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**The Role of Micro-Finance for Income and
Consumption Smoothing**

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Abstract

The recent policy debate has emphasized micro-credit, but not micro-finance as one of the tools for poverty alleviation (see for example the Micro-Credit Summit in February 1997 in Washington, D.C). Improved access to credit is seen as a potent means for increasing the poor's income. The role of credit for consumption smoothing is rarely mentioned in meetings attended by staff from micro-enterprise or agricultural credit institutions, and savings services seem to be promoted simply for the sake of "mobilizing" capital, disregarding their potential role for smoothing consumption. Except for few micro-finance institutions, the role of insurance for income and consumption smoothing is completely neglected. This paper seeks to assess the role of micro-finance for income and consumption smoothing by the poor. In section 2, a conceptual framework is developed that distinguishes between credit, savings and insurance services, and identifies two principal pathways through which access to financial services can enhance income and smooth consumption. I further discuss how the demand for these services is expected to change with increasing level of poverty and risk exposure of the household or individual. In section 3, the types of risks faced by households are presented. I then highlight potential areas for product innovation by the micro-finance sector to address these risks. Section 4 discusses the potential and limits of micro-finance services in assisting households to cope with adverse shocks. This section also provides a non-exhaustive list of examples of innovations already implemented by selected micro-finance institutions that seek to address the demand for financial services for smoothing income consumption. Section 5 concludes with policy recommendations for the design and implementation of micro-finance schemes that not only respond to the income and accumulation motive of households but also to their desire to safeguard their consumption of food and other basic needs via measures of income and consumption smoothing.

1. Financial services, income and consumption smoothing¹

During the 1990s, governments, donors, private investors and foundations have increasingly funded micro-finance institutions that offer financial services to poor people. While there have been success stories, numerous failures have not made the headlines. The Consultative Group to Assist the Poorest (CGAP) estimates (cited from Murdoch, 1998, p. 26) that only about 3-5 % of micro-finance institutions (MFIs) worldwide are financially sustainable, that is they do not depend on funds provided on concessional terms for the operation and expansion of the MFI. Another 7-10% are expected to become financially sustainable within ten years. The other 90 % of MFIs will either fold or continue requiring subsidies.

Two major schools of thoughts contribute to, nurture and influence this movement. The first one may be termed the poverty lending approach and the second one the financial systems approach (Gulli, 1998). The poverty lending approach can be associated with the spirit of the declaration of the Micro-Credit Summit that was held in Washington, D.C. in February 1997. During the summit, the role of micro-credit for poor entrepreneurs, in particular for women, for alleviating poverty was emphasized. The summits' participants called for increasing the number of households having access to micro-credit from less than ten million of households in 1997 to 100 million households by 2005. The proponents of this school claim that micro-credit can alleviate poverty. Because of this, subsidies for institutional innovation and expansion are justified. The second school focuses on sustainably providing financial services to low-income clientele. Proponents of this school argue that there is no justification for subsidies as future outreach critically hinges upon achieving financial sustainability of the micro-finance institution (MFI).

Both schools have pitfalls and strengths, and combining their strengths in a more balanced view may eventually improve the implementation of policies and projects. Two of the pitfalls of the first school appear to be its overarching emphasis on credit rather than on savings, and its implicit assumption that spending donor funds and tax revenues on micro-credit yields higher social benefits-cost-ratios than any other alternative policy interventions at least until the 100 million households have been reached. In the IFPRI country study samples, in roughly half of survey households at least one adult household member borrows during the recall period of one to two years. Yet, almost all households were found to save (at least seasonally) during this period (Zeller and Sharma, 1998). As I argue later, it is fair to say that all poor households, enter into various forms of informal self-insurance or co-insurance arrangements. Moreover, regarding the social benefits argument, not one research study to my knowledge has so far measured the social benefits and social costs of public support to micro-credit institutions. IFPRI's own empirical studies fell also short of that ambitious objective, and limited its analysis to measuring the private benefits of credit access for households. In four out of five country studies, significant and sizable benefits of credit access on income and household food security were found (Zeller and Sharma, 1998). The major difficulty of moving towards a full cost-benefit-analysis of micro-finance is that micro-credit is not a single service that can be seen in vacuum by applying a *ceteris-paribus*-type of analysis, but its social return must be evaluated in conjunction with the variation of other complementary services provided or supported by the state, such as agricultural research, infrastructure, investments in human capital and in social services. Indeed, a number of studies indicate that the household-level returns to credit access (see for example the review by Sharma and Schrieder, 1998) as well as loan repayment (Zeller, 1998) are higher if access to input markets is improved. On the other hand, if access to financial markets is improved, for example through greater

¹ I thank Manohar Sharma for valuable comments.

competition of micro-finance institutions, Sharma and Zeller (1997), as well as Wenner (1995) find that delinquency rates increase as households have more or better alternatives to borrow and are less likely to value any specific MFI. A satisfactory measurement of the potential synergies among and trade-offs between competing policy instruments imposes very steep requirements on data, mainly because of the need to correct for selection biases in placement of micro-finance and complementary programs over space and time as well as for household's and individuals' participation in such programs. Moreover, the fungibility of financial resources within the household leads to significant problems of evaluation that have already been pointed out by von Pischke and Adams (1980). An adequate treatment of these three main problems of impact assessment requires large, carefully stratified panel data sets.

The second school seems to not appreciate the argument of welfare economists that a micro-finance institution is economically sustainable if the social benefits they generate outweigh their social costs (see Zeller et al, 1997 on the definition of the term of economic sustainability versus financial sustainability of an institution). In other words, when an MFI is economically sustainable, the state can subsidize the MFI up to the amount of the difference between social benefits and social costs of the MFI, and thereby eventually make the MFI financially sustainable. Such a win-win situation does not only occur for some of the flagships of the poverty lending approach, such as Association for Social Advancement (ASA), BRAC and Grameen Bank in Bangladesh, but most likely also for many other public investments in MFIs in other countries, too.

A general critique that applies to both schools is that they hardly mention the role of micro-finance for household risk-coping. They mainly emphasize the role of credit for productive investment and income generation in farm or non-farm micro-enterprises and the role of savings for capital mobilization and long-term growth objectives. While saving was recognized by Robert Vogel as the forgotten half of finance in the 1980s, insurance can be termed its forgotten third during the 1990s (Zeller et al, 1997).

Many households borrow, more do save, and all insure. Poor, food-insecure households in developing countries seek to avoid the risk of falling below a minimum level of consumption of food and other basic goods that would threaten their livelihood or even survival. In general, two stages of risk-coping can be differentiated. These are termed income smoothing and consumption smoothing: "First, households can smooth income; this is most often achieved by making conservative production or employment choices and diversifying economic activities. In this way, households take steps to protect themselves from adverse income shocks before they occur. Second, households can smooth consumption by borrowing and saving, adjusting labor supply, and employing formal and informal insurance arrangements. These mechanisms take force after shocks occur and help insulate consumption patterns from income variability" (Murdoch, 1995).

