched control clusters (for whom the average prevalence of formal savings is about 11.9% among the non-vulnerable population).

Table 17. Effects of Marketing on Proportion of Non-Vuln HHs with Formal Savings - All Districts

	All distances			3+km		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	FSAV in 08	FSAV in 10	Chg in FSAV	FSAV in 08	FSAV in 10	Chg in FSAV
Mktg Dummy	0.0311*	0.0447**	0.0151	0.0389**	0.0593***	0.0219
	(0.0598)	(0.0160)	(0.324)	(0.0119)	(0.00202)	(0.187)
Constant	0.111	0.0998***	-0.0124	0.105	0.0878***	-0.0179
	(0.290)	(0.00141)	(0.924)	(0.328)	(0.00225)	(0.890)
Observations	1,734	1,734	1,731	1,516	1,515	1,513
R-squared	0.112	0.103	0.039	0.101	0.108	0.038

Cluster-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 18. Effects of Marketing on Proportion of Non-Vuln HHs with Formal Savings – Dedza & Mchinji

	All Distances			3+km		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	FSAV in 08	FSAV in 10	Chg in FSAV	FSAV in 08	FSAV in 10	Chg in FSAV
Mktg Dummy	0.0155	0.0483***	0.0334*	0.0168	0.0566***	0.0401**
	(0.401)	(0.00877)	(0.0584)	(0.296)	(0.00184)	(0.0322)
Constant	0.124	0.0968***	-0.0273	0.123	0.0901***	-0.0328
	(0.228)	(0.00168)	(0.831)	(0.234)	(0.00202)	(0.796)
Observations	1,322	1,321	1,319	1,151	1,149	1,148
R-squared	0.097	0.099	0.042	0.061	0.089	0.042

Cluster-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 19. Effects of Marketing on Proportion of Non-Vuln HHs with Formal Credit - All Districts

	All Distances			3+km		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	FCRED in 08	FCRED in 10	Chg in FCRED	FCRED in 08	FCRED in 10	Chg in FCRED
Mktg Dummy	-0.00871	-0.00637	-0.00179	-0.0129	-0.0137	-0.00385
	(0.367)	(0.541)	(0.885)	(0.185)	(0.177)	(0.741)
Constant	0.143***	0.148***	0.00145	0.147***	0.154***	0.00312
	(3.60e-06)	(2.21e-06)	(0.885)	(1.36e-06)	(2.93e-07)	(0.742)
Observations	1,733	1,712	1,709	1,631	1,611	1,608
R-squared	0.061	0.055	0.036	0.067	0.047	0.046

Cluster-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 20. Effects of Marketing on Proportion of Non-Vuln HHs with Formal Credit - Dedza & Mchinji

	All Distances			3+km		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	FCRED in 08	FCRED in 10	Chg in FCRED	FCRED in 08	FCRED in 10	Chg in FCRED
Mktg Dummy	-0.00764	0.000892	0.00300	-0.0122	-0.00985	-0.00176
	(0.511)	(0.939)	(0.843)	(0.281)	(0.345)	(0.897)
Constant	0.143***	0.142***	-0.00243	0.146***	0.151***	0.00142
	(9.61e-06)	(2.25e-05)	(0.843)	(3.58e-06)	(1.69e-06)	(0.897)
Observations	1,320	1,306	1,303	1,252	1,239	1,236
R-squared	0.064	0.056	0.036	0.071	0.046	0.048

Cluster-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Finally, I also run the same regressions, restricting the sample to the vulnerable category. Tables 21-24 report the results. Columns 3 and 6 in these four tables show the estimated effect of the information intervention on the incidence of formal services use among this group. As expected, the instrument has no effect on the vulnerable. (About 3% of the vulnerable group does have formal savings in the endline, a third of whom did not have formal savings in the baseline.)

Table 21. Effects of Marketing on Proportion of Vuln HHs with Formal Savings - All Districts

	All Distances			3+km		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	FSAV in 08	FSAV in 10	Chg in FSAV	FSAV in 08	FSAV in 10	Chg in FSAV
Mktg Dummy	0.0460**	0.0370*	-0.00834	0.0460**	0.0370*	-0.00834
	(0.0338)	(0.0934)	(0.684)	(0.0325)	(0.0908)	(0.682)
Constant	-0.0307	-0.0247	0.00556	-0.0307	-0.0247	0.00556
	(0.161)	(0.212)	(0.691)	(0.158)	(0.209)	(0.689)
Observations	271	271	270	250	250	249
R-squared	0.218	0.300	0.178	0.217	0.300	0.162

Cluster-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 22. Effects of Marketing on Proportion of Vuln HHs with Formal Savings – Dedza & Mchinji

	All Distances			3+km		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	FSAV in 08	FSAV in 10	Chg in FSAV	FSAV in 08	FSAV in 10	Chg in FSAV
Mktg Dummy	0.0536*	0.0332	-0.0195	0.0536*	0.0332	-0.0195
	(0.0573)	(0.121)	(0.395)	(0.0552)	(0.118)	(0.390)
Constant	-0.0357	-0.0221	0.0130	-0.0357	-0.0221	0.0130
	(0.185)	(0.235)	(0.440)	(0.181)	(0.231)	(0.435)
Observations	205	205	204	187	187	186
R-squared	0.183	0.137	0.084	0.182	0.135	0.084

Cluster-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 23. Effects of Marketing on Proportion of Vuln HHs with Formal Credit - All Districts

	All Distances			3+km		
VARIABLES	(1) FCRED in 08	(2) FCRED in 10	(3) Chg in FCRED	(4) FCRED in 08	(5) FCRED in 10	(6) Chg in FCRED
Mktg Dummy	0.0375**	0.0187	-0.00309	0.0375**	0.0187	-0.00309
	(0.0434)	(0.481)	(0.893)	(0.0434)	(0.481)	(0.893)
Constant	-0.0250	-0.0124	0.00206	-0.0250	-0.0124	0.00206
	(0.171)	(0.510)	(0.893)	(0.171)	(0.510)	(0.893)
Observations	270	271	269	270	271	269
R-squared	0.506	0.197	0.332	0.506	0.197	0.332

Cluster-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 24. Effects of Marketing on Proportion of Vuln HHs with Formal Credit – Dedza & Mchinji

	All Distances			3+km		
VARIABLES	(1) FCRED in 08	(2) FCRED in 10	(3) Chg in FCRED	(4) FCRED in 08	(5) FCRED in 10	(6) Chg in FCRED
Mktg Dummy	0.0422*	0.0125	-0.00845	0.0422*	0.0125	-0.00845
	(0.0775)	(0.715)	(0.767)	(0.0775)	(0.715)	(0.767)
Constant	-0.0281	-0.00834	0.00564	-0.0281	-0.00834	0.00564
	(0.202)	(0.720)	(0.770)	(0.202)	(0.720)	(0.770)
Observations	204	205	203	204	205	203
R-squared	0.536	0.150	0.301	0.536	0.150	0.301

Cluster-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Assessing the Instrument's Effects on Account Balance Sizes

The information intervention does not appear to have any impact on the *amounts* households save in formal accounts, conditional on having an account. The survey collected data on the current balance of any accounts at the time of the interview. The overall average balance in formal accounts is MK 11,432 in the endline. The dispersion is

high, though, with the median reported value at MK 2,000.[53] Compared to the typical costs of opening an account (which are on the order of MK 1,500, as discussed in Chapter 5), the median balance seems low. This is likely attributable to the fact that the interview took place during the pre-harvest hungry season, when household resources are running low, and account-holders are most likely to need to draw down accounts. It also suggests that, for at least some formal-savers, the accounts may be serving more as a within-year wealth storage and management device than as a long-term wealth accumulation vehicle.

Looking across the information-treated and control communities, the mean and median are slightly higher in the control communities. This is in fact what we would expect if the wealthiest households in a village are the most likely to have formal accounts regardless of whether they are encouraged, and the encouragement is most effective for those that are just a little less wealthy. In communities which did not receive the information intervention, the mean account balance is MK 12,486, and the median is MK 2,500; while in the treated communities the mean is MK 10,692 and the median is MK 2,000. However, the differences are not statistically significant, either through a two-sided t-test, or a Mann-Whitney U-test.

[53] These figures are lower than the account balances for formal accounts reported in the baseline (see Chapter 3, page 75). This may be a sign that households of lower wealth strata are starting to use formal savings as a result of the formal services expansion through the mobile bank.

4.4. Conclusion

This chapter showed that the information intervention had a strong and significant impact on the proportion of each community that adopted formal savings. After controlling for cluster-pair fixed effects and accounting for intra-cluster correlation, exposure to the randomly assigned information treatment increased the proportion of previous non formal-savers that adopted formal savings by 3.1 percentage points across all distance levels (p=.029), and 3.7 percentage points when restricting to more remote communities (p=.013). Over the same two-year period, the proportion of previous non formal-savers in the non-treated communities that adopted formal savings by the rose by 6.5 percentage points across all distances, and 5.9 percentage points in more remote areas. The 3.1 percentage-point and 3.7 percentage-point additional increases caused by the instrument therefore represent a 47% and 63% increase in the adoption rate, respectively.

This chapter also examined the instrument's effect on overall prevalence of formal savings in the local community (i.e. accounting for the possibility of any baseline differences in formal savings penetration between the treated and non-treated). From this perspective, the strong effect on adoption is partially muted due to high baseline incidence of formal savings in a few treated communities of Lilongwe, the district closest to the capital and the bank's headquarters, and relatively low impact on adoption. While this mildly complicates the picture, when restricting to the three-quarters of the sample located in the districts further from the capital, the instrument is shown to have a significant effect on the proportion of local households with formal savings. The marketing resulted in a 2.8 percentage-point increase overall (p=.070), and a 3.2 percentage-point increase when restricting to the more remote village clusters (p=.052). As the average prevalence among non-marketing

clusters in the endline was 12.2% overall and 10.4% in the more remote clusters, this represents a boost in the increase of local formal savings use by 23% and 31%, respectively.

The instrument had no effect on local usage rates of formal credit. This is consistent with prior expectations, based on the fact that the microfinance institution's expansion of access to formal credit is considerably slower than that of access to formal savings, and follows a path orthogonal to the information treatment. The next chapter examines the effects of this exogenous boost in local formal savings rates on inter-household transfers.

Chapter 5. The Impact of Formal Savings on Inter-Household Transfers: A Simple Model & Cross-Sectional Analysis of Gift Receipts

The last chapter showed that the randomly assigned intensive information campaign had a positive significant effect on the proportion of households in each village-cluster that use formal savings. This chapter examines the impact of formal savings uptake on inter-household transfer receipts during the pre-harvest hungry-season, with a focus on "gifts", or pure transfers. The analysis includes an examination of impacts across all households, but the emphasis is on receipts by the most vulnerable.

The literature on informal insurance generally emphasizes the role played by expected reciprocation of transfers by the receiving party, when needed in the future. The focus is therefore typically on inter-household wealth flows that are part of mutual insurance arrangements, or informal contracts. To my knowledge, the little theoretical work that exists on the interaction of formal capital markets with informal institutions for addressing risk is restricted to analyzing these types of bidirectional wealth flows. The predictions from these models suggest inter-household transfers will diminish as formal capital markets develop. This is also consistent with the handful of empirical observations made thus far on the interaction of formal financial systems and informal systems of insurance.

Contrary to suggestions inferred from the limited evidence, however, the introduction of formal savings technologies in rural Malawi has a significant positive effect on inter-household wealth flows. In particular, in communities where formal

savings rates were experimentally boosted, the proportion of households receiving cash-gifts from other households during the hungry season is nearly 50% higher (about 21% versus 31%). When restricting to the most vulnerable households, for whom the impact is most clearly identifiable as via an indirect channel, the difference grows to 180% (about 10% versus 28%). Instrumental variables estimates indicate that, for every one percentage-point increase in the proportion of households using formal savings, the worst-off households experience a three percentage-point increase in the probability of receiving a cash gift.

The rest of the chapter is organized as follows. The first section develops a simple theoretical framework for analyzing the effects of formal savings services penetration in different contexts. In an attempt to broaden the theoretical approach that has dominated the literature on informal insurance institutions, a simple innovation allows for transfers which are unidirectional ("charitable gifts") rather than bidirectional ("mutual insurance), as is commonly assumed.[54] The model illustrates how the entrance of superior savings technologies can lead to different effects when transfers are of one type or the other. Section 2 examines the relationship between the information-instrument described in the last chapter and receipts of cash and in-kind gifts among the most vulnerable households. Finally, section 3 uses an instrumental-variables analysis to estimate the Indirect Treatment Effect (ITE) of a one percentage-point increase in the proportion of local households on the probability that a highly vulnerable household receives a cash gift.

[54] This is not the first time motivations other than reciprocal exchange are considered in the context of private transfers. As discussed in chapter 2, Lucas and Stark (1987) and Cox (1987) test models of altruistic-motivated giving and exchange-motivated giving, and reach different conclusions. While the former finds evidence supporting "tempered altruism", the latter argues transfers are driven by exchange-motivations. The literature on informal insurance and inter-household wealth flows in villages has been dominated by the latter view.

5.1. Formal Savings: Competing Insurance Option, or Boost to One-Way Transfers?

> ***"I have my own mobile bank, and it has four legs – my goat!" (Malawian farmer, 2008, quoted in Flory & Nagarajan 2009)***
>
> ***"You can withdraw from a [formal] bank any time. If you want to sell a goat, you must find a buyer, and you need to settle on a price." (Formal-saver MW, 2010)***

The few earlier efforts to model the effects of formal financial services on household transfers follow the predominant assumption in the literature that such transfers are based on expected future reciprocation. Yet the effects on inter-household wealth flows and consumption insurance for the very poor may in fact hinge on whether such transfers are indeed based on reciprocation. This section uses a simple model to explore how the impacts of formal services expansion can differ when transfers may instead be driven by motives other than reciprocation.

To simplify, consider two idealized cases. In case one, transfers-out are one of a set of options for storing wealth to be used in the event of an adverse shock. In case two, transfers are driven by factors associated with charitable donations. The introduction of formal savings can have very different implications under these two cases.

Assume that households wish to store some positive amount of wealth to serve as self-insurance against an adverse future consumption or income shock. It is commonly understood that one of the most prevalent ways to do this is by saving in-kind, for example through livestock or durables. Let the amount saved in this manner be called s_D, and assume that this savings technology is linear, so that every unit saved yields ρ units

of wealth the following period. If $\rho<1$, the wealth depreciates; if $\rho>1$, wealth appreciates. This simple storage technology is represented in Figure 2a. The introduction of formal savings can be represents a new storage technology. Let s_B represent the amount saved through formal accounts, and assume that the return from this form of saving is also linear. The introduction of this new savings technology is represented in Figure 2c by the new line, the slope of which shows the rate of return from saving through a bank.

If formal savings is a superior savings technology, its introduction will cause the overall return on savings ρ to increase. (This is the case depicted in Figure 2c.) This may happen, for example, through a reduction in the transaction-costs of saving and dissaving if formal accounts represent a more liquid technology. Purchasing and liquidating non-financial assets such as bicycles, radios, or goats may entail substantial time-costs of searching for a buyer, which may take several hours, days, or even weeks. There may also be explicit travel or transport costs involved in finding a buyer or seller, or transporting the asset. There will also be search and possibly transport costs for finding a new (lower-valued) non-financial asset in order to store the remainder of the precautionary savings the assisting household wants to hold. There may also be losses in asset-value that could come from having to sell the asset at an inopportune time, or with an urgency that prevents getting the best price.[55] Storing and accessing wealth through formal accounts has a different set of transaction costs – e.g. traveling to the bank, any withdrawal fees – yet it is likely these will be lower. Formal savings may also have

[55]For example, in the presence of segmented markets, selling an asset just before harvest when local incomes are low may result in low demand and low prices obtained for the asset, or selling at a time when others are also trying to sell the same asset in order to liquidate *their* precautionary savings (e.g. due to a covariate shock) may cause a local supply shock and decrease the price received. The asset may have been purchased at a higher price, and would typically be redeemable at that higher price, if the household could wait until the value rose again, before liquidating it. Thus, even without any other costs, it may require a wealth amount which would otherwise be equal to $x+z$ in order to withdraw and use wealth amount x now.

positive amounts of interest not available from saving in-kind, and lower risk of theft, loss, or damage.

If the rate of return on formal savings is lower than that of saving through durables, the household will continue to save through durables and not start using formal savings. However, if the return on formal savings is higher, the household will switch to formal savings, and the return on its savings will increase. This is the case depicted in Figure 2c.

Case 1: Transfers as "Saving Through People"

If transfers are best understood as an alternative form of saving to insure against future shocks, a request by another for help is interpreted as an opportunity to save. In this case, the pivotal question is not how much is saved in total, but rather what happens to the amount of savings invested via transfers to other people. As only the latter affects inter-household transfers, total savings is not explicitly considered in this case, since it yields no insights with respect to provision of financial assistance to others.

In contrast to non-financial assets and formal accounts, it is reasonable to assume that saving through transfers to people, s_T, yields diminishing marginal returns. At any given time, only a fixed number of people in one's network or community are likely to desire a transfer from another household. These households are likely to vary in their probability of being able to reciprocate the transfer at a future date. A relatively wealthy household, for example, that had an unusually bad year may be more likely to reciprocate than a very poor household which requests transfers from others almost every year. Expected future returns from each unit "saved" through a transfer drop for households

with lower probabilities of reciprocating. After making transfers first to those households most likely to reciprocate, the transferring household will move on to those less-likely to do so. This storage technology is depicted in Figure 2b.

When deciding how much saving to allocate to transfers-out, the household will provide transfers up until the expected yield from transfers equals that from saving in-kind. This is represented by point s_T^0 in Figure 2a. With the introduction of formal savings, in the non-trivial case where the household adopts formal savings and ρ increases, the amount stored in transfers will decrease accordingly until the return from transfers equals the new ρ. This change is represented in Figure 2c and 2d, through the upward shift of the linear storage technology and the consequent reduction of transfers-out from s_T^1 to s_T^2 .

When transfers are an alternative form of saving, banks will compete with households as a destination for wealth-storage. If formal savings enters and increases the rate of return, there is an *unambiguous decline* in wealth-transfers, as the adopting household will stop transfers to those households least likely to reciprocate in the future. This reallocation of savings from the lower-yielding transfers-out (i.e. from transfers to "poorer-quality" households) to the higher-yield formal savings vehicle improves the quality of the savings portfolio of the formal-saver. Note that this result is independent of any effects on the total amount saved.[56]

Note, however, that those households least likely to reciprocate (i.e. the "poor quality" investments) are likely to be disproportionately represented by the worst-off –

[56] Whether total savings increases or decreases, when at least some positive amount is allocated to the bank, the amount allocated to transfers-out will decrease until the return on this asset increases enough such that it equals the return from the formal-account asset.

those who are chronically requesting transfers and rarely in a position to provide them. While improving outcomes for savings-users, this would remove an important source of consumption insurance for the worst-off.

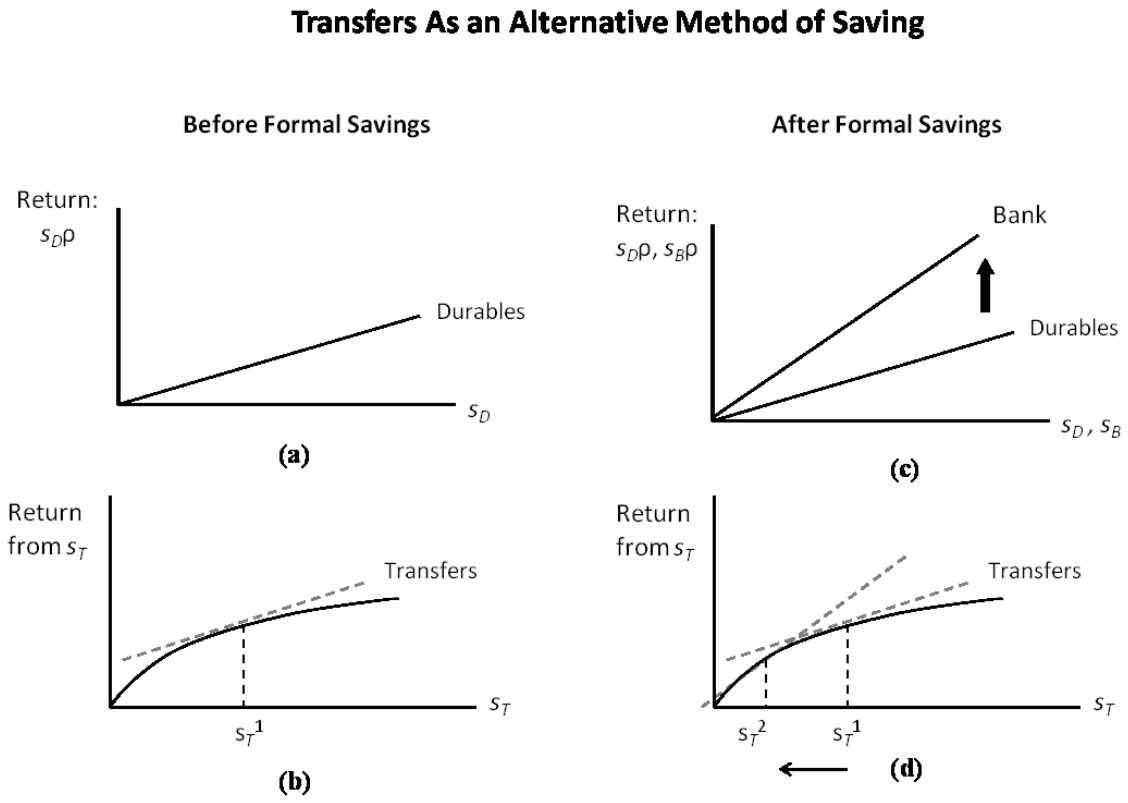

Figure 2. Figures (a) and (b) represent the allocation of savings prior to the entrance of formal savings. Figure (a) represents the simple linear technology of storing wealth in durables, while figure (b) shows the returns from storing wealth through transfers to other people. Figures (c) and (d) shows how the allocation of savings will change if the entrance of formal savings causes the rate of return to increase. Figure (c) shows the new rate of return from the linear savings technology (now the bank), and figure (d) shows how this affects the allocation of savings through transfers-out.

