



Credit is good, but not good when too much.

Analysis of indebtedness and over-indebtedness
in the SADC region using FinScope Surveys

Prepared by FinMark Trust

March 2017

Policy Research Paper No. 04/2017

Authors

Ashenafi Beyene Fanta¹, Kingstone Mutsonziwa¹, Bobby Berkowitz, and Roelof Goosen.

¹ For inquiries please contact Ashenafi Beyene Fanta at ashenafib@finmark.org.za or Kingstone Mutsonziwa at Kingstonem@finmark.org.za.

Acknowledgement

We are grateful for the useful comments from Professor Daniel Makina from the Department of Finance, Risk Management and Banking of UNISA who availed himself to review the paper. We also extend gratitude to Dr Prega Ramsamy, Mr Brendan Pearce and Mr Damola Owolade for insightful comments on earlier versions of the paper.

Table of contents

Executive Summary	I
1. Introduction.....	1
2. Data and methodology.....	4
2.1. The data	4
2.2. Methodology	4
3. Analysis and results	5
3.1. Descriptive analysis	6
3.1.1. Cross-country comparison.....	12
3.2. Econometric analysis.....	16
4. Conclusions	22
5. Implications for policy.....	23
Appendix A	1
Appendix B	1

List of Tables

Table 1: Sample size and year survey was conducted	4
Table 2: Descriptive statistics	1
Table 3: Logistic regression output: Determinants of indebtedness	2

List of Figures

Figure 1: Formal credit, informal credit and overall credit penetration	13
Figure 2: Credit penetration and reasons for borrowing	14
Figure 3: % of over-indebted adults vs formal and informal credit	15
Figure 4: % of over-indebted adults vs number of institutions from which credit was obtained.....	16
Figure 5: Indebtedness and over-indebtedness by gender.....	7
Figure 6: Indebtedness and over-indebtedness by age	8
Figure 7: Indebtedness and over-indebtedness by level of education	9
Figure 8: Indebtedness and over-indebtedness by marital status	10
Figure 9: Indebtedness and over-indebtedness by income.....	11
Figure 10: Indebtedness and over-indebtedness by employment status	12

Executive Summary

This paper provides cross-country comparisons of indebtedness and over-indebtedness along with the determinants of each. The relationship between over-indebtedness and poverty are also discussed and the following conclusions were drawn:

Countries with high level of credit penetration exhibit a lower tendency of people using credit for developmental purpose. Few people borrow for developmental purposes in South Africa and Mauritius where credit penetration is the highest in the region. This might suggest that credit is relatively easier to come by in the two countries. In contrast, a large number of people in the Democratic Republic of Congo borrow for developmental purposes. This might be due to, among others, relatively less stringent lending policies in South Africa and Mauritius than in the Democratic Republic of Congo.

Over-indebtedness may not be necessarily linked to the dominance of either formal or informal lenders. Over-indebtedness is not linked to a specific source of credit and this is evident from the fact that both South Africa and Tanzania have the highest level of over-indebtedness in the region despite the former having a formal lender-dominated market as opposed to the latter where informal lenders are dominant.

South Africa stands out in terms of the number of institutions from which people borrow money. While people in most countries in the region borrow from a single source and a few borrow from two sources, a quarter of South Africans' simultaneously borrow from three sources, i.e., bank, other formal and informal lenders. This could be an indication of high propensity for borrowing among South Africans or credit is easily available in the country.

Formal credit is accessed mostly by those that own homes, earn higher income, employed and live in urban areas. In South Africa, Botswana, Mauritius, Madagascar, Tanzania, Zambia and Zimbabwe both bank and other formal credit are accessed by people who are credit literate, that own homes, employed, earn higher income, and live in urban areas. In most countries, informal credit is accessed by the unemployed, those that earn low income or those living in rural areas.

Over-indebtedness is mainly driven by the lack of credit literacy and borrowing from multiple sources. Lack of credit literacy is related to over-indebtedness in Mauritius, Mozambique, Swaziland, and Zambia. In addition, the number of institutions from which credit was obtained explains over-indebtedness in South Africa, Botswana, Mauritius, Malawi, Swaziland, Tanzania, Zimbabwe and Madagascar.

Lack of income is not the main cause of over-indebtedness suggesting that behavioural rather than economic reasons explain over-indebtedness in many countries. The incidence of over-indebtedness is higher among low income segments of the population only in South Africa, Mozambique, and Zambia while those that earn higher income are

more likely to be over-indebted in majority of the countries. This implies that over-indebtedness is more driven by behavioural characteristics rather than economic reasons.

Over-indebtedness is likely to impoverish the indebted. Over-indebtedness is related to poverty in South Africa, Malawi, Swaziland, Tanzania, and Zimbabwe. However, it is not related to poverty in Botswana, Mauritius, and Madagascar. The explanation for Botswana and Mauritius might be the lower incidence of poverty in the two countries while it might be the case that the poor in Madagascar finance their living cost by obtaining credit from various sources.

Promote credit literacy everywhere. We observed that over-indebtedness prevails in countries regardless of dominance of formal or informal credit. This suggests that promoting credit literacy programs is important. Credit literacy programs that aim at raising individuals' awareness about the potential risk of borrowing and considerations they need to make before applying for a loan will help in curbing the over-indebtedness problem.

Unrestrained access to credit has the potential of aggravating poverty. While reasonable access to credit can allow individuals to make life transitions, over-indebtedness can erode income and lead to poverty. Therefore, financial regulators should ensure that the financial sector provides credit products to individuals through a proper credit assessment process.

Creating income generating capacity rather than promoting credit for the poor would help in fighting poverty. It emerged from our analysis that income is an important determinant of over-indebtedness. Therefore, devising policies that help people in generating more income are likely to work better than promoting credit. As Hodson et al. (2014:pp 335) rightly put it "what the poor need is not more credit, but perhaps better credit, and most fundamentally more income".

1. Introduction

A third of adults in SADC are indebted and with access to credit from either a formal or informal lender, while a quarter of adults exhibit signs of over-indebtedness which implies that three quarters of those that borrow fall into the trap of over-indebtedness. However, studies on over-indebtedness in the sub-region are scant. Therefore, this paper aims at casting light on indebtedness and over-indebtedness of adults in the region through cross-country comparisons. It also examines factors affecting indebtedness and over-indebtedness, and assesses the link between over-indebtedness and poverty. We find that over-indebtedness is mainly driven by lack of credit literacy and borrowing from multiple sources. Interestingly, lack of income is not the main cause of over-indebtedness suggesting that behavioural rather than economic reasons explain over-indebtedness in many countries in the region.

Credit plays an important role in the life of modern society. It helps people in consumption smoothing and hence in maintaining a lifestyle even when earnings fall short of expenditure. It also allows people to respond to unexpected events such as illness, job loss, and emergencies (Hodson et al., 2014). Credit allows individuals to start a business by accessing start-up capital. It also allows individuals to finance their education enabling them to specialise in skills useful for industrial development (De Gregorio & Kim, 2000). In general, consumer credit has come to be regarded as empowering consumers to make better lives for themselves by leveraging future earning potential (Kilborn, 2005). At a macro-level, expansion of credit fuels household consumption (McCarthy & McQuinn, 2015) which is important for economic growth.

There has been a remarkable rise in indebtedness among individuals which is driven by a 'culture of consumption' engendered by the introduction of massive growth in consumer goods coupled with the 'democratisation of credit' that led to easier access to credit in many countries across the globe (Kus, 2015). However, the extent of indebtedness differs from one person to the other based on age, gender, marital status, religion, education and income level (see for details Dwyer et al., 2011; Flores & Vieira, 2014; Howley & Dillon, 2012).

Notwithstanding its benefits, credit can also lead to significant stress when people are unable to service their debt (Hodson et al., 2014). Increased availability of credit coupled with pressure to spend on consumer goods is responsible for over-indebtedness. Over-indebtedness² is a serious concern in many countries across the globe, and it is actually at

² Over-indebtedness is variously defined by different organisations and authors. For instance, according to the European Union (2013), households are considered over-indebted if they are having – on an on-going basis – difficulties meeting (or falling behind with) their commitments, whether these relate to servicing secured or unsecured borrowing or to payment of rent, utility or other household bills. On the other hand, Disney et al. (2008), classify individuals as over-indebted if they are spending more than 25% of their gross monthly income on unsecured repayments; or more than 50% of their gross monthly income on total borrowing repayments (secured and unsecured); or have 4 or more credit commitments; or are in arrears on a credit commitment for more than 3 months; and declare their household's borrowing repayments to be a 'heavy burden'. However, subjectivity in determining the cut-off point makes Disney et al. definition less amenable to wider adoption. A more appealing definition was forwarded by d'Alessio and Lezzi (2013) who use the debt-poverty indicator, according to which a household is over-indebted if its total borrowing repayments bring its income below the poverty line. In this paper, we classify a person as over-indebted if the person is borrowing to repay another debt, or does not want to borrow or had loan application turned down because of too much

the forefront of policy making in many countries. The causes of over-indebtedness can be explained from behavioural science, occurrence of risk events, and supply-side factors.

Behavioural science attributes over-indebtedness to 'impulsivity' and 'overconfidence bias'. According to Anderloni (2012:pp 294), 'over-indebtedness is likely to happen to impulsive individuals, who may adopt impatient, short-sighted behaviour patterns which make it difficult for them to be fully aware of the consequences of their financial and spending decisions'. Individuals may also exhibit 'overconfidence bias' in which they tend to be overly optimistic about their susceptibility to problems of over-indebtedness (Kilborn, 2005). Kilborn (2005) reports that overconfidence is aggravated by 'illusion of control' that leads individuals to overestimate their ability to avoid negative events by controlling their behaviour. Such behaviour leads to the decision to purchase, using debt if necessary, regardless of the effect this choice may have on the sustainability of future debt levels (Anderloni & Vandone, 2010).

Over-indebtedness can also happen when risk events arise that modify the initial conditions in which the contract between creditor and debtor was concluded (Keese, 2009). According to Disney et al. (2008), this includes loss of employment (including the failure of a business), marital breakdown, and poor financial management by the household. In addition, an unforeseen expense such as expensive medical care, an increase in the cost of debt, unforeseen changes in family structure such as divorce or death of a family member, and economic downturns that erode individual's income can also lead to over-indebtedness (Hodson et al., 2014).

Supply-side factors are also responsible for over-indebtedness of individuals (see Ironfield et al., 2005 & Kilborn, 2005; Hurwitz & Luiz, 2007). According to Kilborn (2005), intense competitive pressures forced lenders to advertise and structure their products in a manner that would take advantage of the psychological biases and weaknesses of their customers. This was confirmed by Ironfield et al. (2005) who reported that the financial services industry is partly to take the blame for over-indebtedness in the UK. Similarly, Hurwitz and Luiz (2007) attribute the increased household debt burden in South Africa to political and legislative stance that encouraged wider access to the formal financial sector.

Ryoo and Kim (2014) have proven, through theoretical modelling, that a bank's lending policy is an important factor that determines an individual's access to credit. They showed that instability in the financial system is more likely when banks' lending policies are more accommodating and less sensitive to variations in the borrowers' income. That is why Van Heerden and Renke (2015) blame South Africa's financial sector for a reckless lending practice and suggest that lenders should take reasonable steps to do a proper credit assessment in order to avoid reckless credit granting. A reckless lending regime is also found to be the cause of susceptibility to credit card misuse and over-indebtedness of young consumers in the UK (Awanis & Chi, 2014).

debt, or had debt restructured, or defaulted on a debt obligation, or had a garnishee or emolument order or have been garnisheed.