This paper is about exploring the role of micro-finance for income and consumption smoothing. In a nutshell, improved access to financial services can have two principal effects on household outcomes. First, it can raise the expected value of income and therefore of consumption and future investment and asset accumulation. This is the traditional and often sole argument for provision of services by micro-finance institutions. Second, it can decrease the variances of income and consumption. It is the second effect that is relevant for the subject of the paper. For the food-insecure poor, it is particularly important to reduce the down-side risk of falling below minimum levels of disposable income for consumption of food and other basic needs. Therefore, the poor tend to value financial services relatively more that address the risk-coping motive while the wealthy can afford to demand more of financial services that generate income and therefore accumulate assets. For example, while the rich and well-cushioned in developed countries buy

stocks, the middle- and lower-income families prefer to hold more certificate of deposits, and the poor keep their money in a checking account or under the pillow. Similar behavior, albeit using different financial products, including a myriad of informal financial substitutes, can be observed among the wealthy and poor in developing countries.

This paper seeks to assess the role of micro-finance for income and consumption smoothing by the poor. The principal policy implication of this paper is that the role of micro-finance for risk-coping mechanisms is not well recognized, and therefore underutilized in policy and micro-finance practice. While it is admittedly more difficult to offer savings and insurance services than credit, recent product innovations by a few micro-finance institutions suggest that there is room for better exploiting this potential. In section 2, a conceptual framework is developed that distinguishes between credit, savings and insurance services, and identifies two principal pathways through which access to financial services can enhance income and smooth consumption. I further discuss how the demand for these services is expected to change with increasing level of poverty and risk exposure of the household or individual. In section 3, the types of risks faced by households are presented. I then highlight potential areas for product innovation by the micro-finance sector to address these risks. Section 4 discusses the potential and limits of micro-finance services in assisting households to cope with adverse shocks. This section also provides a non-exhaustive list of examples of innovations already implemented by selected MFIs that seek to address the demand for financial services for smoothing income consumption. Section 5 concludes with policy recommendations.

2. The role of micro-finance for smoothing income and consumption: A conceptual framework

Figure 1 distinguishes two principal pathways through which access to financial services can increase and smooth income and consumption by households and their individual members. These pathways provide a framework for identifying institutional arrangements that address the poor's diverse demand for savings, credit, and insurance services, for evaluating them, and for comparing their costs and benefits with alternative policy measures aimed at alleviation of poverty and social protection. The process through which access to financial services influences income generation and consumption smoothing and the accumulation of physical, human, and social capital in future periods is depicted through the linkage of boxes. Each of the boxes indicates a subcomponent in the overall process. Time scripts are not shown, but the process is perceived as dynamic.

Access to financial services, that is savings, credit and insurance, is influenced by macro-economic and financial sector policy, and the specific policies and programs related to the promotion of micro-finance institutions catering to the poor. Weather, market, and other shocks influence the financial market and its institutions, and trigger informal community action of self-help and informal credit and savings mechanisms. Shocks also influence the demand for financial services by households, either ex-ante or ex-post that is after the shock has occurred. The ex ante uncertainty about shocks induces households to hold reserves of monetary or physical capital, and to preserve or increase their credit lines with formal or informal lenders by honoring past contracts or by providing gifts or loans to prospective future lenders.

Apart from policy action and district- and community-level characteristics that determine the formation of formal and informal financial institutions and therefore the supply side, the household's access to financial services is also influenced by its physical, human and social

capital². Physical and social capital can serve as loan collateral. All three forms of capital determine the repayment capacity and therefore the creditworthiness of households or individuals³. Moreover, households owning more of these three forms of capital have a higher capacity to bear risks. As pointed out by Eswaran and Kotwal (1985), access to credit can further increase the risk-bearing capacity (indicated by the feed-back arrow in Figure 1).

Disposable income that is available for future consumption and investment consists of two components. The first component is the planned, ex-ante (or permanent) income that a household anticipates to earn by the use of its human, physical and social capital. For example, human capital may allow the adoption and efficient use of more sophisticated technologies. Physical capital, such as land or production durables, helps to exploit economies of scale. Social capital, for example membership in a producer and marketing cooperative, may result in higher household-level product prices, lower input prices, or more efficient production processes through mutual learning. All three types of financial services can in principle be used to enhance these forms of capital, and thereby increase the expected value or reduce the variance of ex-ante income. First, credit can increase the capital base of the household, or make it more resilient against shocks. Second, savings accumulated in prior periods can be divested and used for the acquisition of any of the three types of capital needed for the income generation process. Third, the household can enter into insurance contracts and undertake measures of self-protection to safeguard itself against risks. While formal insurance services are usually not accessible by the urban and rural poor in developing countries, the poor seek to insure ex-ante by entering into personalized or group-based co-insurance strategies with the extended family and with friends that provide private transfers, in form of loans or gifts, when in need (Udry, 1990; Cox and Jimenez, 1992) and by entering into bonded patron-client relationships (Bardhan, 1983). The explicit or implicit risk premium paid by the household lowers the level of the ex-ante income, but also reduces its variance and in particular its down-side risk. Further measures of smoothing income include the informal measures of self-protection, for example the use of risk-reducing inputs or the diversification into different non-farm, on-farm and wage earning activities that exhibit low covariance of returns. While these measures can again be effective in smoothing income, they can be very costly to the household and potentially also to society at large.

The second component of disposable income is generated ex-post by the household, that is after the income from the farm and non-farm enterprises as well as from wage labor has been realized. If the ex-ante income turns out to be lower than the minimum level of disposable income required to satisfy the needs for food and other basic necessities, households engage in ex-post activities to generate additional disposable income. Again, these activities can in principle employ all three types of financial services. First, credit for consumption is demanded or production credit is diverted to consumption⁴. Second, sale of assets (i.e. liquidation of previous savings) occurs. And,

² For the impact of social capital on credit access, see for example Zeller, Diagne, and Mataya, 1997; and Grootaert, 1998.

³ In the remainder of this section, I refer to households although the framework is equally applicable to individuals if intra-household decision-making and asset allocation would be added.

⁴ It is important to note that production and consumption of a household that employs family labor in its enterprises and produces home-consumed goods is not separable. Because of this, the distinction between production and consumption is blurred. For example, consumption of food and other non-food inputs into nutrition maintain productivity of family labor, the most important production factor of the poor and in particular the ultra-poor. This is well expressed by Dasgupta (1993): “At low levels of nutrition and health care, increases in current consumption improve future labor productivity: if

third, insurance claims are voiced, either by calling for gifts and remittances from the informal social network and from formal relief institutions, or if available, from formal insurers, such as social security schemes or crop or livestock insurance schemes.