Case 2: Transfers as "Charity"

Transfers may also be understood as charitable gifts to a friend or family member. While there is a burgeoning literature on the motivations for such types of gifts in developed economies, most of the economic literature on informal insurance in village-

settings assumes reciprocal obligations. Yet there is no reason in principle that this must be the case. The utility benefit from a charitable gift might be intrinsic – i.e. not dependent on rewards or punishments from other agents. For example, seeing one's child or sibling in pain or near death may cause disutility, and giving assistance may decreases the disutility experienced. Utility from giving may also be extrinsic – i.e. motivated by rewards or punishments from others. For example, other family members or the broader community may punish a household for refusing to assist someone in need, and giving allows the provider to avoid punishment. A nascent literature explores examples and the economic consequences of this type of "pressure to give" (Hoff and Sen 2006, Baland et. al. 2007, Jakiela and Ozier 2011). A more positive example of extrinsic utility would be that being requested for a gift provides the opportunity to earn utility-enhancing respect and admiration in the community by providing assistance. They key difference between this case and the preceding case, is that the utility benefit from making a transfer is derived exclusively from the transfer itself, rather than from its impact on future-period budget constraints (which the transfer is assumed to not directly affect).

In this case, assume that utility includes both consumption c and transfers x as arguments, so that $u = u(c, x)$, and that first derivatives are positive for both arguments and the second derivatives negative for both arguments. Furthermore, assume they are neither complements nor substitutes (i.e. the cross-partials are zero). Transfers-out may therefore be understood simply as a different type of consumption, the marginal value of which is unaffected by own-consumption levels. Assume that income each period is exogenous to choices over consumption and charitable transfers, and that utility each

period is additively separable. Then the household's decision about how to allocate its resources can be explained with the following simple two-period model:

$$\max_{c_1,x_1,c_2,x_2} u(c_1, x_1) + \delta u(c_2, x_2) \qquad (1)$$

$$\text{s.t. } c_1 + x_1 \leq y_1; \quad c_2 + x_2 = y_2 + \rho(y_1 - c_1 - x_1)$$

where c_i represents consumption in each period, x_i represents a charitable gift in each period, y_i is income received each period, δ is a discount factor, and ρ is the rate of return on savings.

In this setting, an increase in the interest rate will have the standard result that future consumption will increase, while the effect in present-period consumption is ambiguous. That is, as the rate of return on savings goes up, there is both a substitution effect and an income effect. The substitution effect causes the household to substitute away from c_1 and x_1 towards c_2 and x_2, as the relative price of the latter two drop. The real price of future expenditures (whether on c_2 or x_2), in terms of present expenditures, becomes cheaper – each unit of future c_2 (or x_2) requires a smaller sacrifice of current c_1 (or x_1) as ρ increases. However, the income effect causes consumption and gifts in both periods to increase. The overall effect for period 2 is positive, but is ambiguous in period 1. While consuming and giving in the present period is now more costly in terms of future potential consumption and giving sacrificed, it is also possible to increase both present consumption and giving *and* future consumption and giving. The effect of the entrance of formal savings in this context is illustrated in Figure 3.

The theoretical prediction is therefore less clear in the case where transfers are motivated by factors associated with charitable giving. Banks are no longer directly

competing with households for savings. Instead, an increase in the rate of return on savings leads to the standard result that present-period total consumption may go up or down. As charitable gifts are essentially another type of consumption, they may also either go up or down as the rate of return on savings increases.

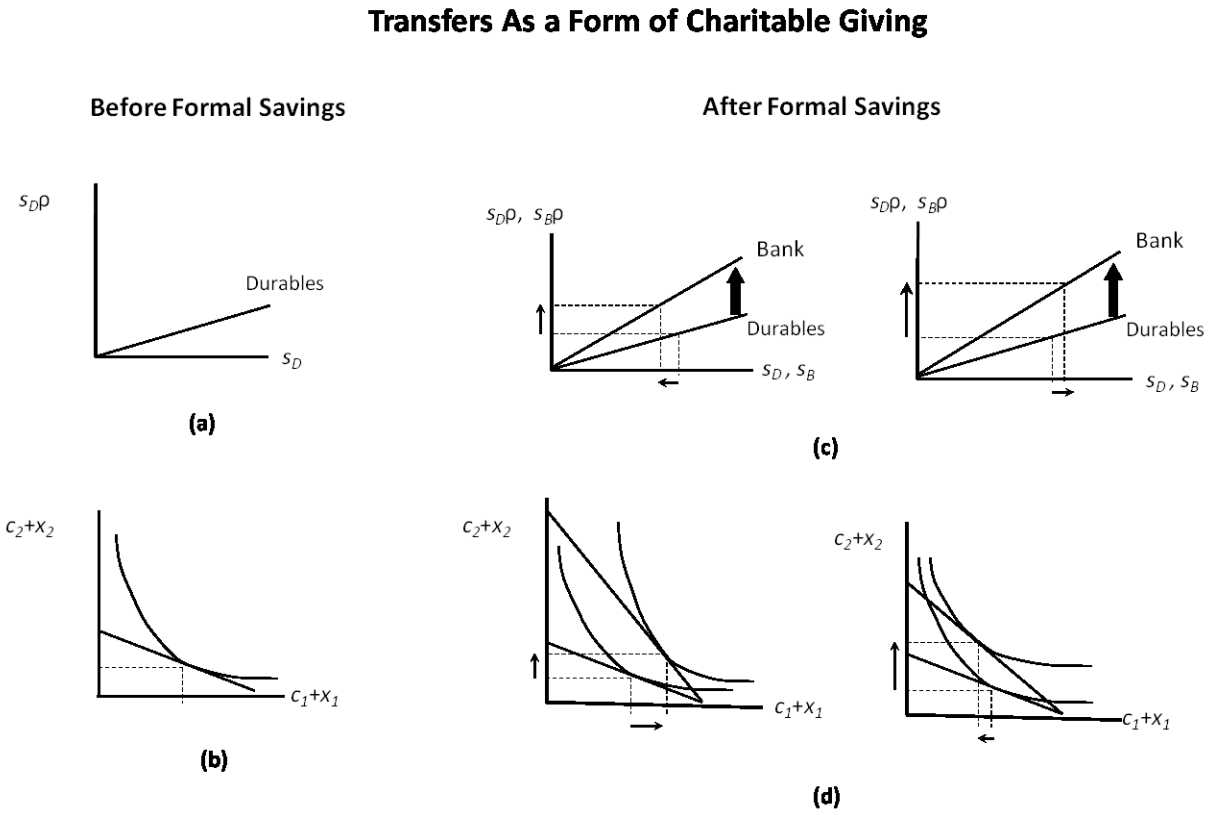

Figure 3: Figures (a) and (b) represent the situation prior to formal savings. Given the rate of return on saving through durables shown in (a), households face relative prices between present and future expenditures represented by the slope of the budget constraint in (b). Panels (c) and (d) depict the two possible effects of formal savings on expenditures when the entrance of banks causes the rate of return on savings to increase. The first figure in panel (d) shows preferences which cause the increased rate of return to lead to higher consumption and charitable gifts in *both* periods, while the second figure depicts preferences which would cause the increased savings rate to induce higher consumption and charity in only the future period, and lower consumption and charity in the present.

Wealth-Constrained Access to Formal Finance

The idealized graphical representation of the returns on formal savings omits two important features which are likely to have important implications in practice. The first is that formal savings often involve a "minimum balance" $\underline{s}$, which is essentially the minimum-priced financial asset the bank or institution is willing to sell. A household must at least have savings equal to $\underline{s}$ in order to even be able to store wealth through the formal savings technology.[57] Graphically, this is shown in Figure 4, where the storage technology's wealth transformation-curve from period one to period two does not actually begin until $s_B = \underline{s}$. For example, the minimum balance for an account with OIBM, the microfinance institution expanding access through the mobile bank, is MK 500 (about $3.25).

In addition, opening a formal account requires a fixed cost *c*, attributable to a variety of sources. These include, for example, the time it takes to travel to the bank, go through the application process, and open the account, along with any explicit costs arising from travel. Formal accounts often require official ID documents, such as birth certificates, frequently not automatically available to villagers, but obtainable from government agencies for non-negligible fees. There are also often mandatory explicit costs charged by the institution for opening the account – such as application fees, mandatory purchase of ATM cards, and other fixed fees to cover administrative costs. Information gathered on transaction costs from the baseline data indicate that the average explicit cash costs of opening a formal savings account, among all formal accounts in the

[57] This is technically true even for saving through non-financial assets. A household must at least have enough savings to purchase the cheapest non-financial asset available in order to store wealth through this method. It should most likely be the case that minimum balances for savings accounts will be higher than this amount, though none of the results rely on this.

baseline data, was MK 1,462. The average reported amount spent on travel was MK 907, on ATM cards was MK 244, on ID documents MK230, and on application fees MK 81. In addition, about 45% of the formal savings accounts found in the baseline were subject to a monthly fee, the average value of which was MK 66 per month.[58] Together, these add up to a fixed cost which may represent a substantial portion of savings for small savers. Graphically, the addition of fixed cost c shifts the wealth-transformation curve for banks downward, and shifts the starting point of the curve from $\underline{s}$ to $\hat{s} = \underline{s} + c$.

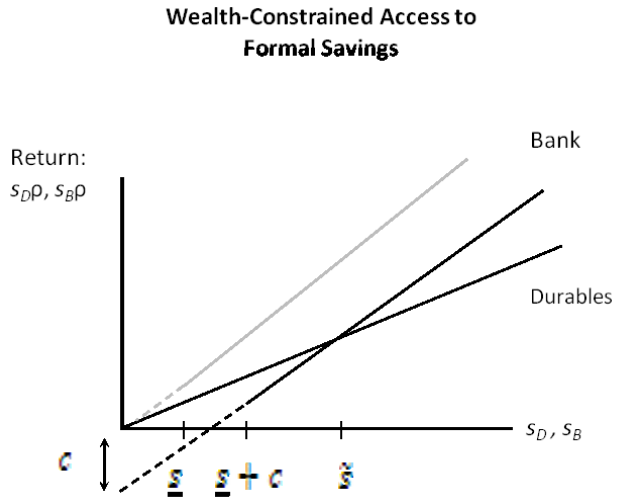

Figure 4: The faint line shows the returns to formal saving in the absence of fixed access-costs. Only the solid portion of this line is attainable, as one must save at least the minimum balance $\underline{s}$. The dark line shows returns in the presence of fixed access costs, where only the solid part of the line is attainable, as one must have at least $\underline{s} + c$ available. Positive returns from formal savings begin at $\tilde{s}$.

[58] There are also sometimes substantial cash costs associated with using a formal account. The average amount of cash spent in order to deposit into an account, among households that deposited during the 30 day recall period before the interview, was MK 205 – predominantly transportation fees. The average reported amount spent on withdrawing from an account was MK 346, with about MK 300 coming from travel costs, and about MK 50 from ATM or teller fees. Finally

Thus, only those households that are able to save at least $\hat{s} = \underline{s} + c$ even have the ability to gain access to formal savings.[59] This makes the poorest segments of the population essentially *ineligible* to adopt use of formal savings. The poorest in village communities are therefore unlikely to open savings accounts at banks, and thus unlikely to experience direct benefits from the expansion of formal savings services. Their constraints make them a *de facto* ineligible group.

The question then becomes whether they experience any *indirect* effects as a result of the fact that the comparatively "wealthy" in their community – from whom the poorest might request transfers in times of need – start using formal savings. The theoretical framework suggests this depends on three factors: whether the relatively wealthy generally provide assistance to the worst-off prior to the introduction of formal savings; if so, whether such transfers are assumed to be based on the promise of reciprocation or instead driven by factors associated with charitable giving; and if the latter, whether the income effect dominates the substitution effect.

While the model focuses on giving behavior of account-adopters, the empirical analysis that follows focuses primarily on the effects of local formal savings adoption on *receipts* of assistance. Focusing on assistance receipts (rather than gifts-out) places the analysis squarely on one of the most sensitive issues for poverty policy: whether and how formal savings expansion affects *non-users*, and in particular, the most vulnerable members of the community. This indirect approach to testing the model is also partly a

[59] Also note that, given that the fixed cost causes the total return from savings to drop, it is possible that saving amount $\hat{s} = \underline{s} + c$ no longer provides a higher return than saving through durables. It may be necessary to save at least $\tilde{s} > \underline{s} + c$ through formal savings in order for the total return to be higher than the pre-existing alternatives.

response to the empirical challenge presented by the data. Many communities are likely to have comparatively few households wealthy enough to access and derive positive returns from formal savings, and hence relatively few initial service-adopters. It is reasonable to suppose that when the relatively wealthy in a village provide assistance, they give to multiple households. A random sample from this environment is therefore likely to have more households that are potential recipients from formal savings adopters than households that are account-adopters. This means that tests on the behavior of adopting households are likely to lack statistical power. Tests on receipts of wealth flows in communities with high rates of adoption, however, serve as indirect evidence of the effects on decisions over transfers out.

5.2. "IIT": The Link Between the Instrument & Receipts of Assistance

The model in the preceding section leads to different predicted impacts on the decision to make an inter-household transfer, depending on whether transfers are a form of saving or instead a charitable gift. The data used to test these predictions contain information on transfers made during the pre-harvest hungry season, the time of year when household resources are most restricted, and requests for emergency assistance are arguably the highest. This is the period during which transfers received are likely to have the highest positive marginal impacts. It is also the time during which the opportunities to make decisions over saving through other people, or providing a charitable gift, are generally most abundant.

The data also benefit from a group which experienced a strong exogenous boost to the formal savings adoption decision, and a comparable control group. The randomly

assigned information treatment serves as an instrument for the adoption decision to enable unbiased inferences about the impact of formal savings on transfers. In addition, the data also provide a well-identified group of households among whom changes in transfer receipts are a clean signal of the response of *others* to improved savings options. Any change in receipts by the *de facto* ineligibles (i.e. the highly vulnerable) clearly cannot be driven by their own adoption of formal savings. They are instead a sign of changes in the provision of assistance induced by formal savings.

As already discussed above, the empirical analysis focuses primarily on the effects of local formal savings rates on *receipts* of assistance, particularly by the most vulnerable households. This is due mainly to the study's focus on empirically testing for the presence of *indirect* effects, and the indirect effects on the worst-off households in particular. As the data do not identify recipients of transfers-out, or whether recipients have formal accounts, examining transfers-out provides less information about indirect effects. Moreover, as the worst-off households do not use formal savings, analyzing impacts on formal savers is less directly relevant to the outcomes of the focal group for this study. It is only of secondary importance, as a means to corroborate the causal mechanism of effects suggested by the model.

The discussion of the impacts of formal savings expansion begins with a brief look at simple percentage changes across the encouraged and non-encouraged clusters. It then proceeds to an analysis of a variety of sharp differences in vulnerable-household transfer receipts, between marketing and non-marketing village clusters. In the context of assessing direct impacts, this would be analogous to intention to treat (ITT) effects. However, since analyzing *indirect* effects, I call this

the "indirect intention to treat", or "IIT".[60] The indirect intention to treat effects are interpreted as preliminary evidence suggesting a causal effect from savings accounts.

While the baseline includes data on a broad range of financial services and transactions, the detailed questions on inter-household transfers were not added to the questionnaire until the endline survey. Discussion of the impacts of formal savings adoption on inter-household transfers therefore begins with a cross-sectional analysis of the endline data, which is covered in this chapter.

As long as the marketing inducement is randomly assigned, it is valid to interpret relationships between marketing and household outcomes as causal. However, the full panel does contain limited information for both years on certain types of wealth transfers that are similar to the gifts-information captured only in the endline. Chapter 6 therefore provides a follow-up to the cross-sectional analysis with a difference-in-differences analysis of these related types of transfers which serves as a robustness check for the results presented in this chapter, confirming that the patterns in cash-gifts discussed below were not present in the baseline.

[60] This estimand is similar in spirit to the "ITE" estimand defined by Angelucci et. al. (2009), as the indirect treatment effect from policy interventions on non-participants in the program. Though used in the present study only as an intermediate step, it bares mentioning that this is one of the first studies I am aware of to use an empirical approach which includes examining the indirect impacts, on non-eligibles, of the intention to treat eligibles. Though they introduce the ITE as a novel estimand for impact evaluations, Angelucci et. al. did not include an analysis of indirect *intention* to treat, as there was almost 100% compliance among eligibles in their sample, since the program they were discussing was welfare payments from the government, and almost all those who were eligible chose to be treated. In the present context of wealth-constrained access to formal savings, however, the non-eligibles easiest to identify are the poorest households (group G). Those defined as "eligible" (potentially anyone not in group G) had a compliance rate far less than 100%, creating the need to distinguish between an indirect treatment effect (ITE, as in Angelucci et. al.) and an indirect *intention to treat* effect (IIT). In the present context, however, the ultimate object of analysis is not the IIT, but rather it is used as an intermediate step to get to the ITE.

A First Glance

We gathered data on cash gifts of 50 kwacha (about $.30) or more, received over a 90-day recall period preceding the interview.[61] The vast majority are from within the local community. While we did not gather data on the actual distances between giving and receiving households, nor on whether the households were located in the same village, the data do include total round-trip travel times required to obtain each gift. About 80% of the reported round-trip travel times are below 30 minutes (implying one-way trips of a maximum 5-15 minutes)[62]. This proportion remains about 80% whether looking at the sample overall, or just the highly vulnerable category. Given that the standard mode of transport in these areas is usually walking, and sometimes bicycling, this suggests that most of these transfers are between households within the same village, or at furthest from neighboring villages.

Table 25 shows simple comparisons of the percentage of households receiving cash gifts in the non-marketing and marketing clusters – overall and by household vulnerability type. Appendix 5, Table 5.A.1 is analogous, but compares percentages of households receiving *multiple* cash gifts. Before analyzing separately by vulnerability level, we already see a large difference in receipts of cash gifts from other households across marketing and non-marketing areas. While 20.8% of all households in the non-marketing areas received a cash gift in the last 90 days, 30.6%

[61] Interviewers were intensively trained on the difference between a "gift" and a loan, the latter carrying with it an expectation of repayment of some type of wealth in the future. In addition, the module I added to the survey with questions on gifts came after a section in which detailed information was already gathered on loans. Interviewers were trained to distinguish between the two and collect information on each only in their respective parts of the questionnaire.

[62] The question was asked so as to include time spent at the location of where they were requesting or receiving the gift. That is, it is a total time-cost figure, inclusive of time spent communicating with anyone providing assistance.

of those in the marketing areas received one. (Significant with a t-test at the .00 level.) This change in the proportion of households represents a difference of almost 50%. In addition, while 7.4% of all households in the non-marketing areas received more than one cash gift, 12.0% of all those in the marketing areas received multiple cash gifts – a difference of 62%. This difference is also highly significant ($p<.001$; see Table 5.A.1 in Appendix 5).

Result 1: Receipt of cash gifts during the hungry season is significantly more prevalent in the marketing villages than the non-marketing villages. Both the likelihood of (i) ever receiving a cash gift; and (ii) receiving multiple gifts is higher in marketing than non-marketing villages.