Demographic factors such as age, gender, number of dependents, work status, marital status (Worthington, 2006; Ottaviani & Vandone, 2011; Schicks, 2014; Du Caju et al., 2016; Aristei & Gallo, 2016) illness or disability (Patel et al., 2012;), financial literacy (Gathergood, 2012; Lusardi & Tufano, 2015; French & McKillop, 2016; Ironfield-Smith et al., 2005) are important factors explaining over-indebtedness. Over-indebtedness can also be caused by cross-borrowing that happens when one lender fails to satisfy the borrower's needs (Haile et al., 2015). In addition, Brunetti et al. (2015) reported that homeownership increases the likelihood of over-indebtedness. At a macro level, change in interest rate, general inflation and house price increase are likely to lead to over-indebtedness (Meng et al., 2013; Miango et al., 2013; Kim et al., 2014). Moreover, financial innovation such as mortgage securitisation is considered to contribute to over-indebtedness (Walks, 2013).

Over-indebtedness is concerning for it has serious consequences both at individual and at a macro level. At an individual level, over-indebtedness is related with an increased chance of emotional distress (Gathergood, 2012; Hodson et al., 2014), deterioration of well-being and/or mental health (EU, 2013; Fitch et al., 2011; Nettleton & Burrows, 1998), bad health (Angel, 2016; Shen et al., 2014; Cuesta, 2015), higher perceived stress and depression, worse self-reported general health, and higher diastolic blood pressure (Sweet et al., 2013). Over-indebtedness is also associated with decreased self-esteem and social relationships (Wang, 2010). More concerning, over-indebtedness may increase a person's chance of involvement in crime as reported by McIntyre and Lacombe (2012) who find a link between the level of personal indebtedness and observed pattern of robberies and thefts in Ireland. Recent studies also report that over-indebtedness causes family breakdown leading to higher divorce rates (see Bridges & Disney, 2016).

Excessive accumulation of debts also causes deterioration in households' social and economic well-being, thus leading to poverty (d'Alessio & Iezzi, 2013). Betti (2007) reported that over-indebtedness can be a factor, even a major factor, in creating and sustaining poverty, particularly among low-income, old age households and single-parent households with young children. This was further confirmed by Dattasharma et al. (2016) who reported that MFI loan repayments led to impoverishment.

At a macro-level, over-indebtedness is observed to hamper consumption over business cycles and amplify recessions (Kukk, 2015). Over-indebtedness also leads to an increase in non-performing loans that weakens bank balance sheets which may cause a credit crunch, as financial institutions become cautious about lending. According to the EU (2013), household over-indebtedness adversely affects the overall health of the economy by curtailing aggregate demand, employment, and growth. Over-indebtedness also leads to a social welfare loss (Nakajima, 2012).

The multi-faceted causes and consequences of over-indebtedness call for studies that would guide policy to curb the problem, hence this paper. The rest of the paper is structured as follows - the next section describes the data and presents the methodology. Section three, presents the results of descriptive and econometric analysis, and the conclusions drawn from the key findings are presented in section four. Section five presents the policy implications.

2. Data and methodology

2.1. The data

Data for the study were obtained from nationally representative FinScope Consumer Surveys conducted in different years in 11 SADC member countries listed in Table 1 below.

Table 1: Sample size and year survey was conducted

No	Country	Year of survey	Sample size	Total adult population to which the survey applies
1	Botswana	2014	1,503	1,324,572
2	Democratic Republic of Congo	2014	5,000	21,698,341
3	Madagascar	2016	5,040	11,327,321
4	Malawi	2014	3,005	8,025,052
5	Mauritius	2014	4,000	921,007
6	Mozambique	2014	3,905	14,431,915
7	South Africa	2015	5,000	37,320,003
8	Swaziland	2014	3,440	565,043
9	Tanzania	2013	7,987	24,231,763
10	Zambia	2015	8,479	8,129,450
11	Zimbabwe	2014	4,000	6,998,144
Total			51,359	134,972,612

2.2. Methodology

The analysis of the data comprised descriptive statistics including graphical analysis and logistic regression analysis. Definitions of the variables that are included in the analysis are presented in Table 3 (in appendix B). Cross-country comparisons were made on indebtedness, over-indebtedness and related variables. To obtain a better picture of differences in indebtedness and over-indebtedness across demographic characteristics, indebtedness and over-indebtedness were analysed across gender, age, level of education, employment status, personal monthly income category, and place of residence.

Logistic regression analysis was conducted to examine the determinants of indebtedness and over-indebtedness and also the link between over-indebtedness and poverty. The first model was used to identify factors affecting indebtedness while the second model assessed the determinants of over-indebtedness. The third model examined the relationship between over-indebtedness and poverty (please refer to Appendix A for a detailed variable description and model specification).

The difference in socio-economic characteristics of countries in the dataset leads to a heterogeneity problem. We therefore run models using clusters of countries in the dataset. The initial analysis involved two clusters with the first group comprising three countries, i.e., South Africa, Botswana, and Mauritius (henceforth M3), while the rest of the countries are included in the second group. South Africa, Botswana and Mauritius are clustered together because they are upper middle income countries with a higher per-capita income (see table 2). Besides, they exhibit a relatively well-developed financial sector and higher level of financial inclusion. The remaining eight countries are grouped together because they share similarity in terms of both economic and financial sector development.

Table 2: Per capita income and financial inclusion comparison of countries

Country	World Bank classification	Per capita income(USD)	Formal credit (% of adults)	Bank accounts (% of adults)
Botswana	Upper middle income	6 684	18	50
Mauritius	Upper middle income	6 497	34	85
South Africa	Upper middle income	5 879	45	78
Swaziland	Lower middle income	2 342	9	54
Zambia	Lower middle income	798	4.5	25
Tanzania	Low income	484	5	14
Zimbabwe	Low income	431	13	30
Mozambique	Low income	418	6	20
Madagascar	Low income	273	5	12
Malawi	Low income	220	4	27
Democratic Republic of Congo	Low income	165	0.5	12

Source: World development indicators and FinScope.

Econometric models are implemented for the two groups separately, and models are also estimated for each country separately.

3. Analysis and results

In this section, the results of descriptive and econometric analyses are presented. The descriptive analysis involves a cross-country comparison of over-indebtedness and its attendants while the econometric analysis involves identifying factors affecting indebtedness and over-indebtedness. It also shows the link between over-indebtedness and poverty.

To paint a picture on indebtedness and over-indebtedness at a regional level, we present descriptive statistics generated using the aggregated data. This is followed by cross-country comparisons of over-indebtedness and related variables using graphical analysis.

3.1. Descriptive analysis

Analysis of descriptive statistics of variables used in the econometric models provides interesting insights into indebtedness and related factors at a regional level. As shown in Table 3 (in appendix B), 32 percent of adults in the region are indebted and access credit from banks, other formal or informal sources. Interestingly, 36 percent of adults are credit literate which exceeds the percentage of those that are indebted. A quarter of adults in the region are over-indebted. Although this does not seem too much when viewed in isolation, it is worrisome given that only a third of adults are indebted. It suggests that, on average, 78 percent of adults that access credit are over-indebted.

Analysis of usage of credit shows that while 20 percent of adults use loan proceeds for productive purposes, 27 percent use it to buy food. Penetration of bank credit is small with only 6 percent of adults having access to it while 10 percent have access to credit from other formal institutions and 17 percent access informal credit. A comparison of sources of credit shows that informal credit is more popular than either bank or other formal credit.

There is the potential to access secured formal credit because 63 percent of adults own a home. In fact, the analysis of home ownership by rural/urban shows that home ownership is higher in rural areas. However, given that formal financial institutions are scant in rural areas means people in rural areas may not be able to use their properties³ as collateral to access credit. A look at other socio-economic factors shows that 41 percent of adults live in urban areas, 30 percent have employment, 36 percent have primary schooling, 45 percent have secondary schooling and 8 percent have post-secondary schooling.

3.1.1. Indebtedness and over-indebtedness across demographic characteristics

Analysis of indebtedness and over-indebtedness by gender shows that 33 percent of men have credit compared to 32 percent of women. A further analysis of credit by source revealed that slightly more women than men use other formal and informal credit. Slightly more men than women use bank credit⁴. Over-indebtedness exhibits the same trend as indebtedness, with 26 percent of men exhibiting signs of over-indebtedness compared to 25 percent of women. A slightly higher level of over-indebtedness of men might be driven by them having better access to credit.

³ It should be noted that home ownership does not necessarily mean having title deeds to the property so that it can be used for collateral. By and large, homes in rural areas have no title deeds and thus cannot be used as collateral for borrowing purposes.

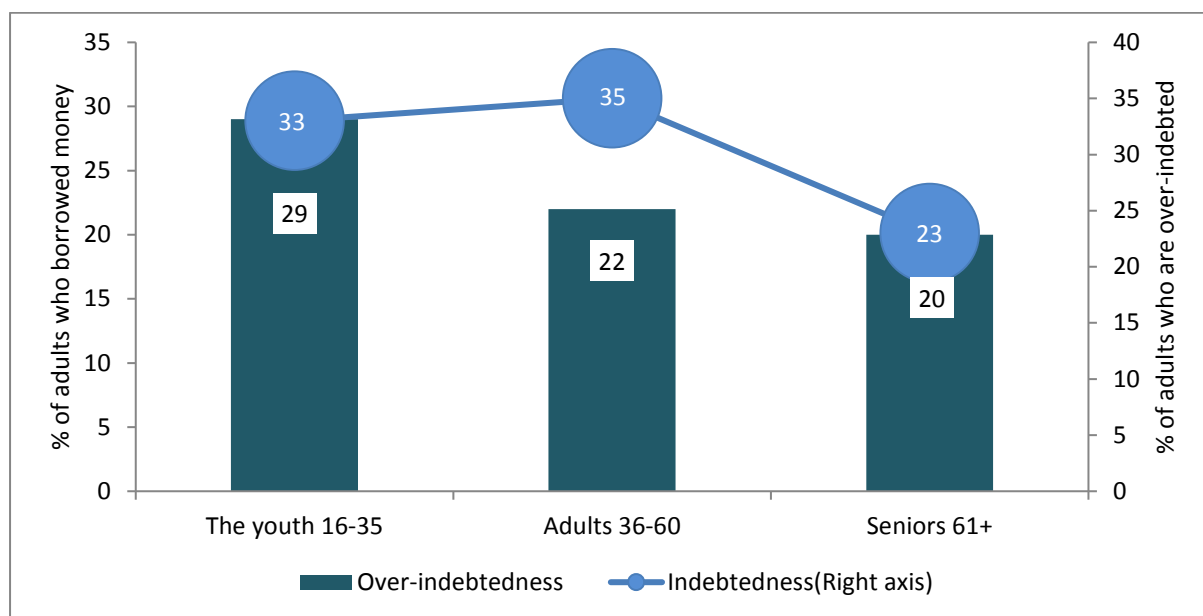
⁴ We noted that 6.5 percent of men access bank credit compared to 4.5 percent of women; 11 percent of women access loans from other formal institutions, and 17 percent of women access informal credit compared to 16 percent of men.

Figure 1: Indebtedness and over-indebtedness by gender

Source: FinScope

Studies show that the youth are more likely to be indebted and also assume higher burden leading to higher chances of them being over-indebted (see Walks, 2014; Aristei & Gallo, 2016). Indebtedness across age groups exhibits a different trend than what was reported in previous studies. As shown in Figure 6, 30 percent of the youth are indebted compared to 35 percent of adults and 27 percent of seniors. The youth are less indebted than adults but more indebted than the seniors. Further analysis of indebtedness by types of institutions (i.e., bank credit, other formal credit, and informal credit) shows that the youth have lesser access to bank credit compared to adults and seniors. This might be due to the absence of credit history for the youth that borrowers build over time.