In summary, the two pathways depicted in Figure 1 are:

- Pathway 1 feeding into ex-ante income: via access to and use of credit and savings services to enhance the capital base for future income generation and via the use of insurance services (or of insurance substitutes) for smoothing ex-ante anticipated income,
- Pathway 2 feeding into ex-post income: via access to and use of ex-post (consumption) credit, divestment of (precautionary) savings, and insurance claims.

Thus, pathway 1 describes income smoothing, and includes all possible ex-ante measures by the household to increase and to smooth future income. Murdoch (1995) points out that smoothing income can come at a significant cost, and that poor households, because of their higher exposure to risks and their lower risk-bearing capacity, incur relatively higher costs of forgone expected income for achieving smoother ex-ante income patterns. Binswanger and Rosenzweig (1993) measure the cost of income smoothing for the wealthy and the poor in the ICRISAT panel data set. I cite from Murdoch who discusses this study (1995, p. 109): “They estimate a production function that provides a measure of impact of riskiness (as dictated largely by the timing of rainfall) on input choice. As the environment becomes more risky, vulnerable households would be expected to shift production into more conservative, but less profitable, modes. Binswanger and Rosenzweig quantify this effect by considering the impact on profits of increasing the coefficient of variation of rainfall timing by one standard deviation. They find that for a household with median wealth levels, farm profits would be reduced by 15 percent, but for the bottom wealth quartile, income smoothing would reduce farm profits by 35 percent. On the other hand, they find that households in the top wealth quartile have adequate ways to cope with risk; as a result, increasing riskiness would have a negligible impact on the profitability of the richest farmers”.

Pathway 2 describes consumption smoothing, and includes all possible actions that can be taken in the event of transitory income shocks so as to smooth disposable income and thereby smooth consumption, as best as possible, in current and in future periods. If there are complete markets for savings, credit, and insurance services, then transitory income shocks that make disposable income deviate from ex-ante permanent income (that is, anticipated average income per period over the entire lifecycle) should be smoothed away by borrowing, saving, and insuring. Hence, transitory income shocks should not affect consumption patterns and consumption should therefore not track current income (Murdoch, 1995). An increasing number of studies, as for example discussed in Alderman and Paxson (1992) and Murdoch (1995) show, however, that households, in particular the poorer ones, are not able to adequately protect their consumption in the face of income shocks. Foster shows that when households confront severe events such the Bangladesh floods in 1988, the nutrition status of children in poorer households severely suffers as a result of insufficient informal coping mechanisms and access to credit. Similarly, in a study in Peru, Jacoby (1994) found that during adverse circumstances, credit constrained parents tended to withdraw children from school and put them into income earning jobs, essentially substituting present consumption over future consumption.

nothing else, morbidity is reduced. . . . At the margin, consumption of basic needs amounts to investment. One may even go further and argue that consumption and investment at the margin are, over time, synergistic up to a point” (Dasgupta, 1993, p. 247).

Improved access to micro-finance may decrease the level of credit obtained at high costs from informal sources, and reduce the occurrence of distress sales of productive assets at low prices. Thus, a sell-off of productive assets (land, livestock, seeds) may be avoided. However, such a substitution of formal for informal credit will only occur if the formal credit and savings services are useful for the purpose of consumption smoothing. Loans that are approved only after considerable waiting time, that carry high transaction costs for loan application, or that are specifically given for production purposes and thereby tightly monitored are of limited use for consumption smoothing. In the same vein, savings deposits that can only be withdrawn after a longer waiting period or that are - as it is very common in the majority of credit-focused micro-finance schemes- a fixed percentage of the loan amount and held as obligatory deposits until the loan is repaid, are of no use for those who wish to save because for precautionary motives.

In the real-life presence of imperfect financial markets, households hold precautionary savings to self-insure as best as possible so as to retain the capacity for future consumption smoothing. While the literature discusses precautionary savings that are held as monetary or physical capital, it is important to recognize that such savings can be in principal also held in form of human and social capital. In the following, I give examples for each of the four forms of precautionary savings.

First, households may hold bufferstocks in the form of assets that can be liquidated in the event of transitory income shocks (Deaton, 1992). Common physical and monetary assets used for precautionary savings in developing countries are money under the pillow, livestock and food. These informal forms of savings are exposed to a number of risks, such as inflation, animal disease, and theft. Second, just like firms do, households may choose not to fully utilize their available credit limits but to preserve the option to borrow for “worse” times. The credit limit is omitted in the conventional balance sheet of a firm or household, but nonetheless can be considered a specific form of monetary capital. Diagne, Zeller and Sharma (1998) show that rural households in Malawi choose to maintain credit reserves for future periods. The households were found to be credit-constrained during the current period so that the holding of credit reserves came at the expense of current income for improving the household’s ability for smoothing future consumption. It was estimated that about half of each additional Kwacha of formal credit line provided to the average household is borrowed at the margin, the other half is preserved for increasing future access to credit. Diagne et al., however found for Bangladesh that households borrowed all of marginal increases in their formal credit limit. This unexpected result appears to be caused by the fact that the loan product of the NGO-supported group credit programs⁵ in Bangladesh did not allow the borrower to choose the amount of credit taken within the bounds of the credit limit. Subject to past loan repayment, increases in credit limit are a function of years of membership with the credit program, and the borrower is given the choice to borrow all of that increase or drop out of the program. This finding also points out that quasi-automatic loan increases may not be optimal even in the case of credit-constrained households. Giving the choice to borrowers of how much to borrow within the bounds of their creditworthiness enables them to hold credit reserves for future consumption smoothing.

Third, precautionary savings can be also held in form of human capital, for example by having more children so as to meet unexpected future shortages in household family labor. Fourth, and

⁵ The NGOs included in the sample by Diagne et al., 1998 were Association for Social Advancement (ASA), Bangladesh Rural Advancement Committee (BRAC), and Rangpur-Dinajpur-Rural Services (RDRS).

last, precautionary savings can be held in form of social capital, for example by investing in personal relationships and membership in social and other institutions at the community level. That such social capital can have an impact on production and consumption has been shown by Grootaert (1998). It is not unreasonable to expect that social capital, just like any other form of capital, can be used more intensively in future periods when transitory income shocks occur. The culture of reciprocal gift giving is deeply embedded in any society. Having more social capital can increase one's (insurance) claims towards society.