Table 25. Percentage of Households that Received at Least One Cash Gift

HH Type (Based on 2008 Characteristics)	Non-Mktg Clusters (#HHs)	Mktg Clusters (#HHs)	Difference
All HHs	20.8% (995)	30.6% (997)	9.8% *** (p=.000)
A (Food-Secure)	28.6% (77)	32.9% (79)	4.3% (p=0.560)
B (Mildly Food-Insecure)	27.9% (61)	36.4% (55)	8.5% (p=0.331)
AB (Secure & Mildly Insecure)	**28.2% (138)**	**34.3% (134)**	**6.1% (p=0.282)**
C (Moderately Insecure)	22.6% (416)	33.0% (406)	10.4%*** (p=.0008)
D (Severely Insecure)	16.8% (441)	27.4% (457)	10.6% *** (p=.0001)
E (D + No Cell)	16.2% (427)	27.1% (428)	10.9% *** (p=.0001)
F (E + 3 or more km)	16.0% (413)	27.5% (412)	11.5% *** (p=.0001)
G (F + Non-literate or Female-head)	9.9% (141)	27.7% (130)	17.8% *** (p=.0001)

The number of households in each category above is slightly smaller than the actual total number of households overall and total number in each category, as there are a few randomly missing responses for the cash gift receipt question.

Note that this difference is not necessarily evidence of an *indirect* effect of formal financial services uptake, since these figures include households that did adopt formal services. It is therefore possible these differences could be driven by some direct effect

that formal services use might have on a household's probability of receiving a cash gift from others. However, digging deeper and looking at differences by vulnerability level shows very strong differences among households of high vulnerability, among whom adoption rates are virtually non-existent.

The figures in Table 25 in fact show that the relationship between the marketing instrument and incidence of cash-gift receipts depends quite heavily on household vulnerability level. When we restrict our focus to the least vulnerable groups, for example, the difference between marketing and non-marketing areas in cash gift receipts attenuates substantially. Among those households that were food-secure (category A) or mildly food insecure (category B) in 2008, the percentage of households receiving at least one cash gift is not significantly higher in the marketing villages than in the non-marketing villages (p=.294).

There is a remarkably consistent pattern of an increasingly high marketing/non-marketing difference as we move towards indicators of increasing vulnerability. The amount by which the percentage of households receiving gifts is higher in marketing than non-marketing areas is only 4.3% among the category A households (not significant), and 8.5% among category B (not significant). The difference grows to 10.4% among category C households, 10.6% among category D, 10.9% among category E, 11.5% among category F, and 17.8% among Category G – all of which are highly significant (at the .01 level or higher). Looking at the *percentage* changes in the proportion of households receiving gifts in moving from non-marketing to marketing (rather than just the change in the proportions), the pattern of increases is even more striking. Gift receipts in marketing areas are only 14% more common among the A-category, and 33% more common among

the B-category (neither significant). The percentage difference grows to 48% among the C-category, 62% among the D-category, 69% E-category, 71% among the F-category, and 180% among the G-category.

Result 2: The difference in prevalence of cash-gift receipts between marketing and non-marketing villages increases as vulnerability increases. The marketing/non-marketing difference is negligible among the best-off households, but highly significant among the worst-off households. This is true for both receiving any gift, and receiving multiple gifts. The positive impact on the likelihood of (i) ever receiving a cash gift; and of (ii) receiving multiple cash gifts increases as vulnerability goes up.

As a brief but important aside, recall that the highly vulnerable group (category G) includes both male- and female-headed households. It is conceivable that gender of household head could affect a household's treatment by the community, suggesting it is important to verify whether the two household types really ought to be analyzed as a single group in terms of assistance receipts. About 56% of category G (153 households) is female-headed (literate & non-literate), while 44% (119 households) is male-headed. The experience of the highly vulnerable male-headed households appears to be almost identical to that of the female-headed households. Among female-headed households in category G, 9.9% of those in the control areas received a cash gift, while 28.2% of those in the treated areas received a cash gift, resulting in a difference of 18.3%, significant with a two-sided t-test (p=.004). Among male-headed households in category G, 10.0% of those in control areas received a cash gift, while 27.1% of those in treated areas did,

resulting in a difference of 17.1% (p=.016). As gender of household head does not appear to affect the proportion of highly vulnerable households receiving cash gifts, either in the control or treated areas, I analyze all category G households as a single group.

A Deeper Look: Impact on the De Facto Ineligibles

We now proceed to a deeper analysis of the Indirect Intention to Treat Effect, which I call "IIT". This is the first stage of analysis, before moving in the following section to an initial look at the Indirect Treatment Effect, or "ITE" (as defined by Angelucci et. al., 2009).

Since this study is primarily concerned with the *indirect* effects of formal savings on consumption-smoothing of non-users, and the impact on assistance receipts by the most vulnerable households in particular, I focus on the experience of the highest vulnerability category. This is group G, which includes households that were highly food insecure in 2008 according to the HFIAP scale, live in communities more than 3 kilometers from the bank-stop, and do not possess a mobile phone. In addition, they either have no literate household members, or are female-headed (57 of the 272 households in this group are both female-headed and have no literate members).

Restricting attention to the highest vulnerability group simplifies the interpretation of any causal effects as deriving from *indirect* effects of local formal savings usage, rather than direct effects from own use of formal savings. As discussed above in the theoretical framework, it is assumed that the minimum balance and fixed costs of opening a formal savings account are too high to be affordable by the poorest

households.[63] This group is therefore assumed to not have access to formal savings, making them a *de facto* "ineligible" group. The classification of this group as ineligible lies in the spirit of Angelucci et. al. (2009), who analyze the indirect impact of Mexico's welfare program, Progresa, on ineligible households. (In their case, there is no IIT-analysis, since nearly everyone offered participation enrolls, making indirect intention to treat almost identical to the indirect treatment effect.)

The data is consistent with the assumption that this highly vulnerable group is essentially ineligible. Very few households in this group use formal savings services. Only 8 households (3.2%) of group G had formal accounts in 2010, 6 of which (2.4% of the entire group) started using formal savings between 2008 and 2010. (Of the 6 households across both groups that switched from no formal savings to formal savings, 4 of them were located in intensive-marketing areas.) Any effects on group G households stemming from local formal savings adoption rates are therefore highly unlikely to be caused by direct effects of having an account, but are instead attributable to indirect effects of others in the community having accounts. Moreover, the response variables for these few households tend to run in the opposite direction as that for the other 97% of category-G households (for example *none* of the 6 savings-adopting households in group G received a cash gift from friends or relatives in the endline). So they are clearly not driving the results.

We have already seen above (Table 25) that there is a large and significant difference in the proportion of category-G households reporting cash gift receipts between the marketing and non-marketing village clusters. Due to the random

[63] Even in cases where a formal account may be technically within the range of affordability for a very poor household, the fixed costs associated with opening the account should be high enough to cause total returns to drop below traditional alternatives for low deposit amounts.

assignment of the marketing instrument, these differences in simple averages are sufficient to infer causal effects. However, those were simple t-tests, and it would clarify the picture to account for pair-level effects, and probable intra-cluster correlation among households in the same village cluster. In addition, we have seen that it is unclear whether in Lilongwe the instrument actually boosted the increase in proportion of households using formal savings. I therefore run a set of OLS regressions on the 0-1 variable for whether a household received a cash gift over the last 90 days, with pair-level fixed effects, and clustered standard errors, both for the entire sample as well as the sample restricted to Dedza and Mchinji districts. I estimate the regressions including all household types, and then restricting to just the highly vulnerable category.

Table 26 reports the results. The conclusions are roughly the same as those based on the simpler t-test. Among all vulnerability categories, the marketing increases the percentage of households in the cluster receiving a cash gift by about 10 percentage points, while it increases the percentage of highly vulnerable households receiving a cash gift by about 15 or 16 percentage points, all of which are significant at the .01-level. Note that the results are nearly identical when the sample is restricted to Dedza and Mchinji districts. (The significance level of the coefficient on the marketing dummy does drop, due to the fewer number of observations, but is still highly significant).

A linear regression may not be appropriate for a regression of percentages. Table 27 therefore shows estimates from a Probit regression, with errors clustered at

the village-cluster level, but which omit the pair-level fixed effects.[64] Marginal effects are reported. As can be seen, the estimated effects are quite similar across the two specifications.

[64] The inclusion or omission of pair-level fixed effects do not alter the basic results of the linear regression. When fixed effects are omitted, estimated magnitudes of effects are almost identical, and they remain significant well beyond the .01-level within all subsamples, whether using all households together or just the highly vulnerable. For example, across all households regardless of type, the estimated magnitudes are slightly lower when fixed effects are omitted, but just barely. The largest difference in estimated magnitude is .006 (an estimated coefficient of .089 versus .095). Across just the highly vulnerable households, the largest difference in magnitude is .02 (an estimated coefficient of .178 versus .159).

Indirect Intention to Treat (IIT) Effect on Percentage of Households in Cluster Receiving A Cash Gift

Table 26. Linear Regression: WLS Approach – Explicitly correcting for heteroskedasticity by running on the whole sample

	All Household Types				Vuln HHs (G)			
	All Districts		Dedza & Mchinji		All Districts		Dedza & Mchinji	
VARIABLES	(1) All Distance Rcv Csh Gft	(2) 3+km Rcv Csh Gft	(3) All Distance Rcv Csh Gft	(4) 3+km Rcv Csh Gft	(5) All Distance Rcv Csh Gft	(6) 3+km Rcv Csh Gft	(7) All Dist Rcv Csh Gft	(8) 3+km Rcv Csh Gft
Mktg Dummy	0.0989***	0.111***	0.0953***	0.0983***	0.159***	0.159***	0.153***	0.153***
	(1.17e-08)	(4.82e-09)	(2.31e-06)	(1.23e-05)	(0.000371)	(0.000346)	(0.00314)	(0.00295)
Constant	0.0409	0.0315	0.0438	0.0413	-0.106*	-0.106*	-0.102	-0.102
	(0.397)	(0.539)	(0.367)	(0.407)	(0.0989)	(0.0963)	(0.117)	(0.114)
Pair Fxd Effcts	YES	YES	YES	YES	YES	YES	YES	YES
EA-Clust SEs	YES	YES	YES	YES	YES	YES	YES	YES
No. Clusters	112	96	85	72	99	91	76	69
Observations	1,992	1,754	1,519	1,330	271	250	205	187
R-squared	0.046	0.043	0.047	0.038	0.225	0.230	0.220	0.221

Cluster-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 27. Probit – Marginal Effects

	All Household Types				Vuln HHs (G)			
	All Districts		Dedza & Mchinji		All Districts		Dedza & Mchinji	
VARIABLES	(1) All Distance Rcv Csh Gft	(2) 3+km Rcv Csh Gft	(1) All Distance Rcv Csh Gft	(2) 3+km Rcv Csh Gft	(1) All Distance Rcv Csh Gft	(2) 3+km Rcv Csh Gft	(1) All Distance Rcv Csh Gft	(2) 3+km Rcv Csh Gft
Mktg Dummy	0.0979***	0.110***	0.0885***	0.0961***	0.178***	0.180***	0.166***	0.169***
	(5.57e-06)	(5.68e-07)	(0.000450)	(0.000201)	(6.44e-05)	(0.000171)	(0.00112)	(0.00247)
Pair Fxd Effcts	NO	NO	NO	NO	NO	NO	NO	NO
EA-Clust SEs	YES	YES	YES	YES	YES	YES	YES	YES
No. Clusters	112	96	85	72	99	91	76	69
Observations	1,992	1,754	1,519	1,330	271	250	205	187

Cluster-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.

Appendix 5 discusses results from a set of regressions which repeats the same IIT analysis as that reported in Table 26, but which takes the village-cluster as the unit of observation (instead of the household), the cluster-mean as the response variable, and uses Huber-White heteroskedasticity-robust standard errors. This estimation approach, the results of which are reported in appendix Table 5.A.2, is clearly less efficient. However, the instrumental variables regressions used to estimate the full ITE in section 5.3 below are run at the cluster-level. Table 5.A.2 therefore reports the IIT estimates for cluster-level regressions for easier comparison with the ITE. Magnitudes of the coefficient estimates from this adjusted regression run at the cluster-level are essentially the same as those reported in Table 26. However, with many fewer observations, the significance for some estimates drop from the .01-level to the .05-level.

Cash Gift Amounts Received

Given the impressive impacts on the proportion of highly vulnerable households that receive any cash gifts, one might suppose cash gift *amounts* received by vulnerable households would also be affected by formal savings adoption rates in the local community. The data include amounts for the most recent gift received over the last 90 days. Across all households receiving gifts, the overall average amount reported is 620 kwacha (about $4). However, amounts vary substantially by vulnerability category. The average gift amount is 1,250 kwacha among A-category households, 890 kwacha among B-category households, 540 kwacha among category C, 520 among category D, and 290 kwacha among category G.

In contrast to the very strong association between the marketing instrument and numbers of households receiving gifts, simple tests on amounts show no significant differences across clusters exposed to the instrument and those not exposed to it. This is true overall as well as by vulnerability category. For example, whether looking at all households together, or just the highly vulnerable category, simple t-tests and Mann-Whitney U-tests on the differences in amounts received (conditional on receiving a gift) are nowhere near significant. The average amounts received are in fact mildly higher in the control villages.

Results for a linear regression on the amount of cash received, including pair-level fixed effects and standard errors clustered at the village cluster level are reported in Table 28 below. These results also show that, conditional on receiving a cash gift, amounts are no higher in the treated villages than the non-treated. When restricting the sample to those households that report receiving a cash gift and regress the amount of the gift on the marketing dummy, the dummy is not significant. In the full sample, across all households, a total of 512 households received one or more cash gifts. Among these, the gift amounts were actually slightly lower in the treated areas, although not significantly so (estimated coefficient on marketing of 174 kwacha, with a p-value of 0.19). Among the highly vulnerable, a total of 50 households received at least one cash gift, and the savings encouragement similarly has no measurable effect on the amount (p=0.21).

These results suggest that the key decision of a benefactor household is not *how much* to give in a cash gift to a supplicant, but instead *whether* to give a cash gift at all. This may indicate that the gifts serve a similar purpose – for example, small amounts of emergency food-consumption maintenance. At the very least, it

suggests that there are standard or commonly accepted gift amounts, which may vary by wealth-level of the recipient.

Result 3: The instrument for formal savings adoption is <u>not</u> associated with an increase in the value of cash-gifts received, but instead only the probability of receipt.

Table 28. OLS on Amount of Cash-Gift Received (Conditional on Receiving a Cash Gift)

	All Household Types				Vuln HHs (G)			
	All Districts		Dedza & Mchinji		All Districts		Dedza & Mchinji	
VARIABLES	(1) All Distance Amt Csh Rcvd	(2) 3+km Amt Csh Rcvd	(3) All Distance Amt Csh Rcvd	(4) 3+km Amt Csh Rcvd	(5) All Distance Amt Csh Rcvd	(6) 3+km Amt Csh Rcvd	(7) All Dist Amt Csh Rcvd	(8) 3+km Amt Csh Rcvd
Mktg Dummy	-173.8	-118.8	-177.4	-100.0	113.0	113.0	130	130
	(0.188)	(0.361)	(0.297)	(0.542)	(0.214)	(0.201)	(0.208)	(0.198)
Constant	1,486***	1,449***	1,488***	1,437***	108.0	108.0	96.67	96.67
	(3.31e-07)	(2.89e-06)	(1.06e-06)	(1.25e-05)	(0.195)	(0.182)	(0.245)	(0.234)
Pair Fxd Effcts	YES	YES	YES	YES	YES	YES	YES	YES
EA-Clust SEs	YES	YES	YES	YES	YES	YES	YES	YES
Observations	512	435	384	324	50	47	40	38
R-squared	0.172	0.194	0.166	0.192	0.969	0.968	0.977	0.977

In-Kind Gifts and Payment of Fees

The data also include information on receipts of in-kind gifts, as well as occurrences of someone outside the household making payment to a third party on behalf of a household member. The latter might include, for example, paying for a household member's medical fees, school fees, etc. Just as for the cash-gift variable, the question is limited to a recall period of 90 days, and only includes values that are greater than or equal to 50 kwacha (approx. $0.30). Appendix 5, Tables 5.A.3 and 5.A.4 show the results from an IIT analysis of these transfer receipts which parallels that for cash-gifts.

Though the estimated effects are rarely significant, the signs are consistent with the results for cash gifts. In particular, the estimated impact of the information intervention on the percentage of highly vulnerable households that report an in-kind ranges from 6.0 to 8.9 percentage points, depending on the sample, with borderline significance in two of the four regressions. The estimated impact on the percentage of highly vulnerable households receiving help paying fees to a third party is 4.4 percentage points higher when including all three districts, representing a 62% difference, though this is not significant (p=.206).

This analysis yields two important insights. On the one hand, it appears that *direct monetary transfers to households* are much more sensitive to the change introduced by formal savings uptake than either non-monetary wealth transfers, or monetary payments to a third party. More importantly, the fact that neither of these other two types of assistance decrease (and, if anything, appear to increase) suggests

that the cash-gifts result is not simply the result of a substitution. It is not the case, for example, that vulnerable households are now receiving cash gifts in lieu of in-kind gifts, such as food. This is important, as it strongly suggests the change in transfer behaviors induced by the boost in formal savings leads to an improvement in welfares of the vulnerable households, an issue that will be taken up in greater detail in Chapter 6.

Result 4: The results on cash gifts do <u>not</u> appear to be driven by a substitution of cash-assistance in place of other types of assistance. This suggests that the increased cash assistance may lead to a positive welfare effect among recipients.

5.3. The Indirect Treatment Effect (ITE)

Up until this point, analysis of effects has been limited to the framework of intention to treat – or, in this case, the indirect effect of the intention to treat (IIT). The ultimate goal, however, is to determine the causal indirect effects of financial service use expansion itself on inter-household transfer receipts by non-users. To do this, I regress transfer receipts on the percentage of households in the local community using formal savings, instrumenting for the latter with the randomly assigned information intervention.

Since the information on cash gifts was collected only in the endline, I am constrained to a cross-sectional analysis. That is, in the first stage, I regress local percentage of households with formal savings in 2010 on the marketing dummy, and in the second stage regress assistance receipts in 2010 on the instrumented local

percentage of households with formal savings. However, as we have already seen in the panel analysis of the marketing instrument's effects, it appears as if the instrument may not have been successful in boosting the local formal savings use in Lilongwe district. In addition, the marketing-clusters in Lilongwe already had a higher average level of formal savings use than the non-marketing clusters (though it was shown to be driven by one or two outliers). I therefore also report results restricting the data to the other two districts, Dedza and Mchinji.

As the focus here is the *indirect* effects of local formal savings use, I restrict analysis to just the highly-vulnerable category. The unit of observation in these regressions is the village-cluster, and the variables are therefore cluster-level aggregates. The dependent variable is the cluster mean of the 0-1 variable for receiving a cash gift among just the category-G households. That is, it is the proportion of the given village cluster's category-G households that receive a cash gift.

The chief regressor of interest is the cluster mean of the 0-1 variable indicating whether a household has a formal savings account. That is, the key regressor is the proportion of households (among *all* households in the cluster) that report having one or more formal savings accounts. This variable may be endogenous for several possible reasons. For example, integration into the modern economy may weaken norms for assisting other households (e.g. dilute traditional safety nets and informal aid networks), and may also simultaneously increase the probability of having formal savings. Communities whose residents are more integrated into

modern life may therefore have higher formal savings usage rates, and lower gifts among non-users, but not due to an effect of formal savings on assistance.

The first stage is a simple linear estimation that regresses the percentage of households (among everyone) in the village cluster with formal savings on the dummy for marketing. The unit of observation is the village-cluster, so the dependent variable here is the cluster mean of the 0-1 indicator variable for a household having formal savings in 2010. The regression includes pair-level fixed effects.

It should be noted that, since the analysis is restricted to category-G households, I am forced to drop from the regression any clusters that do not have households in this category. This results in dropping 13 village clusters (11%) from the sample. The analysis in Chapter 4 of the information intervention's effect on use of formal financial services included these 13 clusters. In order to give a more accurate picture of the first stage in the actual IV regressions below, I therefore repeat the analysis of the instrument's effect on local formal savings and loans prevalence, leaving out these 13 clusters. The results are reported in Appendix 5, Table 5.A.5 (formal savings) and Table 5.A.6 (formal credit), and are directly comparable to the results reported in Tables 13 and 14 (formal savings) and Tables 15 and 16 (formal credit) of chapter 4. As seen in Tables 5.A.5 and 5.A.6, there is very little difference between the results from the full sample, and the results when omitting the 13 clusters without category-G households. The estimated effect of the information intervention on the local percentage of formal savers in the endline is still significant at the .01 to .05 level, depending on the subsample and specification. In addition, as before, the information intervention has no measurable effect on prevalence of formal credit.

