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AN ECONOMIC ANALYSIS OF MICROFINANCE CREDIT IN FIJI: ITS IMPACTS ON POVERTY AND WOMEN EMPOWERMENT

by

BALJEET SINGH

A thesis submitted in fulfillment of the requirements for the degree of Doctor of Philosophy

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School of Economics
Faculty of Business and Economics
The University of the South Pacific

May 2014
Declaration of Originality

Statement by Author
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Professor Biman Chand Prasad
ABSTRACT

Since the 1970s, microfinance gained popularity as an important policy intervention tool to address poverty and empower the poor, in particular women. In Fiji the concept of microfinance was introduced in the late 1990s, and to date there are ten microfinance institutions (henceforth ‘MFIs’) providing microfinance services in Fiji, most of which are run with the support of government grants. This study investigates the demand for microcredit by microfinance clients and microcredit’s impacts on poverty reduction and women empowerment of microfinance clients.

Based on the stratified sampling approach, a sample of 329 clients from three major microfinance institutions in Fiji covering four major provinces is drawn for the analyses. Around half of the sampled clients are savers and microcredit borrowers (henceforth ‘borrowers’) while the other half are mere savers (henceforth ‘savers’) who have intention to borrow in the near future. Same as the fact that women account for about 90 percent of total microfinance members in Fiji, majority of the sampled observations are women. This study compares performances of borrowers against performances of savers using cross section data.

Effects of sample selection bias and endogeneity are addressed in the empirical analyses of demand for microcredit and microcredit’s impacts. Main findings are summarized as follows: (1) Likelihood of a microfinance member’s accessing microcredit (henceforth ‘microcredit accessibility’) is negatively associated with household income, while positively associated with other socio-economic factors. Microcredit amount is positively associated with household income and iTaukei ethnicity, while negatively associated with other socio-economic factors. (2) Household income is positively explained by both microcredit accessibility and amount, together with other socio-economic factors. (3) Microcredit accessibility, in particular accessibility to productive loans, has positive impacts on women empowerment in many aspects.

This study provides important evidence that the microcredit scheme helps the microfinance clients in Fiji in terms of poverty reduction and women empowerment. In light of this, together with the reality that the outreach of the microfinance scheme has been limited over the last decade, the government of Fiji should make greater efforts to
promote the microfinance scheme as well as greater participation of microfinance clients in credit programme.
Dedicated to

My dear late father Gurbachan Singh and my dear mother Sirjant Kaur
ACKNOWLEDGEMENTS

I am grateful to various institutions and individuals who have assisted me in making this thesis successful.

First, I am thankful to three microfinance institutions, namely Fiji National Council of Social Services (FCOSS), Microfinance Unit West (MFW), Co-operative Microfinance North (CMN), for providing lists of their clients and assistance in communicating with their clients. Many thanks go to microfinance clients who provided valuable information on demography, social and economic aspect of their lives. Without their cooperation this study would not have been possible.

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<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
</tr>
<tr>
<td>AIMS</td>
<td>Assessing the Impact of Microenterprise Services</td>
</tr>
<tr>
<td>AusAID</td>
<td>Australian Agency for International Development</td>
</tr>
<tr>
<td>BKD</td>
<td>Bank Kredit Deans of Indonesia</td>
</tr>
<tr>
<td>BRI</td>
<td>Bank Rakyat Indonesia</td>
</tr>
<tr>
<td>CMN</td>
<td>Co-operative Microfinance North</td>
</tr>
<tr>
<td>FCOS S</td>
<td>Fiji National council of social services</td>
</tr>
<tr>
<td>FINCA</td>
<td>Foundation for International Community Assistance</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>IVPROBIT</td>
<td>Instrumental Variables Probit estimator</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MFW</td>
<td>Microfinance Unit West</td>
</tr>
<tr>
<td>MSGTA</td>
<td>Melanesian Spearhead Group Trade Agreement</td>
</tr>
<tr>
<td>NCSMED</td>
<td>National Centre for Small and Micro-Enterprise Development</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Government Organization</td>
</tr>
<tr>
<td>NZAID</td>
<td>New Zealand Agency for International Aid</td>
</tr>
<tr>
<td>PACER</td>
<td>Pacific Agreement on Closer Economic Relations</td>
</tr>
<tr>
<td>PICTA</td>
<td>Pacific Island Countries Trade agreement</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Program</td>
</tr>
<tr>
<td>WTO</td>
<td>World Trade Organization</td>
</tr>
</tbody>
</table>
CHAPTER ONE: INTRODUCTION

1.1 OVERVIEW

This study examines the demands for microfinance institutions’ credit (henceforth ‘microcredit’) and microcredit’s impacts on household poverty and women empowerment of microfinance clients in Fiji. It is the first study that examines such issues in small island countries which include Fiji. The originality of this study comes from the fact that it uses a new data set based on Fijian households, which differs in many contexts from other countries and regions where impacts of microfinance has been widely studied. The issues analyzed in this study are important from the policy perspective, and it makes an important contribution to the existing knowledge on the demands and impacts of microfinance, particularly in the context of a small island country.

To begin with, this study will briefly discuss existing theoretical and empirical evidence on the demands and impacts of microcredit. Since the 1970’s, microfinance gained popularity as an important policy intervention tool to address poverty and empower the poor, particularly women. In addition, this study will analyze the demands and impacts of microcredit provided by three microfinance institutions in Fiji, namely Fiji National Council of Social Services (FCOSS), Microfinance Unit West (MFW) and Co-operative Microfinance North (CMN).

The unique microcredit innovation in 1970, widely known as microfinance, emerged as an important strategy for poverty alleviation and a mechanism for promoting other development agenda (Atieno, 2001; Robinson, 2001; Li et al., 2011; Moon, 2011). Microfinance provides small amounts of loan to households and individuals facing difficulties in obtaining finance from the more established financial sectors such as commercial banks (Nawaz, 2010; Mwenda and Muuka, 2004). Besides microcredit, microfinance institutions also provide saving facilities, business training, and insurance. Well-established microfinance institutions such as Grameen Bank and Bangladesh Rural Advancement Committee also provide information on issues such as education, child health and nutrition, hygiene and health and disease prevention (Mahjabeen, 2008).
In Fiji the concept of microfinance was introduced in the late 1990’s and to date there are ten microfinance institutions providing microfinance services in Fiji, most of which are run with the support of government grants. Fiji Council of Social Services is the main service provider in the Central Division, while Microfinance Unit West and Co-operative Microfinance North are the main providers in the Western and Northern Divisions respectively. All three microfinance institutions are supported by government grants and their members need to have sufficient regular savings as a pre-condition for taking out credit. The ratio of saving to credit is usually 1:2. This means that for every $100 saved, they are allowed to take a $200 loan.

Microfinance has been developing at a fast speed in Fiji since its establishment. This is seen from a number of aspects as summarized in Table 1-1. Total microloan disbursed increased steadily and hugely by more than 6 times over the last decade, from F$164,000 in 2000 to F$1,194,774 in 2009. Total number of microloans disbursed increased by around 3 times from 763 loans in 2000 to 2,875 loans in 2007. Total number of enterprises assisted grew largely from 583 enterprises in 2000 to 1,699 enterprises in 2006, and then dramatically declined to 899 enterprises in 2007. Repayment rate, averaged at a rate of 87.26 per cent over 2000-2009, increased slowly from 62.3 per cent in 2000 to 95 per cent in 2008; however in 2009 it suddenly decreased to 82 per cent. Savings in microfinance institutions have been developing more significantly than loans. Total number of savings accounts and total savings respectively grew by more than 25 and 20 times over 2000-2009.

It is worth noting that, despite the fast development of microfinance in Fiji, the role of microfinance on finance services is quite limited due to the fact that its clients are mainly engaged in micro-businesses and the poor. In 2008 total microloans disbursed by microfinance institutions only accounted for 0.03 per cent of Fiji’s GDP, while domestic credit to private sector as a whole was 48.18 per cent in the same year.
Table 1-1: Performance Indicators of Microfinance in Fiji

<table>
<thead>
<tr>
<th>Year</th>
<th>Total loan disbursed (F$)</th>
<th>Total number of loans disbursed</th>
<th>Total number of enterprises assisted</th>
<th>Total number of savings accounts</th>
<th>Total savings (F$)</th>
<th>Repayment rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>164,000</td>
<td>763</td>
<td>583</td>
<td>883</td>
<td>49,014</td>
<td>62.3</td>
</tr>
<tr>
<td>2001</td>
<td>285,000</td>
<td>767</td>
<td>519</td>
<td>1,102</td>
<td>89,387</td>
<td>88.4</td>
</tr>
<tr>
<td>2002</td>
<td>252,000</td>
<td>1,181</td>
<td>939</td>
<td>2,041</td>
<td>179,835</td>
<td>85.2</td>
</tr>
<tr>
<td>2003</td>
<td>379,000</td>
<td>1,490</td>
<td>932</td>
<td>6,376</td>
<td>519,722</td>
<td>87.87</td>
</tr>
<tr>
<td>2004</td>
<td>921,000</td>
<td>3,179</td>
<td>1,312</td>
<td>12,514</td>
<td>1,125,887</td>
<td>90.3</td>
</tr>
<tr>
<td>2005</td>
<td>1,001,000</td>
<td>3,366</td>
<td>1,380</td>
<td>19,533</td>
<td>1,544,437</td>
<td>89.61</td>
</tr>
<tr>
<td>2006</td>
<td>1,239,000</td>
<td>3,645</td>
<td>1,699</td>
<td>21,277</td>
<td>165,600</td>
<td>94.62</td>
</tr>
<tr>
<td>2007</td>
<td>1,163,667</td>
<td>3,166</td>
<td>899</td>
<td>21,479</td>
<td>1,361,378</td>
<td>97.31</td>
</tr>
<tr>
<td>2008</td>
<td>1,216,619</td>
<td>3,110</td>
<td>992</td>
<td>22,387</td>
<td>1,023,883</td>
<td>95</td>
</tr>
<tr>
<td>2009</td>
<td>1,194,774</td>
<td>2,875</td>
<td>797</td>
<td>23,066</td>
<td>1,051,060</td>
<td>82</td>
</tr>
</tbody>
</table>

Source: National Center for Small and Microenterprise Development

1.2 STATEMENT OF PROBLEM

In the 1970’s the introduction of the modern concept of microfinance – provision of small credit, saving, insurance and business training – was widely accepted as an effective poverty alleviation tool. It has also gained reputation for promoting economic and social empowerment of women (Chen, 1997; Mayoux, 2001; Ranis and Stewart, 2005; Schaaf, 2010). The greatest merit of microfinance is its ability to provide sustainable financial service to households and individuals who were previously seen as un-bankable (Kaladhar, 1997). The provision of small credit allows individuals and households to establish income generating activities, accumulate assets and ultimately leap out of poverty. The provision of credit is also essential to maintain a desired level of consumption.

The early success of microfinance measured by the high repayment rate caught the attention of donor agencies and policy makers and gave them the impression that the poor, particularly women, were potentially creditworthy clients and they could borrow and repay credit at an affordable interest rate. High repayment rate is also a key indicator donor agencies consider for providing much needed subsidies to the microfinance
institutions. Hence, a number of microfinance models were replicated around the world with the view of addressing poverty.

However, while some of the microfinance institutions have managed to achieve their key mission of addressing poverty, others either had no impact on poverty or had a negative impact. There has been some research examining the impact of microfinance on poverty and other indicators, however, the issue remains largely unsettled. Nevertheless, it is believed that impact is hugely context-specific (Shaw, 2004).

Hence, this study analyses the demands for microcredit and microcredit’s impacts of on poverty reduction and women empowerment of microfinance clients in Fiji. This study attempts to answer several important and relevant questions. These are as follows:

**Question one:** What factors determine the demand for microcredit by microfinance clients in Fiji?

**Question two:** Do microcredit schemes in Fiji improve income of borrowers as opposed to non-borrowers?

**Question three:** Do access to microcredit improve women empowerment of borrower clients as opposed to non-borrower clients of microfinance in Fiji?

The three main hypotheses for this study are stated as follows:

**Hypothesis one:** Individual and household characteristics are important determinants of demand for microcredit.

**Hypothesis two:** Microcredit provided by microfinance institutions has improved income of poor households.

**Hypothesis three:** Microcredit provided by microfinance institutions has been successful in promoting women empowerment of its clients in Fiji.

1.3 **CONTRIBUTIONS OF THIS STUDY**

It is widely acknowledged that the concept of poverty has existed for some time and microfinance is seen as a new and effective tool to address the issue. Microfinance
credits (microcredit) is likely to improve the socio-economic status of a household, measured by income, consumption, asset accumulation, health, gender empowerment, education, food security, employment creation, nutrition and child welfare.

Consistent with this view, a stream of empirical literature found evidence of microcredit’s positive impacts on poverty reduction. Pitt and Khandker (1998), Hossain (2012) and Khandker and Samad (2013) found the positive impact of microfinance on household consumption in Bangladesh. Similarly, Boonperm et al. (2013) found the positive impact on household consumption in Thailand. In addition, Chan and Ghani (2011), Al-Mamun et al. (2012) and Imai et al. (2010) found the positive impact of microcredit on household income in Malaysia, Indonesia and India respectively. Likewise, Karlan and Zinman (2009) found the positive impact of microcredit on household income in South Africa. Furthermore, McKenzie and Woodruff (2008) found the positive impact on household income in Mexico. Moreover, Adjei et al. (2009) and Aideyan (2009) found the positive impact of microfinance on household asset accumulation in Ghana and Nigeria respectively.

On the other hand, there is another set of literature which finds no evidence of positive impact of microcredit on poverty reduction or found that microfinance actually does harm. It is argued that microfinance can actually lead to; increased poverty among borrowers, exploitation of women, domestic violence, poor health, debt trap, and more workload for women and children. Consistent with this view another stream of literature did not find any positive impact of microcredit, for instance, Morduch (1998) did not find any positive impact of microcredit on consumption in Bangladesh. Similarly, Chandoevvvit and Ashakul (2008) did not find any positive impact on consumption in Thailand, while Augsburg et al. (2012) found that access to microcredit had a negative impact on consumption in Bosnia. Furthermore, Karlan and Zinman (2009) did not find any impact on income in Philipines, while Karland and Valdivia (2011) did not find any impact on income in Peru.

The effectiveness of microcredit in promoting socio-economic development of society has been challenged not only because of its failure to produce positive outcomes, but also due to the high interest rate charged for small amounts of loan and the increasing
commercialization of the microfinance sector, which may have hampered the outreach of the programme (Kar, 2011). Recent experiences show that microfinance has increased indebtedness with major implications on peoples’ lives in India, Pakistan, Bosnia, Morocco, Nigeria and Nicaragua (Rooyen et al., 2012).

While there have been a substantial number of studies analyzing the impact of microfinance/microcredit; most of these originate from Asia followed by Latin America and Africa, while some also relate to more developed countries. However, no thorough studies have examined the impact of microcredit in small island countries, particularly in the South Pacific region, which includes Fiji. Accordingly, theoretical and empirical evidence on the effectiveness of microcredit is likely to vary by region and different geographical areas where significant differences exist in population base (both absolute and density), financial literacy, group cohesion, attitude towards debt, business development and delivery of financial service (Rooyen et al., 2012; Ahlin, et al., 2011). Given the controversy in literature, it is important to study evidence from small island states in the South Pacific, where poverty has been increasing since independence as well as significant gender disparity exists.

The originality of this study can be stated as follows:

1. Fiji is among the small island countries that have received little attention in the literature on the impact of microfinance credit, where poverty has been increasing and concurrently significant gender inequality is visible. Microfinance has existed in Fiji for the last thirteen years, providing small amounts of credit to poor clients, and about 90 percent of its members are women.

2. The Context of Fiji is also unique as most of the indigenous Fijians (who make up about 90% of microfinance clients) have access to land and resources. However, most of the indigenous Fijians (ITaukei) live on communally owned land, which restricts poor households’ ability to access formal credit despite having right to land. In addition, native Fijian women like their male counterparts also receive rent income from rented land and are entitled to benefits from the land (Cema, 1986 and Dodd, 2012). This means that most of
the native Fijian women have some source of cash income or land and sea resources which they can better utilize for investment in self-help projects. Microfinance institutions can play an important role in improving the welfare of Fijian households by mobilizing saving and providing important and timely credit needed by the households in establishing income generating activities.

3. Fiji’s informal sector has increased in size, implying that there is potential for improving income through microfinance business activities.

4. Evidence from this analysis will potentially provide invaluable insight to the effectiveness of microcredit provided by microfinance institutions in addressing poverty issues in small island states and could be relevant for policy. A significant portion of economies in small island states particularly in Caribbean and South Pacific is contributed by the informal sector. In addition, a significant portion of populations in these states is still dependent on the subsistence or semi-subsistence sector. Microcredit scheme can play a major role in promoting inclusive growth in these states.

5. The findings from this study can be generalized to other small island countries where limited microfinance impact analyses have been undertaken.