As all four forms of precautionary savings enable to hold reserves for future consumption smoothing, they can in principal act as substitutes. The degree of substitution is an empirical matter that is not well explored at all. Kazarosian (1997) findings, derived from panel data for U.S. households, suggest that families significantly save less in monetary and physical capital if they have a higher number of children, and explains this by the fact that children can reduce income uncertainty during old age. This is a line of argument that is frequently voiced for the conditions in developing countries. That precautionary savings matter even for households relatively well covered by social security schemes and financial markets is shown by Carroll and Samwick (1998). They estimate for households of the U.S. Panel Study of Income Dynamics that about 45 % of total net worth are held as precautionary savings. They further find that the bulk of precautionary savings is held in form of rather illiquid assets. Only about a third of highly liquid assets are held for precautionary motives. Carroll and Samwick (1998) explain this result that precautionary savings are also held to insure against relatively large income shocks, such as long spells of unemployment.

A number of policy implications for the role of micro-finance for income and consumption smoothing follow from this conceptual framework. When considering the first pathway in Figure 1 that affects ex-ante the income generation of households, two principal effects of access to financial services must be distinguished. The first is that - through the provision of credit and savings services - households can raise finance to enhance the level of the household's productive capital. With the provision of credit, the costs of (capital-intensive) technology and assets will be reduced relative to family labor. For example, instead of growing low-yielding local crop varieties with a low level of mineral fertilizer, access to credit may allow to use more of improved seeds and fertilizer and produce a higher crop output per unit of labor and land (Feder, Just, and Zilberman 1985). Of course, savings services which enable the accumulation of assets serve the same purpose of providing capital for future investment and income generation. Generating extra income (or growth) is the traditional argument for the provision of credit and savings services. Financial services that potentially raise the income of households are micro-enterprise credit, seasonal agricultural credit, medium- and long-term investment credit, and term deposits and savings accounts that earn interest income. I abbreviate this type of services in the following as FI, that is Financial services for Income generation. These services are fairly common among MFIs, and constitute most often the only type of financial services offered by micro-finance institutions.

On the other hand, credit, savings, and insurance services that address the demand for reducing ex-ante the variance of income, or ex-post the variance of consumption, are rarely offered by micro-finance institutions. Such services include insurance services against idiosyncratic or covariant production, consumption and market risks, the provision of savings services that are liquid and can be withdrawn at short notice, and the provision of consumption credit, or less controversially expressed, the provision of general household credit for maintaining family labor and the household's human and social capital. These services provide a shield against future risks, and can thereby enable households to bear more risks. Since technology adoption and the level of production and investment increases with risk-bearing capacity (see Eswaran and Kotwal, 1985),

the provision of Financial services for Consumption smoothing (FC) can have an indirect and positive effect on ex-ante income generation. Efficient FCs can further reduce the cost of the household for income and consumption smoothing, for example by substituting for some higher-cost informal savings, income diversification, personalized or group-based coinsurance strategies, as well as by substituting for some of the higher-cost informal sources of consumption credit.

FCs are particularly demanded in environments of considerable inter-annual and seasonal income fluctuations, and therefore particularly be relevant for rural households depending mainly on agriculture for their livelihood. Moreover, FCs gain in relative importance over FIs for disadvantaged clientele groups, such as women, the poor, wage laborers, and those left out of any type of formal or informal social security system.

Based on this conceptual framework, it appears reasonable to expect that financial policies will perform better in alleviating poverty and contributing to social protection when the financial services offered by MFIs seek to address not only the demand for FIs for income generation, but also the demand for FCs for income and consumption smoothing. Put in other words, policy may be well advised to recognize not only the potential contribution of micro-finance to poverty alleviation through growth (that is enhancing income generation by the poor), but also the potential of micro-finance for providing means of social protection that can complement other measures of public and informal safety nets.

3. Coping with covariant and idiosyncratic risks through micro-finance services

In this section, I will attempt to systematize the risks that poor households in developing countries face and that motivate the households' demand for financial services for income and consumption smoothing. I will contrast this demand by the type of services commonly supplied by micro-finance institutions. The gap between current supply and demand by the poor defines areas for policy action as well as further research.

Table 1 and 2 list various categories of risks that affect the process of income generation of households or their consumption, respectively. These risks cause income to fluctuate, and may create additional unexpected expenses that need to be met by ex-post consumption smoothing type of measures. The second column in Table 1 and 2 lists examples of typical informal responses to these risks whereas the last column indicates the relevance of micro-finance policy for addressing these risks.

When considering the risks listed in the tables, it is important to distinguish between idiosyncratic and covariant risks, that is risks that affect only individuals or larger groups of people in the same locality, respectively. This is because the informal responses to risk, that are differentiated in the second column of the tables, are less effective in covering covariant risks than in protecting households against idiosyncratic risks. In general, informal responses are of localized nature, mostly based on actions by individual household members or by informal institutions at the local community level to which the household members belong. Because of the dominance of personal and institutional responses only acting at the local level, the effectiveness of local responses to risk is lower. For example, Rosenzweig and Wolpin (1993) find that sales of bullock in India are motivated by the need to smooth consumption. Yet, as demonstrated by Czukas, Fafchamps and Udry (1995), the effectiveness of traditional forms of savings can be severely hampered by covariant risk, such as drought. Czukas et al. explore the role of livestock as a form of precautionary savings in Burkina Faso. Their results show that livestock transactions play less of a role in consumption smoothing than is often assumed. This phenomenon suggests that drought as

covariant risk can equally threaten the effectiveness of specific forms of precautionary savings held, in particular if poorly integrated markets for the assets lead to drastic declines in prices when a large part of households in a region seeks to sell similar assets for consumption smoothing.

Table 1 systematizes the risks related to the generation of income by the household and its members in farm and non-farm micro-enterprises as well as by selling labor in the labor market. While the latter covers the risk of unemployment, the former are specific risks related to the availability of inputs (with respect to quantity, quality, and price risks), the stochastic production function of the enterprise, and the availability of markets where products of the household and its enterprises can be sold. For brevity, I choose not to differentiate the risks affecting income generation into idiosyncratic and covariant risks. It is noted, however, that many of these risks are covariant. For example, risks related to the conduct and performance of input, output and labor markets have similar effects on households that engage in the same enterprises. The less diversified the local economy in urban or rural communities is, the larger the share of the population that is potentially affected by the same source of risk. In other words, the resilience and ability of informal networks to deal with these types of covariant risk factors diminishes with a greater degree of specialization of the local economy. Negative effects on income are of course exacerbated by poorly integrated labor, financial and commodity markets. The proper functioning of these markets often critically depend on infrastructure.