The regressions in Tables 13 and 14, as well as those in Table 5.A.5, are at the household-level, and therefore yield the most efficient estimates of the effect of the information intervention on the local percentage of formal savers. The first stage in the IV estimations below, however, is a regression of the (calculated) percentage of households in each cluster with formal savings in 2010 on the marketing dummy. That is, the first stage is a regression of the cluster mean for the 0-1 household indicator for formal savings on the dummy for information intervention. I then correct for heteroskedasticity using heteroskedastic-robust standard errors. To the extent that this less efficient estimation of the instrument's effect on formal savings prevalence in the first stage results in a weaker instrument for endline local savings prevalence, this would be evident in the second stage, where the estimate for the instrumented variable would be non-significant. In linear IV regressions with a just-identified first stage, the standard errors in the second stage can still be trusted even if the instrument is marginally "weak".[65]

The second stage is a simple cross-sectional Linear-IV with the endline data, where I regress the percentage of category-G households that receive a cash gift on the predicted percentage of households in the cluster with formal savings. I include pair-level fixed effects. There is of course no reason to cluster at the EA-level, since here the EA is the unit of observation. I also use Huber-White sandwich errors to account for heteroskedasticity caused by use of variables that are percentages with variation in the number of observations used to construct each percentage. I report results from the non-instrumented OLS, as well as the IV, for all distance levels, as

[65] Angrist and Pischke, *Mostly Harmless Econometrics*, as well as their follow-up note on this, published online.

well as those pairs beyond the three kilometer threshold, for all three districts and for just Dedza and Mchinji.

The results are reported in Table 29. Both variables have been scaled up so that they are in terms of percentage points (i.e. they are multiplied by 100). The OLS estimates suggest a positive relationship between local formal savings prevalence and cash gift receipts among the most vulnerable. A one point increase in the percentage of local formal savings users is accompanied by an increase in the percentage of vulnerable households that receive a cash gift ranging from between 0.5 to 0.9 percentage points. This is only significant, however, when including all districts and restricting to the three kilometer threshold (though it is quite close to significance at the .10-level in the other samples – especially when restricting to Dedza and Mchinji and looking across all distances).

Instrumenting for local formal savings prevalence to remove the endogeneity sharply increases both the sign and magnitude, suggesting a negative bias in the OLS estimates. As shown in Table 29, a one point increase in the percentage of households in the cluster using formal savings leads to a 2.4 point increase in the percentage of vulnerable households that receive a cash gift. When restricting to Dedza and Mchinji districts, the magnitude of the effect grows to 3.2 percentage points. The effect is highly significant in all four subsamples.

Tables 30 and 31 show results for the same regressions, but instead where the response variables are (i) percentage of vulnerable households that received help paying fees or expenses to a third party; and (ii) percentage of vulnerable households that received an in-kind gift. The results for help paying fees tend to mirror those for

cash gifts, though the effects are not nearly as strong, and not significant in all subsamples. The results for receipt of in-kind gifts are more mixed, the effect having a positive sign in some cases and negative in others, but never significant in any of the subsamples. That is, there is essentially no effect on receipt of in-kind gifts by the vulnerable group. This may suggest the effect is stronger for *monetary* wealth transfers than non-monetary transfers. Regardless, these instrumental-variables estimates of the indirect treatment effect of local formal savings rates on transfer receipts by the highly vulnerable confirm the result articulated in "Result 4" above (and supported by the evidence in the IIT analyses reported in Tables 5.A.3 and 5.A.4). That is, the indirect effect on transfer receipts appears strongest for *direct monetary transfers to households*, and that the effect on receipts of in-kind gifts and help paying fees to a third party are either positive or not significantly different from zero. This suggests the influx of transfer receipts by the highly vulnerable is not driven by a substitution away from other types of transfers.

Table 29. ITE: Effect of Increase in Pctg of HHs Using Formal Savings on Pctg of Vulnerable HHs in Cluster Receiving a Cash Gift

	All Districts				Dedza & Mchinji			
	OLS		IV		OLS		IV	
VARIABLES	(1) Pctg Vuln Rcv Cash Gift	(2) 3+km Pctg Vuln Rcv Cash Gift	(3) Pctg Vuln Rcv Cash Gift	(4) 3+km Pctg Vuln Rcv Cash Gift	(5) Pctg Vuln Rcv Cash Gift	(6) Pctg Vuln Rcv Cash Gift	(7) Pctg Vuln Rcv Cash Gift	(8) Pctg Vuln Rcv Cash Gift
Pctg HHs w FSAV	0.547	0.547*	2.382**	2.382**	0.927	0.927	3.191**	3.191**
	(0.112)	(0.0978)	(0.0111)	(0.0111)	(0.125)	(0.108)	(0.0109)	(0.0109)
Constant	-4.101	-4.101	-17.87	-17.87	-6.954	-6.954	-23.93	-23.93
	(0.428)	(0.408)	(0.217)	(0.217)	(0.434)	(0.412)	(0.216)	(0.216)
Pair Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y
Hetsk-Robust SEs	Y	Y	Y	Y	Y	Y	Y	Y
Observations	99	91	99	91	76	69	76	69
R-squared	0.540	0.526	0.272	0.250	0.572	0.555	0.310	0.282

Robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 30. ITE: Effect of Increase in Pctg of HHs With Formal Savings on Pctg of Vulnerable HHs Receiving HELP PAYING FEES

	All Districts				Dedza & Mchinji			
	OLS		IV		OLS		IV	
VARIABLES	(1) Pctg Vuln Rcv Help w Fees	(2) Pctg Vuln Rcv Help w Fees	(3) Pctg Vuln Rcv Help w Fees	(4) Pctg Vuln Rcv Help w Fees	(5) Pctg Vuln Rcv Help w Fees	(6) Pctg Vuln Rcv Help w Fees	(7) Pctg Vuln Rcv Help w Fees	(8) Pctg Vuln Rcv Help w Fees
Pctg HHs w FSAV	0.514	0.514	1.011*	1.011*	0.392	0.392	0.713	0.713
	(0.164)	(0.147)	(0.0558)	(0.0558)	(0.276)	(0.253)	(0.264)	(0.264)
Constant	-3.857	-3.857	-7.582	-7.582	-2.940	-2.940	-5.351	-5.351
	(0.444)	(0.425)	(0.255)	(0.255)	(0.485)	(0.463)	(0.381)	(0.381)
Observations	99	91	99	91	76	69	76	69
R-squared	0.623	0.615	0.589	0.579	0.647	0.636	0.636	0.625

Robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 31. ITE: Effect of Increase in Pctg of HHs With Formal Savings on Pctg of Vulnerable HHs Receiving An IN-KIND Gift

	All Districts				Dedza & Mchinji			
	OLS		IV		OLS		IV	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Pctg Vuln Rcv In-Kind Gft	Pctg Vuln Rcv In-Kind Gft	Pctg Vuln Rcv In-Kind Gft	Pctg Vuln Rcv In-Kind Gft	Pctg Vuln Rcv In-Kind Gft	Pctg Vuln Rcv In-Kind Gft	Pctg Vuln Rcv In-Kind Gft	Pctg Vuln Rcv In-Kind Gft
Pctg HHs w FSAV	0.451	0.451	0.314	0.314	1.006	1.006	-0.398	-0.398
	(0.338)	(0.318)	(0.674)	(0.674)	(0.273)	(0.250)	(0.709)	(0.709)
Constant	-3.383	-3.383	-2.358	-2.358	-7.547	-7.547	2.986	2.986
	(0.508)	(0.490)	(0.687)	(0.687)	(0.484)	(0.462)	(0.718)	(0.718)
Observations	99	91	99	91	76	69	76	69
R-squared	0.660	0.612	0.659	0.611	0.706	0.655	0.632	0.568

Robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

5.4. Conclusion

This chapter examined the key results of the thesis. The chapter began by formalizing the conceptual framework for the likely impact of formal savings expansion with a simple theoretical model. The model predicts that, when inter-household wealth transfers are viewed by the provider as an alternative form of saving, for example to insure its consumption against future adverse shocks, the appearance of formal savings may lead to a reduction. If a household adopts the newly available formal savings technology, this is a signal that it provides a higher rate of return than its previous alternative savings options. Such a household will reduce any allocation of savings to transfers it would have otherwise made, beginning with transfers to the least reliable to repay, until the return from saving through transfers is equal to the return provided by formal savings. For transfers viewed as savings vehicles, those given to the worst-off are likely the first to be cut, as it is probably they are the least likely to be reciprocated in the future.

When transfers are viewed by the provider as a type of charitable gift, however, the model predicts an ambiguous result. Whether due to intrinsic or extrinsic factors, the benefit from a charitable gift is a direct utility gain in the current period, and therefore functions much in the same way as own-consumption. This is true regardless of whether giving makes the charitable donor unconditionally better-off, or if the event of having been requested first lowers the donor's utility and providing assistance helps mitigate this reduction. If the entrance of formal savings raises the rate of return, there is a competing substitution effect and income effect. As future expenditures are made cheaper (i.e. for

each unit of consumption sacrificed this period by saving, one can consume even more the following period), there will be a tendency for households to save more now and substitute expenditures toward the future. On the other hand, the income effect tends to push expenditures up in both periods. The result is therefore ambiguous, and depends on the shape of household preferences.

Taking the model to the empirical setting of Central Malawi, an examination of the data showed that the entrance of formal savings led to a substantial boost in cash gift receipts – particularly among the most vulnerable. A simple comparison of percentage differences showed that households in communities that received the savings encouragement were more likely to receive a cash gift, by 9.8 percentage-points, a highly significant difference, representing an almost 50% increase over the non-encouraged clusters. This difference systematically grows as vulnerability level increases. While not significant among the category A and category B households, the difference is 10.4 percentage-points among category C households, 10.6 percentage-points among category D, 10.9 percentage points among category E, 11.5 percentage points among category F, and 17.8 percentage points among Category G – all of which are highly significant. Looking at the *percentage* changes in the proportion of households receiving gifts in moving from non-encouraged to saving-encouraged showed that receipts in marketing areas are only 14% more common among the A-category, and 33% more common among the B-category (neither significant). The percentage difference grows to 48% among the C-category, 62% among the D-category, 69% E-category, 71% among the F-category, and 180% among the G-category.

As the highly vulnerable group is essentially ineligible to take up formal savings, these very strong impacts on their receipt of inter-household transfers is clear evidence of a spillover effect of formal savings adoption on non formal-savers. To more accurately quantify the nature of this impact, fixed effects were added and errors were clustered at the community-level, in a linear regression of receipt of a cash-gift on the information-treatment dummy. This indirect intention to treat (IIT) analysis showed IIT estimates of the impact on the highly vulnerable's probability of receiving a gift ranging from 15.3 to 15.9 percentage-points, which were highly significant. Results were almost identical in a Probit specification. The instrumental-variables regression then enabled an estimate of the full indirect treatment effect (ITE). This analysis showed ITE estimates indicating that a one percentage-point increase in the local proportion of formal-savers led to a 2.4 to 3.2 percentage-point increase in the proportion of highly vulnerable households that received one or more cash-gifts.

A brief analysis showed that gift amounts do not appear to be affected. This suggests that the impact is primarily on the decision of *whether* to give a gift in response to a given request, or how many households to provide cash gifts, rather than *how much* to provide through each gift. It was also seen that there is a evidence of mild increases in other types of assistance received, such as help paying fees to a third party. Importantly, the evidence indicates that receipt of other forms of assistance by the most vulnerable do not decrease in the savings-encouraged communities. It therefore appears that the influx in cash-gift receipts induced by increases in local formal savings use does not substitute for other forms of assistance. This suggests the potential for these changes in household transfers to result in welfare changes among recipients. The following chapter examines

evidence on welfare changes among the highly vulnerable in the savings-encouraged communities, using the full panel. It also makes use of the fact that baseline data exists for other types of wealth transfers to provide a robustness check on the main results from this chapter.

Chapter 6. The Impact of Formal Savings on Related Transfers & On Welfare Outcomes: A Panel Analysis

The last chapter showed that an increase in the proportion of the local community using formal savings led to increased receipts of cash gifts among the *de facto* ineligibles, who are also the worst-off households. This chapter explores highly suggestive evidence that receipts of cash loans were also affected. It also examines the welfare effects of increased cash assistance from friends and relatives by considering food-security and health indicators. Since the data on both sets of variables were gathered in the baseline as well as the endline, the analysis here is of *changes* across the two-year period.

Since the marketing encouragement was randomly assigned, the cross-sectional estimates of the effect of marketing-induced increases in local savings account usage should be consistent. That is, the randomization should ensure the endline pattern of differences in gift receipts examined in Chapter 5 was not present in the baseline, nor derive from any systematic differences between marketing and non-marketing clusters along any dimensions other than the marketing campaign itself. Unfortunately, since there is no baseline data on gift-receipts, this is impossible to verify for receipts of pure transfers.

However, the data do contain information on informal *loans* received in both years. In reality, the dividing line between a gift and a loan is not always clear – particularly among recipients at the very low end of the wealth spectrum. In the survey interview, transfers were classified as "loans" if there was an explicit agreement to repay at some point in the future. If a comparatively wealthy household

provides a cash transfer to a highly vulnerable household, for example, even if there is an explicit expectation of repayment, the provider may know there is a high probability the recipient will not be in a position to repay in the future. In expectation, the amount repaid is dramatically reduced (perhaps even close to zero), and the "loan" essentially becomes a gift. The meaning of a "loan" to the poorest households from a friend or relative may even be qualitatively different; it may be understood that it will be repaid *conditional on being in a position to repay*, which is commonly known to be unlikely. If so, a "loan" might differ from a "gift" only in that there is a non-zero *possibility* it may need to be repaid. [66]

It is also important to note that the classification of a transfer as a "gift" versus a "loan" is based on the recipient's response, and we do not have data on how the provider viewed the transfer. If we had dyadic data with information on both givers and receivers for each transfer, we could verify which type of transfer the provider considered it to be. Even then, however, as the line between "loan" and "gift" to the worst off may be quite indistinct, it is not clear this would resolve the ambiguity.[67]

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[66] Also, recall that the model predicts that, when transfers are motivated by issues such as expected reciprocation, self-insurance, and saving, adopting formal savings should cause a household to decrease its loans to those least likely to repay (or likely to repay less than the amount given). That is, it will place less of its savings in the inferior investments, given its set of options. These inferior savings options are likely to be disproportionately represented by the worst-off households. So, if loans to the worst-off are purely "loans", and driven by reciprocation-based motives, rather than factors associated with charitable giving, loan receipts by the worst off should decrease if they. Yet this is not the finding in the results reported below.

[67] In all likelihood, a transfer will generally be subjectively perceived by the provider as lying along a spectrum between gift and loan, in accordance with the expected probability of repayment. Or, more accurately, a zero-interest informal loan to a household with a probability of \default high enough that the rate of return from the loan is clearly worse than alternative investments, will have a portion that is an unambiguous "gift", which is equal to the difference in the rate of return from the loan and the better option originally available.

This suggests there may be substantial noise in the identification of a transfer as a gift or a loan, and that the distinction between the two is not always clear – particularly for receipts among the worst-off. This chapter therefore explores what happens to receipts of loans. The following panel analysis shows that changes in loan receipts by the most vulnerable category of households experienced an uptick in information-treated communities very similar in scale to the cross-sectional differences observed for cash gifts. Depending on the specification, exposing the community to the formal savings encouragement increased the proportion of highly vulnerable non-saving households receiving loans from friends and relatives by 14.4 to 22.4 percentage points. As in the case for cash gifts, the effect grows stronger as remoteness of communities increases and the power of the instrument in exogenously boosting formal savings rates grows.

Given the extensive literature documenting the importance of informal loans in consumption-smoothing, this substantial increase in the probability of receiving a cash loan from a friend or relative suggests important improvements in the smoothing capacity among the worst-off. These changes in receipt of loans from other households also serve as a robustness check on the assumption of no baseline differences in inter-household transfer behaviors. If anything, the baseline data on loans from other households suggests receipts were lower in the treated communities (though the difference is not significant). In this capacity, the panel analysis of local formal savings rates on inter-household loan receipts by the highly vulnerable confirms causal interpretation of the cross-sectional results on cash-gifts discussed in Chapter 5.

Upon observing the substantial magnitude of exogenously boosted local savings rates un inter-household transfer receipts by the worst-off, the natural follow-up question is whether this actually matters in terms of welfare. As Townsend (1994) aptly points out, studying informal insurance institutions one at a time may lead one to overlook important supplementary smoothing options. Focusing on final consumption and related outcomes, however, enables the researcher to evaluate all available institutions jointly. While the data suggests the increased receipts of assistance are at least not substituting for other types of observed inter-household assistance receipts, it is possible the increased assistance might have general equilibrium effects on other types of consumption-smoothing devices that do not depend other households or which are not captured in the data. The true test in whether the influx of cash assistance from other households actually improves consumption smoothing and enhances well-being among the worst-off non service-users therefore lies in whether their consumption and welfare outcomes have actually improved.

The panel analyses below show that living in communities that received the saving encouragement caused two-year improvements in at least three key welfare indicators among the worst-off. Households are 11.8 to 16.3 percent more likely to exit the worst food-security category in the HFIAP scale (severely insecure) to enter one of the three other less severe categories. They also experience a 1.3 to 1.4 reduction in the continuous food-insecurity score, HFIAS, representing a 10-12% improvement over baseline values. In addition, there is evidence of positive impacts on health outcomes.

The worst-off households living in savings-encouraged communities were 12 to 17.4 percent less likely to report any members of the household as recently unwell.

The remainder of this chapter is divided into two short sections. The first analyzes the relationship between the instrument for local formal savings adoption and two-year changes in inter-household transfer receipts by the most vulnerable. The second section examines two-year changes in welfare indicators.

6.1. IIT on Changes in Transfers: Impact of Information Intervention on Informal Loans

The data include information on loans received from friends or relatives anytime in the past two years. These are cash loans, for which the purpose is not specified by the respondent. If formal savings accounts makes it easier for households to share wealth via cash assistance in order to help other households smooth consumption, we might expect to see the effect in loan-receipts as well as gifts. More generally, we might expect changes in receipt of loans to at least loosely track changes in receipt of pure gifts of cash.

The percentage of highly vulnerable households reporting informal loans over the previous 2 years in 2008 was 39.7% in the information-treated clusters and 42.6% in the information control clusters (41.2% overall). In 2010, this percentage rose to 49.2% in the treated clusters, and remained constant at 42.6% in the control clusters. When restricting to clusters 3 km out, the trend grows even stronger. In 2008, while 38.5% of the highly vulnerable in the marketing clusters report informal loans, 45.0% of those in the non-marketing clusters report them. In 2010, however,

the percentage in the marketing clusters rises to 50.4% and that in the non-marketing clusters drops to 43.4%. While these cross-sectional differences are not significant by themselves at conventional levels using two-sided t-tests, they are highly suggestive.

Analyzing the changes, adding controls, and controlling for intra-cluster correlation sharpens the picture. Table 32 reports results from a simple first-differenced regression of informal loan receipt on a dummy for the information intervention (or marketing campaign), with the sample restricted to the highly vulnerable households. All regressions include clustered standard errors, and four different regressions are shown – one without fixed effects, one with fixed effects at district level, one with fixed effects at zone-level, and one with fixed effects at the cluster-pair level. While differencing the data removes any time-invariant local fixed effects (such as variation in norms, tastes, or degree of integration into the modern economy), it does not account for any possible interactions of period changes with local variables or changes which vary across communities. On the one hand, an adverse shock experienced by all communities in the sample could be better mitigated by households in a community with extensive extra-village linkages, freeing households to give loans more easily than in a community with fewer extra-village links. On the other hand, any region-specific or spatially covariate shocks which occur over the two-year period (positive or negative) may affect the ability of neighboring households to provide assistance differently in one area than another.

The response variable is the change in whether a given vulnerable household received an informal loan over the two years preceding the interview date. It can

therefore take values of {-1,0,1}, which correspond to going from receiving at least one or more loans to receiving none, experiencing no change, and going from receiving no informal loan to receiving one or more. The interpretation of the coefficient for the information intervention is therefore the effect of the marketing on the percentage of vulnerable households that received an informal loan. Table 33 reports results from the same regressions, but restricted to Dedza and Mchinji.

In all of the specifications, the estimated magnitudes are substantial, and they are significant in most. They are always significant, and generally at high levels, when including area fixed effects. In particular, when restricting to cluster pairs located three or more kilometers from the nearest bank-stop, the effect is significant in all specifications, and raises the percentage of vulnerable households receiving informal loans by an estimated 14.4 to 22.4 percentage points after adjusting for intra-cluster correlation. Grouping the treated and controls, the overall two-year change in percentage of highly vulnerable receiving informal loans at the 3 km threshold is an increase of 4.8 percentage-points (a drop of 1.6 percentage points in the information-control clusters, and an increase of 11.6 percentage points in the information-treated). The estimated effect is therefore substantial not only in absolute but also relative terms.