### 1.4 METHODOLOGY

#### 1.4.1 Sampling

The main aim of this thesis is to examine the impact of microcredit on its recipients compared to its non-recipients clients. It examines household economic status (measured by income, expenditure and assets) and gender empowerment (of female borrowers) of loan clients of three microfinance providers in Fiji; Fiji Council of Social Services (FCOSS),¹ Northern Cooperative Microfinance and Microfinance West. As of 2009, there were 1700 active microfinance loan clients in Fiji, out of which 1140 (67%) were clients of three selected microfinance institutions. In Fiji there is no secondary source of

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¹ Fiji Council of Social Services (FCOSS) is a NGO based microfinance institution; Northern Cooperative Microfinance is a cooperative and Microfinance West is church based NGO.
data on microfinance that would facilitate impact analysis of microfinance. Therefore, the only option available was to use primary data. A well-structured, pre-tested and pilot tested questionnaire was used as the basic research instrument to conduct the important survey. The questionnaire was screened and approved by the University Research Ethics Committee.

In the use of primary data, sample design is very important. This study draws samples from four major provinces in Fiji; namely Ba, Rewa, Naitasiri and Macuata. Ba falls in the Western Division; Rewa and Naitasiri are located in the Central Division while Macuata is in Northern Division. These are the four provinces where microfinance services are widely available and they represent different socio-economic conditions. A stratified sampling design was administered on three selected microfinance providers to randomly select clients.

Microfinance West is the main microfinance service provider in the Western Division and hence, 60 of their loan clients were randomly picked within the Ba province. Similarly, FC OSS is the main and oldest microfinance provider in the Central Division and hence, 70 of their loan clients were randomly selected within the Naitasiri and Rewa provinces in the Central Division. Two provinces in the Central Division were taken as they jointly form the greater Suva area where most of their clients reside. Similarly, Northern Microfinance is the main service provider in the Northern Division and 40 of the clients were randomly selected from Macuata. We picked 60, 70 and 40 clients in proportion to the total number of clients in borrowing-client cohort. We used the simple random sampling procedure to pick clients from each of strata stated in the above.

Next, an equal number of non-loan clients (savers who showed interest in taking loan) were picked from the three divisions. A simple random sampling procedure was again used to select non-borrowing clients from each of the strata. After the identification of the loan clients to be picked and their village, with the assistance of the microfinance officer, all microfinance non-loan clients (savers with intention of taking loan in future) were identified and randomly from the list. Selecting an equal number of non-loan clients from same area as selected credit client ensured homogeneity of the samples. Some of the villages, settlements and Tikina (Districts) had savers only, so such areas
were eliminated to restrict the focus to areas where loan clients were picked. This was to enable a better comparison between borrower and non-borrower groups. It was ensured that both the groups shared the same characteristics to some extent.

In the end, 11 clients’ information is excluded from the analysis due to unusable responses. Among the remaining 329 clients, 119 were in the Western Division, 137 were in the Central Division and 73 in Northern Division. Other respondents were not reached or they declined to be interviewed. Out of the 329 households interviewed 287 (88%) were women clients.

The fieldwork was carried out during the months of July to November 2011 by the author himself with assistance of undergraduate university students. The gender section of the questionnaire was administered by female interviewers. A one-day training was provided to field assistants before the actual field work. Interviews, which lasted about 40 minutes, were conducted at the respondents’ residence or work place. Most of the questions were close-ended, which was important to minimize interview bias and margin of error. However, interviewers were asked to take note of any important information highlighted by the respondents, such as problems faced by their businesses, attitude of microfinance staff, reasons for failure and success of their businesses. Endogeniety is a major concern in impact analysis of any policy intervention programme, which can be caused by selection bias in survey based studies. Selection bias occurs due to two reasons; clients self-select themselves into the programme and the non-random placement of the microfinance programme. Households which have a drive and eagerness for enterprise are highly likely to participate in the microfinance programme, whereas those who do not have such attributes may never take part in the programme. On the other hand, microfinance institutions may select areas with special attributes to implement their programme. They may choose areas where the incidence of poverty is high or communities which are more dynamic (Maldonado and Gonzalez-Vega, 2008). In order to minimize the selection bias problem, the methodology adopted by a USAID-funded project, namely ‘Assessing the Impact of Microenterprise Services (AIMS)’, which suggests to compare incoming clients with current clients, was followed. It is believed that both existing and incoming clients have entrepreneurial drive and hence,
difference in the observed outcome is purely due to intervention of the programme. This methodology was later adopted by Mosley and Humle (1996), Coleman (1999 and 2006) in analyzing the impacts of microfinance.

The sample for the current study covers only members of microfinance institutions, including borrowers and non-borrowers. Reasons for the exclusion of non-members of a microfinance institution can be seen from the following two aspects. Firstly, both savers and loan clients are members of the microfinance and hence both have entrepreneurial drive, both groups have demonstrated their ability to save and willingness to take a loan, except one group currently has a loan, while the other group does not have any loan. Secondly, compared to non-members, members of microfinance institutions share more common characteristics such as limited access to formal bank loans and limited formal income sources. In other words, incorporating non-members in the study will increase heterogeneity in the sample and probability of estimation bias given limited survey data, which accordingly increases difficulty of narrowing down the range of control factors and risk of reducing regression goodness-of-fit. Thirdly, women’s participation in the microfinance programme itself exhibits women’s capability of making decisions on financial issues and freedom of engaging in a certain level of social and economic activities, which are important indicators of women empowerment.Fourthly, microfinance institutions in Fiji mainly practise individual lending and hence, it is more appropriate to randomly select individuals from both the groups. This is the case that has been widely evidenced in many studies which cover members and non-members of microfinance institutions.

1.4.2 Estimation Procedure

Empirical analyses in this thesis are composed of three parts: determinants of microcredit, income impact of microcredit, and women empowerment impact of microcredit. The first empirical part will be conducted in three steps. Firstly, it predicts probabilities of being MFI loan beneficiaries on top of saving in MFIs. The dependent variable is a binary variable with value one to microcredit borrowers and zero to microfinance institution savers. A logit model is therefore employed to identify probabilities of being MFI loan beneficiaries. The second step investigates the amount of
microfinance credit through the Heckman selection model which corrects for sample selection bias. The core dependent variable of the treatment effects model is the amount of cumulative microfinance loans treating non-borrowers’ loan values as ‘non-available’ rather than zero. Analysis in the third step differentiates productive loans from consumption loans through a least squared estimation analysis, and identifies factors contributing to consumption loans and productive loans respectively. Analysis in this step is hence composed of two two-stage least squares regressions with the dependent variable being cumulative production loans and cumulative consumption loans respectively for two types of microcredit borrowers.

The second empirical part in examining microcredit’s impact on poverty reduction has a simultaneity problem, since the linkage between borrowing microcredit and household income is likely to be bi-directional, as will be evidenced in the first empirical part that income has significant impact on both microcredit accessibility and microcredit amount. Simultaneous equations models are therefore developed in order to address endogenous effects in this part.

The third empirical part examines microcredit’s impact on women’s empowerment, a non-physical aspect of life. Given the binary feature of women empowerment indices, logit models are employed. Women empowerment is measured by 22 indices which cover different aspects of empowerment for the case study of Fiji; these indices are not combined into one single index to avoid measurement bias that results from arbitrary method of combining. This means a system of 22 equations with each empowerment index as the dependent variable in an equation will be assessed individually. Among control factors, household income (or alternatively household assets) and borrowing microloans are likely to be endogenous in the system, the instrumental variables Probit estimator (IVPROBIT) should be accordingly used if the endogeneity issue exists.

1.5 THESIS STRUCTURE

Chapter Two:

2 Microloans and microcredit are interchangeably used in this article.
The unstable political environment since 1987, loss of sugar preferential prices, expiry of multi-fiber agreement and other preferential access to overseas markets and non-renewal of land leases have significantly affected Fiji’s economic performance over the last three decades.

A series of reforms undertaken since 1987 have failed to achieve desired economic growth and average economic growth has remained low. However, poor economic growth and neglect of the agriculture industry caused major decline in the welfare of the people. The poverty rate has increased to 40 percent in 2010 (Ministry of National Planning, 2010). In contrast, the poverty rate in 1977 was only 15 percent. Apart from poverty, unemployment has also risen in the recent years, for example, in 2007 the unemployment rate was 8.6 percent, an increase from 5.8 percent in 1996. Moreover, there are more females unemployed than males, while at the same time female labour participation has declined over the last decade.

In response to unemployment and poverty, in the late 1990’s the Fiji government initiated a microfinance programme. The aim of the program was to provide credit access to the poor households at an affordable interest rate. To date there are ten microfinance institutions providing saving and credit services to the poor households across Fiji. In addition, government also provides basic business training through the National Center for Small and Microenterprise Development to supplement the microfinance institutions.

Chapter Three:

Chapter Three provides a detailed literature review on the impacts of microfinance and demand for microcredit.

First, it provides an overview of the microfinance industry, outlining the models and strategies used by the microfinance institution to provide greater loan accessibility to poor clients.
Secondly, it discusses the factors determining demand for microcredit. It is found that a number of household and individual characteristics determine demand for loan. However, the nature of the impact may vary from case to case.

Thirdly, it discusses theoretical and empirical arguments on the impact of microcredit on poverty. It was observed that there are generally two strands of argument on the impact of microfinance. One strand of evidence argues that microfinance has a positive impact on poverty. The second strand of studies argues that microfinance will not necessarily have a positive impact on poverty.

The study identifies that women empowerment is one of the key aims of the microfinance programme. There are two streams of literature. While one of these finds positive impacts of microfinance on women empowerment, the other does not find any positive evidence. The study also finds that microfinance also impacts other factors such as health and education. It was also found that both random and non-random studies are used to evaluate the impacts of microfinance.

**Chapter Four:**

This chapter investigated the demand for microfinance institutions’ loans. The analysis was conducted in two stages: investigating microcredit accessibility and microcredit size respectively. In the first stage the IVPROBIT estimator was used to explain access to microcredit BORROWER, and in the second stage the Heckman selection model was used to correct selection bias caused by the censored dependent variable, namely cumulative loan amount CLOAN.

Age of spouse, household expenditure per adult equivalent, household head’s nearly unemployment status and the number of children were respectively positively associated with access to microcredit, while income had a negative influence on access to loan. Similarly, age of spouse and income had positive influences on cumulative loan size, while household expenditure per adult equivalent, household head’s nearly unemployment status and the number of children were negatively associated with cumulative loan size. In addition, three additional socio-economic factors, namely education (of both spouse and interviewee), number of earners and amount of transfers
that household receives, were found effective in reducing a household’s dependency on micro-loans.

**Chapter Five:**

This chapter investigated microcredit’s impact on poverty reduction. The analysis was conducted in two steps; investigating microcredit accessibility’s impact and productive loan’s impact respectively. A two-stage probit least squares estimation procedure was used to assess loan accessibility’s impact on poverty reduction and the three-stage least squares estimation procedure was used to assess productive loan’s impact on poverty reduction. A two-stage probit least squares estimation and three-stage least squares estimation were chosen to control the endogeneity problem commonly reported in impact studies.

A positive impact of loan accessibility on household income was identified in the first step, while a bidirectional positive association between productive loan and household income was evidenced in the second. These provide important evidence that microfinance schemes in Fiji are reaching achievements of helping alleviate poverty by lending micro-loans and providing basic training to poor households. Together with the finding in Chapter 4 that households with lower income are in greater demand for access to microcredit, the above evidence further confirms that microfinance in Fiji is effective in helping the poorest of the poor.

**Chapter Six:**

This chapter investigated microcredit’s’ impact on women empowerment. To measure women empowerment in all dimensions of life covering dependent control over assets, joint decision making, free mobility, power against abuse and general knowledge, in total 22 indices were used.

Empirical analysis was based on estimating a system of 22 logit models individually. The core control factor of interest is BORROWER which differentiates microfinance loan borrowers from microfinance members who only saved but did not borrow. Given the empirical evidence of different prediction powers between two sub-groups within the
borrower category, borrowers borrowing for productive purpose (BORROWER_PROD) were further distinguished from those borrowing for consumption purposes (BORROWER_CONS) to further identify women empowerment effect of microfinance by loan purpose. Furthermore, to control for estimation bias, this study included other control factors covering demographic characteristics, household characteristics as well as geographical and ethnical dummy variables.

On estimation methodology, the endogeneity issue was discussed and formally tested in the logit models. The instrument variables probit estimator was used if any of the models was found to be endogenous. Regression results showed that women microfinance loan borrowers were generally more empowered than women microfinance members, not non-borrowers, and further that women borrowing for productive purposes had higher probability of being empowered than women borrowing for consumption purposes in many instances.

Chapter Seven provides the conclusion and policy recommendations.
CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

In both developing and developed countries, the poor are generally deprived of access to the formal financial credit as they cannot provide collateral for loan security (Woolcock, 1999; Imboden, 2005; Feroze et al., 2011; Khan 2009; Venkataramany and Bhasin, 2009; Becchetti and Castriota, 2011; Mallick, 2012). Inability to secure formal credit gave reason to the poor to develop alternative informal financial arrangements to address their financial concerns (Shoji et al., 2012). Concurrently, a number of state, private and non-government organizations’ financial programmes have been established to provide microcredit and other financial services to the poor, which are widely referred to as microfinance.

Although the origin of the concept of microfinance can be traced back to the 18th century (Mersland, 2009), it was only in the 1970’s that it was being widely acknowledged and globally accepted as a poverty alleviation mechanism by donor agencies and government (Tavanti, 2013). Microfinance is a mechanism of giving out small amounts of credit to poor and vulnerable individuals or groups, particularly women, to enable them to establish and improve their own self-employment activities and hence, improve their welfare through increased and additional source of income (Otero, 1999; Nawaz, 2010; Mwenda and Muuka, 2004; Onyuama, 2008; Al-Mamun, 2012; Rahman, 2010; Holland and Wang, 2011; Hermes et al., 2011). Since 1970, apart from credit, microfinance institutions also provide saving facilities, insurance and business training. The microfinance scheme is highly praised for its ability to reduce poverty while generating its own income (Microcredit Summit, 1997; Zagha, 2004). This scheme mostly targets women clients as women are believed to be a relatively vulnerable group in society (Daley-Harris, 2006). It is assumed that access to microcredit improves women’s bargaining power within the household, which is essential in improving their general welfare.

There are two competing views about the impact of microfinance on poverty and other outcomes such as women empowerment. The first view, ‘revealed preference logic’
believes that microcredit should promote the welfare of the borrower. It argues that people take a loan only if they are likely to benefit. In contrast, behavioral models argue that it is not necessary that microcredit will benefit the borrower. It argues that access to collateral free microcredit can tempt people to over-borrow than what they can optimally borrow and repay with an affordable interest rate (Ausubel, 1991). In addition, clients can underestimate interest rates associated with short term loans, which can cause over borrowing of expensive loans (Stango and Zinman, 2009). These can cause severe financial problems to the poor clients and may ultimately decline their income, consumption, assets and welfare. This may further lead to debt trap and exploitation of women. Lack of consensus on the impact of microfinance has created numerous theoretical debates on the impact of microfinance on poverty and women empowerment (Rasid et al., 2011).

The purpose of this chapter is to carry out a detailed review of the existing literature on factors determining demand for microcredit and impact of microcredit on households' outcome as well as its impact on women empowerment. The chapter proceeds by providing a brief background discussion of microfinance in Section 2.2, Section 2.3 examines literature on the demand for microcredit, Section 2.4 evaluates literature for theoretical and empirical evidence on impact of microcredit on poverty and Section 2.5 analyzes theoretical and empirical evidence on the influence of microfinance on gender empowerment. Section 2.6 discusses empirical evidence on the impact of microcredit on other aspects such as education, health and welfare. Section 2.7 critically analyses estimation methods. And the final section provides a brief conclusion on literature.

### 2.2 BRIEF BACKGROUND

The role of a well-functioning financial sector in improving economic and social status of individuals and societies' economic output cannot be over emphasized (Banerjee and Newman, 1993; Beck et al., 2009; Barman et al., 2009; Gupte et al., 2012; Hung, 2003). The productive investments in the economy need to be supported by a reasonably established financial system. Generally a combination of borrowed and personal funds is needed to establish a practical business or finance investment opportunity and to cater for day to day running expenses of the business. This highlights the important role of
financial intermediation in channeling deposits from savers to potential investors, which is necessary for economic growth and welfare improvement. At the initial period of development mostly commercial banks carried out the financial intermediation role. However, while commercials banks contributed positively to economic growth, they largely neglected the financial needs of the poor and rural community and deprived them of any opportunity to leap out of poverty (Pal, 2002).

Commercial banks, which make up the major fraction of financial system in any country, follow prudent principles and procedures in approving credit. Some of the factors that commercial banks consider for loan approval are character, cash flow, collateral, capital and business conditions (Stiglitz and Weiss, 1981; Zeller, 1994). Lack of collateral and absence of any record of the client makes it almost impossible for a formal lending institution to judge credit worthiness of the client. Character is another important attribute of the borrower that is analyzed by the commercial banks. Most of the countries have credit bureaus that keep records of the borrowers. A good past borrowing record of the borrowers for similar reasons would provide some indication of their willingness to repay a loan. However, in situations where such records do not exist, such as rural areas and the unemployed urban community, it becomes too risky for commercial banks to provide credit.

Similarly, cash flow also provides valuable information about borrowers’ ability to make regular payment. For regular salary and wages employees as well as formal entrepreneurs, such information is widely available, whereas the poor, particularly women, the unemployed, farmers and informal operators hardly have any source of regular cash flow. In addition, collateral is a key ingredient of credit approval. Sufficient assets are a pre-requirement of loan applications, which the poor are often not able to provide. Moreover, capital invested in the projects is seen as an indicator of an investor’s willingness to continue with the projects and subsequent payment of debt. Furthermore, commercial banks also consider economic conditions such as business cycles, customer base, product popularity and potential market expansion/contraction before providing loans. A borrower’s ability to repay debt depends on the success of his/her business which in turn depends on the above conditions. A favorable assessment of the above
conditions would indicate survival possibility of the business.