Over-indebtedness exhibits a different trend than indebtedness. The youth are relatively more over-indebted than both adults and seniors evident from the fact that 29 percent of the youth are over-indebted compared to 22 percent of adults and 20 percent of the seniors.

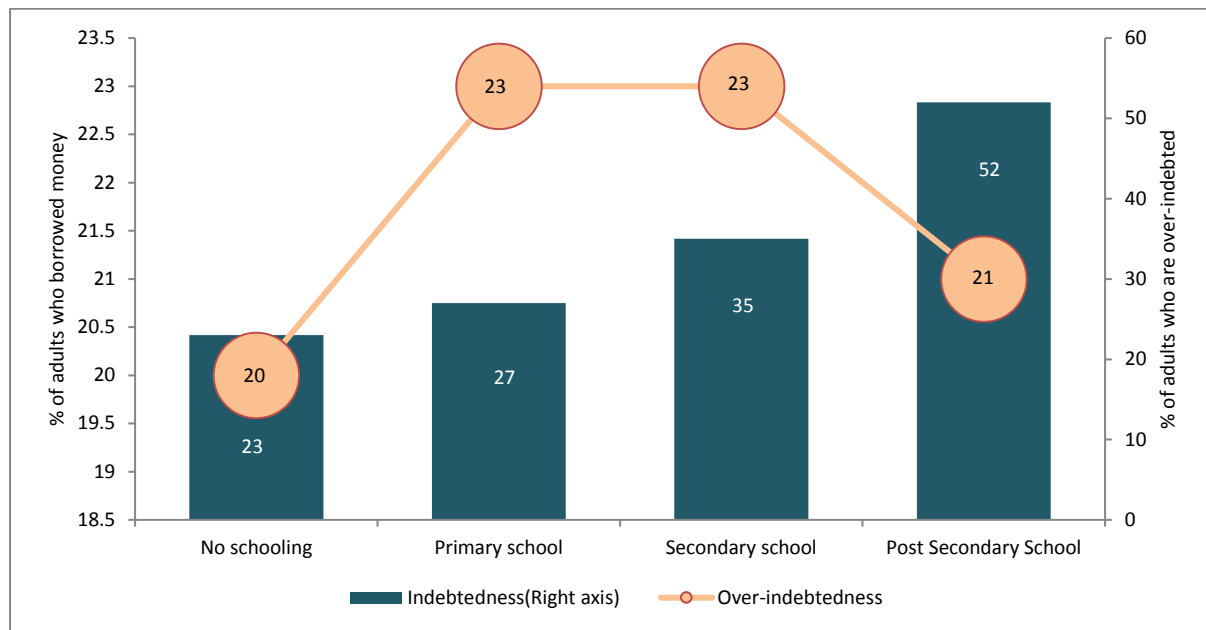
Figure 2: Indebtedness and over-indebtedness by age

Source: FinScope

Indebtedness is also associated with level of education. Indebtedness increases as one moves from those who have no schooling to those with post-secondary schooling. As shown in Figure 7, while 23 percent of those with no schooling are indebted, the comparable figure for those with primary, secondary and post-secondary schooling are 27 percent, 35 percent, and 52 percent respectively. Further analysis of the four levels of education by type of institutions from which credit was obtained shows that 29 percent of those with post-secondary schooling had bank credit compared to 1 percent, 2 percent and 7 percent of those with no schooling, primary, and secondary schooling respectively. The other formal institutions are also more accessible to those with secondary and post-secondary schooling. In contrast, informal credit is commonly accessed by those with no schooling and primary schooling.

Analysis of over-indebtedness across levels of education shows that it is higher among those with primary and secondary schooling and relatively lower among those with no schooling and post-secondary schooling. However, comparison of over-indebtedness base on over-indebtedness to indebtedness ratio⁵ reveals that those with no schooling are the most over-indebted followed by those with primary schooling. Over-indebtedness is relatively lower among those with secondary schooling and very low among those with post-secondary schooling.

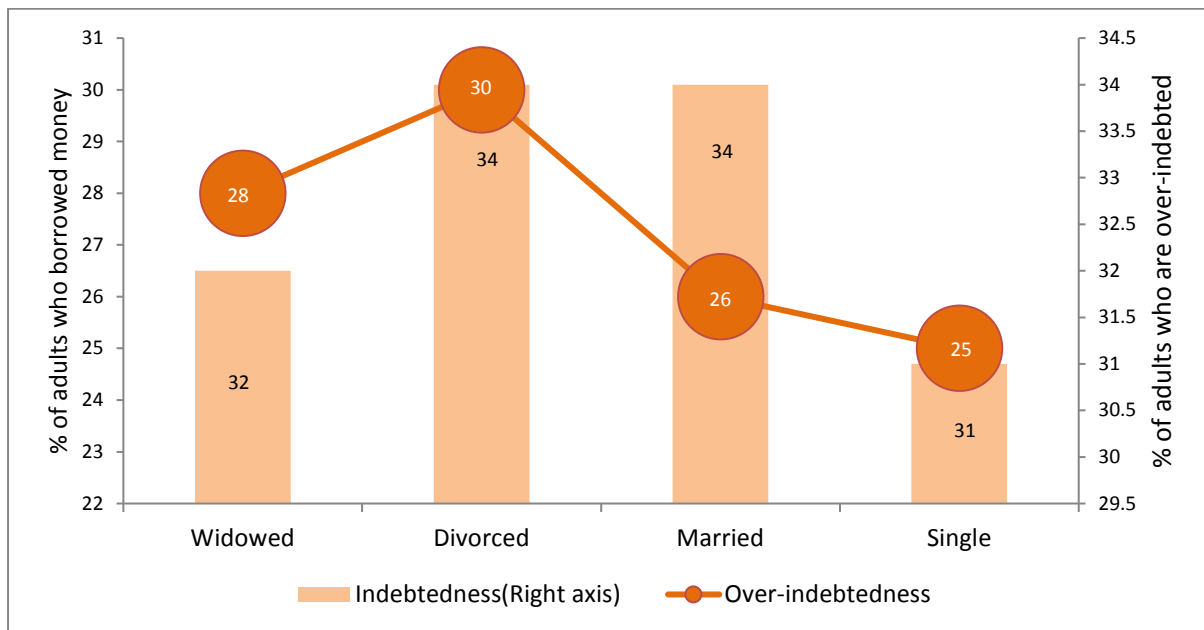
⁵ The fact that 20 percent of adults with no education exhibit signs of over-indebtedness compared to only 23 percent of them having access to credit means 87 percent those that borrow experience over-indebtedness. A comparable figure for those with primary, secondary and post-secondary schooling is 85 percent, 65 percent, and 40 percent respectively.

Figure 3: Indebtedness and over-indebtedness by level of education

Source: FinScope

The effect of family structure on indebtedness and over-indebtedness was reported by Flores (2014). Worthington (2006) reported that single parents and couples with dependents are likely to be more financially stressed. According to Bridges and Disney (2016), over-indebtedness is the cause and consequence of marital breakdown. An analysis of indebtedness by marital status shows that it is lower among singles and widowed individuals, while higher among the married and divorced. Lower indebtedness among singles might be due to less financial responsibility and hence lower demand for credit. Indebtedness is higher among the married and divorced which might be due to higher financial responsibility.

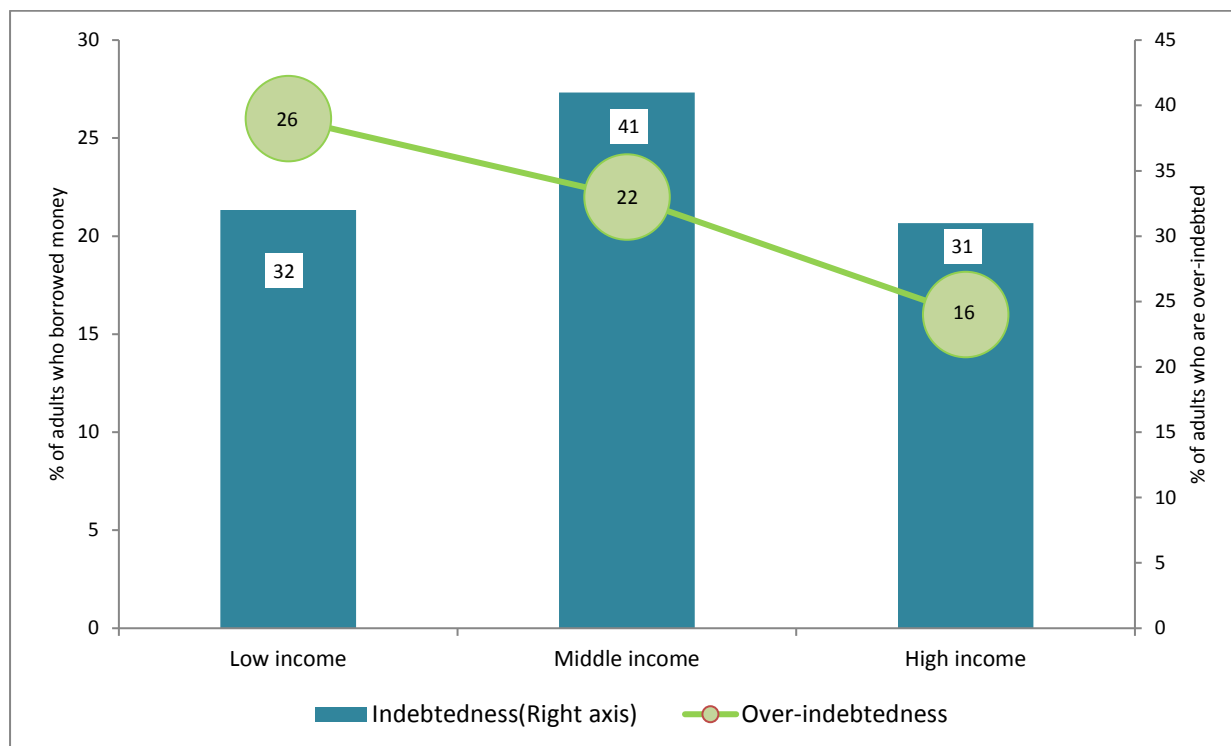
Over-indebtedness is lower among the married and singles than the divorced and widowed. Higher level of indebtedness among the divorced and widowed is consistent with previous studies that report increased financial vulnerability and hence increased chance of over-indebtedness among the two groups.

Figure 4: Indebtedness and over-indebtedness by marital status

Source: FinScope

Income is identified as an important factor affecting both indebtedness and over-indebtedness (see EU, 2013; Flores, 2014). An analysis of indebtedness across three income categories (i.e., low income, middle income, and high income) shows that indebtedness is relatively higher among middle income groups than low income and high income groups. Further analysis of indebtedness by source of credit reveals that bank credit is mostly accessed by middle income groups while low income groups mostly rely on credit from other formal institutions.

Over-indebtedness is disproportionately high among the low income groups compared to middle income and high income groups. This is consistent with previous studies that report a high degree of financial vulnerability among low income groups. The degree of over-indebtedness is not commensurate with the degree of indebtedness among middle income groups that shows relatively higher financial resilience.