Table 32. Change in Percentage Receiving an Informal Loan, Among Highly Vulnerable - All Districts

	All Distances				3+km			
Variables	(1) Δ Loan	(2) Δ Loan	(3) Δ Loan	(4) Δ Loan	(5) Δ Loan	(6) Δ Loan	(7) Δ Loan	(8) Δ Loan
Marketing Dummy	0.103 (0.207)	0.128 (0.112)	0.146* (0.0622)	0.158** (0.0291)	0.144* (0.0876)	0.146* (0.0748)	0.165** (0.0414)	0.158** (0.0281)
Change in Date	-0.00518 (0.128)	-0.00746** (0.0236)	-0.00800** (0.0166)	-0.00912** (0.0268)	-0.00475 (0.196)	-0.00693* (0.0588)	-0.00732** (0.0394)	-0.00913** (0.0325)
Fixd Effcts		District	Zone	Clust-Pair		District	Zone	Clust-Pair
Obsv.	271	271	271	271	250	250	250	250

Table 33. Change in Percentage Receiving an Informal Loan, Among Highly Vulnerable - Dedza & Mchinji

	All Distances				3+km			
Variables	(1) Δ Loan	(2) Δ Loan	(3) Δ Loan	(4) Δ Loan	(5) Δ Loan	(6) Δ Loan	(7) Δ Loan	(8) Δ Loan
Marketing Dummy	0.129 (0.180)	0.169* (0.0669)	0.181** (0.0453)	0.222*** (0.00965)	0.193* (0.0512)	0.197** (0.0325)	0.218** (0.0180)	0.224*** (0.00845)
Change in Date	-0.00732 (0.253)	-0.0126** (0.0363)	-0.0112* (0.0609)	-0.00628 (0.253)	-0.00775 (0.203)	-0.0122** (0.0360)	-0.0117** (0.0493)	-0.00689 (0.209)
Fixd Effcts		District	Zone	Clust-Pair		District	Zone	Clust-Pair
Obsv.	205	205	205	205	187	187	187	187

Table 34. Change in Percentage Receiving an Informal Loan, Among All Households - All Districts

	All Distances				3+km			
Variables	Δ Loan	Δ Loan	Δ Loan	Δ Loan	Δ Loan	Δ Loan	Δ Loan	Δ Loan
Marketing Dummy	0.0258 (0.597)	0.0394 (0.343)	0.0367 (0.380)	0.0372 (0.220)	0.0408 (0.434)	0.0490 (0.273)	0.0534 (0.216)	0.0478 (0.143)
Change in Date	0.000795 (0.629)	-0.00106 (0.490)	-0.000897 (0.558)	-0.00194 (0.219)	0.00226 (0.238)	0.000396 (0.815)	0.000251 (0.888)	-0.000550 (0.789)
Fixd Effcts		District	Zone	Clust-Pair		District	Zone	Clust-Pair
Obsv.	1,988	1,988	1,988	1,988	1,750	1,750	1,750	1,750

Table 35. Change in Percentage Receiving an Informal Loan, Among All Households - Dedza & Mchinji

	All Distances				3+km			
Variables	Δ Loan	Δ Loan	Δ Loan	Δ Loan	Δ Loan	Δ Loan	Δ Loan	Δ Loan
Marketing Dummy	0.0146 (0.808)	0.0398 (0.438)	0.0394 (0.437)	0.0547 (0.161)	0.0429 (0.508)	0.0575 (0.301)	0.0628 (0.238)	0.0611 (0.149)
Change in Date	0.00610* (0.0926)	0.00275 (0.291)	0.00292 (0.245)	0.00298 (0.212)	0.00754** (0.0382)	0.00455** (0.0406)	0.00436* (0.0597)	0.00363 (0.133)
Fixd Effcts		District	Zone	Clust-Pair		District	Zone	Clust-Pair
Obsv.	1,516	1,516	1,516	1,516	1,328	1,328	1,328	1,328

Tables 34 and 35 report results from analogous regressions, but instead using the total sample of all households. Here, while the sign for the coefficient estimate for the information intervention is always positive, the magnitudes are much smaller, and they are never significant across any of the specifications. The positive impact of the information intervention on the two-year change in proportion of households receiving a loan from friends or relatives is therefore limited to the highly vulnerable group.[68] This suggests that loans to the highly vulnerable do in fact differ from other types of loans in an important way, and is consistent with the notion that loans to the highly vulnerable are more likely to be thought of as a type of charitable gift, rather than an alternative method of saving.

Result 5: The instrument for local rates of formal savings adoption is associated with a substantial increase in the two-year change in the proportion of highly vulnerable households receiving cash-loans from friends or relatives. However, it does not affect the proportion of non-vulnerable households receiving such loans.

The positive impact of the information campaign on the proportion of highly vulnerable households in the community receiving informal loans (14.4-22.4 percentage points) is remarkably similar in scale to its estimated effect on the proportion receiving cash gifts (15.3-18.1 percentage points). While this serves as confirmation that the cash gifts result is not driven by baseline differences, it is also an important finding in its own right. Similar to the evidence on in-kind gift receipts

[68] When the above regressions are run on the sample restricted to the non-vulnerable (i.e. all household except for category G) using pair-level fixed effects, the highest significance for the estimated coefficient of the information intervention is p=0.385. Results not shown.

and cash-help with fees, it indicates the influx of cash gift assistance is not driven by a substitution effect. That is, it does not appear to be the case that cash gifts to the highly vulnerable are being substituted in place of cash loans. Rather, both types of wealth-flows to the highly vulnerable are increasing. This strongly suggests a welfare improvement among the highly vulnerable.

Finally, the results on two other panel variables deserve brief mention. Both years of data include information on whether a household received cash help in response to a specific shock, and also whether a household received cash help specifically in order to buy food. Analyses paralleling that for informal loans shows that the effect of the marketing on these transfers is in the same direction. The estimated effects are consistently positive. However, they are significant at conventional levels in only a few specifications. Appendix 6 reports the results.

6.2. The IIT on Welfare Outcomes – Food Security and Health Outcomes

The strong link between the instrument for increased local formal savings adoption and assistance receipts by the worst-off households suggests a positive indirect benefit from formal savings for the worst-off. However, it is not necessarily clear *a priori* that increased receipts of this type of assistance will improve household welfares. While all measurable indicators suggest the influx of assistance receipts in marketing clusters is not through a substitution away from other forms of assistance, the data may be failing to capture effects on other smoothing options. It is possible the increased assistance might have general equilibrium effects on other types of consumption-smoothing devices (self-insurance practices, for example). To determine

whether the influx of cash assistance actually improves consumption smoothing and the well-being among the worst-off non service-users we can check simple welfare measures.

This section briefly examines the evidence for improvements in three different welfare indicators: two food-security indicators and one simple health indicator. The first is the percentage of highly vulnerable households that move up the HFIAP scale, from the category "severely food insecure", to one of the three other categories ("moderately insecure", "mildly insecure", "secure"). Across the entire sample, 43.3% of the households in this category in 2008 moved up, to be classified in one of the three less severe food-security categories in 2010 (44.1% in the marketing clusters, 42.4% in the non-marketing clusters, not significantly different).[69] When restricting to the sample of highly vulnerable households, 40.3% of those in marketing-clusters exited the "severely insecure" category, while only 29.3% of those in non-marketing clusters did. This difference is significant at the .05-level (two-sided t-test).

A simple first-differenced regression examines the effect more closely, controlling for location fixed-effects and adjusting for intra-cluster correlation. Table 36 reports the results. The response variable is simply a dummy, which takes a value of one if the household is no longer in the "severely insecure" category in 2010. (Recall that all of the highly vulnerable households, by definition, were in the "severely food insecure" category in 2008.) The coefficient on the marketing dummy thus represents the effect of the information intervention on the proportion of highly

[69] 30.6% of the sample moved in the opposite direction, from one of the 3 less-severe categories into the most severe category.

vulnerable households that exit the severely-insecure category. As in the first-differenced regressions above, location fixed effects are included to account for the possibility that economy-wide changes are experienced differently in the different locations (due, for example, to market fragmentation or district-level economic changes), of spatially covariate shocks, or of differences in risk-bearing capacities of different locales. Errors are clustered at the village-cluster level. Change of date is included as an added control under the hypothesis that being interviewed later in the pre-harvest "lean" season might lower the measured food-security of a household and thereby diminish its likelihood of being measured as having exited the "severely insecure" category. The results are fully robust to omitting the change-of-date variable.

The effect is substantial in magnitude, and significant in all specifications with the cluster fixed effects, as well as some without. The estimated effect of the information intervention on the proportion of vulnerable households exiting the severely food-insecure category ranges from 7.1 percentage points to 16.3 percentage points. This represents a 23% - 55% difference over the average proportion of highly vulnerable exiting the severely insecure category in the non-marketing clusters.

The more continuous food-security indicator, HFIAS, indicates similar improvements in household food-consumption among the highly vulnerable in information-treated communities over the two-year period. Recall that the HFIAS indicator runs from 0 to 21, with higher numbers indicating worse food-security. While the average HFIAS score improved by 1.1 points among the highly vulnerable in non-marketing clusters (from 12.0 down to 10.9), it improved by 2.0 points among

the highly vulnerable in marketing clusters (from 11.9 down to 9.9). This simple difference is not significant at conventional levels.[70]

However, after controlling for location fixed effects, any changes in the interview date, and accounting for intra-cluster correlation, the estimated effect is significant at the .05-level. The second half of Table 36 reports results from a first-differenced regression of a vulnerable household's HFIAS score on the dummy for the information intervention, the interview date, and pair-level fixed effects interacted with the period dummy, with errors clustered at the village-cluster level. The response variable is thus the change in the household's HFIAS score, while the regressors are the marketing dummy, and any change in the interview date, with time-varying location fixed-effects. As before, the fixed effects are included in the model to account for any variation in relevant changes across locations (such as covariate shocks or any economic changes confined within certain segmented markets) or location-dependent variations in capacities to address any universally experienced fluctuations.

The coefficient for the marketing dummy represents the average effect of living in a community assigned to the information treatment, on the change in a highly vulnerable household's HFIAS score. It is statistically significant across all four samples, and its magnitude is substantial. Those living in a community exposed to the marketing experienced an estimated reduction of 1.25 to 1.40 points. The effect grows stronger when restricting to Mchinji and Dedza districts, and is also stronger at the more remote distance threshold. As the average baseline value for this variable

[70] It is significant under a one-sided t-test when the hypothesis that the average effect is larger in the treated areas. A two-sided t-test yields a p-value of 0.194, while a Mann-Whitney U-test yields a p-value of 0.186. A one-sided t-test yields a p-value of .097.

among the highly vulnerable group in 2008 was 12.0 overall (11.9 in treated, 12.0 in control), this represents a 10-12% improvement in food-security as measured by this scale.

It is also possible that increased cash assistance might lead to improvements in health outcomes. This could occur through several different possible channels. On the one hand, health effects might be directly related to food-security outcomes. Receiving loans or cash and in-kind transfers may reduce the probability of needing to consume poorer quality food.

Cash assistance may also be helping to cover non-food consumption such as medical-related expenditures. Malaria, for example, is extremely prevalent in Malawi, with one of the highest rates in the world. Medical-related expenses may be high enough to inhibit timely preventive treatment which might avert more serious illness and even death. Anecdotal evidence suggests it is not uncommon, for example, to wait and see how an illness develops to determine whether it is simply a cold or Malaria, because the transportation costs of going to a clinic may be high.[71] In this context cash assistance may help cover transportation costs to free clinics, or help cover admission to often less-overburdened and perhaps closer paying-clinics. This might hasten treatment, or even induce an individual to seek treatment at all (rather than try to wait the illness out). Dercon et. al. (2008) find that in Ethiopian villages a certain type of health insurance provided by informal household networks offers help

[71] One widow living with her two grandchildren explained that she waited until a very late stage of cerebral Malaria before asking to a borrow a bike so her second grandchild could cycle him to the closest clinic. The survey teams periodically encountered parents seeking urgent assistance to get their children to a clinic after realizing the child had Malaria. The teams would use their car to drive the child to the hospital. Some of the children lived, but others died. In discussions, parents seem to know a sickness may be Malaria, but they note the high cost of going to a clinic every time a household member is ill.

cover observable components of health-related shocks, for example medical expenses. This may also be occurring in Malawi. Indeed, in qualitative interviews in rural areas of central Malawi, formal-savers report the top reasons people ask them for cash help are for medical expenses and sickness-related issues, to buy food, or to pay for funeral expenses.

One simple measure of health outcomes the data contain is whether any household member was injured or sick over the last 14 days preceding the interview. The overall change in the percentage of households that answered "yes" to this question was an increase of 6.1%, from 75.6% to 81.8% over the two-year period. The change was mildly lower in the marketing communities (+5.8%) than in the non-marketing communities (+6.5%), though the difference is not significant. When restricting to the highly vulnerable, however, the difference is striking. In non-marketing communities, the percentage of highly vulnerable households reporting at least one household member unwell enough to stop normal activities increased by 19.9 percentage points (from 72.3% to 92.2%). In marketing clusters, the percentage increased only 6.1 percentage-points – the same as the overall change across the sample – from 77.1% to 83.2%. The difference, which amounts to a 13.8 percentage is significant with a two-sided t-test (p=.029).

Once again, a simple first-differenced regression examines the effect more closely, controlling for location fixed-effects and any possible changes in interview date, as well as adjusting for intra-cluster correlation. The results are reported in Table 37. The effect is significant in all four subsamples. The information intervention is associated with a reduction in the proportion of highly vulnerable

households reporting an unwell member, ranging from 11.6 to 17.4 percentage points. Note that the scale of the effect, once again, is quite similar to the increase in the percentage of highly vulnerable households that received cash gifts and that received informal loans.

Table 36. Changes in Food-Security Outcomes: Exiting Most Severe Food-Deficiency Status, and Lowering Deficiency Scores

	Exit Severely Food-Insecure				Change in HFIAS Food-Insecurity Score			
	All Districts		Mchinji & Dedza Districts		All Districts		Mchinji & Dedza Districts	
	All Distances	3+ km	All Distances	3+ km	All Distances	3+ km	All Distances	3+ km
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Exit Severe	Exit Severe	Exit Severe	Exit Severe	Δ HFIAS	Δ HFIAS	Δ HFIAS	Δ HFIAS
Marketing	0.162***	0.163***	0.118*	0.120*	-1.251**	-1.252**	-1.393**	-1.402**
	(0.00272)	(0.00241)	(0.0780)	(0.0720)	(0.0147)	(0.0143)	(0.0308)	(0.0285)
Change Date	-0.00351	-0.00389	-0.00249	-0.00290	0.0468	0.0473	0.0801*	0.0827**
	(0.332)	(0.301)	(0.704)	(0.655)	(0.138)	(0.151)	(0.0552)	(0.0477)
Constant	-0.138*	-0.142*	-0.100	-0.105	7.240***	7.245***	7.623***	7.651***
	(0.0642)	(0.0582)	(0.274)	(0.250)	(1.12e-05)	(1.08e-05)	(1.67e-05)	(1.53e-05)
Pair-Lvl FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	272	251	206	188	269	248	203	185
R-squared	0.291	0.279	0.276	0.264	0.219	0.212	0.221	0.211

Cluster-robust Pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 37. Change in the Proportion Vulnerable Households Reporting a Member Unwell

	All Districts		Mchinji & Dedza Districts	
	All Distances	3+ km	All Distances	3+ km
VARIABLES	(1)	(2)	(3)	(4)
Marketing	-0.120*	-0.116*	-0.174**	-0.174**
	(0.0727)	(0.0775)	(0.0470)	(0.0456)
Change Date	-0.00502	-0.00618*	-0.00958	-0.00965
	(0.175)	(0.0938)	(0.171)	(0.167)
Constant	0.370	0.357	0.366	0.365
	(0.117)	(0.126)	(0.178)	(0.176)
Pair-Lvl FE	Y	Y	Y	Y
Observations	272	251	206	188
R-squared	0.278	0.280	0.291	0.294

Cluster-robust Pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

6.3. Conclusion

This chapter showed that receipts of financial assistance by the highly vulnerable in the form of informal loans from friends and relatives also increased in the treated communities, strongly suggesting that increases in local formal savings rates have an effect on informal loans to the most vulnerable which is similar to the effect on cash gifts. Not only were informal loan receipts by the most vulnerable higher in the endline. Since baseline information on this variable is included in the data, it was verified that the two-year change in the proportion of vulnerable households receiving g loans was significantly higher in the treated communities than in the non-treated. (The change was in fact mildly negative in the non-treated.)

Moreover, the scale of the increase in the proportion of highly vulnerable receiving loan-assistance that was induced by the instrument for local formal savings prevalence is remarkably similar to that induced for cash gifts. Depending on the specification, exposing the community to the formal savings encouragement increased the proportion of highly vulnerable households receiving loans from friends and relatives by 14.4 to 22.4 percentage points. As in the case for cash gifts, the effect grows stronger as remoteness of communities increases and the power of the instrument in exogenously boosting formal savings rates grows.

On the one hand, this verifies that the causal interpretation of the endline pattern for cash gifts, which relies on the assumption that the randomization produced a good set of counterfactuals, is valid. Inasmuch as informal loans serve as a good indicator for inter-household wealth flows, there appears to have been no difference in inter-household wealth transfers in the baseline.

The finding that informal loan receipts increased among the highly vulnerable and not among the other household-types, in also an important resultant in its own right. On the one hand, it suggests that loans to the highly vulnerable and qualitatively different in some ways than loans to other types of households, and it is consistent with the hypothesis that they are in some sense thought of as gifts, and thus respond a similar way as cash gifts. On the other hand, given the importance of informal loans in smoothing consumption that has been documented in the informal insurance literature, the influx of assistance through informal loans is also likely to have important welfare effects.

To that end, this chapter also confirmed a significant welfare impact among the highly vulnerable in at least three important indicators of well-being. Within this household category, those living in communities treated by the formal savings instrument were treated community were 11.8 to 16.3 percent more likely to exit the worst food-security category in the HFIAP scale (severely insecure) to enter one of the three other less severe categories. They also experience a 1.3 to 1.4 reduction in the continuous food-insecurity score, HFIAS, representing a 10-12% improvement over baseline values. In addition, the worst-off households living in savings-encouraged communities were 12 to 17.4 percent less likely to report any members of

the household as recently unwell. These findings suggest that the influx in transfer receipts by the worst-off households induced by the increase in local formal savings rates did in fact have important positive welfare consequences for these households.

Chapter 7. Conclusion

The major contributions of this study lie in addressing a large and important empirical gap. Despite widespread interest in both informal insurance practices in villages as well as the potential benefits of modern capital markets for the poor, there is little research on the interaction of the two systems, and scant reliable evidence regarding the effects of formal institutions on informal institutions. Yet this is a potentially critical issue, especially for the worst-off households. By using a randomly assigned information intervention as an instrument, in combination with an orthogonal formal credit access expansion path, this study cleanly identifies the effect of formal savings on inter-household transfer behavior, and separates it from the effects of formal credit.

The information intervention took the form of a marketing campaign, designed to encourage financial services uptake through the provision of details about the services and what they offer. This encouragement exogenously boosted local formal savings rates by significant magnitudes even in the more conservative specifications, without changing use of formal credit. When looking at service adoption, the information campaign led to a 3.1 percentage-point increase in the proportion of the community that started using formal savings, across all communities, and a 3.7 percentage-point increase in the proportion of new-adopters in communities located in more remote locales. These changes represent a 33% and 40% boost, respectively, to the local adoption rate.

When looking at the two-year change in total local incidence of formal savings use, the most conservative and simple approach uses only the instrument as a

determinant. In this approach, the encouragement caused increases in formal savings rates among the three-quarters of the sample located in the districts furthest from the capital and the bank's headquarters by an estimated 2.8 percentage-points across all distances, and 3.2 percentage-points in communities located in more remote locales. This represents a boost in the total local incidence of formal savings by 23% and 31%, respectively.

However, a more appropriate specification for the two-year change in local formal savings incidence might include the initial prevalence in the baseline as a control. This is due to the fact that the initial incidence level in a community is likely to affect the potential for formal savings expansion over the intervening two years. When the baseline formal savings rate is included as a control, the estimated impact of the encouragement on the two-year increase in formal savings incidence is significant across all three districts. Thus, under this model, the strength of the instrument is maintained across the entire sample, including the quarter of the sample located in Lilongwe, which is closest to the capital and its financial institutions.

This boost in local formal savings induced in the marketing-areas appears to have led to a substantial positive impact on inter-household transfers. In communities exposed to the savings encouragement, 30.6% of all households report receiving one or more cash gifts, compared to 20.8% in the non savings-encouraged communities. This difference is highly significant, and represents an increase of almost 50% in the proportion of the community reporting cash-gift receipts in moving from the non-encouraged to the savings-encouraged villages.

The positive impacts of the savings-encouragement on receipts of inter-household assistance systematically increase as vulnerability heightens. Among the least vulnerable 14% of the sample (households in categories A and B), cash gift receipts are no higher in the information-treated communities. Yet the difference becomes significant within households in vulnerability category C, with a difference of 10.4 percentage-points, growing to 10.6 percentage-point among category D, 10.9 among category E, 11.5 among category F, and 17.8 among Category G. (Recall that these categories are based on baseline variables: category C contains households classified as "moderately food insecure", category D those classified as "severely food-insecure", and that categories E, F, and G are subsets of D representing increased levels of vulnerability.) The striking impact on receipt of inter-household transfers by the most vulnerable group underscores the fact that the impacts of financial deepening may be especially large on the worst-off households, a group of particular policy-importance for many anti-poverty and development initiatives.