As the poor, particularly farmers, do not possess many of the above characteristics, they are largely denied access to commercial bank loans. Hence, in the 1950’s state institutions and development agencies intervened to provide subsidised development finance (microcredit) to the poor, a group largely excluded by commercial bank lending (Hollis and Sweetman, 1998; Bhatt and Tang, 2001; Morduch, 1999b). They provided targeted assistance to communities that were not able to access formal credit with the aim to eradicate poverty and promote growth (Von Pischke et al., 1983). However, poor loan repayment, lack of transparency, corrupt practices, high cost of subsidies together with high cost passed on to borrowers led to the ultimate failure of most of the state led microcredit programmes. State-led microcredit programmes were also highly politicized and hence, funds were provided to the politically powerful than where there was need (Morduch, 1999b; Satish, 2004; Robinson, 2001). Also, government-led development financial systems had high default rates with borrowers having no incentive to repay and there was a lack of saving by the target group. It gave the impression that the poor were un-bankable. It was widely believed that poor and rural communities, particularly women, could not borrow and repay loans at a reasonable interest rate and hence, they were generally denied credit.

As the financial service was not reaching the poor and rural community, more and more households fell below the official poverty line and the gap between the rich and poor widened. The emergence of microfinance in the 1970’s challenged the fundamentals of the microcredit systems that were generally run by formal lending institutions and other development financial programmes run by governments and other development agencies (Lashley, 2004). The immediate success achieved by microfinance programmes proved that the poor were capable of taking out credits, establishing and running successful business and repaying loans as scheduled (Barboza and Trejos, 2009; Elahi and Danopoulos, 2004; Hartarska and Nadolnyak, 2008).

2.2.1 Microfinance Strategies and Models

The concept of microfinance introduced in 1970 differs from the traditional microcredit
system in that there is no grant, principal with interest has to be repaid within a given time frame and it also provides training, which was not an integral part of traditional microcredit. The unique invention of microfinance in the 1970’s hoped to address the problem of accessibility in creative ways, while at the same time recover full principal with interest (Chavan and Ramakumar, 2002). The microfinance programme uses a number of strategies and models to overcome the problem of accessibility.

### 2.2.1.1 Strategies

The microfinance institutions introduced a number of strategies to solve the usual problem reported by formal financial lenders (such as commercial banks and state owned financial institutions). For instance, the strategy of group formation (Unity group) is used by the Grameen Bank model of microfinance to address the screening problem (Paxton et al., 2000; Vatta, 2003; Al-Azzam et al., 2012). The innovative group borrowing model is based on the assumption that unity in a group of people of similar social and cultural background is essential for survival of microfinance projects (Chavan and Ramakumar, 2002). Group lending is highly valuable for judging character and ultimate use of the borrowed money (Mersland and Strom, 2009). In addition, credit is only provided for sustainable productive economic activity to ensure regular future repayment. However, at times credit is provided for other non-productive purposes such as weddings and funerals. It is the responsibility of the group members to assess the potential borrowers on the basis of prospect of their proposals and definite repayment. Furthermore, microfinance loan is not given on the basis of how much equity is invested, but borrowers’ survival skills (Ruben, 2007). Hence the strategy of microfinance is to provide credit so that people can do something that can enable them to meet the needs of the family members.

Moreover, supervision of credit utilization and enforcement is carried out by microfinance staff with the assistance of group members. Group members are often able to enforce sanctions on members who default. The institution has a procedure whereby the loan has to be utilized within a seven day period and first payment is usually due within seven days after disbursement of credit. Predominantly, regular weekly repayment is favored by most microfinance institutions. It is believed that it is easier for
clients to make regular payment than making a whole sum payment at the end of the loan repayment.

Apart from group lending, some microfinance institutions offer direct personal lending. Under such lending schemes, clients are required to make regular compulsory saving for a fixed period of time before they are entitled for credit.

2.2.1.2 Models of Microfinance

The three microfinance models that originated after 1970 include Grameen Bank, Bancosol Bolivia and Rakyat Indonesia (Mosley and Rock, 2004). One common feature of these models is the high repayment rate; however, they differ in other aspects.

- **Grameen Bank**

The concept of Grameen Bank was developed in a developing country (Bangladesh) and widely applied in developing as well as developed countries (Chavan and Ramakumar, 2002). The Grameen Bank Model has been adopted in many countries including United States, China and India. The founder of the Grameen Bank, Muhammad Yunus, noticed that the poor were not able to get access to credit and hence, he started giving them his personal money to buy material for projects liking sewing, weaving and making pots (Morduch, 1999b). He was able to set up a bank a decade later with the sole objective of providing credit to the poor and vulnerable communities. Villagers were encouraged to voluntarily form groups of five members and then eight groups of five members formed a central group. The group lending concept is known to reduce moral hazards and adverse selection issues (Ghatak and Guinnane, 1999). Bank staff conducted regular weekly meetings with the central group and it was mandatory for all members to attend. Through group meetings the microfinance staff established a direct communication with clients in providing a service and they maintained regular contact with the clients (Ahmed, 2000; Dixon et al., 2007).

Credit is initially given to two members. Upon successful repayment then it is extended to the next two members, then the fifth member. Loans are usually provided for one year with a nominal interest of twenty percent. By policy, if any member of the group fails to
make repayment, subsequent loan is denied to all other members of the group. Groups are assumed to be homogenous; they are made up of members of similar cultural, economic and social background (Hossain, 1993; Sarkar, 2001). It is also assumed that members have perfect information about one another and anyone with a high probability of default would not be included in the first place. Generally, peer pressure is used to avoid defaulting from defaulting. In case the borrower fails to make regular repayment, other members will have to pay and any such default may deny future subsequent loans to the group. Similarly, if the group fails to meet the payment then the central group will be responsible for the payment (Barua, 2000).

The unique concept of joint liability introduced by the Grameen Bank reduces the risk of default by borrowers. Under the concept, any default on a part of the group of borrowers would sabotage their future chances of future borrowing. Therefore, group members will be extra cautious in selecting their group members. This provides incentives to the group to exclude known risky members. As villages have better information about each other than credit providers, they are likely to carefully screen their members. Joint liability also provides incentives to members to closely monitor each other and pressure borrowers not to default.

Besides the strategy of joint liability the Grameen Bank also uses other strategies to reduce the risk of default by borrowers. For instance, it promises to provide bigger and better loans as clients prove their creditworthiness. They further provide bigger general loans at reduced rates to best performing clients.

Moreover, the Grameen Bank takes compulsory savings from group members before they qualify for loans. Compulsory savings are treated as the insurance by the Grameen Bank for loans that they provide, and therefore compulsory savings normally are not allowed to be withdrawn. However, in times of hardship members are allowed to borrow against compulsory savings.

Apart from providing credit, the Grameen Bank plays an important role in shaping the socio-economic structure of rural societies in Bangladesh. For instance, it provides special loans for good disciplines shown by the clients. Good disciplines include things
such as sitting in rows and paying respect. They further encourage clients to support small family concept, prevent child marriages and promote healthy life styles (Schreiner).

The Grameen Bank model is not without criticisms. Criticisms include, for instance the Grameen Bank does not allow the members to borrow individually (Mcguire and Conroy, 2000). Empirical evidence on impacts of microcredit scheme such as the Grameen Bank is mixed and it is extensively discussed in Sections 2.4 and 2.5 of this chapter.

Approach taken by the Grameen bank gained popularity and credibility in its success of selecting clients and repayment (Johnson and Rogaly, 1997). Usually a very high repayment rate was reported for microfinance institutions. Learning from the success of Grameen Bank, many other similar institutions in different parts of the world replicated the model (Hulme, 2008).

- Bancol Solidario, Bolivia

Similar to the Grameen Bank, Bancol Solidario (BancoSol) practices the group lending concept; however, it varies from Grameen Bank in many other aspects. Unlike Grameen Bank, voluntary groups are formed of between three to seven members and loans are provided to all members concurrently (Morduch, 1999b; Schicks, 2007; Mosley, 1996). Moreover, its key focus is banking and not social services. It provides credit to people with established businesses and those mostly located in urban areas. Modern BancoSol also lends to individuals; however, BancoSol levies a higher interest rate of 48 percent and a three percent upfront service fee. Other differences include non-reliance on subsidy, flexible repayment period and repayment schedule, a larger loan size and relatively well-off borrowers (Sengupta and Aubuchon, 2008). The Bancosol model is adopted in other Latin American countries in the form of ACCION.

- Indonesia Microfinance Model (BRI and BKD)

Bank Rakyat Indonesia (BRI) and Bank Kredit Deans of Indonesia (BKD) are two popular microfinance schemes in Indonesia. BRI provides loans to individuals and it
does not practise group banking (Morduch, 1999a). Loans are usually given to the richest of the poor. Sometimes borrowers are asked to provide some sort of collateral. Since BRI is a profit based organization, it does not practise social services. Conditions of collateral often exclude the poor from accessing credit. The bank usually charges an interest rate of 34 percent, which is reduced to 25 percent if the loan is paid on time. Moreover, the bank does not provide any kind of training. Unlike BRI, BKD provides services to the rural community and its focus is on individual lending to the poorest households. Usually the size of loan is very small and the loan term ranges from 10-12 weeks. An interest rate of ten percent is charged on the borrowed amount. Similar to the Grammen Bank, no collateral is required, although the fund is administered through village heads.

• Village Bank

In the mid 1980’s John Hatch and his colleagues at the Foundation for International Community Assistance (FINCA) formulated the concept of village banking in Latin America. Since then the model has been replicated in a vast number of countries covering thousands of geographical areas. Village banks are usually formed with the assistance of NGO’s in collaboration with a community group. The community members have the major power in loan approval and loan management. Usually NGO’s provide seed fund to make an initial round of loans, however, the members are required to make compulsory savings prior to any loan approval. Loan size is tied to savings and members are allowed to borrow four to five times of their saving (Morduch, 1999a). Today this model is replicated in most parts of the world and thousands of institutions are providing microfinance services in developing as well as developed countries.

Despite various efforts made by the microfinance institution to provide financial services to the poor and rural community, about forty percent of the population around the world does not have access to credit. Hence, the next section will analyse factors determining access and demand for credit.
2.3 DEMAND FOR LOANS

The ability of microfinance as a tool to alleviate poverty is largely determined by the financially disadvantaged household’s access to microfinance providers. A combination of demand and supply of credit determines the level of access. Demand is driven by the household’s decision whether or not to seek credit and the amount of credit, while supply depends upon the credit provider’s decision on whether to give loan or not and how much. A household’s demand for microcredit may depend on a number of factors, such as: household assets, income, education, age, sex, expenditure, size of the household, number of income earners, number of dependents and other characteristics.

A number of studies examined factors determining household demands for credit and identified a number of factors that may determine demand and access to loan. However, the impact of these factors may vary from case to case, for instance, a factor may increase demand for loan in one case, but it may act exactly the opposite in another. For instance, Li et al. (2011) examined determinants of access to credit by Chinese households in rural areas within a binary choice model. They identified the ratio of household members without income to household income earners, self-employment, family members working as village/township official, secondary education and farm size to be positively linked to access to microcredit, whereas household size, assets, attitude towards debt, access to other credit sources, savings with Rural Credit Cooperative (RCC) and share with RCC and distance negatively influence access to credit.

Khoi et al. (2013) examined determinants of access to formal and informal credit in Vietnam. They identified informal loan duration, land holding status, informal interest, informal loan purpose and direct road access to village as having positive influence on access to informal credit, whereas no education, age, and urbanized commune negatively influenced this access. Interestingly, membership of a credit group, possessing a poor certificate, being employed as a local government official, age, marriage and ethnicity positively influenced access to formal credit.

Mohamed (2003) examined factors determining access to quasi-formal and formal credit by Artisanal fishermen and smallholder farmers in Zanzibar. The study identified age,
gender, level of education and income as negatively influencing access to credit, while awareness of credit positively influenced it. Similarly, Okurut (2006) examined determinants of access to credit by the poor in South Africa. The study identified factors such as age, being male, household size, per capita expenditure; and education level positively influencing access to credit while being poor had a negative impact on it. Johar and Rammohan (2006) examined access to credit by Indonesian women. The study found that factors such as female-headed households, social network, non-labour income, number of household borrowers, age, all levels of education, knowledge of informal money lenders and targeted government programmes positively influenced access to credit, whereas factors such as distance and household size had a negative influence on access to credit by females. These factors had similar effects on the amount of credit borrowed.

2.4 MICROFINANCE AND POVERTY: THEORY AND EVIDENCE

2.4.1 Theoretical Arguments

A simple definition of poverty can be stated ‘as an income (or more broadly welfare) level below a socially acceptable minimum’ (Weiss and Montgomery 2005, p395). Weiss and Montgomery (2005) stated that the concept of poverty can be categorized into chronic poor (income below poverty line in the long term) and ‘transitory poor’ (those with income below poverty line due to adverse shock). The authors also argued that the ‘chronic poor’ can be further divided into those who are likely to remain poor, unless they are provided with social welfare support (the 'destitute'), and those who are poor simply because they do not have asset and opportunity (non-destitute chronic poverty). The ‘non-destitute chronic poor’ can further be classified into those who are slightly below the poverty line and those who are significantly below the poverty line were referred to as ‘the core poor’ (Weiss and Montgomery, 2005; Arch, 2005; Hussain, 2008). Researchers such as Yunus (2003, 2004) argued that most of the household in rural areas were poor simply because of limited access to financial services. Yunus (2003, 2004) argued that poor people were reasonably skilled, hardworking and productive, and that they however lacked working capital, which restricted their economic progress in life. The poor households could not get access to formal credit as
they were not able to provide collateral. Hence, microfinance emerged as an alternative to provide credit access to the poor households with the view of addressing poverty. The mechanism through which microfinance addresses poverty varies between non-destitute chronic poverty and transitory poverty (Weiss, and Montgomery, 2005; Akram and Hussain, 2011).

- Positive Views

In the case of non-destitute chronic poverty, microfinance provides borrowers with income generating activities which are likely to provide them with employment or an alternative to low-paid jobs. This further allows them to diversify their business and assets, which is important to improve income. However, in the case of transitory poverty, access to credit allows the borrower to smooth consumption. Transitory poverty is a temporary situation when income falls below the poverty line, leaving the individual to either withdraw savings or look for finance elsewhere to maintain consumption level. Similarly, Weiss and Montgomery (2005) argued that in the case of the core poor, microfinance provides access to credit for protection purposes only, while the core poor may need money for things such as weddings, education, funerals and other special events.

In addition to providing financial services, microfinance institutions provide services such as business training, training on improving various aspects of their business such as marketing, product improvement, and discipline, which positively contributes to improved productivity of clients (Kai and Hamori, 2009). Improved income and productivity will allow the borrower to accumulate wealth and break out of the poverty trap.

Moreover, in most of the cases it is mandatory for microfinance clients to have a regular saving which contributes to the client’s welfare in two ways. First it inculcates in them good savings behavior and secondly, the savings can be withdrawn on rainy days or it could be accumulated and invested in productive activities. Saving itself is the most liquid form of assets, which provides economic confidence and an opportunity to invest in lucrative projects at a later date and hence, diversify and increase income and
ultimately improve welfare.

Apart from increasing the borrower’s income and assets, micro credit influences poverty in a number of ways. On a positive note, micro credit may allow a borrower to employ additional employees who may be poor and hence, improve his standard of living (Mosley, 2001). Access to microfinance institutions may substantially lower the cost of borrowing or access to credit or both. Any of the above benefits will substantially contribute to addressing poverty, particularly in rural areas. Microfinance is a novel way to extend credit to the poor. Generally, economically weaker people as well as those from the backward community make up a significant proportion of self-help groups. A successful group lending model indicates that even the poor can practise financial discipline. Although the loan is small it is about meeting the requirements of the poor, also helping the poor to improve their income levels.

• Negative Views

While there are a number of channels through which microfinance programmes can address poverty, critics of microfinance provide a number of reasons as to why microfinance may have zero or negative impact on poverty. Karnani (2007) argues that the poor are mostly risk adverse, meaning that they are unlikely to invest in risky ventures and hence, they are likely to lose out on good income generating projects. They will be more inclined to invest in safe projects which are generally associated with low returns and their prospects of increasing income will be limited. Furthermore, Karnani (2007) suggested that, the poorest are hesitant to borrow because of the interest rates. Although it is argued that high interest rates are essential for financial sustainability of microfinance institutions and to the long term interests of the poor, high interest rates will add to the indebtedness of the poor beyond what they can afford to repay. Therefore, it can be concluded that access to credit becomes a non-viable or unavailable service for the poorest.

Similarly, Hashemi and Rosenberg (2006) also argued that the poorest of the poor are reluctant to borrow because of their inability to repay loans, if they do not have a steady income. They fear that taking loans will increase their indebtedness without much
increase in the level of income. To avoid high default rates, many microfinance institutions would not lend to the poor who do not have a regular source of income and hence, the poorest of the poor would be excluded from microfinance services (Copestake, 2002; Weiss and Montgomery, 2005; Lawson, 2010).