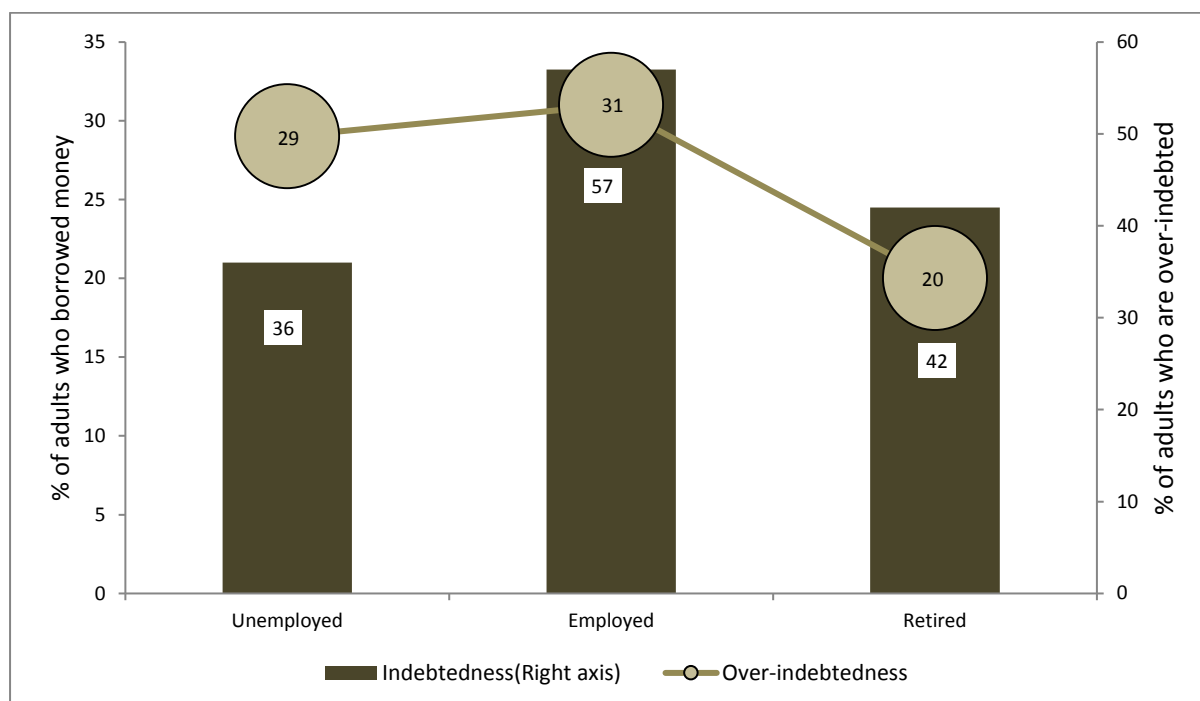
Figure 5: Indebtedness and over-indebtedness by income

Source: FinScope

That employment status affects indebtedness and over-indebtedness was noted by previous studies (see Disney, Bridges & Gathergood, 2008; Ottaviani & Vandone, 2011; Philip et al., 2016; Aristei & Gallo, 2016). The unemployed are likely to exhibit increased financial vulnerability than the employed. Figure 10 shows that indebtedness is higher among the employed than the unemployed and the retired. In fact, the unemployed exhibit the lowest degree of indebtedness which might be due to supply-side factors including eligibility particularly from the formal market. An analysis of source of credit for each group reveals that the unemployed mostly rely on informal credit and less on bank and other formal credit. The employed rely on bank and other-formal credit while retirees have greater access to other formal credit.

Vulnerability of the unemployed is evident from a disproportionately higher degree of over-indebtedness compared to the employed and the retired. The unemployed bear the heaviest burden of over-indebtedness as evidenced by over-indebtedness ratio⁶ of 0.81 compared to 0.54 for the employed and 0.48 for the retired.

⁶ The over-indebtedness ratio is the ratio of over-indebtedness to indebtedness. For the unemployed, the index is 0.81 which is 29 percent rate of over-indebtedness divided by 36 percent indebtedness rate.

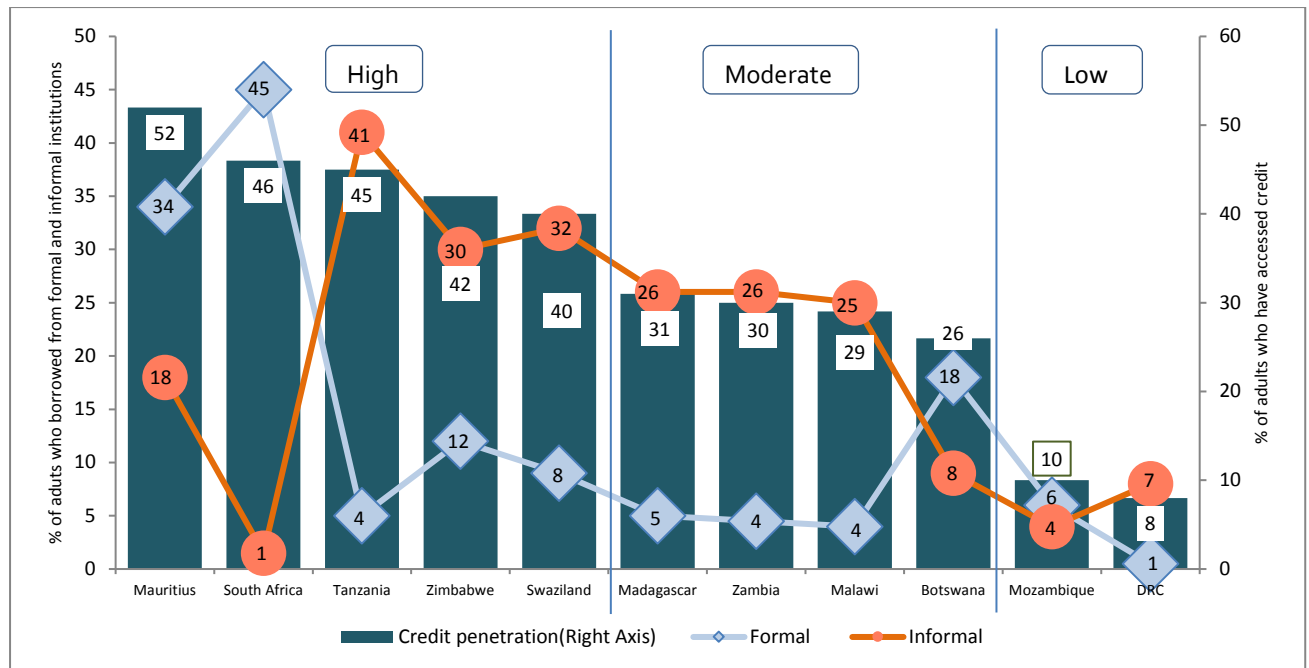
Figure 6: Indebtedness and over-indebtedness by employment status

Source: FinScope

3.1.2. Cross-country comparison

Credit penetration varies across countries, and as shown in Figure 1, Mauritius is at the top while the Democratic Republic of Congo is at the bottom of the distribution. The countries can be clustered into three groups as high, moderate, and low credit penetration. The first group comprises Mauritius, South Africa, Tanzania, Zimbabwe and Swaziland. The second group comprises Madagascar, Zambia, Malawi and Botswana followed by a third group that comprises Mozambique and the Democratic Republic of Congo. One can note that there are differences even among countries within each cluster in terms of relative penetration of formal and informal credit. From among countries in the first cluster, South Africa is at the top with 45 percent of adults borrowing from formal financial institutions followed by Mauritius where a third of adults access formal credit.

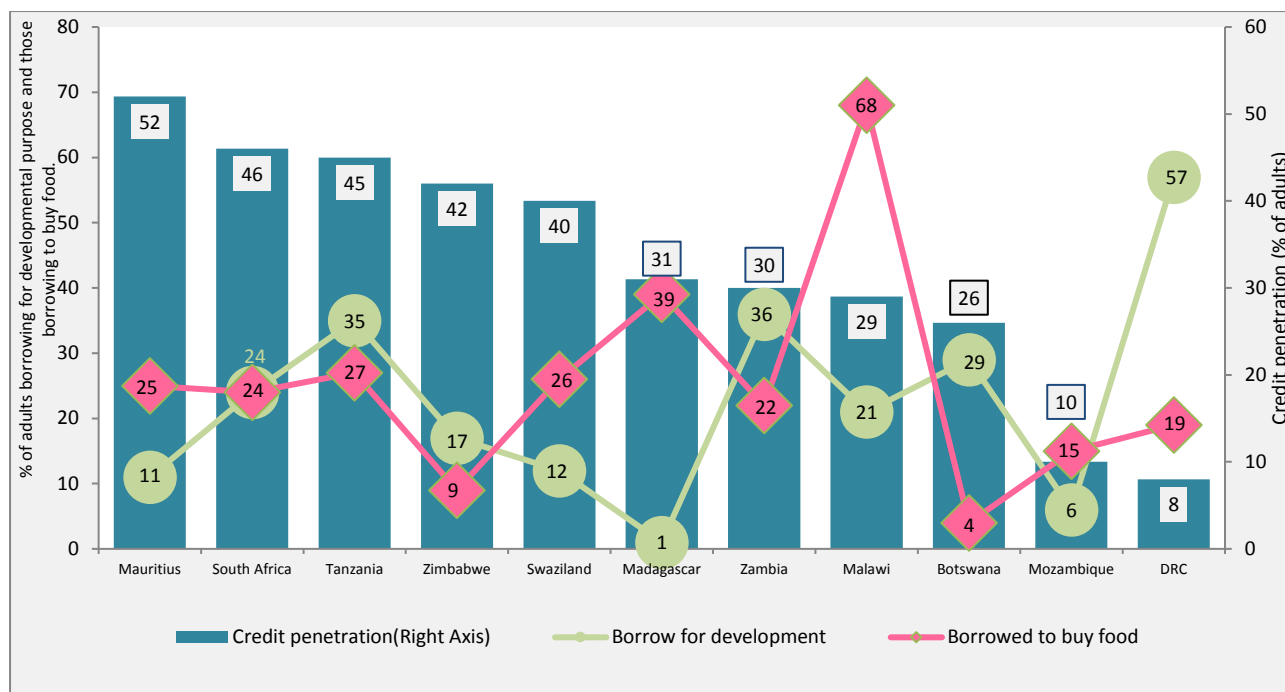
Tanzania, Zimbabwe and Swaziland exhibit relatively lower penetration levels of formal credit and they have relatively large numbers of adults utilising the informal channel. The variation in the nature of formal and informal access is also evident in the second cluster. While Madagascar, Malawi, and Zambia have a higher penetration of informal credit, Botswana has a lower penetration of informal credit and a relatively higher penetration of formal credit. The same trend is noticeable among the last cluster where Mozambique has a relatively higher penetration of formal credit than the Democratic Republic of Congo.

Figure 7: Formal credit, informal credit and overall credit penetration.


Source: FinScope

Proceeds from loans can be used to meet liquidity requirements such as paying for regular expenses in cases where there is delay in income. Loans can also be used to invest in activities that can potentially boost one's income generating capacity-commonly known as developmental activities such as investing in education, property, business or any other similar activity. Although both liquidity management and investment in developmental activities are important, too much usage of credit for liquidity management activities may signal potential repayment problems. It may also show relative ease of accessing credit. We classified borrowers into two groups as those that borrow for developmental purposes (to pay for own and children education, start up a new business, expand existing business, buy vehicles, and etc.) and those that borrow to buy food and clothing.