The third column in Table 1 highlights the potential role of micro-finance policy to partially address these risks. When discussing the potential of micro-finance, it is important at the outset to point out that the principle remedy to address these risks may not necessarily lie in improving financial markets, but by investing in road infrastructure, technology development and transfer, or by improving performance of commodity markets. To what extent micro-finance matters will ultimately depend on the specific circumstances. With respect to risks occurring in the availability and quality of inputs, credit disbursed in cash may be of little use, and addressing the underlying bottlenecks and imperfections in input markets is likely to be more relevant in many circumstances. Yet, member-based financial institutions can exploit economies of scale, scope and risk by collective acquisition of inputs. The role of micro-finance tends to increase when one considers risks related to the production function itself. Access to credit can help households to adopt risk-reducing inputs, such investment in irrigation or adoption of disease-resistant crop varieties and pesticides, or diversify risks by entering into new enterprises for which profits are weakly correlated with the traditional income portfolio of the household. For certain types of production risks that can be easily monitored and therefore insured, sustainable provision of insurance is possible. However, as far as farm enterprises are concerned, the provision of crop and livestock insurance is ridden with a number of difficulties that are hard to resolve in practice under the conditions of small-scale farming in developing countries. New information technology and satellite imaging that can decrease the cost of monitoring may however change the future prospects for sustainable insurance of risks in smallholder agriculture. However, at present, the role of financial sector policy in addressing these risks appears fairly limited. Last, with respect to risks related to output markets, similar reasoning as was the case for input markets holds. Insofar as access to finance can enable households to diversify their portfolio of enterprises to smooth income risks, micro-finance could possibly make a contribution. However, for most circumstances, lack of road infrastructure, communication, and policy distortions in output markets are likely to play a greater role for volatility of household incomes related to this category of risks.

The discussion of risks related to income volatility points out to a somewhat limited role of savings, credit and insurance services related to income smoothing. The principal direct role that can be identified is that savings and credit services can enable households to acquire the necessary

start-up capital for establishing new enterprises for which profits are weakly correlated with their existing portfolio. Moreover, access to credit and savings services can facilitate household's investment in risk-reducing assets, such as irrigation, or inputs, such as pesticides. A relative advantage of credit and savings, compared to insurance, lies in the fact that credit and savings facilitates income smoothing (for example by providing the capital for investing in irrigation) and ex-post consumption smoothing, as is discussed more in detail below. This double function of credit and savings cannot be performed by many specialized insurance products.

As is discussed next, access to financial services can have a far greater role for smoothing consumption, and thereby increasing the risk bearing capacity of households for increasing future income. Table 2 distinguishes between rather infrequent, but very large risks that can wipe out the productive capacity of a household (Table 2.1), and risks that frequently occur and cause transitory shocks in consumption (Table 2.2)⁶.

With respect to large, infrequent risks, such as war, political upheaval, major successive droughts and other natural disasters (see first row in Table 2.1), the household's ability to deal with such risks through informal responses is quite weak. This is either caused by the covariant nature of these risks (and the related weakness of informal responses to deal with such risks) or by the large impact of the risk on the household. For these covariant and large risks, the role of insurance and credit is fairly limited. In so far as these sources of risk are covariant, the provision of sustainable insurance schemes appears quite impossible under the conditions of most low-income countries unless the insurance company is well diversified at the national level and therefore can spread the risks over a large client base. In most cases, it is the state that is called upon to be the implicit insurer by providing social assistance, either through permanent income transfers to secure a minimum standard of living (in the case of permanent disability to earn a future income) or by giving temporary transfers to replenish productive assets of households and to treat conditions of workers' disability. Once the ability to earn an income is restored through private or public assistance, so that the capacity to repay a loan and to save is regained, subsequent access to savings and credit services can assist households to expand the productive capital in successive periods.

One may argue that temporary transfers by the state to replenish assets could be given on a loan instead of a grant basis. If the administrative network to properly administer such loans is in place and can be used at low transaction costs to the government and the target groups, it can be indeed justified to choose a loan over a grant system. Yet, if governments use - as it is often done - local-level employees of certain line ministries who are inexperienced in the handling of credit, the repayment rates for disaster loans - such as after droughts or flood - are often extremely low. Repayment rates that hover in the teens and twenties, combined with additional administrative costs for loan provision and recovery, may well lead to total costs of service provision that are far higher for loans than for grants. Moreover, loosely monitored and ill-targeted disaster credit schemes by the state run the risk of destroying morale for repaying future loans.

For all three types of risks listed in Table 2.1, precautionary savings services can in principle play a very important role. This is in particular true for cushioning against the risk of permanent

⁶ Insofar as these risks concern the productive capacity of the household by affecting the ability of household members to work and generate income, these risks could also be viewed as affecting income generation, and be listed under labor inputs in Table 1. However, I choose to list these risks as ex-post shocks as they create additional potential demand for unanticipated consumption expenditures (such as the treatment of human diseases).

disability and for the case of old age and death of family members. However, in the case of permanent disability that is caused by idiosyncratic risks, such as an accident, and certainly for old age, insurance services also have potential. For the case of permanent disability to work as well as old age, in most cases there appears no role for credit simply because the risk under consideration wipes out the capacity to earn an income and therefore repay the loan. However, if the disabled person possesses assets that provide a source of income (such as a house) or are good collateral to the bank, consumption credit can in principle be offered.

Table 2.2 lists risks that usually have transitory effects on the ability to earn an income. They therefore cause transitory shortfalls in consumption if informal responses are inadequate. A major source of risk for the poor is ill health, either caused by covariant diseases, such as Malaria and flu, or caused by many types of idiosyncratic diseases. The impact of health risks increase with the level of poverty because labor is the major production factor for the poor while the rich may substitute own family labor by acquiring hired labor in case of temporary illness. Thus, it is often liquidity constraints that are the causes of shortfalls in income and consumption and in inadequate treatment of diseases. However, just like in the cases of imperfect commodity markets, if the public health system is not well functioning so that proper medical care and medicaments are not available access to financial services may not do much good. It is therefore in many cases more appropriate to invest in health infrastructure, in access to safe water and sanitation that most efficiently can tackle these health risks. Only if this basic health infrastructure is in place and is accessible by the poor can access to financial services make a difference. In the IFPRI studies, the short-run impact of access to financial services on nutrition was found to be insignificant in all case studies (see Zeller and Sharma, 1998). In the long-run, however, access to financial services may increase income of households and enable thereby communal action to use part of that income to invest in health infrastructure, for example by funding a communal water borehole. If health services can be purchased locally, access to precautionary savings services and to credit are expected to have a considerable potential in assisting the poor in dealing with transitory health risks. The role of financial services is equally important to finance consumption goods during illness.