Critics of the microfinance further argue that microcredit is mainly provided for entrepreneurial purposes and not everyone possesses business skills (Karnani, 2007). Lack of entrepreneurial drive is unlikely to give a positive return and most situations can lead to business failure and will ultimately increase the hardship of poor households (Johnson and Kidder, 1999). In addition, given the limited marketable skills that the poor have, lending for entrepreneurial purposes means that a significant number of people compete for the same market share.

Moreover, these critics argue that provision of credit has the potential to trap people in an indebtedness cycle, which can happen in a number of ways. First, an individual can use the loan for consumption or medical expenses, which makes it impossible to make repayments (Vonderlack and Schreiner, 2002; Rogaly, 1996). Secondly, the business that the individual engages in collapses and no income is generated to repay the loan. Hashemi (2006) argues that high demand for microcredit services reported as proof of its effectiveness may instead be an indication that some people are getting trapped in a debt cycle. Therefore, the borrowing and repaying cycle continues and it is likely that individuals borrow from one agency to pay to another.

Some critics also argue that the unique concept of group lending can potentially diminish the welfare of poor households. The advocates of the group model believed that groups will be made up of members of similar socio-economic background (homogenous group) with minimum costs, as members have perfect information about each other. However, Marr (2002) refuted this claim and argued that members do not have information about each other and lack of information may result in formation of heterogeneous group rather than homogenous groups. Formation of heterogeneous groups will result in continuous changes in the group as some members may be forced out while others may join in depending on costs and benefits, responsibilities within the group and negotiating power. This may impose heavy costs to the members, which may
not be immediately visible and hence, will not stop members from engaging in group activities. However, in the long run it will be counterproductive to poverty reduction. Group dynamics are entrenched with cultural, social and economic structure. Hence, the function of the group is largely affected by social values, costs and benefits, power structure and uncertainties.

According to Marr (2002), the final benefits/costs of credit depend on the known and unknown risks, limitations and openings that occur between the time gap once a credit is disbursed and income earned. A number of events may take place in between such as; a natural disaster entirely damaging assets, members investing in risky business which may result in huge losses. All these events can potentially influence the livelihood and welfare of the household.

Moreover, the success of members’ business will influence their willingness and ability to repay the loan, contribute to compulsory regular saving and actively engage in group meetings. When the return from the business is zero or negative, a member may simply not be able to pay back the loan. However, the return is significantly small and members may decide to pay from other sources or not to pay at all. The member’s ultimate decision to pay will depend on how much the member values group commitment. If members borrow from elsewhere it could possibly trap them into prolonged debts. The member’s decision not to pay loan may have serious repercussions on the group members, which could include humiliation, being banned from public relationships, seizure of assets, damaging of property and at times it could also end up in death threats. All these factors have a devastating effect on poverty as well as the key outcome that microcredit aspires to achieve.

Lack of consensus among the policy makers and researchers on the impact of microfinance on poverty prompted empirical research on the impact of microfinance. The studies vary in methodological approach and context. Some of the empirical studies analyzing the impact of microfinance on various household outcomes are discussed below.
2.4.2 Empirical Findings

- Evidence of Positive Impacts

Both non-experimental and experimental (randomized control trial) studies have been extensively used to evaluate the impact of microcredit on poverty. The use of non-experimental studies found that the impact of microfinance can be positive, negative or it may not have any impact at all. For instance, in one of the earlier studies Pitt and Khandker (1998) analyzed in 1991-1992 a cross section household survey data of Bangladesh to examine the impact of microfinance provided in Bangladesh. The study found a positive impact of microcredit on household consumption, and the impact was more visible in the case of women borrowers. The positive impact of microcredit on income and consumption in Bangladesh was also found by Hossain (2012) and Bashar and Rashid (2013) in a cross section studies.

In another study Chan and Ghani (2011) found that access to microcredit significantly improved income in rural and remote areas of Malaysia. Similarly, Al-Mamun et al. (2012) found a positive impact of microfinance on income in Indonesia. In addition, Imai et al. (2010) found a positive impact of microcredit on income and poverty in India.

Besides income and consumption, a number of studies also examined the impact of microcredit on asset accumulation. For instance, Adjei et al. (2009) examined the impact of microcredit on asset accumulation in Ghana and found that access to credit significantly contributed to asset accumulation, while a positive impact of microcredit on asset and income was also noted in the case of rural Nigeria by Aideyan (2009). In an earlier study Coleman (1999) compared existing clients with incoming clients in Thailand and found no impact of microcredit on savings and assets.

In contrast, Mosley (2001) using case studies, examined the impact of microcredit on poverty in Bolivia. The study used poverty head count and poverty gap measures to see the outcome. The study noted that about two thirds of the borrowers who were able to cross the poverty line would not have been able to do so, if they had not had access to credit. It was further noted that microcredit significantly contributed to asset accumulation; however, the impact was less in case of core poor borrowers. The study
argued that the impact of microcredit was minimal in case of core poor as borrowers are more careful not to expose themselves to high risk. The study further noted that increase in income was positively associated with income levels.

In order to control for endogeniety, a number of studies used the propensity score matching estimation procedure and produced mixed findings. For instance, Boonperm et al. (2013) examined the impact of village funds on income and expenditure in Thailand using the propensity score matching framework and found a positive impact of village fund on expenditure, income and holding of durable goods. In another study, Duvendack and Palmer-Jones (2012) using propensity score matching by gender found a positive impact of microcredit on women’s ownership of non-land assets irrespective of male or female borrowers.

There are a number of studies which examined the impact of microfinance on poverty within a panel data framework. In one of the early studies Khandker (2005) examined the impact of microcredit on household consumption in Bangladesh within a panel data framework using the BIDS-world bank survey data carried out in 1998-99 that partly studied the same household as the 1991-92 survey. This study found a significant positive impact of access to microcredit on consumption and noted positive externality of the microfinance project, as non-borrowers also benefited from microfinance projects through growth in local economy and particularly, impact was more for the core poor. Berhane and Gardebroek (2011) examined the impact of microcredit in Ethiopia and found a significant positive impact of microfinance on household consumption and improving household roof. In a more recent study, Khandker and Samad (2013) examined whether microcredit potentially trapped clients into poverty or debt in using a 20 year panel survey data. The results showed that access to microcredit significantly increased income, assets and consumption of the borrowers and also the increase in assets over time exceeded the increase in debt over the same period of time. The result clearly demonstrated that access to microcredit not only elevated people from poverty, but also improved their debt status. Similarly, Imai and Azam (2013) examined the impact of microfinance on poverty in Bangladesh and found that productive loan had a positive impact on household income, while consumption loan had a positive impact on
consumption. Most of the evidence from the penal data shows a positive impact of microfinance generally on poverty.

In order to address the methodological weakness of non-experimental studies, a number of studies evaluated the impact of microcredit using randomized control trials. Karlan and Zinman (2009) who studied the impact of expanding credit on consumption in South Africa using randomized evaluation, showed a significant positive effect of credit on consumption and income and employment. However, South Africa borrowing can be regarded as high-cost consumer finance rather than microcredit. The use of loan can lead to formal employment as it allows people to acquire training needed for employment, whereas microcredit is for self-employment and it does not lead to employment. McKenzie and Woodruff (2008) also found that access to microcredit significantly improved profit in Mexico. The impact was more in financially constrained firms than otherwise. They concluded that those firms which lacked financial access became members of the microfinance institution and hence, they were able to improve their profit through small credit. Dupas and Robinson (2013) examined the impact of access to saving in rural Kenya using randomized evaluation. The study found that access to a saving account increased women’s investment in business and also contributed to increased private expenditure of female clients. Attanasio et al. (2011) examined the impact of microcredit in Mongolia using randomized evaluation. They found that microcredit had a positive impact on business investment, consumption and asset in group lending, but no impact was seen in individual lending. The positive impact of microfinance on assets was also found by Swain and Varghese (2009) in Thailand using experimental (randomized control trial). Swain and Varghese (2009) argued that the impact of microcredit on assets should only be assessed in the case of old programmes whereas short-term outcome such as income and assets should be analyzed in new programmes. This means that all programmes’ impact should be analyzed on a case by case basis and the result from one specific programme cannot be generalized.

- Evidence of Negative Impacts

On the other hand, Morduch (1998) in his study based on the same data set as used by Pitt and Khandker (1998), and using the difference-in-difference framework, failed to
find any significant impact of microfinance on consumption in Bangladesh. Similarly, in an earlier study Coleman (1999) compared existing clients with incoming clients in Thailand and found no impact of microcredit on savings and assets.

Moreover, Li et al. (2011), Coleman (2006), ADB (2007) and Amin et al. (2003) cast doubt on the effectiveness of microcredit on alleviating the poorest of the poor out of poverty. Coleman (2006) in a study over Northeast Thailand found that microcredit was not reaching the intended group. Most of the households participating in the programme had a higher asset base to start with. The study further noted that while access to microcredit had a positive impact on rich committee members, it had no impact on improving the welfare of common members (poor clients). Li et al. (2011) found that access to microcredit positively contributed to income and consumption in China and the magnitude of the impact increased with the size of the loan, which suggested that the impact increased as clients became more deeply involved with microcredit. However, the study noted that microcredit was not reaching the poorest of the poor, which potentially limited the programme’s ability to address poverty in China. Both Coleman and Li et al effectively controlled for self-selection problem.

Similarly, in the 2007 ADB report on microcredit in the Philippines, it was concluded that lower income households had smaller average loan size. A smaller loan prevents lower income households from engaging in activities that require greater capital and generate more income, indicating that microcredit had a negative impact in lower income households. Similarly, Amin et al. (2003) in a study in Bangladesh found that members were less well off than the non-members, while Matul and Tsilikounas (2004) examined the impact of microcredit in Bosnia and Herzegovina and they found no significant positive impact of microcredit on employment, investment or income.

Furthermore, Chandoevwit and Ashakul (2008) examined the impact of village funds (microcredit) on income and expenditure in Thailand using the propensity score matching framework. The study failed to find any significant positive impact of village funds on either consumption or household income. However, it was observed that village funds influenced non-consumption expenditure and it was concluded that credit was not used for investment purposes. Similarly, Duvendack and Palmer-Jones (2012) found that
access to microcredit had a negative impact on consumption irrespective of whether the borrower was male or female.

Karlan and Zinman (2009) using randomized evaluation found that access to microcredit caused a decline in the business activity and no increase in profit was noted for female borrowers in the Phillipines. There was also a notable decline in the subjective measure of well-being. Karlan and Valdivia (2011) examined the impact of business training on microfinance clients in Peru using the randomized evaluation. The study did not find any significant impact of business training on profit, employment or revenue. Augsburg et al. (2012) examined the impact of microcredit on poverty and education in Bosnia using randomized evaluation. The study found that there was no increase in business profit, reduced consumption, no change in food consumption, increase in labour participation of age group 16-19, implying that they reduced school participation. Similarly, Banerjee et al. (2013) did not find any significant impact of microcredit on consumption in India using randomized evaluation.

While the impact of microfinance on income, expenditure, asset and other financial outcomes are summarized above, another important objective that microcredit hopes to fulfill is empowerment of women. As it is one of the key objectives of microfinance, the next section will discuss in detail the issue of women’s empowerment and the role that microfinance can potentially play to promote women empowerment.

2.5 MICROFINANCE AND WOMEN EMPOWERMENT

2.5.1 Overview

Even in the 21st century women continue to face discrimination in all areas of their lives. At the work place they are burdened with more responsibilities in comparison to the income they receive, mainly common in the informal sector, since there are fewer legislations or laws that fairly recognize and protect women’s labour in this sector of the economy. Additionally, there is inadequate support from government agencies or statutory bodies to protect their rights in dealing with issues such as; wages

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3 For purpose of this study, women empowerment is defined as her ability to move freely, involvement in household decision-making, power against abuse, and level of awareness on general knowledge.
determination, working conditions and working hours, retirement benefits and other work life related grievances. Furthermore, there are no standards, contracts or recourse for female workers, especially in situations whereby they are mistreated or there are poor work conditions. Women, despite being skilled in traditional craft or occupation, remain poor with little to no asset holdings. In addition, in most cases there is a glass-ceiling barrier that prevents women from acquiring certain goals in life. Women also experience difficulties surrounding social, economic, and cultural practices that discriminate against sex (Kaur, 2010). For instance, there are cultural practices that undermine women from birth, and social/societal structures deny females their social mobility of freedom. Such discrimination includes the right to formal education and social freedom.

Moreover, taboo on women in countries such as India and Muslim-dominated countries to interact with men outside the family, and most importantly, the lack of or no contribution in major decision-making at home or even regarding production matters undermine women’s ability to work independently. Consequently, these social and cultural beliefs about women restrict them from actively participating in economic development. In most South Asian countries women are hit the hardest during economic crises due to their socio-cultural belief (Chowdhury, 2000; Arch, 2005; Kaur, 2010). Due to this reason women are trapped in poverty and they remain poor.

Microfinance is seen as an important policy intervention to promote women empowerment through income generating activities, which is likely to provide them alternative employment and a stable income source (Khandker, 2003; Pitt et al., 2006; D’espallier et al., 2011; Rahman et al., 2009). The discussion below will outline some of theoretical and empirical findings on the impact of microcredit on women empowerment.

2.5.2 Microfinance and Women Empowerment

2.5.2.1 Theoretical Arguments

- Positive Views
The empowerment of women is one of the main purposes of microcredit programmes (Isseries, 2003). Women empowerment can be characterized as the mobility of women, economic security, ability to make purchases either large or small, involvement in major household decisions, political and legal awareness, and involvement in public protest and political campaigns. Access to credit can potentially promote all or some of these attributes (Mayoux, 1998; Lucy et al., 2010).

Women’s participation in microfinance programmes improves their ability to visit market places for buying products, medical centres for medication, cinemas for watching movies, and other homes in the village or outside village for more social relations. All these have empowered women to adapt to greater challenges in life. These programmes also influence legal and political awareness and participation in public campaigns. Such campaigns are often for the members themselves, the chairman, and the local and political leaders (Johnson and Rogaly, 1997). The longer the involvement of women in the credit programmes, the greater the likelihood of those women being empowered.

Women are likely to contribute more not only to their families, but to society as a whole in the long run. Credit programmes enable women to negotiate gender barriers that increase the control of women over their own lives, improving their freedom in the family and increasing their persuasive power. As a result, credit programmes improve the relative position of women in their families, and in society at large (Jayadev and Rao, 2012).

Women’s lifestyle is improved by these programmes as they become economically solvent and self-sufficient through income generating activities which not only provide stable sources of income to women borrowers, but also provide opportunities to accumulate capital and assets by allowing women to save for the future of their families and economy at large while also investing in assets (Thomas, 1990; Lundberg et al., 1997; Duflo, 2003; Ngo and Wahhaj, 2012). Women earning independently and contributing to their families are less insecure and less vulnerable to threats of being abandoned by their husbands. Having control over productive assets and stable income sources gives them greater negotiating ability within the household, while they also gain respect of the spouse and family. Once women obtain economic security and are able to
contribute to their families, they have the freedom of mobility and freedom from domination by the family. Thus, they have better control of their bodies and birth control options. Mobility of women within and outside the villages assists them in seeking family planning information and other educational assistance.

In addition, increase in income indirectly improves the education level making women more aware of their consumption and sanitation needs as well. The improvement in education among the rural borrowers helps to increase consciousness about their health and the future of the next generation (Sigalla and Carney, 2012). By interacting within group members and health workers, rural women increase awareness on the use of contraception and birth control mechanics. Exchange of ideas and group interaction, social support for legitimization of innovative reproductive behavior encourage rural women to use more contraception in their daily lives. Increased income also enables them to send children to school, and particularly in the case of female borrowers, daughters stand better chances of being educated compared to daughters of non-borrowers (Pitt and Khandaker, 1996; Kabeer, 2001).

By sharing their experiences, views, ideas and beliefs on various topics during discussions, women are better able to understand the challenges they face and opportunities they have in the wider world. To succeed in their goals, they should be actively discovering strategies and implementing them to empower themselves. In addition to this, group formation (important feature of microfinance) arouses awareness in women of the important economic role they play in society and gives them confidence to detach themselves from the conservative cultural practices that used to confine their activities to their homes, with self-respect and dignity. This has strengthened their relationships and the union movement as a whole. Studies suggest that after being part of group lending programmes, these women have taken leadership roles at business and community level together with their participation at the political level.

- Negative Views

On the other hand, there are a number of studies which argue that microfinance can actually lead to disempowerment of women, or it may not have any impact at all (Goetz
and Gupta, 1996; Garikipati, 2008; Ligon, 2002; Tassel, 2004; Elahi, 2003). Critics of microfinance believe that poor women, particularly in rural areas, are unable to be self-reliant due to the fact that development programmes are hardly prolonged. Thus, there is a higher probability of women becoming more dependent on credit providers rather than making them independent. Despite microcredit being provided to women, there is little to no change in the gender division of labour. Loan may have increased the level of economic activity among women, however; there is no change in the range of activities as these women are still confined to the work they used to do, the majority of which revolves around domestic/home-based activities. Moreover, women participation in credit programmes can significantly increase the workload of women as they have to look after the business as well as normal household chores. This may only burden women without improving their bargaining power within the household.

Furthermore the purdah norm in countries like Bangladesh continues to hinder women in their socio-economic development, such as limiting their participation in market-oriented activities or restricting mobility (Cain et al., 1979; Faridi et al., 2011; Amin et al., 1995). Some studies also argue that women participation in credit programmes can actually increase violence against women, particularly when women fail to repay loans and seek their husbands’ assistance in making repayments (Goetz and Gupta, 1996; Leach and Sitaram, 2002; Ahmed and Chowdhury, 2011).