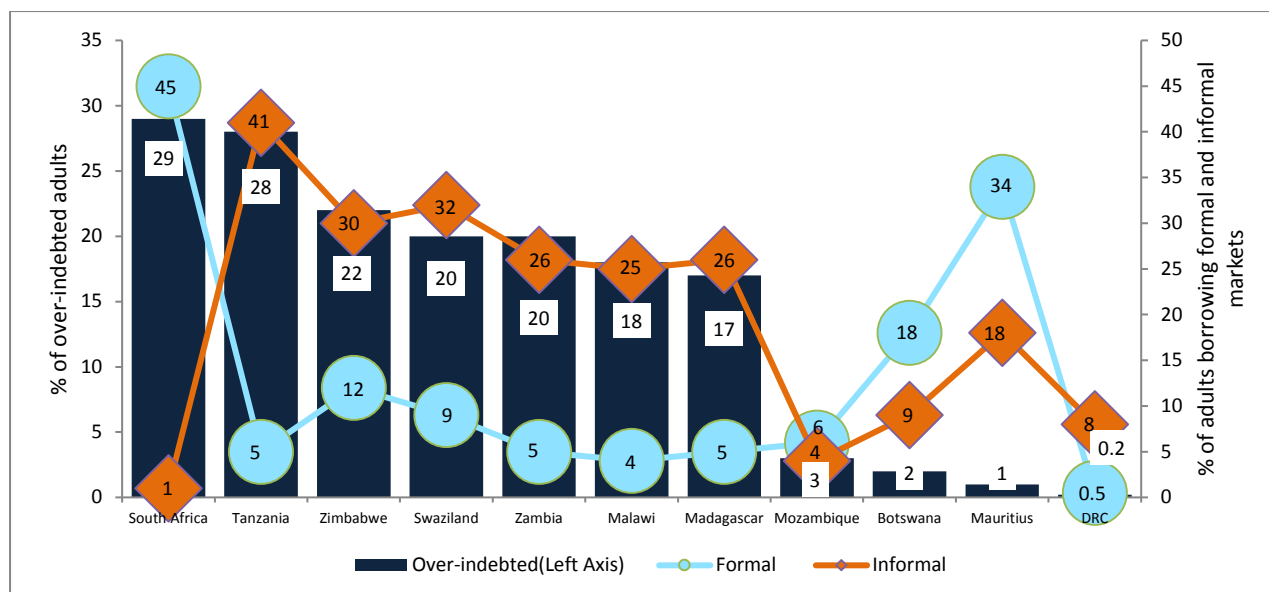
Cross-country comparisons of those who borrowed for developmental purposes shows that 57 percent of borrowers in the Democratic Republic of Congo use the proceeds for developmental purposes compared to only 1 percent of adults in Madagascar. Higher borrowing for food is the most common purpose in Malawi where 68 percent of adults report to have done this and it is the least cited purpose in Botswana wherein only 4 percent of adults borrow to buy food. Strikingly, only 11 percent of adults in Mauritius borrow for developmental purpose despite a relatively higher penetration of credit in the country. In both South Africa and Mauritius, a quarter of adults borrow to buy food which may imply a relative laxity of financial institutions in extending loans which might be due to competitive pressure in the credit market or 'reckless credit' in the case of South Africa as noted by Herdeen and Renke (2016). This calls for ensuring appropriate regulatory control on the one hand and promoting credit literacy on the other.

Figure 8: Credit penetration and reasons for borrowing

Source: FinScope

A cross-country comparison of over-indebtedness shows variations across countries. South Africa and Tanzania are the top of the over-indebted adults ranking with nearly a third of adults reporting to experience over-indebtedness while Mauritius and the Democratic Republic of Congo are at the bottom with 1 percent or less over-indebted. Given that 45 percent of adults borrow from the formal market, the over-indebtedness in South Africa is related to the conduct of the formal credit market that can be tackled through regulation. In contrast, the over-indebtedness problem in Tanzania is related to the informal market activity that is not amenable to regulatory intervention. It may be in fact addressed through credit literacy programs.

Mozambique, Botswana, Mauritius, and the Democratic Republic of Congo exhibit lower levels of over-indebtedness than the rest of the countries in the region. However, the low levels of over-indebtedness might be due to varying reasons. For instance, low levels of over-indebtedness in Mozambique and the Democratic Republic of Congo may be due to lower credit penetration (both countries have the lowest credit penetration record in the region) while a proper market conduct might explain the trend in Botswana and Mauritius (both have high level of formal credit usage). In general, the comparison shows that over-indebtedness is not necessarily linked to either formal or informal credit.

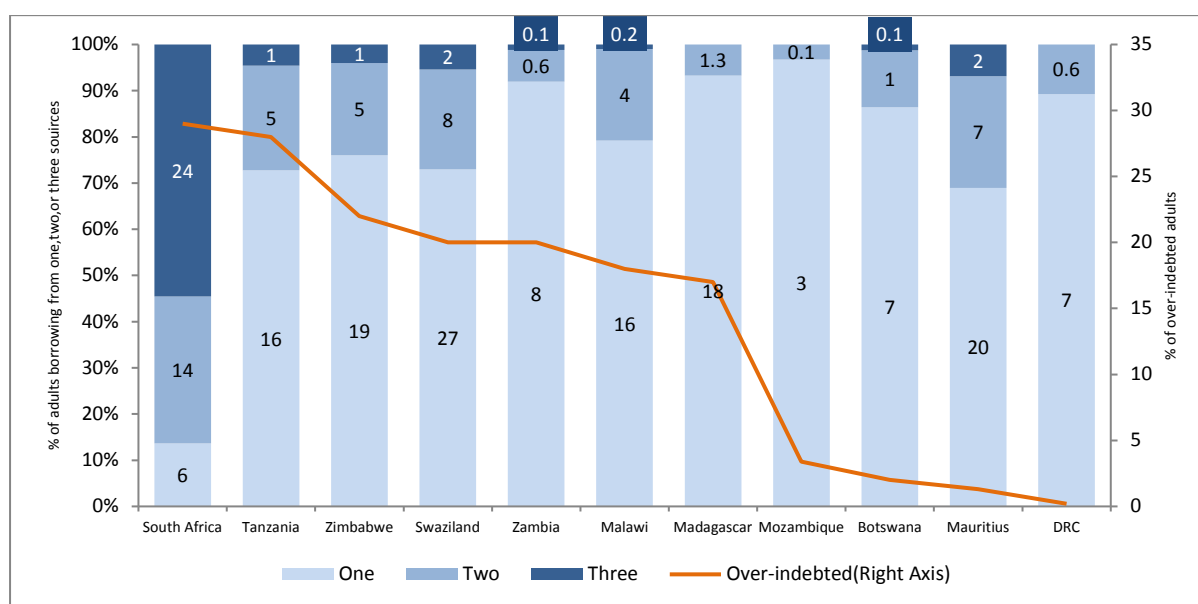
Figure 9: % of over-indebted adults vs formal and informal credit


Source: FinScope

Over-indebtedness might also be caused by an individual's ability to access credit from multiple sources. As a result, this report groups adults into three categories. The first group comprises those who borrowed either from a bank, other formal or informal institution. The second group comprises individuals who borrowed from two sources (for instance, bank and other formal or bank and informal or other formal and informal). The third group comprises those who access credit from all the three sources.

As shown in Figure 4, cross-country variation is evident in the number of institutions used to access credit. The countries can be fairly grouped into two categories. The first category comprises countries where adults accessed credit from two types of institutions. The second includes countries in which adults sourced credit from three types of institutions. While the Democratic Republic of Congo, Mozambique, and Madagascar are in the first category the rest are in the second category. South Africa stands out as an outlier among the countries wherein adults accessed credit from three types of institutions because a quarter of adults in the country reported to have accessed credit from three sources simultaneously. This actually confirms our statement in the earlier section that in South Africa credit is easy to come by. Besides, one can note that competition in the credit market may not be confined within firms in the same institutional category but there seems to be competition across institutions, i.e., across banks, other formal and informal lenders.

Figure 10: % of over-indebted adults vs number of institutions from which credit was obtained



Source: FinScope

3.2. Econometric analysis

Drivers of indebtedness

Analysis of drivers of indebtedness provides interesting insights into factors affecting it. We noted perceptible differences in the factors affecting indebtedness in the two groups. For M₃, indebtedness is significantly affected by credit literacy and it is important to access a bank credit. Conversely, credit literacy is negatively related to access to informal credit implying that the more literate one is the more likely one is to use bank or other formal credit and less likely to use informal credit. Interestingly, credit literacy is positively related to even informal credit in the second group. This might be driven by relative scarcity of formal credit pushing people to the informal market regardless of their level of credit literacy.

Our country-level models reveal disparities among countries within each group. In the M₃ countries, South Africa and Botswana exhibit similar patterns where credit literacy increases the chance of accessing bank and other formal credit while it decreases the chance of accessing informal credit. In Mauritius, while credit literacy increases the chance of accessing credit from banks, it decreases the chance of credit from both other formal and informal institutions. This might be due to relative popularity of bank credit in Mauritius. Likewise, the disparity in terms of the effect of credit literacy on indebtedness is noticeable among countries in the second group. While credit literacy increases the chance of accessing bank credit in all the countries except Swaziland, its effect on other formal and informal credit varies. Credit literacy increases chance of accessing other formal credit in Malawi, Mozambique, Swaziland, it decreases the chance of accessing credit in the rest of the countries. Similarly, credit literate adults tend not to use informal credit in the

Democratic Republic of Congo, while the tendency to use informal credit by credit literate adults is high in Malawi, Mozambique, Swaziland, Tanzania, Zambia, and Madagascar.

In M3 countries, those that own a home are likely to access credit from bank and other formal financial institutions while they are less likely to borrow from informal institutions. Lower propensity among home owner's to access informal credit might be due to their ability to access the formal credit, eventually lowering their appetite for informal credit. Informal credit is likely to be accessed by those that do not own a home which might be due to absence of collateral requirement in the informal credit market. Strikingly, home ownership is still useful in accessing credit in the second group, implying that the informal providers might follow a relatively stringent credit policy due to higher demand for it. It may also imply the lower likelihood of unsecured credit being extended due to the lack of supply in adequate amounts.

As reported in Table 4 (appendix B) cross-country variations are evident in how home ownership is related to access to credit. Within the M3 group, home owners in South Africa are likely to access bank and other formal credit and less likely to access informal credit. In Botswana, home owners are less likely to access either a bank, other formal or informal credit. In Mauritius, while home owners are more likely to access bank credit, they are less likely to look for other formal and informal credit. Within the second group, home owners are likely to access bank credit in the Democratic Republic of Congo, Tanzania, Zambia, Zimbabwe and Madagascar and less likely to access bank credit in Mozambique, Swaziland, and Malawi. Home owners in the Democratic Republic of Congo, Tanzania, and Madagascar are also likely to access other formal credit while those in Malawi, Mozambique, Swaziland, Zambia, and Zimbabwe are less likely to access other formal credit. Home owners are unlikely to use informal credit except in Malawi and Tanzania which might be due to the relative scarcity of formal credit in the two countries.

Indebtedness is also affected by household size. In the M3 countries, those with larger household size are less likely to access either bank, other formal or informal credit while those in larger households in the second group are more likely to access credit from either source. In fact, cross-country comparisons revealed that, within the M3 countries, those in larger households in South Africa are more likely to access both bank and other formal credit and less likely to access informal credit. In Mauritius, those in larger households are more likely to access other formal or informal credit but less likely to access bank credit. Among countries in the second group, those in the Democratic Republic of Congo, Malawi, Mozambique, and Madagascar with larger households are less likely to access bank credit and more likely to access credit from other formal or informal sources. In Tanzania, Swaziland, Zambia and Zimbabwe, those in larger households are more likely to access bank credit and informal credit and less likely to access other formal credit. Household size increases the likelihood of accessing credit from other formal institutions in the Democratic Republic of Congo, Malawi, Mozambique, Zambia, and Zimbabwe while it decreases the likelihood of accessing credit from other formal institutions in Tanzania, Swaziland, and

Madagascar. Household size increases the likelihood of accessing informal credit in all the countries in the second group except Zambia and Zimbabwe.