To more accurately quantify the nature of this impact on the most vulnerable, fixed effects are added and errors clustered at the community-level, in a linear regression of receipt of a cash-gift on the information-treatment dummy. This indirect intention to treat (IIT) analysis shows IIT estimates of the impact on the highly vulnerable's probability of receiving a gift ranging from 15.3 to 15.9 percentage-points, all highly significant. Results are almost identical in a Probit specification. An instrumental-variables regression enables an estimate of the full indirect treatment effect (ITE) of increases in the proportion of formal savers on the percentage of highly vulnerable that received one or more cash gifts. This analysis shows ITE

estimates indicating that a one percentage-point increase in the local proportion of formal-savers led to a 2.4 to 3.2 percentage-point increase in the proportion of highly vulnerable households that received one or more cash-gifts.

As minimum balances and fixed costs associated with opening a formal account create a barrier preventing use by the poorest, the highly vulnerable group is *de facto* ineligible to take up formal savings. These strong impacts on receipts of inter-household transfers by the most vulnerable are therefore clear evidence of a spillover effect of formal savings adoption on non formal-savers. This adds to a small but growing number of studies that highlight the importance of accounting for and measuring indirect impacts of policy interventions and aid programs. These effects can be of critical importance, particularly in village-settings, where households are often intimately connected with each other. The impact evaluation literature tends to remain focused on assessments of program effects on direct beneficiaries of the program. While perhaps natural, it is clear that in some cases very large effects may lie outside this narrow focus, and significant portions of a project's impact may be missed entirely when failing to account for indirect effects on the putatively "non-treated".

The findings of this study carry significant methodological import in particular for impact assessments and project evaluations in microfinance, an increasingly common research activity in development. The results show that the provision of financial services has important indirect effects on *non service-using* households in the area. This means that within-locality comparisons, even when suitable instruments are available or randomized access is feasible, can be an *invalid*

and unreliable method for measuring the effects of service-use on users. It becomes a question of identifying the appropriate counterfactual for what is intended to be measured. Even a perfect instrument for service-use will not identify its absolute effect if the comparison group is also affected. Thus, approaches based on using the Wald estimator to find local-average treatment effects (LATE) must be implemented and interpreted with extreme caution, and should not be used to infer absolute direct impacts of service-use unless it can be verified that the stable unit treatment value assumption (SUTVA) actually holds. As this study clearly demonstrates, when treatment is defined as own-adoption of a financial service, it is likely that SUTVA will in fact fail for certain key outcomes (e.g. transfer receipts and welfare indicators) when comparing across individuals in a village.

Similar concerns complicate assessments of direct effects based on comparisons between communities. Microfinance researchers and project evaluators should thus bear in mind the implications that the presence of indirect effects may have on their empirical approaches to estimating the impacts they intend to measure. Equally important, the finding of strong indirect effects suggests that accurately measuring the full impacts of microfinance projects and interventions to expand access to formal capital markets, requires a broader focus on the entire community of which service-users form a part.[72]

This study's empirical findings on the response of receipts of monetary assistance (gifts and loans) to formal savings expansion are important in their own

[72] As a methodological aside, it also bares mentioning mentioning that this is one of the first studies I am aware of to use an empirical approach which includes examining the indirect impacts, on non-eligibles, of the intention to treat eligibles – that is, use of an "IIT" estimand. If future project evaluations begin to incorporate analyses of indirect effects, as this study suggests is important, the reduced form IIT estimator will be a useful intermediate stage for inferring indirect treatment effects.

right, not least because of previous suggestions the effect may be in the opposite direction. However, as Townsend (1994) rightly points out, by narrowing the focus to only a few institutions (e.g. gifts and loans), it is of course always possible to miss parallel changes in other consumption-smoothing options. While all observable indicators suggest that the increased monetary assistance did not substitute for assistance that would have been received in other forms, it is nevertheless possible the data fail to capture consequent effects on other smoothing mechanisms available to the ultra-poor.

The data, however, permit the analysis to proceed several steps further, overcoming the pitfalls of looking at the impacts on individual institutions one at a time. By examining welfare outcomes of the households affected, it is possible to implicitly infer whether any substitution or displacement effects neutralize the positive benefits to recipient households. It also focuses the analysis squarely on outcomes of crucial policy relevance: the well-being of the poor.

This study's results show that living in communities that received the saving encouragement caused two-year improvements in at least three key welfare indicators among the worst-off. Highly vulnerable households are 11.8 to 16.3 percent more likely to exit the worst food-security category in the HFIAP scale (severely insecure) to enter one of the three other less severe categories. They also experience a 1.3 to 1.4 reduction in the continuous food-insecurity score, HFIAS, representing a 10-12% improvement in food-security over baseline values. In addition, highly vulnerable households living in savings-encouraged communities were 12 to 17.4 percent less likely to report any members of the household as recently unwell.

One of the most noteworthy findings of this study is the impressive magnitude of the effects on transfer receipts – particularly among the worst-off households – and the substantial impacts this has on welfare outcomes. While certainly promising, the lesson here should be one of caution. Recall that the model predicts an ambiguous result, making it *possible* for the introduction of formal savings to have a stimulating effect on inter-household wealth flows. It is not clear, however, that introducing formal savings will always have a positive effect. The results of this study quite clearly demonstrate that expanding formal savings access can have very large impacts on inter-household transfer behaviors, and that changes in transfer receipts can have substantial effects on the welfare of the poorest of the poor. While the fact that the experience of rural Malawi was in the positive direction is perhaps a promising sign, the model suggests this result depends on the shape of preferences. It is possible that preferences or cultural norms in Central Malawi differ in some relevant way such that its experience differs from that of other areas.[73] Examining the extent to which the effects brought to light through this study are applicable to other settings and whether they depend on important dimensions of culture or social norms which change across environments therefore represents an important area for further investigation.

Another important caveat is with respect to time-frame. Two years is a relatively short period for the materialization of impacts, and there may be

[73] As an example, this region is predominantly Chewa, an ethnic group that is historically matrilineal and matrilocal. Research elsewhere has shown the importance of matrilineal institutions, such as land-inheritance and post-marital location practices, on behavior (e.g. Gneezy, Leonard, and List 2009; Flory, Leonard, and List 2011). In particular, List et. al. (??) find evidence that individuals in matrilineal societies may contribute more to public goods. If matrilineal customs are somehow linked to the strength and prevalence of "social preferences", it may affect the ways in which the findings of this study apply to other settings. Further research on the relationship between land-inheritance and post-marital location practices on the one hand and gift-giving behavior to provide consumption insurance is may be necessary.

countervailing effects which operate over a longer time-frame. For example, behavioral habits and social norms may change through the introduction of formal capital markets, but on a slower scale. This could conceivably cause the pecuniary and non-pecuniary rewards of transfers-out to change such that several years after the expansion of formal savings, the effect on inter-household wealth flows is reversed. In this case, if financial markets do not develop quickly enough, so that all households have access, the outcome could be more mixed, with potentially negative outcomes for highly vulnerable households whose previous safety nets have been displaced. In this case, policy-makers and practitioners will want to be more careful to see that promoting the expansion of formal savings options is accompanied by substitutes for safety nets which may disappear for the most vulnerable. Determining whether the effects identified in this study change over time, and perhaps even reverse, thus represents a critical avenue for future research.

Appendices

Appendix 4

Conditioning on Baseline Prevalence of Formal Savings (or Formal Credit)

This is a regression of the cluster mean on for the dependent variable (i.e. the cluster percentage of formal savers/borrowers or brute change in that percentage) on the cluster means for the regressors (i.e. cluster percentage of formal savers (borrowers) in 08, distance)

Table A.4.1. Proportion of HHs in EA with Formal Savings, Controlling for Initial Local Savings Penetration & Distance

	All Districts				Dedza & Mchinji			
	All Distances		3+km		All Distances		3+km	
VARIABLES	(1) FSAV in 2010	(2) Δ Pctg Fml Savers	(3) FSAV in 2010	(4) Δ Pctg Fml Savers	(5) FSAV in 2010	(6) Δ Pctg Fml Savers	(7) FSAV in 2010	(8) Δ Pctg Fml Savers
Mktg Dummy	0.0346*	0.0360*	0.0352	0.0366*	0.0425**	0.0430**	0.0476**	0.0480**
	(0.0721)	(0.0586)	(0.115)	(0.0999)	(0.0383)	(0.0355)	(0.0408)	(0.0389)
FSAV in 2008	0.599***	-0.403**	0.629***	-0.371*	0.488***	-0.509***	0.466**	-0.531**
	(0.000287)	(0.0127)	(0.00251)	(0.0690)	(0.00646)	(0.00449)	(0.0486)	(0.0248)
Distance	-0.0251**	-0.0255**	-0.0349*	-0.0353*	-0.0293*	-0.0292*	-0.0311	-0.0308
	(0.0486)	(0.0433)	(0.0968)	(0.0907)	(0.0760)	(0.0756)	(0.171)	(0.174)
Constant	0.181	0.184	0.274	0.277	0.245	0.243	0.265	0.262
	(0.433)	(0.420)	(0.334)	(0.325)	(0.325)	(0.327)	(0.344)	(0.350)
Pair Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y
Observations	112	112	96	96	85	85	72	72
R-squared	0.817	0.591	0.782	0.565	0.817	0.656	0.736	0.651

Heteroskedasticity-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table A.4.2. Proportion of HHs in EA with Formal Savings, Controlling for Initial Local Savings Penetration Only

	All Districts				Dedza & Mchinji			
	All Distances		3+km		All Distances		3+km	
VARIABLES	(1) FSAV in 2010	(2) Δ Pctg Fml Savers	(3) FSAV in 2010	(4) Δ Pctg Fml Savers	(5) FSAV in 2010	(6) Δ Pctg Fml Savers	(7) FSAV in 2010	(8) Δ Pctg Fml Savers
Mktg Dummy	0.0275	0.0288	0.0402*	0.0416*	0.0423*	0.0429**	0.0541**	0.0545**
	(0.169)	(0.148)	(0.0748)	(0.0634)	(0.0528)	(0.0493)	(0.0183)	(0.0174)
FSAV in 2008	0.728***	-0.272**	0.625***	-0.376*	0.645***	-0.353***	0.456*	-0.541**
	(3.07e-08)	(0.0277)	(0.00249)	(0.0639)	(6.01e-06)	(0.00959)	(0.0501)	(0.0206)
Constant	-0.103	-0.103	-0.0858	-0.0863	-0.0913	-0.0920	-0.0547	-0.0556
	(0.598)	(0.594)	(0.622)	(0.618)	(0.602)	(0.599)	(0.699)	(0.695)
Pair Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y
Observations	112	112	96	96	85	85	72	72
R-squared	0.799	0.551	0.765	0.531	0.791	0.609	0.714	0.623

Heteroskedasticity-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table A.4. 3. Proportion of HHs in EA with Current Formal Loans, Controlling for Initial Local Savings Penetration & Distance

	All Districts				Dedza & Mchinji			
	All Distances		3+km		All Distances		3+km	
VARIABLES	(1) FCRED in 2010	(2) Δ Pctg Fml Borrowers	(3) FCRED in 2010	(4) Δ Pctg Fml Savers	(5) FCRED in 2010	(6) Δ Pctg Fml Savers	(7) FCRED in 2010	(8) Δ Pctg Fml Savers
Mktg Dummy	0.00572	0.00336	-0.00661	-0.00713	0.00929	0.00566	-0.00164	-0.00231
	(0.694)	(0.816)	(0.631)	(0.611)	(0.592)	(0.740)	(0.924)	(0.896)
FCRED in 2008	0.388**	-0.555***	0.550***	-0.414**	0.278	-0.652***	0.454**	-0.495**
	(0.0244)	(0.000928)	(0.00249)	(0.0229)	(0.117)	(0.000227)	(0.0242)	(0.0189)
Distance	-0.0298***	-0.0307***	-0.0335***	-0.0306***	-0.0358***	-0.0372***	-0.0326***	-0.0289**
	(0.00787)	(0.00512)	(0.00180)	(0.00739)	(0.00469)	(0.00197)	(0.00198)	(0.0111)
Constant	0.397***	0.396***	0.418***	0.379***	0.474***	0.476***	0.420***	0.372***
	(0.00111)	(0.00100)	(0.000301)	(0.00192)	(0.000565)	(0.000322)	(0.000266)	(0.00274)
Pair Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y
Observations	112	112	96	96	85	85	72	72
R-squared	0.682	0.648	0.670	0.654	0.692	0.662	0.647	0.633

Heteroskedasticity-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table A.4. 4. Proportion of HHs in EA with Current Formal Loans, Controlling for Initial Local Savings Penetration Only

	All Districts				Dedza & Mchinji			
	All Distances		3+km		All Distances		3+km	
VARIABLES	(1) FCRED in 2010	(2) Δ Pctg Fml Borrowers	(3) FCRED in 2010	(4) Δ Pctg Fml Savers	(5) FCRED in 2010	(6) Δ Pctg Fml Savers	(7) FCRED in 2010	(8) Δ Pctg Fml Savers
Mktg Dummy	0.00254	8.32e-05	-0.00195	-0.00288	0.0128	0.00926	0.00520	0.00375
	(0.876)	(0.996)	(0.896)	(0.847)	(0.536)	(0.654)	(0.778)	(0.839)
FCRED in 2008	0.403*	-0.540***	0.557***	-0.408**	0.320	-0.609**	0.495**	-0.458*
	(0.0522)	(0.00914)	(0.00446)	(0.0347)	(0.185)	(0.0133)	(0.0351)	(0.0524)
Constant	0.0909**	0.0809*	0.0701*	0.0626	0.0983*	0.0867	0.0758	0.0669
	(0.0443)	(0.0668)	(0.0692)	(0.105)	(0.0840)	(0.116)	(0.124)	(0.173)
Pair Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y
Observations	112	112	96	96	85	85	72	72
R-squared	0.587	0.533	0.615	0.608	0.576	0.521	0.595	0.593

Heteroskedasticity-robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

The above tables provides evidence that the higher the initial percentage, the smaller the increase in that percentage. For example, column 2 suggests that for every 1 percentage point increase in the initial savings prevalence, the 2-year increase in percentage of households with formal savings will be 0.4 percentage points lower. (The average change in formal savings prevalence across the entire sample is +5.3%) This is an interesting finding in its own right. It suggests that communities may have an inherent capacity (at least in the short-term) for the fraction of households that will take up formal savings, and that as usage rates near that capacity, the rate at which new people convert to formal savings technology decreases.

It also appears that distance matters in terms of the rate of conversion to formal savings use. Those communities closer to the bank-stop appear more responsive to the increased accessibility provided by the van-bank. This is not surprising. But it is also an interesting finding in its own right.

Appendix 5

Table 5.A. 1. Percentage of HHs that Received More than One Cash Gift

HH Type	C-clusters	T-clusters	TC Diff	Pctg	Signif
All HHs	7.4%	12.2%	4.8% (p=.0004)	+64%	***
VulnA	17.1%	19.0%	1.9% (p=.76)	+11%	
VulnB	13.8%	15.4%	1.6% (p=.82)	+ 12%	
VulnC	8.2%	14.0%	5.8% (p=.009)	+ 71%	***
VulnD	4.1%	9.0%	4.9% (p=.003)	+120%	***
VulnE	4.2%	8.9%	4.6% (p=.006)	+110%	***
VulnF	4.1%	9.0%	4.9% (p=.005)	+120%	***
VulnG	3.5%	5.4%	1.9% (p=.46)	+54%	

Indirect Intention to Treat (IIT) Effect on Percentage of Households in Cluster Receiving a Cash Gift: Cluster-Means Approach

Table 5.A.2. OLS Regressions on Means Approach – Correcting with Heteroskedasticity-Robust Errors

	All Household Types				Vuln HHs (G)			
	All Districts		Dedza & Mchinji		All Districts		Dedza & Mchinji	
VARIABLES	(1) Rcv Csh Gft	(2) Rcv Csh Gft	(3) Rcv Csh Gft	(4) Rcv Csh Gft	(5) Pctg G Households Rcv Csh Gft	(6) Pctg G Households Rcv Csh Gft	(7) Pctg G Households Rcv Csh Gft	(8) Pctg G Households Rcv Csh Gft
Mktg Dummy	0.0994***	0.114***	0.0996***	0.106***	0.157**	0.157**	0.181**	0.181**
	(3.15e-05)	(1.69e-05)	(0.000349)	(0.000923)	(0.0370)	(0.0300)	(0.0385)	(0.0304)
Constant	0.100	0.0930	0.100	0.0972	-0.0785	-0.0785	-0.0904	-0.0904
	(0.326)	(0.397)	(0.333)	(0.362)	(0.402)	(0.382)	(0.405)	(0.382)
Pair Fxd Effcts	YES	YES	YES	YES	YES	YES	YES	YES
Robust SEs	YES	YES	YES	YES	YES	YES	YES	YES
Observations	112	96	85	72	99	91	76	69
R-squared	0.582	0.555	0.602	0.504	0.570	0.558	0.596	0.580

Robust pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In Table 5.A.2, the results are shown for a set of regressions analogous to the regressions reported in Table 26 of Chapter 5, but in a manner that, though inferior, is directly comparable to the ITE analysis in section 5.3 of chapter 5. Instead of using the household as the unit of observation, these regressions take the village-cluster as the unit of observation, and uses aggregated variables from the cluster-level as the independent and dependent variables. That is, the left-hand side variable is simply the percentage of households within each cluster that received a cash gift (for columns 1-4), or the percentage of type-G households in each cluster that received a cash gift (for columns 5-8). The only difference in these regressions from those reported in Table 26 is that here the actual percentage is regressed on the treatment dummy, rather than the household-level 0/1 variable. (That is, I first calculate for each cluster the mean value for the 0-1 household indicator for receipt of cash gift, then regress that on the marketing dummy for that village cluster).

The primary difference is that the regressions reported in Table 5.A.2 use heteroskedasticity-robust sandwich errors to estimate the standard errors, instead of weighting each cluster-observation by the number of observations they contribute. The latter approach is more efficient, which should make the results reported in Table 26 more accurate than those in Table 5.A.2. The reason I show the results in Table 5.A.2 here is that I am constrained to use this approach in the instrumental variables regressions to estimate the full ITE in section 5.3 of Chapter 5.

The differences between the coefficient estimates reported in Table 5.A.2 and those in Table 26 are negligible. The main difference is that the significance has dropped, so that the IIT impact of the marketing treatment on percentage of

vulnerable households receiving cash gifts is now significant at the .05-level, rather than the .01-level. A Probit regression would not make sense in the context of using the means from each EA (since it's not a 0/1 variable, but rather a continuous variable -- it's the percentage). So I do not compare OLS to a model that would force predicted outcomes to remain in the (0,1) range.