Some studies have highlighted that microcredit has weakened women’s position in the society rather than empowering them, because it failed to sufficiently put attention towards gender (Mayoux, 2010). They argue that credit on its own cannot empower or provide women with freedom. Having total focus on women empowerment and excluding male participation in microfinance activities can result in marginalizing the decision-making of women, whereby men who are economically active can refuse to show support. In extreme circumstances males can undermine or sabotage their activities by taking control of the resources, knowing that the house is the target for assistance.
2.5.2.2 Empirical Findings

There are a number of studies which examined the impact of microcredit on gender empowerment and found inconclusive evidence. Some studies found that access to microcredit generally promoted women empowerment; some did not find any evidence of empowerment, while others found that microcredit can promote certain aspects of women empowerment and it may not promote or may cause disempowerment in other aspects.

• Evidence of Positive Impacts

In one of the earlier studies Hashemi et al. (1996) formulated eight indicators to measure the impact of microcredit on women empowerment. Some of the indicators used were women’s economic contribution to the household; mobility; ability to make small and large purchases; ownership of productive assets; involvement in major decision-making; freedom from family domination; and political awareness. The study found that access to microcredit improved women’s ownership of assets and purchasing power. Women with credit also experienced greater mobility and political participation. Generally, the study found that microcredit promotes women empowerment within the household. Similarly, in another study, Ashraf et al. (2010) using the randomized controlled trial in the Philippines, evaluated the impact of a commitment micro-saving account. The study found the programme had a positive impact on women’s decision-making and household in treatment group spent more on women-related durable goods relative to control group. Participation in the programme further improved women’s perception of saving and their purchasing power within the household.

Nader (2008) examined the impact of microcredit on women’s socio-economic well-being in Cairo. The study noted that microcredit significantly improved the self-esteem of women. Nader argued that self-esteem and confidence of women were enhanced through microcredit as their source of income increased and they felt more independent. The study also found evidence of improvement in education of children of women who had access to microcredit. Microcredit not only improved the education of children, but also the gap between girls and boys education significantly declined. Similarly, Khan
(1999) examined the relationship between microfinance, wage employment and housework in Bangladesh. The study noted that microcredit is highly valued by women due to the stability it brought into their lives, provided them with collective space and valuable information on important issues concerning women. A similar result was also found by Galab and Rao (2003) in their analysis of the impact of women’s participation in a self-help group in India. They found that women were able to increase their consumption, income, improve quality of employment on one hand and on the other they were able to improve nutrition, health and general welfare of the family.

In another study, Kabeer (2001) found that access to credit gave women the scope to improve their bargaining position within the household. Kabeer (2001) examined the impact of ‘small enterprise development project’ loans on the gender outcome within a qualitative framework. The study was based on two selected villages in Bangladesh. The study found that access to credit had mixed impact on female mobility, however, most of the women experienced increased mobility within the public domain. The study further noted that access to microcredit increased women’s ‘sense of self-worth’ as they felt that they were able to contribute to the family through income or purchase of goods. Access to credit allowed women to either start up business or improve their business activity or set up business within the household. It also allowed women to give up low paid jobs for self-employment. While increased income came at the cost of increased workload, women did not consider it a problem. The joy from increased income was much more than the cost of additional hours of work. Money brought them increased self-worth and dignity. They were also able to assist their husbands to set up productive activities, for example, they bought them land or their husbands assisted them in their businesses. This brought greater respect within the community. The study also noted that most women were able to accumulate assets in their own name. This ensured them a greater bargaining power and also freed them from domestic violence. Access to loan also provided women with better say in decision-making within the household. It was also noted that women who were less empowered in one aspect were more empowered in another aspect. For instance, a woman may have less mobility due to purdah but she has more say in the household decision-making. A woman may have the asset under her
husband’s name due to community perception, yet would have more control over the asset.

Similarly, Mayoux (1999) found clear evidence to show that positive improvement in the women’s lives gives rise to successful women entrepreneurs. In some situations it provides more economic and productive opportunities to women, while in other cases it expanded the existing activities of women. The study also noted that in a few situations women had to give away lucrative activities seen as male occupations, and had to settle for less lucrative second activities due to social pressure. On the other hand, Sigalla and Carney (2012) using a qualitative study in Tanzania, found that microcredit had a mixed impact on women entrepreneurs’ development and empowerment. Some women gained confidence and were able to reduce vulnerability in marriage through their contribution to household income, while others were not able to do the same or faced strained relationships within the extended family.

• Evidence of Negative Impacts

However, Goetz and Gupta (1996) argued that microcredit had no significant influence on women empowerment, as women have limited or no control over credit. In their analysis, five categories were used ranging from ‘full control’ of the entire productive process of marketing, to no involvement in any way in the use of loan. In the context of Bangladesh, the study noted that where women’s mobility was restrained, only 37 percent of the women had full or significant control on loans, whereas 63 per cent had very little or no control, implying the problematic situation women could find themselves in while repaying loans. Other studies on Bangladesh highlighted that repayment of loan was done through various sources such as, repayment through sewing, subsistence work which involved selling home produce like vegetables, egg and milk. In certain situations loans were also paid by income accumulated from rickshaw pulling. This result clearly shows that not only that access to microcredit did not produce any positive result, but also that it increased the women’s hardship, as they had to resort to other means to repay the loan.
Similarly, Garikipati (2008) found that microcredit had a negative impact on women empowerment in India. The study noted that as the length of membership in the programme increased, women’s control over the finances and the probability of favorable work time also declined. There was also a decline in the probability of their work being shared by other household members. With respect to women who were not members of the credit programme, the study noted that if the family enjoyed better economic status, women’s possibility of control over assets and finances increased and there was also a good chance of domestic work being shared amongst other family members, and generally their empowerment improved as well. The study concluded that lending to women generally increased the household wellbeing and income and reduced income vulnerability, but their own status declined.

Strier (2010) examined the impact of microcredit on women empowerment in Israel within a qualitative framework. The study found evidence of lack of success of microenterprise development projects. Strier (2010) noted that lack of capital and women’s tendency to engage in feminine related jobs was the main hurdle for women’s economic progress. Moreover, women taking up an entrepreneurial role deprived them of social welfare benefits, which gave them a better sense of stability and social security. Loss of social welfare benefits made the women feel vulnerable and increased the fear of falling into the poverty trap.

Few studies also investigated the impact of microcredit on incidence of domestic violence. Some of these studies found that access to microcredit may decrease incidence of domestic violence, while others found it otherwise. For instance, Kim et al. (2007) evaluated the scope of women’s empowerment and mechanisms underlying the significant reduction in intimate partner violence in a cluster-randomized trial in South Africa. The study found evidence that after two years of the programme, partner violence significantly declined. Introduction to microfinance allowed the women to challenge the acceptance of violence, expect and receive better treatment from partners, leave abusive relationships and raise awareness about immediate partner violence. In some parts of Africa women who had control over income felt that it was very important to them. They were effectively able to contribute to the household consumption and
wellbeing. The women were able to build up their individual resource base and highly-regarded savings. Many women saw this as an increase in their self-esteem and ability to make purchase independently of their husbands and in some cases, insurance against divorce. In addition, access to microfinance increased women’s respect in the household and allowed them more say in the management of the household affairs. The study also noted that women were effectively using their money for the general welfare of the family and children’s education.

Similarly, Rahman (1999) found that microfinance officials often applied pressure on women clients to repay loans, which led to the rise in domestic violence at home. Schuler et al. (1997) also found evidence of increased incidence of gender violence among the control group. In addition, many women experienced incidence of violence in the post-loan period, mainly attributed to: female refusal to give loans to male family members; being late during the period of repayment whereby other women suffered as they had to wait, and later they were abused by their husbands for being late; and failure to secure additional loans. Some evidence also suggested that women’s repayment rate was higher because sometimes they were forced or intimidated by loan workers to pay up their account; however, these tactics could not be used over men.

2.6 OTHER ASPECTS

Besides measuring the impact of microcredit on income, assets and consumption, a number of studies tried to assess its impact on other aspects. For instance, Chowdhury and Mukhopadhaya (2012) examined the effectiveness of government and non-government organization-driven microfinance on multidimensional poverty in rural areas. This study found a positive impact of both microfinance institutions on economic and social wellbeing, general knowledge, building human capabilities, asset building, freedom, and employment creation. Similarly, Mahjabeen (2008) examined the impact of microcredit on household welfare within a CGE framework and observed a positive impact of microcredit on income, consumption and employment, inequality and welfare.

Mosley and Rock (2004) studied the impact of microcredit in six African countries namely; Kenya, Cameroon, Uganda, Zimbabwe, and South Africa using Ordinary least
square and two-stage least squares estimation methods. In case of Uganda, the study found that microfinance had a more significant role in improving conditions of employees of loan supported microenterprises compared to entrepreneurs themselves, however, the opposite was observed for Kenya. Similarly in South Africa and Zimbabwe, gain to the borrower family was higher compared to workers employed by borrowers. Overall, it found that microcredit had a positive impact on education, health and women empowerment. Similarly, Ahlin and Jiang (2008) examined the impact of microcredit on development. The study noted a positive effect of microcredit on welfare development. They further argued that while self-employment was important, technology transfer, training and information sharing programmes could provide additional benefits in the long run.

Moreover, Shimmura and Lasterria-Cornhiel (2010) examined the impact of microcredit on schooling in rural Malawi using a paired-site sampling design. The study found that access to microcredit reduced girls’ attendance in school and one of the possible explanations given by the author was that tabacco production was labour-intensive and demanded more family labour. It also noted that the rural credit programme did not reach the poorest of the farmers. In another similar study in rural Malawi, Hazarika and Sarangi (2008) did not find any significant impact of microcredit on schooling, however, microcredit contributed to child labour. Yet, there was no trade-off between schooling and child labour. Similarly, Becchetti and Conzo (2010) examined the impact of microcredit on schooling. The study found a mixed impact of microcredit on schooling outcome. Microcredit promoted children’s school attendance for higher income families only. It contributed more to children living in faraway places, provided they had productive assets.

2.7 METHODOLOGY

Despite the substantial studies that examine the impact of microcredit on poverty, and other household outcomes such as gender empowerment, the issue of how to measure the impact of microfinance remains highly debatable. Over the years numerous methodologies have been used by researchers to quantify the impact of microfinance. They all have their own strengths and weaknesses in relation to data accessibility, cost,
and unbiasedness of estimation. In the next section we will discuss two methodologies which are widely employed in the literature, namely, non-random and randomized trial approach. Non-random approach is further classified as reflexive evaluation and quasi-experimental evaluation.

2.7.1 Reflexive Evaluation Approach

Reflexive evaluation, also referred to as non-random approach, is one of the basic methodologies employed in microcredits impact evaluation. In reflexive methodology, the treatment (experiment) group’s performance is compared to themselves, before and after being clients of microfinance. However, such methodologies are generally criticized as many other factors could lead to the observed changes in the performance of the treatment group, for instance financial crisis could lead to a decline in the income of the treatment group (Kalan and Goldberg, 2011). Reflexive studies also require data before and after the intervention of the programme and often require a lot of time to carry out.

2.7.2 Quasi-experimental Approach

A large number of studies in the field compare the treatment group (group which has access to microcredit) against the control group (group which do not have access to microcredit), generally known as the quasi-experimental approach. Difference-in-difference is one the traditional techniques of comparing the treatment group with the control group (group with similar characteristics with treatment group except they are not receiving treatment). This method is used to compare the changes in a variable of interests in the treatment group with the control group.

Researchers have relied on a number of techniques to select the control group. However, how closely the control group resembles the treatment group is subjective. Therefore, this technique has received heavy criticism, as it is likely to under- or over-estimate the impact of microfinance due to bias caused by self-selection and non-random placement of the microfinance projects. People who have entrepreneurial skills are more likely to select themselves to programmes or may perform better compared to people who don’t have such skills, which causes the problem of self-selection and hence, comparing one
group’s performance (with finance) against the other (group without finance) can produce misleading evidence. Moreover, microfinance institutions do not randomly implement their programmes and hence, they are likely to provide credit to better off poor compared to the poorest of the poor, which explains non-random placement (Morduch, 2005).

It is therefore vital that the non-randomness issue in the evaluation process be addressed. A number of techniques such as use of instrument, propensity matching score and ‘comparing existing client with incoming client’ have been adopted to overcome the self-selection bias in non-random experiments. This advancement in the methodology is generally known as quasi-experiment methodology.

Some studies adopt instrument variable in the analysis of impact of microcredit on specific outcome. The instrument should be correlated with loan, but should not be correlated with dependent variable. The most difficult thing in using instrument variable is identifying the most suitable variable. Use of a weak instrument can bias the result. Moreover, the instrument is likely to vary from one situation to another. Finding a suitable instrument has been cited as one of the most difficult tasks in microfinance research (Morduch, 2005).

Pitt and Khandker (1998) were two of the pioneer evaluators of the impact microcredit, who made a serious attempt to control for self-selection and non-random project placement by using instruments. They used the land eligibility rule to identify a suitable instrument to control and minimize endogeniety caused by self-selection and non-random placement of project. They surveyed members of three main microfinance institutions in Bangladesh and all three microfinance institutions gave credit only to households having less than half an acre of land. Therefore, the study used half an acre as the instrument in the analysis. After controlling for endogeniety, the study noted a positive impact of microfinance on consumption. However, the study was later criticized by Morduch (1999a) and Roodman and Morduch (2009). Morduch (1999a) argued that the land eligibility rule was not strictly followed by the loan officers and hence, loans were very often provided to households owning less than half an acre of land, a group that should have been excluded.
Matching propensity score is another technique used to control and minimize bias caused by self-selection and non-random placement. Matching propensity score involves creating an artificial control in order to quantify the treatment effect. Critics of this technique argue that this procedure fails to randomly select the treatment and control groups and hence, any analysis carried out may cause an impact bias resulting from self-selection in the programme due to hidden attributes of clients such as entrepreneur drive (Mcintosh et al., 2011). This will ultimately overestimate the impact of the microcredit.

Another commonly used quasi-experimental technique in microcredit is ‘Assessing the impact of microenterprise services (AIMS)’, a technique derived and used for USAID-Fund projects. An AIM compares existing clients with the incoming clients for any changes in the variable of interest (for instance changes in income). The advocates of the technique argue that both existing clients and incoming clients have entrepreneurial interests and hence, they can be compared. For instance, Coleman (1999, 2006) used a unique survey design to minimize and control selection bias. The study used prospective clients, who signed up for the project but did not receive credit within one year as the control group. The treatment group members were at least two year old microfinance clients. The critics of the AIMS technique argue that there may be hidden attributes of treatment clients which made them join the programme earlier and hence, it may bias the results, leading to under/overestimation of the impact.

2.7.3 Randomized Trial Approach

To overcome methodological flaws in non-random studies, some studies used the randomized trail (treatment), in which the control group and the treatment group have the same features with respect to all dimensions, the only difference is that the treatment group is given credit, while the control group do not have credit. Individuals are randomly placed in the treatment and control groups. For instance, Banerjee et al. (2013) using the randomized study examined the impact of microfinance in India. In 2005, Spandana, a leading microfinance institution in India, randomly picked 52 out of 104 villages in Hyderabad for microfinance services. A baseline survey was carried out by the authors in 2005 on 2,800 selected households to gather basic household data such as income, consumption, assets, education, employment, borrowing, business and saving.
A comprehensive survey was carried out after fifteen to eighteen months following the inception of the microfinance scheme in the area. Sixty-five households were selected from each village in the treatment group (villages with Spandana microfinance services) and the control group (villages without Spandana microfinance service) for the study. Following this another comprehensive survey was done two years after the end of the first survey on the same set of households. Using a simple comparison of average between the treatment and control groups, the study failed to find any significant positive impact of microcredit on consumption, health, women’s empowerment and education and business profit.

However, similar to the non-random approach, the random approach has also been criticized. Studies such as Deaton (2010), Heckman (1992, 2010), Leamer (1983, 2010) and Barrett and Carter (2010) argue that applying the randomized method to a small sample can possibly cause the randomization bias. Given the concern of the randomization bias, care must be taken to balance the treatment and control groups on the basis of observables in a small sample. However, there is a lack of standard procedure to carry out this and often randomization techniques perform poorly in a small sample (Barrett and Carter, 2010). Therefore, the errors reported in the randomized method that do not control for possible bias can lead to misleading inference about the treatment effect (Barrett and Carter, 2010). The critics also argue that evidence from the randomized studies can be barely generalized (Hermes and Lensink, 2011). For instance, microfinance may not have any impact on the slums of Hyderabad, but it is not necessary that it will also not have any impact in the slums of Suva, Fiji. Hermes and Lensink (2011) argue that both randomized and quasi-experimental (such as use of instruments, AIMS, PMS, panel) techniques have their own advantages and disadvantages and hence, both can be handy in the microfinance impact evaluation (Roodman and Morduch, 2009; Hermes and Lensink, 2011).

2.8 CONCLUSIONS

The debate on the impact of microcredit on poverty and women empowerment remains highly controversial and unsettled. While there are some studies which theoretically and empirically argue that microcredit eradicates poverty and promotes women
empowerment, critics have theoretically and empirically shown that microcredit falls short of fulfilling its promise, and in some instances it has increased poverty and exploitation of women and hence, disempowered them.