Other sources of transitory risks causing volatility of the poor's consumption include the manifold claims that the social network can put on a household and its members, mostly the need to advance or reciprocate help to the extended family, friends, and neighbors and the requirements to finance social events for meeting cultural norms, such as marriage and burials. For these types of transitory events, the provision of precautionary savings appears most appropriate. Since these shocks can frequently occur, and some are hard to anticipate, a range of precautionary savings services that differ with respect to liquidity and return can be offered. For example, for marriage, long-term savings products, i.e. term deposits, are more appropriate whereas frequent and unanticipated claims by the social network could be dealt with current accounts and highly liquid savings services.

The above discussion pointed to a number of specific risks, mostly related to consumption smoothing, that potentially can be addressed by micro-finance institutions. These risks are mainly of idiosyncratic nature, and the dominant financial service that appears most feasible to implement by micro-finance institutions as a response to these risks are precautionary savings and credit. The poor's willingness to pay for financial services for income and consumption smoothing will of course depend on the effectiveness and costs of informal responses, including informal forms of precautionary savings, consumption, and insurance. Before exploring in the next section some innovations by micro-finance institutions, it needs to be emphasized at the outset that formal financial services responding to these safety net aspects of finance can crowd out informal

responses, implying a smaller net benefit of formal services. If formal services are subsidized by the state, they can therefore create social costs that exceed social benefits. Having said that, it is to be noted that the evidence presented in section 2 showed that informal responses are far from adequate.

To find the right mix between publicly and privately provided safety nets is the true challenge. In a nutshell, some form of public assistance is necessary to alleviate poverty and protect the poor from major shocks. The main question is which policy, or better, which bundle of policies, addresses this problem in the most efficient manner. Moreover, informal responses are greatly weakened in their effectiveness if risks are correlated over time. They further are less effective for the vulnerable and socially excluded in society, i.e. those that lack sufficient access to informal self-help networks. Thus, informal responses are likely to provide adequate cushion for some, but not for others, in particular the poor. Secular trends, such as the break-up of the extended family through migration and urbanization, and demographic shifts, such as fertility decline and extended life expectancy, tend to reduce over time the efficiency of informal responses, in particular for old age and for permanent disability. Because of this weakening of informal networks over time, the demand for publicly provided safety nets as well as the demand for financial services for consumption smoothing that is provided by micro-finance institutions is likely to increase over time in low-income countries.

4. Recent innovations of micro-finance institutions

In the following, I concentrate mainly on idiosyncratic risks for which the immediate implementation potential of micro-finance appears to be largest, and for which product innovations have already been introduced by micro-finance institutions.

Since most MFIs in developing countries at present are too small in terms of size of clientele and their geographical coverage, they are often unable to effectively cover covariant risks, either by direct insurance services or by pooling emergency funds financed by clients. However, as MFIs grow over time and reach operational scales like those achieved by Bank Rakyat Indonesia (BRI) or Grameen Bank, there is also considerable potential to sustainably address covariant risks. For example, the Grameen Bank and BRI both have rescheduled loans to clients in areas of natural disasters. BRI can do this without assistance by the state because of its high profits and its business conviction that losing a good borrower because of a covariant risk is also a loss to BRI. The Grameen Bank has as well rescheduled loans in the past for clients affected by flood. Grameen Bank requires members to deposit small amounts of savings into a so-called emergency fund. The pooling of such funds over larger areas can in principal address covariant types of risks.

With respect to idiosyncratic risks that cause consumption to fluctuate, the major sources of risk listed in Table 3 are summarized in the first column: (1) health risks, including pregnancy and temporary or permanent disability caused by accident or disease, (2) old age and death of family members (again, as far as death is not due to covariant risks, such as war and AIDS), (3) claims by the social network or expenses for social events that need to be met by the household, (4) and the break-up of families because of divorce and other reasons that leave vulnerable household members at risk, in particular children, women and the elderly. The second column of Table 2 describes innovations in financial products that specifically address these risks. The third column gives examples of MFIs that provide such services to their clients.

The provision of health insurance for low-income people in developing countries faces a number of great challenges that are not discussed in this paper. In developed countries, and for formal-sector

employees in developing countries, health insurance is usually provided by specialized large-scale private or public insurance institutions that are not part of the financial sector. Yet, micro-finance institutions can provide precautionary savings services and consumption credit to indirectly address these risks. Village banks that follow the FINCA model (Nelson et al, 1996) or the model developed by the French NGO Centre International de Développement et de Recherche (CIDR) (Chao-Beroff, 1996) raise funds for internal on-lending to their members. The village bank model allows the members to decide on interest rates for savings deposits and for internal loans. For example, the village banks supported by CIDR in Madagascar set savings rates between 24 and 36 % per annum, and on-lending rates at 36 to 48 % per annum, although the formal lending rate of the agricultural bank was only 14%. The lending rate decided by the village banks is much higher than the one for loans from friends and relatives, but less than the lending rate of about 60 % that socially distant money lenders charge on seasonal consumption loans (Zeller, 1998). In many village banks, the members explicitly allowed for on-lending of funds for consumption purposes, and some village banks provide interest “subsidies” to members that need consumption loans. Other examples of MFIs, that explicitly provide consumption credit, include Caja Social in Mexico and BRAC in Bangladesh. For the case of BRAC, the members can borrow up to 75 % of their savings deposit for emergency purposes. SEWA in India that targets micro-loans to very poor women allows their borrowers to stop loan repayment during pregnancy.

Health risks can also be addressed by the provision of precautionary savings services. This type of service is useful for all types of risk listed in Table 3 provided that the maturity of the deposit, its interest rate, and its transaction costs for depositing and withdrawing funds at short notice are adjusted accordingly. For health risks that occur relatively frequently and demand immediate response, the costs and time for withdrawal must be minimal. A current account at a village bank or a nearby bank branch offers such features, or a term deposit that can be withdrawn at short notice with a penalty. In order to protect savings deposits, banking laws often hinder semi-formal MFIs (such as village banks and group-based savings and credit schemes) to offer and to diversify their savings products in response to customer demands (Hannig and Wisniwski, 1998). Yet, those MFIs that are registered under the banking or cooperative law often have a variety of savings products that respond to the demand for precautionary savings to cover risks of health, disability, social claims, or old age. Examples of banks that successfully offer savings services to a diverse clientele, including the urban and rural poor, are BancoSol in Bolivia or BRI in Indonesia.