Income is understandably one of the most important factors affecting indebtedness. In M3 countries, an increase in income increases the chance of accessing bank credit but decreases the chance of accessing credit from other formal and informal institutions. This implies that banks meet the financing needs of middle income and high income people better than other formal and informal lenders. It also shows the importance of other formal and informal financial institutions in serving lower income segments of the society. In the second group, income increases the chance of accessing credit irrespective of its source, albeit with varying degree of significance. Cross-country variations are evident within each group. Within M3 countries, income increases the chance of accessing bank credit and decreases the likelihood of accessing informal credit in all the three countries. Income increases the chance of accessing credit from other formal lenders in Botswana and Mauritius while it decreases in South Africa. For all countries in the second group, income increases the chance of accessing bank and other formal credit. Income also increases access to informal credit in the Democratic Republic of Congo, Malawi, Mozambique, and Swaziland while it decreases access to informal credit in Madagascar, Tanzania, Zambia and Zimbabwe.

Employment is related to higher chance of accessing bank and other formal credit and lower chance of accessing informal credit in the M3 countries while it increases the chance of accessing credit in the second group irrespective of the source. However, a closer look at country-level models reveals that employment increases the chance of accessing credit from all sources in Botswana and Mauritius. In South Africa, employment increases the chance of bank and other formal credit while it decreases chance of informal credit. For countries in the second group, employment is related to an increase in the chance of accessing bank credit in all the countries except in the Democratic Republic of Congo and Malawi. Employment also increases the chance of access to other formal credit in all the countries except in Mozambique. The employed are also more likely to access informal credit in all the countries except in Zambia.

In general, different factors explain indebtedness in each country. For instance, in South Africa, bank credit is accessed by the credit literate, those that own homes, have a larger household size, earn higher income, employed and living in urban areas. A similar pattern is observed in Botswana, Mauritius, Madagascar, Tanzania, Zambia, and Zimbabwe. Other formal credit is accessed by low income people in South Africa while informal credit is widely accessed by low income people in most countries.

Drivers of over-indebtedness

Over-indebtedness can be triggered by a combination of supply-side factors, personal characteristics and risk factors. However, our analysis in this section focuses on personal characteristics of adults such as credit literacy, number of institutions from which credit

was obtained, source of credit, home ownership and socio-demographic characteristics. As reported in Table 4 (appendix B), credit literacy is positively related to over-indebtedness in M₃ countries implying that credit literate individuals are more likely to be over-indebted. For countries in the second group, credit literacy is negatively related to over-indebtedness implying that credit literate individuals in those countries are less likely to be over-indebted. The difference in the effect of credit literacy on over-indebtedness between the two groups might be due to relatively easier access to credit in the M₃ countries compared to countries in the other group. This could also be due to differences in the effectiveness of consumer protection and market conduct regulation and implementation.

A closer look at individual country models shows variations even among countries within each group. For instance, while credit literacy increases over-indebtedness in South Africa and Botswana it decreases over-indebtedness in Mauritius. In the second group, credit literacy is related to a higher chance of over-indebtedness in Malawi, Tanzania, and Madagascar while it is related to lower chance of over-indebtedness in Mozambique, Swaziland, and Zambia. The number of institutions from which credit was obtained is the other important factor explaining over-indebtedness. Models for the M₃ and other countries all consistently show that the chances of over-indebtedness increases with an increase in the number of institutions from which credit is obtained. This has been confirmed through individual countries' models where the number of institutions is positively related to over-indebtedness in all the countries except Mozambique.

To examine the relationship between over-indebtedness and each source of credit, we introduced one source of credit (i.e. bank, other formal, informal) at a time. For M₃ countries, while bank credit increases the chance of over-indebtedness credit from other formal and informal institutions is related to lower chance of over-indebtedness. In contrast, for countries in the second group, bank credit is related to a higher chance of over-indebtedness while other formal and informal credit is related to a higher chance of over-indebtedness. However, a more nuanced picture can be painted when looking at individual country models. Bank credit is related to higher chances of over-indebtedness in South Africa, Mozambique, Tanzania, Zambia, and Zimbabwe while it is related to lower chances of over-indebtedness in Botswana, Mauritius, Malawi, Swaziland, and Madagascar. Credit from other formal institutions is related to higher chances of over-indebtedness in Botswana, Mozambique, Swaziland, Tanzania, and Madagascar while it is related to lower chances of over-indebtedness in South Africa, Mauritius, Malawi, Zambia and Zimbabwe. Informal credit is related to higher chances of over-indebtedness in most countries except in South Africa, Tanzania, Zambia and Zimbabwe. Those who borrow from a bank and informal lenders are less likely to be over-indebted. Borrowing from other formal institutions increases the chance of over-indebtedness calling for further probe into this sector to see if there is loan sharking practice or laxity in extending loans.

Home ownership is positively related to over-indebtedness in both M₃ and second group countries. This has been confirmed through individual country models (except for

Botswana, Zambia and Zimbabwe) which might be caused by inability of home owners to repay their home loans. This is consistent with earlier finding by Brunetti (2015) who reported that home ownership increases over-indebtedness.

Despite earlier reports by Ottaviani and Vandone (2011) that increase in household size is positively related to over-indebtedness due to the financial burden caused by increased number of dependents, our result suggests that increase in household size decreases the chance of over-indebtedness. This might be due to a possible correlation between household size and household income contributors. Over-indebtedness increases with age in South Africa, Botswana, Mauritius, and Swaziland while it decreases as age goes up for the rest of the countries. The result for the rest of the countries implies that younger people are more over-indebted than older ones which is consistent with Flores and Vieira (2014). This might be explained by a positive perception of the youth on debt as a necessary investment in status attainment (Dwyer et al., 2011). Gender has a negative coefficient which means women are more over-indebted than men.

Income is the other important predictor of over-indebtedness. Although the aggregated model for M3 countries and the other groups suggests that increase in income increases the chance of over-indebtedness, a look at country-level model results shows a positive link between income and over-indebtedness in countries except South Africa and Mozambique. A negative link between over-indebtedness and income in the two countries suggest that people at a lower income quintile are more likely to suffer from the strains of over-indebtedness.

While employment is related to lower chances of indebtedness in many countries, it increases over-indebtedness in South Africa, Mauritius, and Mozambique which contrasts with expectation. Urban dwellers exhibit higher chances of over-indebtedness in Botswana, Mozambique, Swaziland, Tanzania, Zimbabwe, and Madagascar while they are less likely to be over-indebted in the rest of the countries.

In general, seven factors stand out as useful variables explaining over-indebtedness. The first is credit literacy, the lack of which leads to over-indebtedness in Mauritius, Mozambique, Swaziland, and Zambia. Secondly, the number of institutions from which credit was obtained explains over-indebtedness in South Africa, Botswana, Mauritius, Malawi, Swaziland, Tanzania, Zimbabwe and Madagascar. Over-indebtedness is likely to affect homeowners in South Africa, Malawi, Mozambique, Swaziland, Tanzania, and Madagascar. Contrary to previous studies that report the number of dependents to contribute to over-indebtedness, our result suggests that this is not the case except in Tanzania. Over-indebtedness is also not strongly caused by lack of income because in majority of the countries the over-indebted are those with a higher income. The incidence of over-indebtedness is higher among low income segments of the population only in South Africa, Mozambique, and Zambia. In most countries, employment acts as a shield against over-indebtedness. However, employment is related to increased chance of over-

indebtedness in South Africa, Mauritius, and Mozambique. While over-indebtedness affects urbanites in Botswana, Mozambique, Swaziland, Zimbabwe, and Madagascar, it is a common phenomenon among people in the rural areas in South Africa, Mauritius, Malawi, Tanzania, and Zambia.

Over-indebtedness and poverty: is there a link?

Over-indebtedness has many negative consequences on the lives of people including health problems, loss of self-esteem, marital break down, poverty, etc. However, we could not assess all the possible adverse consequences that over-indebtedness can inflict upon individuals due to limited data and hence examined only the relationship between over-indebtedness and poverty. We measured poverty using the question "gone without food". As reported in Table 4 (Appendix B), over-indebtedness increases the chance of poverty except in Botswana, Mauritius and Madagascar. This is consistent with previous studies d'Alessio and Iezzi (2013) who reported that over-indebtedness can erode income to the extent that people are unable to afford basic needs of life.

Credit literate individuals are less likely to experience poverty related to over-indebtedness except in Malawi and Tanzania and this is consistent with our statement in the previous section that credit literacy decreases the chance of over-indebtedness. Borrowing from multiple sources increases the chance of poverty in some countries while it decreases it in others. For instance, borrowing from multiple sources is related to increased chance of poverty in Malawi, the Democratic Republic of Congo, Swaziland, and Madagascar while it decreases the chance of poverty in South Africa, Botswana, Mauritius, Tanzania and Zimbabwe. An inverse relationship between borrowing from multiple sources and poverty might be due to people using borrowed funds to buy food, and hence reporting lower incidence of poverty. As a caveat, a positive link between borrowing from multiple sources and poverty might be due to reverse causality where the poor tend to look for credit from multiple sources to sustain life.

Results of the aggregated models show that home ownership is related to lower chances of experiencing poverty. However, the individual country models suggest that this is the case only in some countries. Home owners in Botswana, Malawi, Swaziland, and Zimbabwe are more likely to experience poverty while those in South Africa, Mauritius, the Democratic Republic of Congo, Tanzania, and Madagascar are less likely to experience poverty. Household size is related to increased chance of poverty in countries except in Swaziland, Tanzania and Zimbabwe. Women are more likely to be impoverished in South Africa, Botswana, and Mauritius than the rest of the countries. Obviously, income decreases the chance of poverty across all the countries and the same is true for employment. Similarly, incidence of poverty is lower in urban areas than rural areas implying that the brunt of poverty rests on the shoulders of the rural people.

In general, over-indebtedness is related to poverty in South Africa, Malawi, Swaziland, Tanzania, and Zimbabwe. However, over-indebtedness is not related to poverty in

Botswana, Mauritius, and Madagascar. The explanation for Botswana and Mauritius might be the lower incidence of poverty in the two countries while it might be the case that the poor in Madagascar finance their living cost by obtaining credit from various sources.

4. Conclusions

This paper reported cross-country comparisons of indebtedness and over-indebtedness along with the determinants of each. The paper also examined the factors affecting indebtedness and over-indebtedness using aggregated regional data. The relationship between over-indebtedness and poverty has also been discussed and the following conclusions have been drawn:

Countries with high levels of credit penetration exhibit a lower tendency of people using credit for developmental purpose. Only a few people borrow for developmental purposes in South Africa and Mauritius where credit penetration is the highest in the region which might suggest that credit is relatively easier to come by in the two countries. In contrast, a large number of people in the Democratic Republic of Congo borrow for developmental purposes. This might be due to the relatively stringent lending policy in South Africa and Mauritius than in the Democratic Republic of Congo.

Over-indebtedness may not be necessarily linked to either formal or informal lenders. Over-indebtedness is not linked to a specific source of credit and this is evident from the fact that both South Africa and Tanzania have the highest level of over-indebtedness in the region despite the former having formal lender-dominated markets as opposed to the latter where informal lenders are dominant.