It is also appears from the literature that most of the studies examining the impact of microcredit are based on countries in Asia, Africa and Latin America, the majority of these, however, are countries in Asia. It is also evident from literature that the impact of microcredit cannot be generalized as the impact may differ from region to region due to factors such as population density, entrepreneurial skills, level of market development, outreach of programmes and attitude towards debt. Therefore, it is important to carry out region and country-specific studies to draw a better understanding of the impact of the microcredit programme.

There are other issues such as sustainability of microfinance institutions and the mission drift extensively covered in microfinance literature. However, this study did not discuss some of those issues as this study is mainly focused on the impact of microcredit on income and women empowerment in Fiji.

The next chapter will provide a detailed discussion of the socio-economic background of the Fijian economy.
CHAPTER THREE: BACKGROUND OF THE FIJIAN ECONOMY AND MICROFINANCE

3.1 INTRODUCTION

This chapter describes the socio-economic background of the Fijian economy and further discusses the microfinance sector in Fiji.

Despite the market oriented economic reform which was instituted following the late 1980’s, Fiji failed to achieve the desired levels of economic growth. Poor economic performance and subsequent failure of welfare policies caused a major decline in the welfare of the people. The poverty rate increased from 25 percent in 1991 to 40 percent in 2008 (Ministry of National Planning, 2010). Concurrently, there has been a significant increase in the unemployment rate and growth of the informal sector activities.

In the late 1990’s the Fiji government, together with donor agencies, took a proactive approach to the microfinance programme in Fiji as a mechanism to address poverty and unemployment. Finance was vital for promoting economic activity, however, very often the poor, particularly women, did not have access to formal financial services, which significantly limited their economic opportunity. In Fiji, about sixty percent of the households do not have access to formal finance and hence, microfinance is an innovative way to fill this gap (Battacharjee and Joshi, 2009). To date there are about nine microfinance institutions serving around three percent of the Fijian population. While a number of studies have analysed the outreach, sustainability and development of microfinance institutions in Fiji, to date no study has analysed the impact of microfinance in Fiji.

Section 3.2 presents Fiji’s economic performance, the key trade sectors, and issues on poverty and gender. Section 3.3 outlines the microfinance sector in Fiji, focusing on its emergence and performance. And Section 3.4 summarizes the chapter.
3.2 OVERVIEW OF FIJI ECONOMY

In order to analyse the impact of microfinance on household welfare, it is important to understand the socio-economic condition of the Fijian economy. Fiji is a small island nation in the South Pacific and is home to around 883,125 people of multi-ethnic origin. Native Fijians, formally known as iTaukei, make up around fifty-seven percent of the Fijian population, followed by Indo-Fijians who make up another thirty-eight percent, while other ethnic groups make up around five percent.

Fiji gained independence in 1970 and enjoyed a reasonable economic growth in the first decade after independence. The main drivers of economic growth in these years were the sugar industry, the subsistence sector, wholesale and retail, construction, mining, and tourism and service sectors (Ellis, 1988). In addition, Fiji, after independence, initiated a number of infrastructure projects including roads, electricity, water, health and education which contributed to economic progress and the welfare of the country. The sugar industry was a key contributor to economic growth and a major contributor to rural welfare and employment (Lal and Rita, 2005; AKram-Lodhi, 1998). High preferential prices received for sugar under the EC/ACP sugar protocol enabled Fiji to mitigate any negative shocks from surges in oil prices in the 1970’s (Ellis, 1988). These favorable factors in the 1970’s contributed to higher capita income, improved welfare, improved socio-economic development, and hence enabled Fiji to achieve lower middle income country status.

Since Fiji’s economy was heavily dependent on a few sectors only, in the early 1980’s the economy started showing some signs of stress (Ellis, 1988). The sugar industry which was the backbone of the country and the major employment provider faced some major difficulties due to fluctuating world market prices and fluctuating output. The uncertainty faced by the sugar industry forced many farmers to reduce the labour force and casual wages, which significantly contributed to the increasing unemployment problem in the economy. In addition, Fiji faced a major political disturbance in 1987 brought about by its first military coup de tat which further worsened the unemployment problem, and thus reduced welfare across the Fijian economy (Walsh, 2002; Chand, 2007). The coup also had an immediate effect on redundancies and reduced hours.
largely attributed to loss of investor confidence and reduced economic activity (Narayan et al., 2006; Jayaraman and Ward, 2003).

In an effort to revive the economy and improve the welfare of the people, policy makers launched a number of economic reform programmes in the late 1980’s. The reform included a shift from a government bureaucratic approach toward economic liberalization and move from import substituting to export promotion (Narayan and Prasad, 2003). Concurrently, the state also established poverty alleviation programmes in the early 1990s to address hardships faced by those living below the poverty line (Gounder, 2007). On one hand, the reform brought about some benefits in terms of economic growth, employment and rise in wages. On the other hand, a 30 percent depreciation of the Fijian dollar and withdrawal of government support from industries related to the poor and rural community, such as rice, further increased the burden on the poor (Prasad, 2006). Furthermore, the expiry of land leases in 1997, military coups in 2000 and 2006 and relatively poor economic performance further complicated the situation for the poor (Kinivuwai, 2009; Prasad, 2003).

3.2.1 Performance of Fiji Economy

Since independence, Fiji experienced a mixed economic growth rate with a short span of both high, and at times, significantly low output. The real GDP increased at an annual rate of 2.5 percent over the period 1970-2012 (see Figure 3-1) and the real GDP per capita increased by 1.3 percent which, according to the Government of Fiji (2002), has been insufficient to provide adequate employment and economic and social infrastructure to promote development. Over the period 1970-1979 Fiji achieved a positive economic growth annually. The high growth rate achieved during this period can be attributed to the expanding labour market, elevated consumer confidence, and adequate foreign capital inflow together with high levels of investment and commercial activities. During this period Fiji was also able to favourably exploit its natural resources. For instance, the expanding sugar industry was one of the major contributors to the expanding workforce during the same period. A number of infrastructure projects such as hydroelectricity, roads and bridges also contributed significantly to the improved performance of the economy during the first decade after independence.
The period of the 1980’s brought about a number of challenges to the Fijian economy, especially with a number of natural disasters, fluctuations in sugar production and price, the global oil price hike and political crisis (Government of Fiji, 2002). Since independence, Fiji experienced its first fall in output in 1980, followed by an increase in output in 1981 and subsequent decline in output in 1982 and 1983. Output increased in 1984 before declining in 1985. A moderate increase in the output was achieved in 1986; however, it declined again in 1987. A decline in the output in 1987 was generally attributed to the 1987 military coup which had an immediate impact on investor confidence, the tourism industry and business activity. A number of workers were made redundant due to the fall in business activity (Chand and Prasad, 2002; Kasper et al., 1988; Rao, 2002).

The Fiji government initiated a number of reform policies, such as, labour market reform, trade sector reform, and public sector reform, all of which significantly contributed to positive growth rates achieved in 1988-1990 (ADB, 1999; AusAID, 1995). Fiji generally achieved positive economic growth rates for most of the years in the 1990’s except for 1991 and 1997. A moderate growth achieved in the 1990’s was
attributed to positive policies implemented in the late 1980’s and early 1990’s. The reform implemented by policy makers attracted a number of foreign investors such as the garment industry which boosted the economic performance in the 1990’s (Chand and Prasad 2002). Further political reform in late 1990’s enabled Fiji to achieve a growth rate of 8.8 percent in 1999.

Like the 1980’s, the beginning of the new century brought fresh challenges to the Fijian economy. Fiji was met with a failed civilian coup in the year 2000, which resulted in a sharp decline in output from a growth rate of 8.8 percent achieved in 1999 to a 1.7 percent decline in the year 2000. Like the 1987 coup, the negative impact of this coup was felt by all sectors of the economy, including the tourism, garment, agriculture, construction, and wholesale and retail sectors. Fiji achieved positive growth rates over the period 2001-2006 ranging from 0.3 to 5.1 percent. This was mainly due to stable government policies. A positive economic performance was mainly driven by the strong performance of the tourism sector. Not only did tourism earnings increase in the same period, but there was also a significant increase in investment related to the tourism sector such as tourism related construction. While policy makers were struggling to achieve steady economic growth, Fiji yet again experienced its fourth coup in 2006. Together with the political crisis, other factors such as world financial crisis and rising fuel prices also contributed to the poor performance of the Fiji economy since 2006 (Tabaiwalu, 2010). Over the period 2007-2012, Fiji only managed to achieve an annual average growth rate of 0.5 percent with a decline in output noted in years 2007, 2009 and 2010.

Apart from the political crises that Fiji has experienced over the past four decades, a number of other factors limited the success of economic reforms instituted over the years. These factors could be classified as internal or external. Internally, Fiji failed to diversify its economic activities and it was heavily dependent on a few sectors, which made the Fiji economy more vulnerable to adverse weather conditions. The second internal problem was the lack of land reforms. Lack of long term agricultural leases was one of the major deterrents of productivity related to agriculture and land-based activities. Farmers were unlikely to invest to improve efficiency and productivity of
agriculture, unless they secured long-term returns. Expiry of land leases since 1997 forced many experienced and skilled farmers to leave their farms (Kidd, 2012; Scheyvens and Russell, 2010). The impact of the expiry of land leases was felt by all agriculture related sectors, such as, rice, sugar, ginger, cash crops, livestock and others. This was clearly reflected in declined importance of the agriculture sector to Fiji’s gross domestic product. Fiji was also subject to natural disasters such as floods and cyclones, which often affected the performance of the productive sector of the economy, such as, sugar and other agricultural commodities, tourism and transport.

Externally, Fiji’s geographical location and being heavily dependent on a few exports made it vulnerable to the external shocks. For instance, fluctuations in the sugar price had a major bearing on the Fijian economy as it was one of the major exchange earners. Moreover, as Fiji is hugely dependent on imported fuel as its major energy source, oil price hikes severely affect Fiji’s productive capacity as well as its competitive edge in the world market.

3.2.2 Trade Sector Performance

Like most other small and developing countries, Fiji is heavily dependent on trade for its economic growth and improving the welfare of the people. Since independence, Fiji has signed a number of bilateral, regional and multilateral trade agreements including that with World Trade Organization (WTO). Fiji has bilateral trade preferences with countries such as Australia, New Zealand, China and Tonga. Concurrently, Fiji is also a member of a number of regional trade agreements such as the Pacific Agreement on Closer Economic Relations (PACER), the Pacific Island Countries Trade Agreement (PICTA), and the Melanesian Spearhead Group Trade Agreement (MSGTA), which provide special treatment to member countries.

Fiji has a narrow export base which is dominated by few primary export commodities, such as, sugar, mineral resources (gold and copper), copra, fish, flowers and other agricultural commodities, which make up about 60-65 percent of Fiji’s total export. After achieving independence in 1970, Fiji rigorously promoted an import substitution policy. The focus of the state policy was to develop and strengthen agriculture which
was the main pillar of its economic growth. Crops like rice were mainly for domestic consumption, while commodities such as sugar, copra, banana and other agricultural crops were produced for the export market. Primary commodity export contributed significantly to Fiji’s export in the early 1970’s and it continues to be a significant contributor to Fiji’s exchange earning.

The sugar industry historically played a significant role in the growth and development of the Fijian economy. In the first decade after independence it was the main contributor to the economy in terms of output and employment (Prasad and Narayan, 2005). Currently, the industry contributes around 10 percent to gross domestic product and supports the livelihood of about one quarter of Fiji’s population. More importantly, it was the main export earner before the trade policy reform and continues to significantly contribute to Fiji’s export earnings. Over the period 1981-2003, sugar export, as a percentage of GDP, was around 10 percent. Only after 2003, did the sugar export earning take a downward trend and has shown little or no sign of recovery in 2010. Fiji recorded the lowest sugar export over the period 1980-2011.

The strong performance of the industry through 1970’s to 1990’s was partly due to Fiji’s preferential access to the European Union market made possible through the Lome Convention/Sugar Protocol (Narayan, 2003; Chand, 2005). Through the Protocol, Fiji was able to get a two to three times higher price for its sugar relative to the world market price. The strong protected price offered to Fiji sugar provided a major incentive to farmers and other stakeholders of the industry to expand and grow the industry.

Nevertheless, the sugar industry failed to diversify its products and improve efficiency and productivity. Therefore, it experienced a notable decline in the cane and sugar output per hectare over the years (Tabaiwalu, 2010). The expiry of the native land leases since 1997 had yet another devastating effect on the already ailing industry (Lal et al., 2001; Prasad and Narayan, 2005; Prasad, 2006; Mahadeven, 2009; Prasad and Narayan, 2008; Prasad 2012). The internal problem coupled with the gradual removal of the preferential price over the last decade led to a major reduction in the output and contribution of the sugar industry to Fiji’s GDP. Despite the issues faced by the industry, it continued to support the livelihood of a significant fraction of the population.
A narrow export base and reliance on few agricultural commodities have not been conducive for long term economic growth. To address this concern, policy makers initiated economic reforms in 1980’s to diversify products as well as markets for exports. A number of incentives such as tax free zones and tax free factories were provided to attract investors to the targeted areas. The major beneficiaries of the scheme were the manufacturing as well as the services sector.

Turning to the services sector, the importance of this sector to the Fijian economy has enormously increased since independence. Specifically, the tourism industry has become a significant player and is the major contributor to gross domestic product, employment and as a foreign exchange earner. In 1989, the tourism industry surpassed the sugar industry to become the number one foreign exchange earner and it has dominated since then. The tourism industry continues to grow and potentially, it can become a billion dollar industry within a short period of time. Beautiful beaches and unique cultures are major attractions to overseas tourists. Countries such as New Zealand, Australia, Japan, USA, Korea and China are major suppliers of tourists with India expected to be a significant future market (Narayan, 2002; Scheyvens and Russell, 2010).

The contribution of the tourism industry as a foreign exchange earner has significantly increased over the years. Tourism earnings as a percentage of GDP was around 25 percent in 2004-2005, the highest ever achieved by any single industry. However, the tourism industry is very susceptible to internal and external shocks such as political stability, natural disasters, financial crises and other threats. Political instability of 1987, 2000 and 2006 had an immediate impact on tourist arrivals, and hence on tourism earnings (Narayan, 2000; Scheyvens and Russell, 2010). Tourism earnings as percentage of GDP was 13.9 in 1986; however, it declined to 10.4 in 1987 largely attributed to the military coup in 1987 (see Table 3-1). Similarly, the 2000 coup caused a decline in tourism earnings from 21.7 percent in 1999 to 16.1 percent in 2000, and the 2006 coup reduced tourism earnings from 24 percent in 2006 to 16.9 percent in 2007.
Table 3-1: Average annual sugar, tourism and garment exports of Fiji, 1980-2011

<table>
<thead>
<tr>
<th>Period/Year</th>
<th>Sugar (F$ million)</th>
<th>Tourism (F$ million)</th>
<th>Garment (F$ million)</th>
<th>% of GDP</th>
<th>Sugar</th>
<th>Tourism</th>
<th>Garment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-1984</td>
<td>130.56</td>
<td>133.68</td>
<td>0.38</td>
<td></td>
<td>12.46</td>
<td>12.5</td>
<td>0.04</td>
</tr>
<tr>
<td>1985-1989</td>
<td>171.68</td>
<td>196.84</td>
<td>28.6</td>
<td></td>
<td>11.48</td>
<td>13.22</td>
<td>1.92</td>
</tr>
<tr>
<td>1990-1994</td>
<td>229.66</td>
<td>329.88</td>
<td>126.1</td>
<td></td>
<td>11.54</td>
<td>16.44</td>
<td>6.32</td>
</tr>
<tr>
<td>1995-1999</td>
<td>259.72</td>
<td>478.8</td>
<td>239.98</td>
<td></td>
<td>10.24</td>
<td>18.8</td>
<td>9.5</td>
</tr>
<tr>
<td>2000-2004</td>
<td>251.76</td>
<td>564.4</td>
<td>267.8</td>
<td></td>
<td>8.68</td>
<td>19.64</td>
<td>9.58</td>
</tr>
<tr>
<td>2005-2009</td>
<td>211.82</td>
<td>786.02</td>
<td>99.28</td>
<td></td>
<td>5.46</td>
<td>19.92</td>
<td>2.6</td>
</tr>
<tr>
<td>2010</td>
<td>70.1</td>
<td>980</td>
<td>99.2</td>
<td></td>
<td>1.3</td>
<td>18.8</td>
<td>1.9</td>
</tr>
<tr>
<td>2011</td>
<td>127.1</td>
<td>1074</td>
<td>89.9</td>
<td></td>
<td>2.3</td>
<td>19.1</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Source: Author’s calculation based on data from Reserve Bank Quarterly: Various issues.

Given the significance of the tourism industry, the respective governments have implemented measures to address the concerns of the tourism sector. Incentives provided to boost the tourism sector include: ‘hotel aid and investment allowances, carry forward of losses, accelerated depreciated allowance, relaxation of work permit rules, and duty concession’ (Narayan and Prasad, 2003, p6). The government also provides significant budgetary support to the tourism sector for overseas marketing drives, for instance in 2012 the Fiji government allocated 23.5 million dollars for the tourism sector development.