Table 5.A.3. Linear Regression: Indirect Intention to Treat Effect on Percentage of Households in Cluster Receiving an In-Kind Gift

	All Household Types				Vuln HHs (G)			
	All Districts		Dedza & Mchinji		All Districts		Dedza & Mchinji	
VARIABLES	(1) All Distance Rcvd Kind-Gift	(2) 3+km Rcvd Kind-Gift	(3) All Distance Rcvd Kind-Gift	(4) 3+km Rcvd Kind-Gift	(5) All Distance Rcvd Kind-Gift	(6) 3+km Rcvd Kind-Gift	(7) All Dist Rcvd Kind-Gift	(8) 3+km Rcvd Kind-Gift
Mktg Dummy	0.0291	0.0239	0.0146	-0.00250	0.0891	0.0891	0.0599	0.0599
	(0.105)	(0.210)	(0.473)	(0.907)	(0.103)	(0.100)	(0.325)	(0.320)
Constant	0.137***	0.141***	0.148***	0.162***	-0.0594	-0.0594	-0.0399	-0.0399
	(4.63e-08)	(2.11e-08)	(2.42e-09)	(0)	(0.220)	(0.216)	(0.385)	(0.380)
Pair Fxd Effcts	YES	YES	YES	YES	YES	YES	YES	YES
EA-Clust SEs	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,982	1,744	1,509	1,320	271	250	205	187
R-squared	0.046	0.048	0.046	0.046	0.247	0.227	0.266	0.237

Table 5.A.4. Linear Regression: Indirect Intention to Treat Effect on Percentage of Households in Cluster Receiving Help Paying Fees

	All Household Types				Vuln HHs (G)			
	All Districts		Dedza & Mchinji		All Districts		Dedza & Mchinji	
VARIABLES	(1) All Distance Rcvd Help Fees	(2) 3+km Rcvd Help Fees	(3) All Distance Rcvd Help Fees	(4) 3+km Rcvd Help Fees	(5) All Distance Rcvd Help Fees	(6) 3+km Rcvd Help Fees	(7) All Dist Rcvd Help Fees	(8) 3+km Rcvd Help Fees
Mktg Dummy	0.0229*	0.0247*	0.0150	0.0168	0.0449	0.0449	0.0105	0.0105
	(0.0565)	(0.0556)	(0.173)	(0.144)	(0.206)	(0.202)	(0.742)	(0.740)
Constant	0.0216*	0.0202*	0.0280**	0.0266**	-0.0299	-0.0299	-0.00699	-0.00699
	(0.0608)	(0.0894)	(0.0219)	(0.0297)	(0.295)	(0.291)	(0.746)	(0.744)
Pair Fxd Effcts	YES	YES	YES	YES	YES	YES	YES	YES
EA-Clust SEs	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,992	1,754	1,519	1,330	271	250	205	187
R-squared	0.070	0.077	0.065	0.070	0.300	0.299	0.327	0.329

Table 5.A.5. Effect of Marketing on Proportion of HHs with Formal Savings Accounts – Restricted to EAs with Category-G HHs

	All Districts						Dedza & Mchinji					
	All Distances			3+km			All Distances			3+km		
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	FSAV in 08	FSAV in 10	Chg in FSAV	FSAV in 08	FSAV in 10	Chg in FSAV	FSAV in 08	FSAV in 10	Chg in FSAV	FSAV in 08	FSAV in 10	Chg in FSAV
Mktg Dummy	0.0315**	0.0535***	0.0240	0.0315**	0.0535***	0.0240	0.00732	0.0420**	0.0356**	0.00732	0.0420**	0.0356**
	(0.0314)	(0.00502)	(0.129)	(0.0315)	(0.00508)	(0.129)	(0.609)	(0.0135)	(0.0411)	(0.609)	(0.0136)	(0.0414)
Constant	0.0948	0.0772***	-0.0192	0.0948	0.0772***	-0.0192	0.114	0.0864***	-0.0285	0.114	0.0864***	-0.0285
	(0.296)	(0.00536)	(0.865)	(0.296)	(0.00542)	(0.865)	(0.184)	(0.00358)	(0.797)	(0.184)	(0.00366)	(0.797)
Observations	1,815	1,814	1,811	1,678	1,677	1,674	1,412	1,410	1,408	1,291	1,289	1,287
R-squared	0.104	0.109	0.041	0.103	0.110	0.038	0.070	0.086	0.044	0.063	0.083	0.040

Cluster-Robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 5.A.5 reports results on the marketing's effect on formal savings prevalence in the slightly smaller sample that includes only those clusters which contain category-G households. As Table 5.A.5 shows, in all samples, the instrument has a highly significant effect on the percentage of households in the village with formal savings in 2010 (regardless of distance threshold or district). For the second stage of the cross-sectional IV regressions to estimate the indirect effect of formal savings, this is technically all that matters. However, since I do have both years of data for the financial services variable, a more strict test on the instrument's strength in inducing the boost in local formal savings prevalence is looking at the two year change induced by the information campaign. Here, we see that the instrument is not quite significant at conventional levels when including all districts, but is significant at the .05 level when restricting to the two districts furthest from the capital and the bank headquarters. (As discussed in section 4.5 of chapter 4, note that this lack of significance in the change in prevalence of formal savings may be due to the fact that the correct specification for the change in formal savings use actually requires including the baseline level of formal savings use as a determinant.)

The regressions reported in Table 5.A.5 are not of course the exact regressions I run in the first stage of my two-stage least squares estimations described above. For the regressions in Table 5.A.5, the unit of observation is the household (with dependent variable a 0-1 indicator for formal savings), rather than the village-cluster (with dependent variable the mean of the 0-1 values within the cluster). The reason I show the household-based regression is that it should be more efficient, and provide

the most accurate picture of the true effects of the encouragement on local financial services use.

Table 5.A.6. Effect of Marketing on Proportion of HHs with Current Formal Credit – Restricted to Clusters with Category-G HHs

	All Districts						Dedza & Mchinji					
	All Distances			3+km			All Distances			3+km		
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	FCRED in 08	FCRED in 10	Chg in FCRED	FCRED in 08	FCRED in 10	Chg in FCRED	FCRED in 08	FCRED in 10	Chg in FCRED	FCRED in 08	FCRED in 10	Chg in FCRED
Mktg Dummy	-0.00706	-0.0130	-0.00699	-0.00706	-0.0130	-0.00699	-0.00848	-0.00586	0.00130	-0.00848	-0.00586	0.00130
	(0.431)	(0.185)	(0.521)	(0.431)	(0.185)	(0.521)	(0.389)	(0.575)	(0.919)	(0.389)	(0.575)	(0.919)
Constant	0.126***	0.135***	0.00553	0.126***	0.135***	0.00553	0.127***	0.130***	-0.00103	0.127***	0.130***	-0.00103
	(3.35e-07)	(5.85e-09)	(0.529)	(3.35e-07)	(5.85e-09)	(0.529)	(4.64e-07)	(3.23e-07)	(0.919)	(4.64e-07)	(3.23e-07)	(0.919)
Obsv.	1,813	1,796	1,791	1,813	1,796	1,791	1,409	1,397	1,392	1,409	1,397	1,392
R-squared	0.080	0.045	0.049	0.080	0.045	0.049	0.088	0.045	0.054	0.088	0.045	0.054

Cluster-Robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Appendix 6

Table 6.A. 1. Change in Percentage Vulnerable HHs Receiving Cash Help for Shocks

	All Districts		Dedza & Mchinji	
	(1)	(2)	(3)	(4)
	All Distances	3+ km	All Distances	3+ km
VARIABLES	ΔCash Help	ΔCash Help	ΔCash Help	ΔCash Help
assign_10	0.0315	0.0275	0.0655*	0.0627*
	(0.381)	(0.438)	(0.0665)	(0.0740)
chgdate	0.000689	0.00205	-0.00193	-0.00110
	(0.809)	(0.452)	(0.523)	(0.703)
Constant	-0.0150	-0.000535	-0.0604	-0.0513
	(0.663)	(0.987)	(0.147)	(0.200)
Pair Fixed Effects	Y	Y	Y	Y
Observations	272	251	206	188
R-squared	0.303	0.306	0.319	0.319

Cluster-Robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Appendix 7

PROMOTION ASSISTANTS TRAINING MANUAL

AND

BRANCH MANANGERS' RESPONSIBILITIES AND TARGETS

Prepared By: Transformation And Marketing Department
Opportunity Bank

February 2008

TABLE OF CONTENTS

1. PERSONAL SELLING

1.1 Personal Selling

Personal selling generally consists of presentation of products and services and associated persuasive communication to potential customers. In financial services, however it is also concerned with the giving of advice.

1.2 Preparation

Adequate preparation is the key to effective selling and efficient use of sales time. The sales force personifies the bank and its approach, and quality of preparation is critical to the success of a sales visit. Knowledge of the bank and its products influences customers' image of the bank. The right approach needs to be determined, planned and rehearsed.

1.3 AIDA

The sales sequence is designed to build an **A**wareness and take prospects through an **I**nterest to **D**esire and **A**ction **(AIDA).** Sales objectives need to be developed in the context of this sales process.

1.4 Sales Interview

The sales interview may last only minutes, but it is a very intense interaction where gestures and expressions are as important as the actual words spoken. The seller must be tactful, empathise with the customer and be aware of the hidden clues in both what is said, and the body language of how it is said.

1.5 Flexibility

Although a Promotion Assistant will have a planned approach to the sales meeting, this should not be too structured. It must be flexible enough to allow the development of issues and concerns relevant to the prospective customer and to allow the approach to be modified to meet the needs and personalities of different types of prospective customers.

1.6 Buying Decision

The prospective customer may decide to buy at any point in the sequence. A Promotion Assistant must be ever alert for buying signals and be prepared to attempt a trail close of sale. Experience and training are both important in helping the seller develop and perfect the various techniques and approaches used in the sales sequence. These techniques should not be seen as mechanical and routine but considered as part of the complex task of motivation and persuasion.

1.7 Building Long-Term Customer Relationship

The sales activity does not end with the signing up of an order. Maintaining customer goodwill and loyalty is important to the future of any business. Developing long-term relationships with prospective customers is likely to characterise the sales activity of the future.

1.8 Self-motivation

Self-motivation is very important for any Bank Representative. He or she needs to display enthusiasm, intelligence, reliability, commitment, initiative and creativity, self-confidence, courtesy and sensitivity. A wide variety of targets may also be used both for motivation and control purposes. Training is essential both to aid motivation and to maximise sales performance.

1.9 Kasupe Deposit Account

Kasupe Deposit Account is a unique product that has been designed for people who reside in rural and semi-urban areas. The majority of people who live in these areas usually have one big income that normally comes at the same time each year. This is the reason the Bank has come up with features that customers demanded during the Micro Savings Survey that was conducted August to September 2006. Kasupe Deposit Accounts most important selling points are:

Monthly Administrative oo Ledger Fee	MK0.00
Over the Counter Withdrawal Fee	MK25.00 per Withdrawal
ATM Withdraw Transaction Charge	MK25.00 per Transaction
Interest Capitalisation Frequency	Monthly
Minimum opening Balance	MK500.00
Smartcard Charge	MK400.00

1.10 Smartcard Price Reduction

Opportunity Bank is pleased to announce the reduction of the smartcard price from **MK1,000.00** to **MK400.00** with effect from 25th February 2008. This special offer runs from 25th February to 30 June 2008 and is part of the bank's Five Years Celebration of its provision of service in Malawi.

Opportunity Bank also extends the same offer to all customers who opened new accounts from 2nd January to 23rd February 2008 by refunding MK600.00 on the price they paid for smartcards.

Those opening Savings Accounts or Kasupe Deposit Accounts during the celebration period will pay MK400.00 for smartcard and MK500 as account opening minimum balance.

2. SELLING APPROACH

2.1 Banking Business

In banking business, sales personnel serve as the link between the bank and its customers. Designing a sales force involves decisions regarding objectives, strategy, and structure. Once these have been accomplished, a manager must manage its sales representatives by training them, supervising them, motivating them and evaluating them.

It has been said that in business there are three parts to every sale, i.e. the part performed by the bank, another part performed by the salesperson and yet another part performed by the customer. Both the salesperson and the bank must contribute proficiently in creating, managing, and maintaining a successful sales force.

2.2 Sales Closure

Finding new prospects and explaining features and benefits of bank's products rests with salespeople, the Promotion Assistants. It can be a very difficult task for a Promotion Assistant who isn't sales-oriented, particularly when it comes to the time of closing the sale. Although it may be difficult, closing the sale doesn't have to be painful or bewildering experience. Here are a few basic pointers to help demystify this potentially awkward process:

- **Close from the beginning**

  Explain your agenda. Tell the prospect exactly what you're selling and how it can benefit their business. Being up front about your intentions promotes an honest, mutually respectful, and rewarding discussion that is paving the way for a smooth close.

- **Learn to recognise potential customers readiness to buy**

  A customer might indicate they're ready by asking questions about the product or the buying process: "How long would delivery take?" or "What does that mean?" Other signs include complaints about previous offers and interested comments such as "Really?" or "Good idea."

3. SELLING FLOWCHART

1. Greet & Introduce yourself as Opportunity Bank Representative

2. Introduce purpose of visit

3. Present Bank's Vision, Mission, Core Values and Customers Bill of Rights

4. Announce free Processing of Tobacco Proceeds in 2008

5. Two days after sell of Tobacco

6. Introduce Kasupe Deposit Account

7. Announce celebration of five years of providing banking service in Malawi and changing banking landscape

8. Announce Reduction of Smartcard Price from MK1,000.00 To K400.00

9. Introduce Fixed Deposits

10. Introduce Mphamvu Loans

11. Announce Fixed Deposit Promotion

Requirements: MK30,000.00 Three Months Fixed Deposit Contract.

Prizes: 1st prize – 1 winner and gets 10 bags of fertilizer
2nd prizes – 10 winners of 5 bags of fertilizer each
3rd prizes – 50 winners of 2 bags of fertilizer each

11. **Finally**, ask if they are going to sell tobacco through our Kasupe Deposit Account. If the answer is yes, thank them and give them the card and explain what they should do. Once more thank them for giving you an opportunity to explain everything about Opportunity Bank.

4. FREQUENTLY ASKED QUESTIONS ON DEPOSITS

For many people, it sure feels like there's just not enough money going around, but one way to change things is to curb spending habits and learn how to save. There are a lot of people who still hide their cash in pillows or tins in their houses. If people do not take money to the bank, with cash lying around like that, then there's quite a temptation to make use of it somehow. If one leaves the extra cash in an accessible place, one may be more likely to exchange it for Cassava or pumpkin leaves.

4.1 WHY SHOULD YOU SAVE?

- **To reach financial independence.**
  This is the ultimate reason to save because what money can buy, other than the requisite material goods and services, is freedom and independence to do as you wish with your time.

- **To be prepared and anticipate the twists and turns of outrageous fortune.**
  This is what an emergency fund is all about: don't get caught unprepared!

- **To realize a known goal somewhere in the horizon.**
  If you know you'll be facing a big expenditure down the road, then get ready for it, e.g., weddings, school fees, hospitalisations etc.

- **To achieve your dreams.**
  This is a warm and fuzzy answer. Many times it's something luxurious, like a 50 inch flat screen or a heated pool or a sailboat you always wanted. But it could also be something as prudent as eventually just having enough to deem yourself ready for the investing or even the business world.

- **To grab on to the next big opportunity.**
  When the time is ripe, you better be there with the cash. Just the right moment can make all the difference and determine just how many 0's there should be at the end of your money totals.

- **To prove something to yourself.**
  I believe in measuring successes no matter how small, since it really helps with building confidence. Conquering the challenge of living within one's means is sure one of those measures. Start saving and bask in the light of a personal victory!

4.2 Q: WHAT ARE THE BEST PRACTICES FOR SAVING?

A: Here's how to save for the near term:

- **Know how much money you'd like to put away.**
  You can start by knowing how much you can afford to sock away. What is your discretionary income like? Here's my general rule: take out 10% of your gross

income and stuff it in your savings fund. Better yet, aim for 15% if you can. Once it reaches a certain amount to address short term goals, you can then divert the 10-15% going forward into investments.

- **Choose the type of vehicle to place your money in.**
  Find out where you'd like to park your money in. There are many choices which I discuss further below but the answer for you lies in how much certain characteristics matter to you, such as liquidity and convenience, rate of return and stability.

- **Compare financial offerings across the board.**
  - available interest rates
  - fees for maintaining such an account
  - minimum investment required to open an account
  - any other terms governing the account such as: how liquid will the funds be and are there penalties for withdrawal

- **Apply will power. Lots of it.**
  Just like weight control, one of the best ways to stop spending money and finding enough to save is to go cold turkey. I found that by distracting myself and replacing my shopping hobbies (or habits?) with some other activity, I've managed to ignore the lovely wares that come by my house every month!

- **Stop buying impulsively.**
  Before buying an item, give it a few days. If you are a fairly busy person or are trying to be one, then after a few days, chances are you will no longer remember the nonessential item that caught your eye earlier.

- **Pay yourself first by automating your savings process.**
  What you don't see won't tempt you. Set up an automated savings programme through Opportunity Bank that will automatically suck your money into a savings or money market account or other short term fund.

- **Check up on how much you've got and keep track of your savings.**
  There are many ways to address your savings: you can earmark them for short, medium or long term goals. Keep an eye on how much you are saving so that once you've got enough in short term instruments, you can move on to the next step and invest the rest for growth or income, and be able to take a bit more risk.

- **Where Should I Put My Short Term Savings?**
  Before thinking about investing, make sure you have funds parked in safe accounts to handle short term needs.

- **Fixed Deposit**
  These are deposit (Investment) instruments with specific maturities that vary in length of time period; At Opportunity Bank, there are: 1 month, 2 months, 3 months, 6 months, 9 months and12 months contracts. Money is very safe in Fixed Deposit Contracts, the more the contract rolls over at maturity, the higher the guaranteed rate of return.

5. FREQUENTLY ASKED QUESTIONS ON LOANS

5.1 Interest Rates and Mphamvu Loans

5.1.1 Q. WHAT ARE THE INTEREST RATES ON LOANS OPPORTUNITY BANK OFFERS?

The ruling interest rates since 1st February 2008.

Kasupe Deposit Accounts	**2%**
Savings Deposits	**5%**
Fixed Deposits	
1 Month Fixed Deposit	**5%**
2 Months Fixed Deposit	**6%**
3 Months Fixed Deposit	**5.5%**
6 Months Fixed Deposit	**4%**
9 Months Fixed Deposit	**Negotiable**
12 Months Fixed Deposit	**Negotiable**
Premium Investment Accounts	
7 Days Premium Investment Account	**5%**
21 Days Premium Investment Account	**5.5%**
BASE LENDING RATE	**20%**
Mphamvu Loans	**3.5% above base**
Payroll loans	**9% above base**

MICRO LOANS (MONTHLY RATES)

Premium Trust Banks	**4.02%**
Monthly Premium Trust Banks	**2.92%**
Individual Micro Credit1	**3.75%**
Individual Micro Credit 2	**2.27%**
Individual Micro Credit 3	**1.95%**

5.1.2 Q: WHAT IS A MPHAMVU LOAN?

A: Mphamvu loans are loans that are offered to customers who have either a savings account, Kasupe Deposit Account or Fixed Deposit in Opportunity Bank and want to maintain their investments.

5.1.3 Q: HOW LONG CAN A CUSTOMER REPAY HIS/HER MPHAMVU LOAN?

A: A customer can choose the repayment terms that suit them. They can either:

- spread their repayments over any period up to 12 months or
- make one bullet or balloon repayment after an agreed period particularly if funds will be used for farming.

5.1.4 Q: HOW MUCH WILL MY MONTHLY REPAYMENTS BE? OR WHAT ARE THEIR ANY REPAYMENT OPTIONS?

A: It really depends on how long a customer chooses to repay back the loan. A customer can choose to repay monthly or make a balloon or bullet payment.

5.1.5 Q: CAN I CHOOSE A DATE FOR MAKING MY REPAYMENTS?

A: Yes, you can choose whatever repayment date you like.

5.1.6 Q: HOW DO I APPLY? OR HOW CAN ONE GET A MPHAMVU LOAN?

A: A customer can drop in any branch of Opportunity Bank during banking hours and operations staff will be delighted to help the customer choose the loan product that suits the customer best. Applicants are required to complete an application form found at the enquiry desk in the branch. Once the form is completed the applicant will be taken to Branch Loans Administrator who will ask the applicant to sign a loan agreement.

5.1.7 Q: HOW QUICKLY WILL I GET MY MONEY?

A: The funds will be transferred into your chosen bank account within 2 hours of your signing of the loan agreement. An electronic payment is sent direct to your bank account and the money can be withdrawn as soon as the funds reach your account.

5.1.8 Q: HOW LONG WILL IT TAKE TO GET A DECISION ON MY LOAN?

A: As an Opportunity Bank customer, the bank gives an answer a decision within minutes, and in all other cases, the likely turnaround period is matter of minutes.

5.1.9 Q: DO I NEED A SAVINGS OR A GUARANTOR TO TAKE OUT A LOAN?

A: As a customer, you need to have either a Savings or Kasupe Deposit Account for the loan to be disbursed to. As long as you have a Fixed Deposit, the bank will organise a loan to suit your needs.

5.1.10 Q: ARE THERE ANY EXTRA CHARGES?

A: Yes, there is an arrangement fee of 2.5% for the loan amount which is paid upfront and interest that will be charged to the loan at the end of each month.

5.1.11 Q: HOW MUCH CAN I BORROW?

A: The amount a customer can borrow is limited by the Fixed Deposit amount held in the bank. For example, if a customer has MK10,000.00, can borrow up to MK9,000.00.

5.1.12 Q: WHAT HAPPENS WHEN MY LOAN IS DUE?

A: It has to be repaid, however, if there are some issues, the customer must notify the branch manager at least 72 hours. Failure to do so, the bank will assume that the customer wants to use the Fixed Deposit to repay the loan.

5.1.13 Q: HOW CAN A CUSTOMER CHANGE THE LOAN VALUE DATE?

A: A customer must contact the branch manager at least 72 hours before the repayment date is due.

5.1.14 Q: HOW MANY TIMES CAN A CUSTOMER BE ALLOWED TO EXTEND THE MPHAMVU LOAN?

A: The bank allows the customer to extend the Mphamvu loan as many times as possible as long as the Fixed Deposit covers the loan amount and interest.

5.1.15 Q: WHEN WILL THE LOAN REPAYMENT HIT MY DEPOSIT ACCOUNT?

A: The loan repayment amount will be debited to the Savings or Kasupe account on the agreed repayment due date.

5.1.16 Q: WHAT ARE MY REPAYMENT OPTIONS?

A: A customer has two repayment options to choose from:

- Elect to repay equal amounts every month on a particular date; or
- Elect to repay once at an agreed date.

5.1.17 Q: WHAT HAPPENS IF THE CUSTOMER DOES NOT MAKE A REPAYMENT ON THE DUE DATE?

A: If customer fails to make a repay on the agreed date, the bank will use the Fixed Deposit pledged to repay the loan.

5.1.18 Q: ONCE THE CUSTOMER PAYS OFF THE CURRENT LOAN, HOW LONG WOULD IT TAKE TO ACCESS A RE-loan?

A: On the same day the other loan is fully repaid.