South Africa stands out in terms of the number of institutions from which people borrow money. While people in most countries in the region borrow from a single source and a few borrow from two sources, a quarter of South Africans' simultaneously borrow from three sources. This might show high propensity to borrowing among South Africans or easily available credit.

Formal credit is accessible mostly to those that own homes, earn higher income, employed and live in urban areas. In South Africa, Botswana, Mauritius, Madagascar, Tanzania, Zambia and Zimbabwe formal credit are accessed by people who are credit literate, that own homes, employed, earn higher income, and live in urban areas while informal credit is accessed in most of the countries by the unemployed, those that earn low income or those living in rural area.

Over-indebtedness is mainly driven by lack of credit literacy and borrowing from multiple sources. Lack of credit literacy is related to over-indebtedness in Mauritius, Mozambique, Swaziland, and Zambia. In addition, the number of institutions from which credit was obtained explains over-indebtedness in South Africa, Botswana, Mauritius, Malawi, Swaziland, Tanzania, Zimbabwe and Madagascar.

Lack of income is not the main cause of over-indebtedness suggesting that behavioural rather than economic reasons explain over-indebtedness in many countries. The incidence of over-indebtedness is higher among those that earn higher incomes in majority of the countries while over-indebtedness among low income segments of the population prevails only in South Africa, Mozambique, and Zambia. This implies that over-indebtedness is driven more by behavioural characteristics and or lender credit policy rather than economic reasons.

Over-indebtedness is likely to impoverish the indebted. Over-indebtedness is related to poverty in South Africa, Malawi, Swaziland, Tanzania, and Zimbabwe. However, it is not related to poverty in Botswana, Mauritius, and Madagascar. The explanation for Botswana and Mauritius might be the lower incidence of poverty in the two countries while it might be the case that the poor in Madagascar finance their living costs by obtaining credit from various sources.

5. Implications for policy

The following policy implications have been drawn from the above conclusions

1. **Promote credit literacy everywhere.** We observed that over-indebtedness prevails in each country regardless of the predominance of formal or informal credit. This suggests that promoting credit literacy programs is important. Credit literacy programs that aim at raising individuals' awareness about the potential risk of borrowing and considerations they need to make before applying for a loan will help in curbing the over-indebtedness problem.
2. **Unrestrained access to credit has the potential to aggravate poverty.** While reasonable access to credit can allow individuals to make life transitions, over-indebtedness can erode income and lead to poverty.
3. **Special attention needs to be accorded to the youth, low income groups and women.** Our analysis shows that there is a high chance of over-indebtedness among the youth, low income groups, and women calling for special policy attention to this group of society.
4. **Creating income-generating capacity rather than promoting credit for the poor would help in fighting poverty.** It emerged from our analysis that income is an important determinant of over-indebtedness. Therefore, devising policies that help people generate more income are likely to work better than promoting credit. As Hodson et al. (2014:pp 335) rightly put it 'what the poor need is not more credit, but perhaps better credit, and most fundamentally more income'.

References

- Anderloni L. and Vandone D. (2010). Risk of over-indebtedness and behavioural factors, Università Degli Studi Di Milano Working Paper n. 2010-25. Retrieved on January 20, 2017 from http://wp.demm.unimi.it/tl_files/wp/2010/DEMM-2010_025wp.pdf.
- Anderloni, L., Bacchiocchi, E., and Vandone, D. (2012). Household financial vulnerability: An empirical analysis. *Research in Economics*, 66(3), 284-296.
- Angel, S. (2016). The Effect of Over-Indebtedness on Health: Comparative Analyses for Europe. *Kyklos*, 69(2), 208-227.
- Aristei, D., and Gallo, M. (2016). The determinants of households' repayment difficulties on mortgage loans: evidence from Italian microdata. *International Journal of Consumer Studies*.40, 453-465.
- Awanis, S., and Chi Cui, C. (2014). Consumer susceptibility to credit card misuse and indebtedness. *Asia Pacific Journal of Marketing and Logistics*, 26(3), 408-429.
- Betti, G., Dourmashkin, N., Rossi, M., and Ping Yin, Y. (2007). Consumer over-indebtedness in the EU: measurement and characteristics. *Journal of Economic Studies*, 34(2), 136-156.
- Bridges, S., and Disney, R. (2016). Household Finances, Income Shocks, And Family Separation In Britain. *Economic Inquiry*, 54(1), 698-718.
- Brunetti, M., Giarda, E., and Torricelli, C. (2015). Is financial fragility a matter of illiquidity? An appraisal for Italian households. *Review of Income and Wealth*.
- Cuesta, M. B. (2015). The effects of over-indebtedness on individual health. Institute for the Study of Labor, Discussion Paper No. 8912.
- d'Alessio, G., and Iezzi, S. (2013). Household over-indebtedness: definition and measurement with Italian data. Bank of Italy Occasional Paper, (149).
- Dattasharma, A., Kamath, R., and Ramanathan, S. (2016). The Burden of Microfinance Debt: Lessons from the Ramanagaram Financial Diaries. *Development and Change*, 47(1), 130-156.
- De Gregorio, J. and KIM, S., (2000). 'Credit Markets with Differences in Abilities: Education, Distribution, and Growth.' *International Economic Review*, 41(3), 579-607.
- Dickerson, A. M. (2008). Consumer over-indebtedness: A US perspective. *Texas International Law Journal*, 43, 135.
- Disney, R., Bridges, S., and Gathergood, J. (2008). Drivers of Over-indebtedness. Report to the UK Department for Business.

- Du Caju, P., Rycx, F., and Tojerow, I. (2016). Unemployment risk and over-indebtedness. A micro-econometric perspective. ECB Working Paper 1908. European Central Bank.
- Dwyer, R. E., McCloud, L., and Hodson, R. (2011). Youth debt, mastery, and self-esteem: Class-stratified effects of indebtedness on self-concept. *Social Science Research*, 40(3), 727-741.
- EU (2013). The over-indebtedness of European households: updated mapping of the situation, nature and causes, effects and initiatives for alleviating its impact – Part 1: Synthesis of findings.
- Fitch, C., Hamilton, S., Bassett, P., and Davey, R. (2011). The relationship between personal debt and mental health: a systematic review. *Mental Health Review Journal*, 16(4), 153-166.
- Flores, S. A. M., and Vieira, K. M. (2014). Propensity toward indebtedness: An analysis using behavioral factors. *Journal of Behavioral and Experimental Finance*, 3, 1-10.
- French, D., and McKillop, D. G. (2016). Financial literacy and over-indebtedness in low-income households. *International Review of Financial Analysis*. (in Press)
- Gathergood, J. (2012). Debt and depression: causal links and social norm effects. *The Economic Journal*, 122(563), 1094-1114.
- Haile, H. B., Osman, I., Shuib, R., and Oon, S. W. (2015). Is there a Convergence or Divergence between Feminist Empowerment and Microfinance Institutions' Success Indicators? *Journal of International Development*, 27(7), 1042-1057.
- Hodson, R., Dwyer, R. E., and Neilson, L. A. (2014). Credit card blues: The middle class and the hidden costs of easy credit. *The Sociological Quarterly*, 55(2), 315-340.
- Howley, P., and Dillon, E. (2012). Modelling the effect of farming attitudes on farm credit use: a case study from Ireland. *Agricultural Finance Review*, 72(3), 456-470.
- Hurwitz, I., and Luiz, J. (2007). Urban Working Class Credit Usage and Over-Indebtedness in South Africa*. *Journal of Southern African Studies*, 33(1), 107-131.
- Ironfield-Smith, C., Keasey, K., Summers, B., Duxbury, D., and Hudson, R. (2005). Consumer debt in the UK: Attitudes and implications. *Journal of Financial Regulation and Compliance*, 13(2), 132-141.
- Keese M. (2009), Triggers and Determinants of Severe Household Indebtedness in Germany, SOEP papers 239, DIW Berlin, The German Socio-Economic Panel (SOEP).
- Keese, M. (2012). Who feels constrained by high debt burdens? Subjective vs. objective measures of household debt. *Journal of Economic Psychology*, 33(1), 125-141.

- Kilborn, J. J. (2005). Behavioral economics, overindebtedness and comparative consumer bankruptcy: Searching for causes and evaluating solutions. *Bankruptcy developments journal*, 22, 13.
- Kim, H. J., Lee, D., Son, J. C., and Son, M. K. (2014). Household indebtedness in Korea: Its causes and sustainability. *Japan and the World Economy*, 29, 59-76.
- Kukk, M. (2015). How did household indebtedness hamper consumption during the recession? Evidence from micro data. *Journal of Comparative Economics*.44 (2016) 764–786.
- Kus, B. (2015). Sociology of Debt: States, Credit Markets, and Indebted Citizens. *Sociology Compass*, 9(3), 212-223.
- Lusardi, A., and Tufano, P. (2015). Debt literacy, financial experiences, and over-indebtedness. *Journal of Pension Economics and Finance*, 14(04), 332-368.
- McCarthy, Y., and McQuinn, K. (2015). Deleveraging in a highly indebted property market: Who does it and are there implications for household consumption? *Review of Income and Wealth*.
- McIntyre, S. G., and Lacombe, D. J. (2012). Personal indebtedness, spatial effects and crime. *Economics Letters*, 117(2), 455-459.
- Meng X., Hoang, N, and Siriwardana M. (2013). The determinants of Australian household debt: A macro level study, *Journal of Asian Economics*, 29, 80–90.
- Meniago, C., Mukuddem-Petersen, J., Petersen, M. A., and Mongale, I. P. (2013). What causes household debt to increase in South Africa? *Economic Modelling*, 33, 482-492.
- Nakajima, M. (2012). Rising indebtedness and temptation: A welfare analysis. *Quantitative Economics*, 3, 257–288.
- Nettleton, S., and Burrows, R. (1998). Mortgage debt, insecure home ownership and health: an exploratory analysis. *Sociology of health and Illness*, 20(5), 731-753.
- Ottaviani, C., and Vandone, D. (2011). Impulsivity and household indebtedness: Evidence from real life. *Journal of economic psychology*, 32(5), 754-761.
- Patel, A., Balmer, N. J., and Pleasence, P. (2012). Debt and disadvantage: the experience of unmanageable debt and financial difficulty in England and Wales. *International Journal of Consumer Studies*, 36(5), 556-565.
- Pavlíková, E. A., and Rozbořil, B. (2014). Consumerism and Indebtedness. *Procedia Economics and Finance*, 12, 516-522.

- Ramsay, I. (2012). A Tale of Two Debtors: Responding to the Shock of Over-Indebtedness in France and England—a Story from the Trente Piteuses. *The Modern Law Review*, 75(2), 212-248.
- Ryoo, S., and Kim, Y. K. (2014). Income distribution, consumer debt and keeping up with the Joneses. *Metroeconomica*, 65(4), 585-618.
- Schicks, J. (2014). Over-indebtedness in Microfinance—an empirical analysis of related factors on the borrower level. *World development*, 54, 301-324.
- Shen, S., Sam, A. G., and Jones, E. (2014). Credit Card Indebtedness and Psychological Well-Being over Time: Empirical Evidence from a Household Survey. *Journal of Consumer Affairs*, 48(3), 431-456.
- Sweet, E., Nandi, A., Adam, E. K., and McDade, T. W. The high price of debt: Household financial debt and its impact on mental and physical health. *Social Science and Medicine*, 91, 94-100.
- Van Heerden, C., and Renke, S. (2015). Perspectives on the South African Responsible Lending Regime and the Duty to Conduct Pre-agreement Assessment as a Responsible Lending Practice. *International Insolvency Review*, 24(2), 67-95.
- Walks, A. (2014). Canada's housing bubble story: Mortgage securitization, the state, and the global financial crisis. *International Journal of Urban and Regional Research*, 38(1), 256-284.
- Wang, J. J. (2010). Credit counselling to help debtors regain footing. *Journal of Consumer Affairs*, 44(1), 44-69.
- Worthington, A. C. (2006). Debt as a source of financial stress in Australian households. *International Journal of Consumer Studies*, 30(1), 2-15.