Similar to the services sector, the manufacturing sector gained momentum after 1987 largely attributed to reforms implemented and incentives provided after 1987. Immediately after the coup the interim government took the initiative to deregulate the economy and brought in a number of liberalization measures. The incentives provided under the reform attracted a number of garment manufacturers and the garment industry became the engine of growth in the manufacturing sector. The export earnings of garment industry were less than 0.5% of GDP prior to 1987, but it quickly increased to 6 percent in 1989. The success achieved by the garment industry during the late 1980s and 1990s can be attributed to many factors including; the range of fiscal incentive provided by the state, special access to major markets, decline in garment production in major
markets such as New Zealand and Australia, and low labour cost of production. Through the Multi Fiber Arrangement (MFA), Fiji was able to get a guaranteed market share in the United States. Also, through the South Pacific Regional Trade and Economic Co-operation Agreement (SPARTECA), Fiji gained duty free and quota free access to Australia and New Zealand markets. A guaranteed market access together with the fiscal package and low labour costs provided major incentives and confidence to foreign manufacturers to establish garment factories in Fiji.

The contribution of the garment industry in terms of foreign exchange earnings continued to increase till 2000. Thereafter, it took a nosedive mainly due to uncertainty regarding the access and expiry of MFA with the United States. A decline in the garment industry negatively impacted employment, particularly women’s employment in Fiji. Most of workers in the garment industry were rural-urban migrant females who made up most of households residing in the squatter settlements in urban centres in Fiji. Loss of jobs left more households in poverty and reduced welfare. Pabon et al. (2012) estimated the squatter poverty rate to be twice as much as the urban poverty rate.

### 3.2.3 Labor Market and the Informal Sector

Human capital is one of the most important factors of economic growth. In Fiji’s economy, the strong performance of the economy in the 1970’s and early 1980’s was closely linked to the highly skilled and experienced labour force. The impact of the 1987 coup was heavily felt on the labour market and population at large (Narayan and Prasad, 2007; Gounder, 2004; Chand, 2007). Following the coup many experienced and skilled workers left Fiji for greener pastures and a more secure future overseas (Gounder, 2004). Over the period 1987-1999, 6869 professionals emigrated from Fiji (Mohanty 2005). Also, the Ministry of Finance and National Planning (MFNP) estimated that by the year 2006 more than 50 percent of professional, technical, clerical and managerial workers migrated from Fiji. This created a major vacuum in the labour market, which had a major impact on the efficiency and productivity of the Fijian economy. Apart from loss of skilled labour, the military coup had an immediate impact on unemployment as many workers lost their jobs due to the downsizing of business activity or closing of certain businesses.
Nevertheless, the export promotion policy implemented in the late 1980’s provided some relief to the unemployment problem (Jayaraman and Singh, 2007). Over the period 1989 to 1995, the average annual employment increased by 3.77 percent, while at the same time employment in the manufacturing sector increased at an annual average rate of 6.9 percent with a 40 percent increase felt in 1989. Growth of the garment, textile and clothing industry was the main contributor to growth in employment opportunities. It is also important to note that the garment industry brought major employment opportunities to women.

Since the late 1990’s, Fiji experienced a weak to moderate growth in employment rate, thereafter for most of the years, increased job chances were not sufficient to absorb the increasing labour supply. The inability of the labour market to provide employment to an increasing number of people joining the labour force has immensely caused a more severe unemployment problem in the economy. The unemployment rate increased to 8.6 in 2008 from 3.7 in 1996. The presence of a high unemployment rate in Fiji clearly explains the increasing incidence of poverty in Fiji.

3.2.4 Saving and Investment

Poor level of investment in the economy remains a major concern to the policy makers. Over the period 1970-1985 investment was around 23 percent of GDP (see Table 3-2). Reasonably high investment noted in the 1970’s and early 1980’s was attributed to investment in infrastructure and expanding the private sector (Jayaraman, 2008; Singh, 2007). In the 1970’s, the Fiji government heavily invested in infrastructure, such as, roads, water, hydro-electricity and other government industrial projects. The state alone invested around 12-14 percent of GDP towards the infrastructure development. Private sector investment was also high in the 1970’s and 1980’s relative to other periods. The private sector invested in activities such as tourism, agriculture (particularly sugar) and small-medium commercial enterprises.
In the late 1980’s and early 1990’s there was sharp decline in the investment rate for two reasons. First, most of the investment projects undertaken by the government since independence ended in the early 1980’s causing a decline in investment. Secondly, political instability drained most of the government resources to unproductive activities such as the military. As shown in Table 3-3, there was a sharp increase in the military expenditure over the same period. Government’s reform policies attracted some investors in certain targeted areas such as tourism; however, in other areas investment remained low due to economic uncertainty.

Table 3-2: Average annual investment as % of GDP, 1971-2005

<table>
<thead>
<tr>
<th>Period</th>
<th>Average annual private investment</th>
<th>Average annual public investment</th>
<th>Average annual total investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976-1980</td>
<td>6.74</td>
<td>12.96</td>
<td>23.9</td>
</tr>
<tr>
<td>1986-1990</td>
<td>2.98</td>
<td>8.3</td>
<td>14.28</td>
</tr>
<tr>
<td>1991-1995</td>
<td>5.7</td>
<td>6.08</td>
<td>14.72</td>
</tr>
<tr>
<td>2000-2005</td>
<td>3.2</td>
<td>11.5</td>
<td>18.45</td>
</tr>
</tbody>
</table>

Source: Author’s calculation based on data from Reserve Bank Quarterly: Various issues.

Table 3-3: Military expenditure trend, 1971-2010

<table>
<thead>
<tr>
<th>Period</th>
<th>F$ Million</th>
<th>% of GDP</th>
<th>% of government budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971-1980</td>
<td>3.7</td>
<td>0.3</td>
<td>0.9</td>
</tr>
<tr>
<td>1981-1985</td>
<td>20.4</td>
<td>1.3</td>
<td>2.9</td>
</tr>
<tr>
<td>1986-1990</td>
<td>28.8</td>
<td>1.6</td>
<td>3.8</td>
</tr>
<tr>
<td>1991-1995</td>
<td>46.6</td>
<td>2.4</td>
<td>5.9</td>
</tr>
<tr>
<td>1996-2000</td>
<td>52.5</td>
<td>2</td>
<td>4.5</td>
</tr>
<tr>
<td>2001-2005</td>
<td>57.8</td>
<td>2</td>
<td>5.3</td>
</tr>
<tr>
<td>2006-2010</td>
<td>99.8</td>
<td>2.1</td>
<td>8.1</td>
</tr>
</tbody>
</table>

Over the period 1996-2000 an increase in investment was noted, and this was mainly driven by public sector investment in infrastructure such as roads. However, there was a certain level of decline in private sector investment mainly caused by uncertainty over land leases (Reddy, 2007). Investment further declined over the period 2000-2005, and this was caused by political instability. Both public and private sector investment declined over the period. However, there was an increase in investment towards the end of 2005 as there was an increase in tourism sector activities. Reduced interest rate and enhanced efficiency of the Fiji Trade and Investment Bureau also contributed to increased private sector investment.

In general, investment was low over the last three decades, which has been one of the main reasons for the poor performance of the economy. It was also evident that government policies over the years have failed to attract significant private investment in the long run.

3.2.5 Gender

Gender empowerment is essential to improve education, employment, income earning opportunity, and wealth accumulation, which are the key ingredients to eradicate poverty, and to improve welfare including health and education. Therefore, addressing women empowerment issues, for instance, improving income earning opportunities, can potentially assist in addressing many of the MDG goals, such as those relating to, poverty, education, health, infant mortality, maternal mortality and critical diseases (Ministry of National Planning, 2010).

It is also well established in theoretical and empirical literature that women’s negotiating ability within a household plays an important role in the allocation of limited household resources on investment such as education and health. Improving women’s access to income earning opportunities through business ownership is one of the most important mechanisms for empowerment. Mothers who have greater access and control over resources, particularly income, are likely to invest more on a child’s health and education.
Women make up about forty nine percent of the Fijian population. Traditionally, due to traditional, social and customary obligations, most women in Fiji were engaged with household related duties mainly. However, due to increasing poverty and hardship since the 1980’s, women are going against traditional norms and have increasingly joined the labour force. Women’s participation in Fiji’s labour force increased from 21% to 38% over the period 1986-2007.

The 2004-2005 employment survey highlighted a major gender disparity in the labour force (Catura and Bowman, 2008). There were almost three times more males holding a wage employment or were self-employed compared to females. Males in salaried employment were two times more than females. Economically active females relative to the total economically active population significantly declined from 40 percent in 1996 to 31 percent in 2004/2005, while the female self-employment rate increased from 13.5 percent to 24 percent over the same period. This clearly shows that either more females were taking up self-employment to inferior employment or more unemployed females were opting for self-employment assisted by various government schemes. In addition, the decline in the garment industry also contributed to the lower rate of female economically active population.

Given Fiji’s economic and labour market situation, it is very important that education is provided to girls, which is largely seen as a precondition for formal sector employment. In addition to formal education, improving women’s ability to engage in alternative income generating activities is also essential. This can be done by providing women with business skills and seed capital to establish income generating projects.

As the informal sector is likely to play a more predominant role in providing income earning prospects in future, it is important to improve women’s participation in the informal sector. Women’s participation in both formal and informal sectors will improve their control and access to resources, particularly cash income, which is likely to improve their negotiating power within households.

3.2.6 Poverty in Fiji

3.2.6.1 Overview
Poor economic growth and unequal distribution of wealth, resources and benefits among the Fijian community have contributed to the ever-rising incidence of poverty over the last three decades. GDP per capita in Fiji has dangerously remained low over the last few decades with an average annual growth rate of approximately 1.4 percent. Stagnant or falling income has also given rise to squatter settlements and a vast number of people deprived of basic sanitation, water and sewerage facilities. The incidence of poverty increased from 15 percent in 1977 to 25 percent in 1991 and then to 35 percent in 2003, which further increased to 40 percent in 2010 (MDG Report 2010). Such trends highlight the failure of state pro-poor policies and calls for better strategies to address poverty.

3.2.6.2 Poverty Trend and Policies

Based on the 1977 Income and Expenditure Survey, it was estimated that 15% of the population failed to meet an acceptable minimum income. It was anticipated that in the 1980’s the poverty rate would further increase as the sugar industry was facing some problems (Ellis, 1988). Fluctuating sugar prices and fall in the sugar productivity forced farmers to reduce casual wages for labour involved in the sugar industry, such as, cane cutters, farm workers and others. Meanwhile, there was a rise in the school dropout rate and infant motility rate, and more and more people faced difficulty in meeting their rental needs and thus applied for the government social welfare programme (Bryant, 1992).

The problem of poverty and unemployment rate further increased following the 1987 military coup. Following the military coup, a number of workers were made redundant, and there was loss of investor confidence, and hence a sharp decline in economic activity. Accordingly, the number of welfare recipients increased significantly, while the funds allocated for welfare declined, indicating a deteriorating situation for all (Bryant, 1992). All these called for reforms. Reform policies were introduced in the late 1980’s and 1990’s and showed some improvement in economic activities. For instance, there was an increase in sugar production, tourism, manufacturing, constructions and the

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4 Basic poverty line is used as yard stick for measuring poverty. Basic poverty line is defined as minimum monetary value of consumption needed to maintain a decent standard of living (Narsey, 2008).
services sector. All this contributed to positive economic growth and gross domestic product dramatically increased by 7.4 percent in 1989. However, a drastic devaluation of the Fijian dollar by 33 percent in 1987 severely increased the cost of living. Government’s policies aiming to relieve tax and restore wages to pre-coup levels failed to offset increased prices of goods and services experienced over the same period.

While the reforms initiated after 1987 were mainly driven by the desire of improving efficiency and competitiveness of public enterprises through privatization and withdrawal of government support for various sectors, no policy was introduced to assist the poor people particularly rice and cash crop farmers. With the withdrawal of government’s support in the rice industry, rice output declined and poor farmers had little option to improve their earnings. The restructure of public utilities and the agriculture sector further pushed people into poverty and increased hardship. Similarly, expansion of the industrial sector in urban areas was not sufficient to absorb resources released from the rural agriculture sector, which increased urban poverty (Prasad, 2006). Consequently, as argued by Prasad (2006), the shift from agriculture to manufacturing industries significantly contributed to rural poverty. Moreover, a drastic decline in government spending on agriculture related activities and lack of rural infrastructure development affected rural income.

According to the Household Income and Expenditure Survey carried out in 1991, the poverty rate increased from 15 percent in 1977 to 25 percent in 1990 and it was widely spread across the country. In response, the Fiji government established a poverty task force in 1992 to identify and formulate relevant policies to reduce poverty (Gounder, 2007). The task force was provided with donor assisted development fund for income generating activities for the poor. Since 1992 poverty eradication initiatives have been undertaken by a number of government ministries. Some of the initiatives include increasing income generating projects through the social welfare programme as well as microfinance, improving informal settlement, subsidizing housing programmes, providing basic infrastructure and utilities such as water, electricity at a subsidized rate or free of cost, providing free education up to secondary level, providing tertiary scholarships for disadvantaged students, providing agriculture assistance, family welfare
assistance and support for small and medium entrepreneurs in designated areas, and many more. More recently, government initiated the $30.00 food voucher scheme for citizens aged above seventy (Kidd, 2012).

Despite its efforts to increase social protection provisions, government failed to address national issues such as the expiry of land leases and lack of investment. In addition, government’s concentration on developing few sectors further declined welfare, increased poverty and unemployment (Kidd, 2012). Accordingly, as found by ADB (2002), people were dissatisfied with governance, poor delivery of vital goods and services, limited employment opportunities, lack of alternative opportunities for displaced farmers due to expiry of land leases, and urban centers’ inability to provide employment for the growing labour force. Despite all these concerns, the government did not allocate a sufficient budget for social welfare, rural infrastructure and development, rural water and electrification, rural health services and rural education to effectively address the hardship faced by people living in poverty.

Coming to external sources to address poverty, Fiji receives a substantial amount of foreign aid which is normally allocated through the government budgetary process. Aid money is not necessarily used for poverty eradication, with the exception of aid received through non-government organizations (Gounder, 2007). This means that most of the people living below the poverty line are dependent on governments to assist them with vital services. Despite this, governments always allocate limited funds to address social welfare problems as they can neither support such programmes on a large scale, nor do they want to promote handout attitudes (UNDP 1997).

Poverty further increased from 25 percent in 1991 to around 35 percent in 2003 and then to 40 percent in 2008 (MDG Report 2010). A number of factors such as expiry of land leases, the declining sugar industry (Walsh, 2002; Narsey, 2007), political instability (Narayan, 2000; Prasad, 2006), public sector reform and stagnant economy (Kidd, 2012) and lack of access to economic assets and markets (Tabaiwalu, 2010) contributed to the rising poverty over the period.
Despite increasing poverty, GDP per capita has slightly improved over the last four decades (Chand, 2007). This goes on to indicate that income inequality had increased over the same period. Poor people were pushed into greater hardship. Many households found themselves slipped into poverty as they lacked income earning opportunities and skills. Narsey (2006) argued that in 1999 about fifty-five percent of wage employees in Fiji received wages that were not sufficient to provide socially accepted minimum consumption.

With the perception of the poverty situation and the importance of reducing poverty, the Fiji government has spent almost one and a half billion dollars during 2000-2008 on addressing poverty. As part of the current welfare programme, a small amount of cash (handout) is provided to a large segment of the population, which is clearly ineffective in eliminating poverty because it is neither sufficient to meet the needs of a family, nor does it promote income earning projects. As a matter of fact, incidence of poverty ironically increased. This calls for a more innovative and sustainable mechanism of empowering people so that they are able to break the vicious poverty cycle. Microfinance, which is based on promoting income generating activities, can surely play an important role in providing an alternative scheme for addressing poverty in Fiji. The next section will discuss the background of microfinance in Fiji.

### 3.3 MICROFINANCE IN FIJI

The Reserve Bank of Fiji defines microfinance as “the provision of a broad range of financial services such as deposits, loans, payments services, money transfers and insurance to the poor and low-income households and individuals and to micro and small enterprises” (Reserve Bank of Fiji, 2009, p2). The microfinance lending programme allows the poor to access financial services, to enhance their income and create an asset base and protect themselves from risks that can interrupt their income. The main assumption of the microfinance scheme claims that, allowing financial services to the poor will enhance and stabilize their level of income, which is essential for alleviating poverty and improving welfare.
Microfinance in Fiji is at an embryonic stage of development. There are ten microfinance institutions currently providing microcredit in Fiji, and they are heavily dependent on government grants and donor subsidies to meet their day to day operating expenses and lack self-sustainability (Fischer and Bruett, 2010b). Nevertheless, they provide a much needed opportunity to the poor, vulnerable and rural community, particularly women, to save and access credit to enable them to venture into productive business activities. Microfinance is a very important tool to empower households, improve household income and enhance the overall welfare of households and individuals, in particular women. This section will briefly discuss the overall background of microfinance in Fiji and provide a brief description of the selected microfinance institutions.

3.3.1 Need for Microfinance in Fiji

As has been discussed, since the 1980’s Fiji economic performance has been sluggish and the overall welfare of people declined concurrently. Moreover, a series of public sector reforms in the late 1980’s together with stagnant private sector activity demonstrate the economy’s lack of capacity to absorb the growing labour force. This means that a large number of individuals entering the labour force, particularly youths, are at a risk of not finding a suitable employment. Moreover, labour participation of adult women is very low or they are mostly engaged in the subsistence sector. In the absence of a vibrant formal sector activity, it is imperative to promote informal sector activity in Fiji to enhance self-employment opportunities and supplement the formal sector activity.