Poor households accept negative returns on savings deposits, if costs and time of withdrawal of savings is minimal. Nonetheless, a diverse range of savings products that provide different forms of trade-offs between liquidity and return, is required to address the full range of savings needs of the poor. However, the optimal choice of savings products can be conditioned by the clients’ access to labor, food and commodity markets. For example, if food markets during the hungry season are segmented and food prices are highly volatile, households may continue to save in the form of food, even if formal savings options with high liquidity and low transaction costs are accessible. Such conditions prevail in many remote rural areas with poor infrastructure. For example, in the rice market of Madagascar, regional and seasonal price differences reach up to 300 % or 100%, respectively (Minten et al, 1998). The imperfections in the food marketing system explains why the growth and performance of member-managed rice “banks” in Madagascar, linked with a cash credit program, have been quite successful during the 1990s. The rice bank scheme offers groups of smallholders the option to store their rice immediately after harvest when output prices are low, and to take out cash loans to finance consumption and to invest in off-farm enterprises during the dry season. The rice serves as collateral but is stored by the borrower themselves. Four to six months after the harvest when rice prices are high, the farmers sell their rice and repay their consumption loans. This credit cum in-kind savings scheme is very attractive to farmers that face

volatile food markets as it allows households to more effectively smooth their consumption in the hungry season.

Another important type of risk for the poor is disability to work. In principle, precautionary savings can be used as an insurance substitute if insurance services are not offered to directly cover this risk. A rare innovation in this regard are village banks in Kenya that are promoted by FINCA. The members of the village banks can purchase group disability insurance from a national insurance company. FINCA assists in retailing these services to the village banks.

A number of MFIs offer life insurance services to cover risks of death or lack of care during old age (see Table 3). Most often, however, the insurance contract only covers the outstanding debt of the borrower in case of his or her death. This is the case for example for BRI in Indonesia or ASA in Bangladesh. BRAC, on the other hand, offers a life insurance contract to its very poor members who are mostly women, that pays out a predetermined sum in case of death of the member⁷. The insurance contract can respond to two principal motives. First, in particular for women in rural Bangladesh, the death of the husband usually results in the woman's loss of access to all major assets of the household. The widow is then completely dependent on her children, her parents and her father or brothers-in-law. By buying a life insurance and designating a beneficiary of her family, the woman can gain increased bargaining power to obtain care during old age. Second, women in single-parent households can provide some form of security to their children by buying life insurance.

Because of socio-cultural constraints, women often cannot get a loan unless they are married and their husband is a co-signer on the loan application. Micro-finance institutions ought to insist that such discrimination is not practiced for their loan and savings products. By providing women with individual credit lines and savings accounts, their bargaining power during marriage can increase (although this effect may not materialize, as discussed in Goetz and Sen Gupta, 1996). Moreover, individual accounts for women will enable them to have a much stronger economic position in case of breakup of family, for example due to divorce or due to death of husband.

5. Implications for Policy

Access to micro-finance has the potential to not only assist the poor in earning income from micro-enterprises, but also to smooth their income and consumption. The first potential effect is the traditional argument for micro-finance that one may term as the growth argument for micro-finance. It is presently the primary motivation for the micro-finance movement. Yet, when targeting services to poorer groups, the second effect gains in relative importance. This is the safety net argument for public support of micro-finance institutions.

This paper presented a conceptual framework that sought to distinguish these two principal effects of and arguments for public support of micro-finance institutions. Following this, micro-finance can address aspects of growth as well as safety net policy. I entirely focused in this paper on the second aspect, and discussed the types of risks that cause fluctuations in income as well as consumption. The largest potential for micro-finance is seen for addressing idiosyncratic risks, such as risks related to ill health, disability, old age, and divorce. When micro-finance institutions

⁷ When I visited Bangladesh in 1995, a landless BRAC member showed me her insurance certificate. In case of her death, the contract would pay 5,000 Taka (about US-\$ 110) to her son. When asking for her motive for buying this insurance, she replied that the insurance gives her children more security in case she dies early, and gives herself more security during old age when she will depend on her children.

grow in scale and outreach to poor and non-poor groups, they also increase their potential to address covariant risks of their clientele.

A number of innovative micro-finance institutions offer financial products that respond to these risks. Most commonly found are precautionary savings services that provide clients various products that offer choices between the transaction cost of withdrawal and the return earned on the deposit. Some MFIs offer explicit lines of consumption credit, in particular in the case of member-based financial institutions that offer their members the flexibility to raise savings deposits for on-lending to members at terms freely decided by the members. Many village banks in Latin America and Sub-Saharan Africa sustainably offer consumption credit that is financed with internal savings collected from the banks' members. Some MFIs have ventured into insurance, and have developed their own insurance products, mainly life insurance. Other experiences suggest that MFIs have a potential for retailing insurance products of the formal insurance sector to their clients.

The poor's willingness to pay for financial services for income and consumption smoothing will of course depend on the effectiveness and costs of informal responses, including informal forms of precautionary savings, consumption, and insurance. It needs therefore to be emphasized that the provision of financial services may crowd out informal responses. To the extent that services by MFIs are indirectly subsidized by the state, for example by grants for product innovation, staff training and by institutional expansion, formal financial services can create social costs that exceed social benefits. Yet, it is fair to say that the informal responses are far from adequate, and that publicly supported institutional innovations in micro-finance can offer in many circumstances a viable policy instrument that generates net social benefits.

To find the right mix between publicly and privately provided safety nets remains therefore the true challenge. Under many conditions, micro-finance institutions can offer safety net-type of services that are largely or exclusively financed by the clients. Alternative forms of safety net provision supported or directly implemented by the state, such as ex-post income transfers or public works, can carry high administrative costs for delivery and targeting and may require considerable response times after the shock has already occurred. In comparison, precautionary savings, insurance and consumption credit, are demand driven. And, by using local information, MFIs can adapt their services to specific demand patterns of various clientele groups. Depending on the subsidy level of the MFI, the costs of service provision can be financed to a large or to the full extent by the clients themselves. MFIs that are already established can offer financial products for income and consumption smoothing at relatively low variable costs as the core business is already supported by growth-oriented financial services.

For these reasons, micro-finance institutions that want to increase their relevance for the poor are well advised to innovate with financial services for income and consumption smoothing. Public action can further promote this by supporting pilot projects and related action research. Evaluations of MFIs that receive support by government or donors so as to make a contribution to the alleviation of poverty ought to include checks on whether the MFI provides financial products for income and consumption smoothing, such as precautionary savings services, emergency credit, insurance services or implicit insurance substitutes. Such checks can be undertaken rapidly and at low cost by simply looking at the terms of financial products currently offered, and can identify further poverty-oriented product innovation that can be easily be implemented and can in many circumstances increase the business volume and profitability of the MFI.