Appendix A

We used three sets of models where the first model identifies determinants of indebtedness with sub-models on each specific source of credit (Bank, other formal, and informal). The second model determines factors affecting over-indebtedness. The third model examines the relationship between poverty and over-indebtedness. The dependent variable in each model is binary calling for a binary logistic regression model in which the probability of the dependent variable is described by the following function:

$$\pi_i = \frac{e^{z_i}}{1+e^{z_i}} \text{ or } z_i = \log\left(\frac{\pi_i}{1-\pi_i}\right) \dots\dots\dots(1)$$

Where

π_i is the probability the i^{th} person has a certain characteristic(i.e., probability of indebtedness, over-indebtedness, gone without food)

z_i is the value of the unobserved variable for the i^{th} person.

The logistic regression model assumes that z is linearly related to the predictors

$$z_i = b_0 + b_1x_{i1} + b_2x_{i2} + \dots + b_px_{ip} \dots\dots\dots(2)$$

Where

x_{ij} is the j^{th} predictor for the i^{th} person that include credit literate, number of institutions from which credit was obtained, and demographic characteristics such as gender, income, age, place of residence, level of education, marital status, and employment status.

b_j is the j^{th} coefficient

p is the number of predictors

The dependent variable in each model is dichotomous taking the values 1 or 0 otherwise. In the first model, the dependent variable is indebtedness and the value 1 is assigned to those who have accessed credit and 0 otherwise. In the second model the dependent variable is over-indebtedness taking a value of 1 when a person is over-indebted and 0 otherwise. In the third model, where we examine the relationship between poverty (gone without food) and over-indebtedness, a value of 1 is assigned to those who reported to have gone without food and 0 otherwise.

Appendix B

Table 3: Definition of variables of variables and descriptive statistics

Variable Name	Description	Min	Max	Mean
Indebted	A person has borrowed from a financial institution (formal or informal)	0	1	0.32
Over-indebted	A person is over-indebted according to the definition given on page 1 of the report.	0	1	0.25
Number of institutions from which credit was obtained	Number of institutions (formal and or informal) from which credit was obtained	1	3	1.12
Credit literate	A person chooses a lender using at least two criteria from possible reasons such as interest rate, repayment terms, fastest access to money, simple documents or application process, etc.	0	1	0.36
Gone without food	A person gone without food due to lack of money	0	1	0.33
Household size	Number of people living in the household	0	12	4.73
Own home	A person owns a residential property	0	1	0.63
Productive usage of debt	A person used debt for developmental purposes such as to pay for own or children's education, start up a new business, expand existing business, buy vehicles, etc.	0	1	0.20
Borrowed to buy food	A person used borrowed money to buy food	0	1	0.27
Bank Credit	A person obtained credit from a bank	0	1	0.06
Other formal credit	A person obtained credit from non-bank financial institution	0	1	0.1
Informal credit	A person obtained credit from an informal lender	0	1	0.17
Age	Age of respondent	16	98	38.39
Gender	Respondent's gender	0	1	0.48
Income	Categories of monthly personal income (Low, middle, and high). Middle income is defined as one standard deviation from average income, while low income is below the middle income high income is above the middle income.	1	3	1.47
Employed	A person is employed	0	1	0.30
Urban	A person lives in urban area	0	1	0.41
Primary	A person has primary education	0	1	0.36
Secondary	A person has secondary education	0	1	0.45
Post-secondary	A person has post-secondary education	0	1	0.08

Table 4: Logistic regression output: Determinants of indebtedness

	M3 countries			Other countries		
	Bank credit	Other formal credit	Informal credit	Bank credit	Other formal credit	Informal credit
Credit literate	1.052***	0.208***	-1.230***	0.988***	0.300***	0.977***
Own home	0.295***	0.121***	-0.364***	0.090***	0.282***	0.141***
Household size	-0.157***	-0.017***	-0.015***	-	-	-
Age of respondent	0.040***	0.022***	0.080***	0.027***	0.024***	-0.028***
Age Squared	-	-	-	-	-	-
Gender	-0.356***	-0.241***	0.667***	0.485***	-0.191***	-0.288***
Personal monthly income	1.491***	-0.468***	-0.942***	0.738***	0.527***	0.006***
Widowed	reference	reference	reference	reference	reference	reference
Divorced	0.138***	-0.143***	0.331***	-0.272***	2.030***	0.434***
Married	0.147***	0.223***	-0.130***	0.674***	2.011***	0.294***
Single	-0.202***	0.157***	-0.152***	0.091***	0.051***	-0.038***
No schooling	Reference	Reference	Reference	Reference	Reference	Reference
Primary school	0.168***	-0.257***	-0.651***	-0.331***	1.072***	0.385***
Secondary school	0.794***	0.153***	-0.665***	0.411***	1.175***	0.383***
Post-Secondary school	1.817***	-0.093***	-5.390***	1.203***	1.445***	0.229***
Unemployed	reference	reference	reference	reference	reference	reference
Employed	0.679***	0.186***	-0.464***	-0.303***	0.584***	0.669***
Urban	1.066***	0.342***	-0.578***	0.645***	0.241***	-0.271***
-2 Log likelihood	18350399	41144974	4957524	6917840	4575158	25246529
Cox & Snell R Square	0.243	0.024	0.010	0.036	0.024	0.064
Nagelkerke R Square	0.428	0.033	0.070	0.139	0.133	0.100

Note: *** significant at 1% level, * significant at 10% level. Binary logistic regression estimation coefficients are reported.

Table 5: Logistic regression output: Determinants of over-indebtedness

	Botswana	Madagascar	Mauritius	Malawi	Mozambique	South Africa	Swaziland	Tanzania	Zambia	Zimbabwe
Credit literate	0.243***	0.096***	-0.146***	1.111***	-0.321***	0.034***	-0.212***	0.032***	-0.215***	-
No of Institutions	1.864***	0.772***	0.172***	0.753***	-0.235***	0.078***	0.718***	0.240***	-0.060***	1.452***
Own home	-0.657***	0.309***	-0.017	0.353***	0.157***	0.027***	0.043***	0.008***	-0.218***	-0.181***
Household size	-	-0.011***	-0.041***	-0.010***	-0.011***	-0.008***	-0.098***	0.022***	-0.005***	-0.016***
Age of respondent	0.597***	-0.017***	0.010***	-0.011***	-0.018***	0.014***	0.015***	-0.014***	-0.025***	-0.035***
Age squared	-0.008***	-	-	-	-	-	-	-	-	-
Gender	-0.047***	-0.076***	0.074***	-0.252***	0.202***	-0.159***	-0.002	0.573***	0.320***	-0.191***
Income	0.139***	0.024***	0.048***	0.348***	-0.142***	-0.064***	0.038***	0.071***	-0.013***	0.042***
Divorced	-16.599***	0.300***	0.083***	-	-0.458***	0.015***	0.084***	-0.070***	0.134***	0.159***
Married	-1.189***	0.280***	0.297***	-	-0.140***	-0.102***	-0.067***	-0.326***	0.239***	0.146***
Single	-0.333***	0.463***	0.102***	-	-0.268***	-0.011***	-0.357***	-0.597***	0.451***	0.122***
No schooling	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Primary school	-0.189***	-0.040***	-0.260***	-0.148***	0.115***	-0.312***	0.175***	0.126***	-0.295***	0.661***
Secondary school	-0.209***	-0.505***	-0.158***	0.114***	-0.058***	-0.316***	-0.100***	0.159***	-0.073***	0.489***
Post-secondary school	-0.804***	-0.025***	0.099***	-1.037***	-0.495***	-0.488***	-0.379***	0.238***	-0.046***	0.538***
Employed	-1.063***	-0.235***	0.107***	-0.653***	0.160***	0.199***	-0.226***	-0.117***	-0.139***	-0.387***
Urban	0.130***	0.101***	-0.090***	-0.031***	0.016***	-0.344***	0.200***	0.371***	-0.387***	0.122***
-2 Log likelihood	184519.3	7763838.8	239704.8	5116270.4	11936711.9	37501432.1	407768.3	6829517.2	2345664.8	3599902.8
Nagelkerke R Square	0.189	0.047	0.017	0.104	0.014	0.022	0.101	0.047	0.044	0.211

Note: *** significant at 1% level, * significant at 10% level. Binary logistic regression estimation coefficients are reported.

Table 6: Logistic regression output: The link between poverty (gone without food) and over-indebtedness

	Botswana	DRC	Madagascar	Mauritius	Malawi	South Africa	Swaziland	Tanzania	Zimbabwe
Over-indebted	-0.088***	22.126	-0.155***	-0.510***	0.122***	0.316***	0.057***	0.168***	0.123***
Credit literate	-0.278***	-0.234***	-0.080***	-1.643***	0.557***	-0.446***	-0.081***	0.287***	
Number of institutions	-0.229***	0.489***	0.159***	-0.149***	0.147***	-0.007***	0.056***	-0.118***	-0.124***
Own home	0.214***	-0.226***	-0.111***	-0.694***	0.420***	-0.150***	0.175***	-0.148***	0.368***
Number of dependents		0.177***	0.017***	0.129***	0.060***	0.049***	-0.026***	-0.018***	-0.008***
Age of respondent	0.060***	-0.051***	-0.045***	0.163***	-0.003***	0.051***	0.049***	-0.004***	-0.006***
Age squared	-0.001***	-	-	-0.002***	-	-0.001***	-0.001***	-	-
Gender	-0.258***	0.221***	0.156***	-0.725***	0.049***	-0.120***	0.067***	0.002***	0.01***
Income	-0.144***	-0.063***	-0.108***	-0.148***	-0.350***	-0.663***	-0.741***	-0.059***	-0.171***
Widowed	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Divorced	-0.284***	-4.941***	-0.163***	0.368***	-	-0.168***	-0.260***	0.088***	0.185***
Married	0.756***	-4.818***	0.050***	0.255***	-	-0.390***	-0.400***	0.105***	0.129***
Single	0.376***	-4.518***	0.233***	-0.008***	-	-0.496***	-0.106***	0.098***	0.215***
No schooling	Reference	Reference	Reference	Reference	Reference	Reference	Reference	reference	reference
Primary school	-0.610***	-0.326***	-0.067***	0.196***	-0.335***	-0.041***	-0.407***	-0.002***	-0.433***
Secondary school	-0.969***	-0.500***	-0.166***	0.292***	-0.626***	-0.424***	-0.945***	-0.383***	-0.565***
Post-Secondary school	-0.894***	-1.561***	-0.466***	0.810***	-0.386***	-0.727***	-1.353***	-0.539***	-0.915***
Employed	-0.137***	-0.682***	0.113***	-0.354***	-0.096***	-0.250***	-0.153***	-0.092***	-0.168***
Urban	-0.193***	0.935***	-0.207***	0.560***	-0.304***	-0.756***	-0.241***	-0.394***	-0.103***
-2 Log likelihood	1188317.5	1422158.02	10680464.8	97194.2	6105378.9	35019734	451231.5	6303514.02	5410654.4
Nagelkerke R Square	0.068	0.244	0.031	0.124	0.063	0.129	0.154	0.036	0.047

Note: *** significant at 1% level, * significant at 10% level. Binary logistic regression estimation coefficients are reported.