5.1.19 Q: WHAT IS REQUIRED TO RECEIVE A RE-LOAN?

A: The customer has to see our Loan Administration Officer at any of Opportunity Bank's branch.

5.2 Other Types of Loans

5.2.1 Small and Medium Enterprises Loans

These are small to medium business loans that Opportunity Bank provides to established small to medium entrepreneurial persons operating established businesses. Clients in this category provide various types of collateral and the loans range from MK600,000 to MK1,500,000. Repayments range from 4 months to 12 months.

5.2.2 Corporate Loans

These are large business loans that Opportunity Bank provides to established businesses. Clients in this category provide various types of collateral and the loans range from MK1,500,000.00 to several millions. Repayments range from 4 months to 12 months.

5.2.3 Micro Credit

5.2.3.1 Q: WHAT IS MICRO ENTERPRISE DEVELOPMENT?

A: Micro enterprise development is a programme that provides micro loans to marginalised and under-served entrepreneurs along with basic business training, mentoring, financial planning and leadership development. It also includes financial services such as savings and insurance. Opportunity Bank uses Premium Trust Banks in extending its services to micro entrepreneurs who are asked to form groups and the membership should between 7 and 10 in urban and Semi-urban and between 10 and 15 in rural areas.

5.2.3.2 Q: CAN OPPORTUNITY BANK ASSIST PEOPLE IN DEEP POVERTY WITH LOANS?

A: Opportunity Bank helps people that are in deep poverty but are doing some businesses to improve their livelihood so as to meet their families' basic needs.

5.2.3.3 Q. WHAT IS A PREMIUM TRUST BANK?

A: A Premium Trust Bank is a group of 7 to 10 poor entrepreneurs in urban areas and 10 to 15 in rural areas, who guarantee each other's loans so that they can start small businesses and support their families through the loans.

5.2.3.4 WHAT KIND OF BUSINESSES DO OUR CLIENTS OPERATE?

A: They operate very small businesses in the informal sector-food preparation, sewing, knitting, weaving, and basket making, for example. Other popular activities are retail businesses, where clients buy and resell goods like fruit, vegetables, clothing, soap, and hairbrushes. Some are farmers raising chicken, pigs, and fish.

5.2.3.5 Q: WHAT TYPE OF LOANS DOES OPPORTNUNITY BANK GIVE TO ITS CLIENTS?

A: Opportunity Bank provides several types of loans to different categories of customers as follows:

- **Micro Credit**
  Micro credit is a small business loan that Opportunity Bank provides to minor entrepreneurial persons operating petty businesses that are not recognised and served by main stream banks because of her or his poverty and lack of collateral. Customers are put in groups of between 7 and 10 in urban and semi-urban and between 10 and 15 in rural areas and their solidarity acts as their collateral. The loans range from MK10,000 to MK150,000. Repayments range from 4 months to 12 months.

- **Individual Micro Credit**
  Individual Micro credit is a small business loan that Opportunity Bank provides to established minor entrepreneurial persons operating petty businesses that are not recognised and served by main stream banks because of the small size of the businesses. Clients in this category provide collateral and the loans range from MK30,00 to MK600,000. Repayments range from 4 months to 12 months.

5.2.3.6 Q: HOW MANY CLIENTS DO YOU SERVE?

A: We currently serve more than 130,000 clients.

5.2.3.7 DO YOUR CLIENTS HAVE A GOOD RECORD OF REPAYING THEIR LOANS?

A: Yes. Our clients have maintained an average repayment rate of 98 percent or better.

5.2.3.8 Q: DO YOU CHARGE INTEREST?

A: Our clients are charged commercial interest rates. This allows us to cover our costs and sustain our operations, ensuring that the loan capital is maintained to benefit the community for generations. Experience with lending to the economically underserved has shown that they can afford market interest rates when other lending terms are favourable. Moreover in the past, their only other means of obtaining credit was through loan sharks, who may charge as much as 500-1000 percent annual interest rates.

5.2.3.9 Q: CAN I ACCESS MY CASH FROM ANY OTHER PLACE OTHER THAN OIBM BRANCH NETWORK?

A: Yes through ATMs that accept our smartcards are installed at Malawi Savings Bank (MSB), Nedbank, and INDEbank.

5.2.3.10 Q: WHAT HAPPENS TO MY MONEY IN THE SMARTCARD WHEN I LOSE IT?

A: Electronic money in the smartcard is never lost. Once the card is replaced the money will be automatically transferred to the new card.

5.2.3.11 Q: IS IT POSSIBLE FOR ME TO SAVE MONEY WITH OIBM WHEN I ALREADY HAVE A SMARTCARD?

A: Yes you can. You can open an account at OIBM and use your existing smartcard to link to the new account.

5.2.3.12 Q: Q. CAN I GET A BUSINESS LOAN TO:

buy the equipment and inventory?
pay overhead costs such as rent, salaries, etc.?
have a large enough reserve fund for extra working capital for taking advantage of "specials" and for surviving temporary setbacks?

A. Yes

5.2.3.13 Q: HOW DO I KNOW HOW MUCH FUNDING I NEED?

A. It is essential to know what the initial costs of land, building, fixture, machinery, supplies, vehicles, pre-opening expenses and opening inventory and daily operating costs, rising inventories, payroll, rent, taxes, advertising, accounts receivable, etc. will add up to.

You must prepare a cash flow forecast, which will give you a reasonable estimate of your cash requirements for the first 12 months. Some instructions and sample forms on preparing cash flow forecasts are available and the loans officer will assist you to prepare at no cost.

5.2.3.14 Q: Q. WHAT ARE THE DIFFERENCES BETWEEN LONG TERM AND SHORT TERM FINANCING?

A. Long term financing is used to buy fixed assets such as buildings, machinery and fixtures and is paid back in equal monthly instalments and is repaid within 36 months.

Short term financing is used to pay for current assets such as inventory, accounts receivable and other working capital requirements and is repaid within 12 months.

Note: It is easier to borrow money by pledging fixed assets, so don't pull all your equity into machinery or buildings; save it for needed working capital!

5.2.3.15 Q: WHAT DOES OPPORTUNITY BANK NEED TO KNOW ABOUT MY BUSINESS?

A. Opportunity Bank needs to know:

- that you can repay the loan out of normal business activities.
- the loan is big enough to do the job.
- cash flow projections for the first 12 months, including repayment plans.
- projected profit and loss for the first and second year.
- itemised list of stock and equipment.
- list of assets you can offer as collateral.
- short history of your business experience.
- statement of your personal net worth.

5.2.3.16 Q: WHAT IS CASH FLOW FORECASTING?

A. cash flow forecasting is your most useful tool to help ensure financial solvency. With this forecast you try to predict all the funds that you will receive and disburse, and the resulting surplus or deficit. You take into account not only the operating and capital budgets, but also the ratio of cash sales to credit sales and the paying habits of your customers. To estimate cash outflow you must also consider the promptness with which you intend to pay for your materials and merchandise.

By making a cash flow analysis you can estimate:

- How much cash will be needed to operate your business each month.
- When you will need additional short term funds from the bank.
- When you will have a surplus funds reduce your bank loans.
- This information can assist you in timing your capital expenditures more appropriately, accelerate collection of accounts receivable, ward off a cash shortage, plan short term borrowing well in advance and perhaps invest a temporary surplus.

5.2.3.17 Q: WHERE CAN I FIND A SOURCE OF FUNDS AND WHAT TYPE SHOULD I APPLY FOR?

The most common source of financing for small business is Opportunity Bank. To provide working capital, Opportunity Bank can provide short and long term loans against inventory or accounts receivable, etc. The loans are used for:

- To assist in establishing your new business
- To purchase an existing business
- To purchase new equipment
- To provide additional working capital.
- Opportunity Bank also offers a full range of banking services, including personal and business deposit and loan accounts, buying and selling of foreign exchange and letters of credit.

5.2.3.18 Q: HOW DO I BENEFIT FROM OPPORTUNITY BANK?

A. Opportunity Bank provides capacity building to its clients so that business management skills are properly developed. Experience counts heavily in planning, organising, supervision, directing, control, development and demonstrated success.

- Arrange your borrowing needs well in advance and keep time on your side. With time on your side, Opportunity Bank provides competitive terms, such as security margins, interest rates and collateral requirements.
- Risk-taking must be a calculated endeavour not a speculative gamble.
- Loan Officers will always put your loan request in writing and ask you to finalise all loan documents before making any other financial commitments.
- Keep yourself current on the prevailing lending attitudes so that you can adjust your own administration of receivables and collections accordingly.
- The only constant human element in your banking relationship is yourself.

5.2.3.19 Q: HOW DO I DEVELOP A GOOD RELATIONSHIP WITH MY BRANCH?

To develop a good bank relationship:

- Find out the services Opportunity Bank offers (location, hours, etc.).
- Give the bank representative all the information he requires for head office approval of the loan.
- Annually arrange a line of credit to meet peak requirements (but borrow only what is necessary, when necessary).
- Adjust the loan level as actual requirements change.
- Make realistic repayment commitments.
- Avoid overdrafts.
- Be prepared to provide security for the loan.

5.2.3.20 Q: WHAT ELSE DOES OPPORTUNITY BANK NEED TO KNOW FROM THE CUSTOMER?

A. Opportunity Bank will require the following information:

- Amount of loan and period for which is needed.
- Reason for the loan and a brief history of the company
- Financial statements of the business for the past two years
- Details of current financial position including specific data on:
  - Accounts receivable.
  - Accounts payable.

- Inventory.
- Fixed assets.
- Short and long term debt.
- Special accounts facts about company operations.
- Facts about management and officers.
- Details of the project to be financed.
- Cash flow statements for next 12 months (indicating operating line of credit).
- Projected financial statements (indicating present requirements).
- The security you're offering.

5.2.3.21 Q: HOW IS MY APPLICATION EVALUATED BY OPPORTUNITY BANK?

A. Your application will be evaluated on:

- Your debt paying record.
- Ratio of debt to net worth.
- Past earnings and potential future earnings of company.
- Value and condition of the collateral for security.
- Your character and credit rating.
- Your management ability.
- The fact that you have prepared a business plan.
- Opportunity Bank will accept the following as collateral:
  - Granting of a floating charge debenture.
  - Personal guarantees of officers of limited companies.
  - Co-signers or guarantors.
  - Pledging of cash surrender value of life insurance.
  - Agreement to restrict salaries, drawing and loan payment of proprietors, partners and principal shareholders.
  - Assets such as a vehicle(s), equipment, residence(s), commercial buildings.
- Restrictions imposed by Opportunity Bank on the borrower are:
  - Maintain working capital at a specified amount.
  - Furnish financial statements, monthly, quarterly or semi-annually.
  - Share structure.
  - Limit dividends.
  - Sell the company or the assets.
  - Create no new debt except as agreed.
  - Provide no guarantees on behalf of others.
  - Restrict drawings or benefits to shareholders.
- The following will serve as security for term loans:
  - Mortgage on property or chattel.
  - Floating charge debenture on other assets.
  - Personal guarantees.

5.2.3.22 Q: WHAT ARE THE DIFFERENCES BETWEEN FIXED AND VARIABLE RATE LOANS?

A:

- **Fixed Rate**
  With interest rates going down now, this is not a great time to get a fixed rate loan, but when interest rates are rising. With a fixed rate loan the repayments are worked out at the beginning and never change. That way, you can budget and know exactly how much you will pay over the term of your loan.

- **Variable Rate**
  A variable interest rate moves up and down to reflect changes in the financial market especially now when interest rates are going down.

  Changes in the rate do not affect what you pay each month, but rather how long it will take you to repay your loan. If the interest rate drops over the term of the loan, you will repay the loan sooner. If the rate increases, it may add an additional repayment or two.

  Warning: If you do not meet the repayments on your loan, your account will go into arrears. This may affect your credit rating.

5.2.3.23 Q: HOW MANY YEARS CAN I REPAY MY LOAN OVER?

A: You can choose the repayment terms that suit you. You can spread your repayments over any period up to 5 years.

5.2.3.24 Q: HOW MUCH WILL MY MONTHLY REPAYMENTS BE?

A: It really depends on how long you choose to pay back the loan. The shorter the term you choose for your loan, the higher the monthly repayments will be. The longer you take to repay, the smaller your monthly payments.

5.2.3.25 Q: WHAT ARE THE FLEXIBLE OPTIONS THAT YOU OFFER?

A: Balloon or Bulk Payment – Repay once after the sale of Agricultural produce or as agreed. Choose to pay fortnightly and monthly.

5.2.3.26 Q: CAN I CHOOSE THE DATE I MAKE MY REPAYMENTS?

A: Choose the method you find most convenient. Whichever method you select, either fortnightly or monthly and you can choose whatever repayment date you like.

5.2.3.27 Q: HOW DO I APPLY?

A: Just drop in any Opportunity Bank branch and we will be delighted to help you choose the loan product that suits you best.

5.2.3.28 Q: HOW QUICKLY WILL I GET MY MONEY?

A: The funds will be transferred into your chosen bank account within 24 hours of you receiving written confirmation from us that your loan has been accepted. An electronic payment is sent direct to your bank account and the money can be withdrawn as soon as the funds reach your account.

5.2.3.29 Q: HOW LONG WILL IT TAKE TO GET A DECISION ON MY LOAN?

A: As Opportunity Bank customer, we'll give you a decision in minutes, and in all other cases, the likely turnaround period is approximately 24 hours.

5.2.3.30 Q: DO I NEED SAVINGS OR A GUARANTOR TO TAKE OUT A LOAN?

A: You don't need have savings built up. As long as you can show that you're able to make the repayments, we'll organise a loan to suit your needs. However, we would expect you to build savings thereafter.

5.2.3.31 Q: ARE THERE ANY EXTRA CHARGES?

A: With Opportunity Bank all fees are explained to the customer by the loans officer before the loan is disbursed.

5.2.3.32 Q: WHAT DOES CREDIT INSURANCE COVER?

A: Opportunity Bank takes credit life insurance for all loans the bank offers its clients.

5.2.3.33 Q: WHAT DOES CREDIT INSURANCE NOT COVER?

A: As with all life insurance policies, there are certain circumstances it does not cover. If a client dies within 14 days of collect the loan funds, the bank expects the relatives to repay the loan.

6. SELF-ESTEEM - SELLING MPHAMVU LOANS ROLE PLAY

Method: Individual and Group Activity
Time: 10 minutes
Materials: 1 Envelope per group member.

Objectives:

- To demonstrate that all participants have creative talent.
- To stimulate individual powers of persuasion and communication.

Steps to Follow:

a) Participants are going to give a sales presentation to other participants.
b) Each participant will be given a Fixed Deposit and will have an opportunity to sell the minimum of 3 Mphamvu loans to other participants. After listening to each presentation and watching the role play, other participants will complete the evaluation form for the presenter and submit to the Facilitator. The salesperson who sells more Mphamvu Loans wins the game.
c) The forms will be analysed and the results will be given to HR for future reference.

Reflection should be based on the following questions:

- Who was the most persuasive?
- Who was the most creative? Why?
- What techniques did the successful salespersons use to make you want to obtain Mphamvu loan?
- How can you use some of the same strategies to sell more in your business?

QUESTIONS	Sub Standard	Poor	Good	Very Good	Excellent
1. How did he explain the products to customers?					
2. How persuasive was he?					
3. How creative was he?					
4. How did he go through the selling steps?					
5. How did he close the deal?					
6. Was the presenter persuasive					

7. BRANCH MANAGERS' RESPONSIBILITIES

7.1 Product Knowledge

It is the Branch Manager's responsibility to ensure that:

- All the staff including Promotion Assistants have good knowledge in all products and services the bank offers its customers.
- Product Review Training Programmes are in place at the branch and that all members of staff are taken through each and every product and service.
- Product Champions are identified to lead in training other members of staff particularly new staff.
- Promotion Assistants have strong knowledge in Bank's:
  - ❖ Vision
  - ❖ Mission
  - ❖ Core Values
  - ❖ Customers' Bill of Rights
  - ❖ Free Processing of Tobacco
  - ❖ Tobacco proceeds are credited to customers' within two days
  - ❖ Kasupe Deposit Accounts
  - ❖ Five Years Celebration and Reduction of Smartcard Price
  - ❖ Fixed Deposit Contracts
  - ❖ Fixed Deposit Promotion and all prizes
  - ❖ Mphamvu Loans

7.2 Monitoring and Supervision of Field Based Promotion Assistants

7.2.1 Reporting

Field Based Promotion Assistants (FBPAs) will report directly to the Branch Managers of their designated branches.

7.2.2 Engagement of Community Based Volunteers

Local communities will be actively involved in the Bank's promotion programme. This promotion programme can succeed only if Branch Managers engage local communities and opinion leaders in this noble programme.

7.2.3 Proposed Approaches

a) Introduction of the Field Based Promotion Assistants to communities

Branch Managers will introduce FBPA to local communities and opinion leaders such as chiefs, Agriculture Extension Officers, Head teachers of some key schools, Health Surveillance Officers, and all TAMA councillors. This would help the FBPA to gain trust and relate more easily with members of the community. It is advisable that one meeting should be organised in each area that would bring together all these leaders.

b) Use of Volunteers

- Through local leaders, Branch Managers will identity one male and one female volunteer in each target village.
- The volunteers will be provided basic training by Branch Managers in the products and services villagers are targeted to buy at this time of the year. The bank's basic information should be in the following:
  - ❖ Vision
  - ❖ Mission
  - ❖ Core Values
  - ❖ Customers' Bill of Rights
  - ❖ Free Processing of Tobacco
  - ❖ Tobacco proceeds are credited to customers' within two days
  - ❖ Kasupe Deposit Accounts
  - ❖ Five Years Celebration and Reduction of Smartcard Price
  - ❖ Fixed Deposit Contracts
  - ❖ Fixed Deposit Promotion and all prizes
  - ❖ Mphamvu Loans

- Volunteers will be assisting in mobilising people in their localities and acting as the link between the community and our FBPA.
- These volunteers will in addition be very instrumental in monitoring performance of the FBPA as well as spreading word of mouth to their neighbours.
- Branch Managers will be holding monthly meetings with all volunteers to get feedback, energise and motivate them. To motivate volunteers, the bank will pay MK1,000.00 as seating allowance whenever meetings are held.
- Volunteers will be given T-Shirts so that they are easily recognised by their communities.

c) Cards

We are preparing serialised cards that Branch Managers will give to their FBPA. The procedure is:

- FBPA will be giving such cards to prospective clients who will have shown real willingness to open Kasupe Deposit Accounts with the Bank.
- Each card will have a reference number, the branch will enter the customer name and customer identification number in the register alongside the card reference number.
- The Branch Manager will pay an extra MK500 for any extra 10 customers who have opened the accounts because of the FBPA's effort. This will be calculated only if the targeted has been exceeded and will be in the multiples of ten (10).

8. TOBACCO DEPOSITS ANNUAL TRENDS AND BRANCH TARGETS

- In 2005 we raised just over USD300,000.
- In 2006 we raised just over USD1.3 million.
- In 2007 we raised in excess of USD13 million.
- In 2008, we are targeting to raise from Tobacco Farmers alone in excess of Fifty (50) million United States Dollars as follows:

BRANCHES	NEW FARMERS	AMOUNT USD
Area 25	1,000	5,000,000
Kasungu	2,000	10,000,00
Lilongwe	1,500	7,500,000
Limbe	1,500	7,500,000
Malangalanga	1,000	5,000,000
Mponela	1,000	5,000,000
Mobile	1,000	5,000,000
Mzuzu	1,000	5,000,000
TOTAL	10,000	50,000,000

9. FIELD BASED PROMOTION ASSISTANTS BUDGET

BUDGET FOR FIELD BASED PROMOTION ASSISTANTS

Area	Quantity/ No. of Weeks	Weekly Target	Weekly Wage	Weekly Bicycle Allowance	Total cost
Mponela	16	50	1,500	500	24,000
Ntchisi	16	25	1,500	500	24,000
Dowa	16	25	1,500	500	24,000
Madisi	16	30	1,500	500	24,000
Msundwe	16	25	1,500	500	24,000
Kamwendo	16	25	1,500	500	24,000
Mchinji	16	50	1,500	500	24,000
Nkhoma	16	30	1,500	500	24,000
Chimbiya	16	25	1,500	500	24,000
Dedza	16	50	1,500	500	24,000
Malomo	16	25	1,500	500	24,000
Jenda	16	25	1,500	500	24,000
Mperembe	16	25	1,500	500	24,000
Mbalachanda	16	25	1,500	500	24,000
Enukweni	16	25	1,500	500	24,000
Santhe	16	25	1,500	500	24,000
Thondwe	16	25	1,500	500	24,000
SUB TOTAL		**510**			**408,000**
Volunteers	**Monthly Allowance**		**1,000**		

For any extra 10 customers the Field Promotion Assistant will get a bonus of MK500.00

Funding will be taken from Mphamvu Loan promotion budget line because Mphamvu Loans will be promoted along side Fixed Deposits.

ESTIMATED TOTAL PROJECT COST MK500,000.00

END

Glossary

If needed.

References

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