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Table 1: Risks affecting income generation of household and its members

Risks related to ...	Examples of informal responses to risk	Relevance for micro-finance policy
Input markets (availability and quality of production inputs, including shortages of family labor due to ill health)	<p>Diversifying income sources (non-farm, on-farm, wage labor, temporary or permanent migration of household members)</p> <p>Establishing reliable input sources through formal contracts or through investment in social relations with input dealers</p> <p>Entering bonded patron-client relationships by poor entrepreneurs with wealthy input suppliers (example tenant-landlord)</p> <p>Holding costly reserves for inputs (for example seeds, raw material for micro-enterprise)</p> <p>Investing in social capital (informal groups that provide labor)</p>	<p>If input markets are not well functioning, credit for inputs (in cash) to micro-entrepreneurs may not create much benefit</p> <p>Organization of MFI-clients to reap economies of scale, scope and risk in purchasing inputs</p>
Production function (for example covariant weather risks or idiosyncratic risks affecting business, crop or livestock enterprise)	<p>Diversifying income(that is foregoing profits from specialization)</p> <p>Risk-reducing inputs (e.g. irrigation, pesticides, vaccination of animals)</p> <p>Postponing decisions (e.g. sowing later)</p> <p>Diversifying operations spatially (e.g. plot diversification)</p> <p>Choosing low-return enterprises that have lower risks</p>	<p>Credit and savings services for diversification in new enterprises</p> <p>Provision of production insurance (crop, livestock insurance)</p>
Output markets (Risks in finding a buyer and price risks)	<p>Diversifying income</p> <p>Establishing contracts/ informal relationships with output buyers (including bonded patron-client relationships with employers)</p> <p>Producing more for home consumption than for market (emphasizing autarky and foregoing gains from trade)</p>	<p>Addressing bottlenecks in marketing (again, lack of access to financial services may not be primary cause of income fluctuation)</p>

Table 2.1: Risks affecting consumption with chronic, permanent effects on the ability to earn an income

Risk related to ...	Informal responses to risk	Relevance for micro-finance policy
Sliding into chronic poverty in its worst form (loss of all productive assets, including ability to work) e.g. often caused by covariant risks, such as natural disasters, war, political upheaval and major economic crises, HIV/AIDS	Informal social welfare (for example neighborhood help, giving to beggars, putting children in foster homes, remittances by extended family) Informal precautionary savings and investment in human capital (having children) and social capital (having access to networks that provide help)	No role for credit as there is no viable project to be financed and no repayment capacity Provision of precautionary savings services Other safety net measures are more relevant (i.e. public transfers to replenish assets, such as disaster relief, or social security) Very limited role for insurance
Permanent disability to work	as above	Disability insurance and precautionary savings services
Old age or death of family member	Informal precautionary savings (long-term investments in physical, human, and social capital that can provide income at old age)	Precautionary savings services Life insurance

Table 2.2: Risks affecting consumption with usually transitory effects on the ability to earn an income

Risks related to ...	Examples of informal responses to risk	Relevance for micro-finance policy
<p>Health (temporarily affecting ability to work)</p> <p>1. Covariant health risks (e.g. malaria, flu)</p> <p>2. Idiosyncratic health risks (e.g. many human diseases, accident, pregnancy)</p>	<p>Reducing exposure to health risk, if causes are known</p> <p>Holding precautionary savings</p> <p>Investing in social capital that provide labor, food and care (but capacity of network for service provision may be weakened, too, because of covariance)</p> <p>As with covariant risks, but investment in social capital much more likely to be effective</p>	<p>Public health policy (incl. health insurance) is most relevant.</p> <p>MF policy can complement by providing</p> <ul style="list-style-type: none"> - precautionary savings services with emphasis on low transaction costs for withdrawal and liquidity rather than return - consumption credit <p>In addition to above, member-based MFIs can self-finance the demand for consumption credit out of internal savings or can retail specific insurance services</p>
<p>Claims by social network to fulfil (e.g. financing social events, helping out friends and relatives in need)</p>	<p>Holding precautionary savings, as above</p>	<p>Provision of liquid savings services for unexpected claims, and term deposits for anticipated claims (e.g. marriage)</p>
<p>Divorce and other causes of household disintegration</p>	<p>Maintaining ownership/ control over assets brought into/ accumulated during marriage</p> <p>Investing in social networks accessible by the individual household member</p>	<p>Promoting savings accounts and credit lines for individuals, in particular for women</p>

Table 3: Innovations in savings, credit and insurance services by micro-finance institutions

Risks related to ...	Product innovations by MFIs	Examples of MFIs that have implemented innovations
Health (temporarily affecting ability to work, such as accident, many diseases, and pregnancy, and that usually lead to higher consumption expenditures and to shortfalls in income)	<p>1. Consumption credit lines that provide cash loans at short notice to clients. Frequent conditions for loan eligibility:</p> <ul style="list-style-type: none"> - borrower must already be client of MFI (but exceptions in case of lending funds accumulated by members themselves) <p>2. Loan rescheduling in case of pregnancy</p> <p>3. Precautionary savings services, such as current accounts earning no interest, or term deposits with varying maturities, interest rates and penalties for early withdrawal</p>	<p>Caja Social, Mexico</p> <p>BRAC, Bangladesh (up to a certain amount of savings deposit)</p> <p>Village banks following the FINCA model (in many countries in Latin America and Africa: consumption loans are funded with internal savings of members, and often given with interest rebates that are decided by members)</p> <p>Cooperative credit and savings institutions (such as in Cameroon and Madagascar)</p> <p>SEWA, India</p> <p>Village banks (for example following the FINCA model)</p> <p>BancoSol (Bolivia), a commercial bank catering to poor</p>
Permanent disability	Disability insurance	Village banks following FINCA-model in Kenya. FINCA assists the village banks to buy group disability insurance for their members from a insurance company.

Table 3 (continued): Innovations in savings, credit and insurance services by micro-finance institutions

Risks related to ...	Product innovations by MFIs	Examples of MFIs that have implemented innovations
Old age and death of family members	Life insurance Precautionary savings (as above, but long-term deposits with higher interest rates)	Bank Rakyat Indonesia: The life insurance only covers debt of borrower. In case of death of borrower, the insurance pays for any outstanding debt of borrower. Bangladesh Rural Advancement Committee (BRAC): The life insurance is paid out to the person designated by BRAC member in case of death. The lump-sum payment to the “heir” provides implicit incentive to take care of the BRAC member during old age. Some micro-finance institutions (mostly those registered as banks)
Claims by social network to fulfil	Consumption credit lines Holding precautionary savings, as above	Author does not know of any MFI that explicitly provides loans for financing social events, such as marriage or burial.
Divorce and other causes of household disintegration	Targeting of financial services to women Promotion of social change, gender equality, women’s empowerment	Most, but not all MFIs: Savings accounts and credit lines are registered under individual names (husband does not co-sign)

Sources: Rashid and Townsend (1993), Zeller et al, 1997; Hannig and Wisniwski (1998), Nelson et al (1996), Goetz et al. (1996)

Figure 1—Access to financial services and its effects on income and consumption smoothing