Very often the poor and the rural community lack finances to venture into any productive activity. The women are vulnerable as they neither have collateral nor a good education background to enable them to access any meaningful credit. As a matter of fact, about 109,000 households in Fiji do not have access to financial services (Battacharjee and Joshi, 2009). Fiji, being a resource based economy and with an abundance of skills in traditional craft such as weaving, sewing, crafting, fishing, there is a huge potential for informal sector activity. However, due to lack of capital and business skills, most of the time these potentials are not realized. Therefore, modern day
microfinance can play an important role by providing credit and basic business training to assist poor women to establish income generating activities, increase their income and ultimately improve their welfare. Improving women’s income earning capacity will not only provide an additional source of income to the household, but it will also improve her bargaining power within the household as well as enhance her self-esteem and confidence.

Moreover, microfinance provides an important saving mechanism to the poor and rural community, particularly women in Fiji. Savings are important for households to enhance future income sustainability. Proper use of savings in Fijian households include; improving children’s education, purchasing product assets such as farming tools and livestock, starting a business, investment, home improvement and applying for loans. In addition, in Fijian cultures important life events such as birth, birthdays, weddings and funerals also require a significant input of savings. For ordinary households with limited income sources, savings come into being slowly and in small amounts. Depositing small amounts of savings thus becomes difficult for people located in remote areas due to costly transport between homes and formal banks. Microfinance institutions’ service of collecting savings from homes makes deposits easy and secure in this regard.

3.3.2 Fiji Microfinance

In the 1970 and early 1980’s financial services in the rural area were provided by credit unions, cooperatives, informal money lenders as well as by the Savings Bank of Fiji. The Savings Bank was later transferred to the Colonial Bank of Fiji (Cole, 2003). However, in the late 1980’s due to mounting problems within the bank, it was not able to effectively service the rural and poor communities. Similarly, following the 1990’s there was a huge decline in the credit union movement and its primary membership. In the mid 1990’s, the National Bank of Fiji was fully taken over by the Colonial Bank, a subsidiary of Commonwealth Bank of Australia, and hence it withdrew most of its rural services. This limited the accessibility of financial services in Fiji mainly to the rural community and the poor and financially disadvantaged groups and individuals (Belloni, 2005).
Informal financial services were the only form of financial services that were available to the poor and the rural community. However, these informal services were provided on an irregular basis, with no clearly defined objective, and more so the services were available to only a few. Moreover, the interest rate charged by the money lenders was exorbitant. In a study Sharma and Reddy (2002) estimated that 69 percent of the rural ITaukei communities were deprived of financial services. Though there were no studies on the extent of rural community excluded from financial services, it has been argued that a large percentage of women, unemployed, low income earners, individuals with low education were deprived of financial services (Sibley, 2010; Horton, 2011).

Due to deteriorating rural finance, in 1998 the Fiji government showed a keen interest in the microfinance scheme as a means of improving financial access of the poor and rural community. In the same year the government took the initiative and established the National Microfinance Unit (NMFU) under the Ministry of Finance. In 2000 two microfinance institutions were established with the initiative of NMFU namely; Fiji Council of Social Services and Anglow Lautoka. In 2004 NMFU was merged with the National Centre for Small and Micro-Enterprise Development (NCSMED) in 2004 (Belloni, 2005). Since then NMFU has played a key role in promoting and assisting financial institutions in Fiji. To date, NMFU have managed to establish ten microfinance institutions with a total coverage of 24,000 clients. While NMFU have managed to achieve some success in providing financial access to non-bankable, more effort is needed to improve its performance both in terms of coverage and quality of services provided.

In 2008 Fiji Government through the Reserve Bank of Fiji took further initiative to promote microfinance in Fiji, and hence issued a policy to all commercial banks and directed them to set up microfinance units at all of their branches in Fiji. Furthermore in 2009, the Financial Systems Development and Compliance Group was established in the Reserve Bank of Fiji. One of the key roles of the group is to promote and develop microfinance. In addition, the National Financial Inclusion Taskforce was established in the same year. The task force includes members from the public, civil society and private sector. The taskforce anticipates providing financial services to at least 150000
clients who are currently deprived of the services. Further initiatives are made to commercialize the microfinance sector. For instance, in 2010 operating license was granted to South Pacific Business Development to provide microcredit facilities in Fiji. Further commercialization of the microfinance sector will provide significant challenges to commercial banks in terms of providing collateral free credit. Commercialization of the microfinance sector will also improve efficiency and long-term sustainability of the microfinance scheme.

The microfinance sector in Fiji can be categorized into three groups, namely, formal, semiformal and informal.

3.3.2.1 Formal Financial Sector

- Commercial Banks

The origin of commercial bank services in Fiji can be traced back to 1880 with the predecessors of Australia New Zealand Bank (Sibley, 2010). Since then most of the successful commercial banks in Fiji are owned by foreign companies. In 1974 the government of Fiji established its own bank called the National Bank of Fiji, however, it was declared bankrupt in 1995 (Sibley, 2010). Fifty-one percent share of the National Bank of Fiji was acquired in 1998 by the financial services group, Colonial Ltd., which was merged with the Commonwealth Bank in 2000. In 2006 the Commonwealth Bank acquired the remaining forty nine percent share of the National Bank of Fiji from the Fiji government. Thereafter the National Bank of Fiji was fully owned by a foreign company.

The National Bank of Fiji rural service was provided through Post Fiji which used to manage the rural financial services. However, the establishment of private franchise businesses in Post Fiji led to the termination of many rural service centres. Although the banks provided services in the rural areas, there was a lack of services for the poor, and in most of the cases, poor individuals faced hardship in fulfilling the minimum balance required for opening accounts with formal banks. They also faced difficulty in providing collateral for loans. Moreover, in the 1990’s in order to improve the efficiency of the banking service, many banks introduced electronic banking, which resulted in the
closure of many bank branches. This means that many poor had to travel far to access bank services, which were often costly and time consuming (Sibley, 2010).

Studies including World Bank (2003) also found that most of the commercial banks were hesitant to provide small loans for business, personal loans, or loans for agriculture. Commercial banks also had a minimum balance requirement on all savings accounts; a fee of $2 was charged for every withdrawal in excess of one withdrawal that was allowed free of cost on passbook accounts. A fee of $30 was also charged if there was no saving or withdrawal within 12 months. A high fee levied on the passbook account is visible evidence that banks are generally trying to discourage people from holding passbook accounts. A statement account is preferred by banks as opposed to passbook accounts as they can be accessed through ATMs. However, statement accounts pose major difficulty to the rural community due to the high transportation costs involved in getting access to ATM machines (World Bank, 2003).

ANZ bank in partnership with UNDP launched a rural banking service in 2003. The whole idea was to provide a rural service and at the same time make contact with individual clients. Under the scheme the bank provides two distinct products; long term saving and everyday transaction account. In 2005 the bank started with its micro loan service, under which clients who had made regular deposits for six months could apply for small loans. The value of the loan ranged from $125 to $1,250. However, the recovery rate on credit was very poor, forcing the bank to discontinue the microcredit programme.

In 2009, the Reserve Bank of Fiji issued a directive to all commercial banks to establish microfinance departments at all their branches, and by 2010 all banks complied with the directive and all banks at least offer low cost deposit services to the poor and the rural community. These banks such as Westpac have also taken a proactive role in promoting products of their microcredit clients through product exhibitions which are mostly held in weekends. Banks such as ANZ are also providing financial literacy education through various financial literacy workshops.
3.3.2.2 Semi-formal Financial Institutions

- Credit Unions and Co-operatives

The origin of co-operatives in Fiji can be traced back to 1919 when the first co-operative was formed, while the first credit union was formed in 1954 (Fischer and Bruett, 2010b). Both of these movements were thriving in the early years after independence with respect to a number of institutions as well as membership. The early success of these movements is partly attributed to support provided by training centres (Fischer and Bruett, 2010b). Over the last two decades many credit unions have ceased operation and more so in rural areas. In 1991 there were 108 credit unions registered as members of the Credit Union League, however, it declined to fewer than 50 in 2002 and its member base declined from 27000 to 10000 over the same period. The decline in number of credit unions can be partly attributed to poor administration (Leonard, 2011). Credit unions were mainly in urban areas serving formal urban workers. In 2009 there were 45 credit union serving 15000 members. Similar to the credit unions the primary membership of the financial co-operatives also declined substantially and the problem aggravated once the land leases started to expire forcing many households to leave their farms.

- Microfinance Institutions

Since 2000 a number of different microfinance models such as direct lending model, Grameen Bank model, cooperative and village bank have been tested in Fiji with varying success (Kinivuwai, 2009; World Bank, 2003). In Fiji currently there are ten microfinance institutions, three are urban based and six are rural based microfinance institutions providing services to 13 provinces in Fiji (see Table 3-4). As of 2009, there were 1700 active borrowers with an outstanding loan of $509,460.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Partnership with NCSMED</th>
<th>Area of Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>Fiji Council of Social Services (FCOSS)</td>
<td>Suva, Nasinu, Tailevu, Rewa, Navua</td>
</tr>
<tr>
<td></td>
<td>MF West</td>
<td>Ba, Lautoka, Nadi, Sigatoka</td>
</tr>
<tr>
<td></td>
<td>MF North</td>
<td>Labasa, Seaqaqa, Savusavu</td>
</tr>
<tr>
<td>Rural</td>
<td>Nakuailava Microfinance Institution</td>
<td>Ra Province</td>
</tr>
</tbody>
</table>
All these microfinance bodies rely on government grants to cover most of their operating costs; however, grants have been declining in recent years. Moreover, none of the microfinance institutions are likely to achieve financial sustainability in the near future and they are unlikely to reach a large percentage of financially excluded households and individuals mainly due to low population density and huge transportation costs involved in serving a low client base in geographically remote areas (Battacharjee and Joshi, 2009).

Furthermore, Microfinance institutions’ target of eliminating poverty cannot be realized without facilitation provided by the Fijian government and non-governmental organizations such as United Nations Development Program (UNDP), the Australian Agency for International Development (AusAID) and the New Zealand Agency for International Aid (NZAID). These international institutions aim to improve living standard, literacy, women empowerment and children schooling in the Pacific Island countries (Lewis and Lockheed 2006; World Bank, 2003). With respect to assisting the poor and sustaining a vibrant co-operative and small business sector, microfinance institutions in Fiji work with the Department of Co-operatives and Small Business and provide a variety of training courses including business management, financial management, beekeeping, bee box making, bread making, basic accounting, flower arranging, and so on. All these efforts make it possible to help the poor in Fiji unleash their energy and creativity, and therefore eliminate poverty steadily.

3.3.2.3 Informal Institutions

- Money Lenders
Fiji has a long history of informal money lenders in urban as well as rural areas. Despite various efforts by the government to eliminate informal money lending by providing alternative financial services, informal money lending is prevalent in most parts of the country. Informal money lenders usually charge very high interest rates, are restricted to a certain area, and provide services on an irregular basis (Battacharjee and Joshi, 2009). Borrowers often have to give in their ATM card, pin number, and/or passbook as security.

- Friends and Relatives

Borrowing from friends and relatives is quite common in the Fijian community. Indo-Fijians would have a well-established financial system where either money is borrowed and later returned or usually it is exchanged for some goods or services. Social links within the Indo-Fijian villages make this possible. However, the money borrowed is usually very small, is usually for emergency reasons and has to be repaid within a short period of time, and usually it is provided without any interest. On the other hand, kerekere (concept of borrowing) is an integrated part of ITaukei culture. Money borrowed under the system of kerekere may not necessarily have to be repaid; however, some form of favour can be expected in return.

3.3.3 Overview of Selected Microfinance Institutions

- FC OSS

FC OSS was the first NGO to be included in the pilot project of NCMF in 1999. It was provided a government grant to provide services to the Central Division in the same year. Initially FC OSS provided microfinance services to the Nausori-Suva corridor, and the service was later extended to Rewa, Tailevu, Naitasiri and Namosi. Also, initially FC OSS adopted the Grameen Bank model; however, it later changed to individual lending. As per procedure, members must regularly deposit money for three months with a minimum balance of $150 before they can apply for any loan. Initially, a loan of up to $250 is given; upon successful payment of the loan amount, the loan can be extended and increased depending on the client’s savings and need. Currently, an interest of 25%
is charged on a six month loan term and also a 3 percent service fee is charged upfront for every loan.

Moreover, a significant percentage of former borrowers continue to save their money with FCOSS for future loan and financial security. At no point is members saving used for lending. Instead, it is held in a trust account. Like other microfinance institutions, FCOSS highly relies on government grant. Over a decade FCOSS has managed to help many individuals to successfully establish micro-enterprise. Some of the activities for which credit is being provided are; market vendor, transport business, garment, and canteen, fishing and farming projects.

- **Microfinance West (Aglow)**

Aglow, a church-based non-government organization, is one of the largest microfinance organizations in Fiji. In 1999 the government of Fiji through the National Microfinance Unit called for expressions of interest from social organizations to provide microfinance services in Fiji. Aglow expressed interest and was included in the pilot scheme. Initially the operation of Aglow was centered around Lautoka and gradually it has increased to other areas in Western Vitilevu. Similar to FCOSS, Aglow has adopted and practises the Grameen bank model and provides individual credit.

Initially, it provided loan amounts not exceeding $250 to its members. With the help of the microcredit, borrowers started small business such as market vendor, fishing business, canteen and handicraft business. Most of these businesses are located in urban and semi-urban areas, and some are located in surrounding rural areas. Most of their clients have successfully been able to extend their business. For example, they started with one market stall, now they have 10 market stalls. Some started with small canteens and later extended it to transport and bakery. Some of the clients who started with the help of Aglow are now able to access commercial bank loans as high as $50,000. More importantly, about 90 percent of its members are women.

Most of these people who are assisted by Aglow were initially not able to get access to commercial bank loans as they were classified as high risk clients. Aglow took the risk of lending to high risk poor clients with an income of less than $100 and the borrowers
were allowed to access credit collateral free, though compulsory regular saving was a pre-requisite for loans.

A few women were forced to close their business and the most common excuse given was government regulations. There is some strict business requirement which these women are not able to fulfill. For example, to run a food business, one needs a health certificate which is very costly for poor women and most of the time women have to wait long before health inspectors’ visit and provide them with a license. Also, in order to buy ice from fisheries, one needs to have a boat license, and hence people who need ice for other business purposes are often not able to buy it. Other regulations, such as, price control, tobacco regulation and fishing licenses, lead to the demise of some of the businesses run by women in the Western Division. Nevertheless, most of the women who dropped out of the programme successfully paid off their loans.

Aglow mobilizes saving by making it mandatory for members to make a regular deposit weekly. These are pre-conditions if the members want to benefit out of Aglow microcredit. The motive behind compulsory saving is to address market imperfection and also to enhance financial position of its clients. At no time is the institution allowed to use savings for lending purposes. Apart from new savers, Anglow has managed to retain former borrowers as savers. The saving facility is highly valued by the members as it provides them with safe saving and no account maintenance fee is charged as opposed to commercial banks. Aglow provides door to door services and its staff members visit their clients once a week to collect deposits, repayments and provide any credit if needed.

Aglow’s initial loan is provided for a fixed period of 24 weeks at an interest rate of 25 percent and weekly repayments. Subsequent loans can be provided for a longer period and also loan amount is usually increased depending on the borrower’s savings. Many borrowers interviewed indicated that despite having accumulated enough savings, they would rather take a loan than use savings for business expansion or for meeting any unexpected expenditure. They indicated that having a credit actually makes them work hard and better manage their income. Many of the borrowers have accumulated
substantial savings. Furthermore, most of the clients have accessed loan more than one time.

- Co-operative Microfinance North

Co-operative Microfinance North was initiated in 2003 with the aim to provide microfinance services in the North. Like the other two microfinance institutions, it provides both saving and loan services to its members. Members are required to make compulsory regular savings before they can qualify for a loan. It is one of the most successful microfinance institutions in Fiji.

3.4 CONCLUSIONS

The discussion in this chapter provides some important observations about the performance of the Fijian economy. The economic growth has almost been stagnant over the last three decades. Investment in the private and public sectors remained very low over the same period. Public sector reform has significantly reduced the size of the public sector employment. Similarly, private sector employment creation has been low due to the lack of private sector expansion. The sugar industry used to be the major employment generator before 1980’s, however, in the recent past there has been a sharp decline in its contribution to the Fijian economy in terms of both gross value added and employment. Withdrawal of government support from other key sectors such as rice and citrus also caused a major decline in the output of these sectors and pushed many of them into poverty.

On the other hand, there has been a sharp increase in the labour force participation over the years caused by the increase in population and abundant labour released by improvement in agricultural productivity. Many of these new entrants risk finding any formal sector employment simply due to lack of employment opportunities. At the same time, downsizing and right-sizing of civil service and private sectors like banks further contributed to raising unemployment concerns. Moreover, a series of depreciation of the Fijian dollar and lack of increase in wages have seriously affected the purchasing power of household income.
Lack of dynamic economic growth and formal sector employment creation coupled with declining real household income called for alternative income generating activities for the poor and people with less education. The informal sector can potentially provide income sources for new labour market entrants and an alternative source of income to households experiencing declining real income. The informal sector has also made a significant contribution towards empowering many adult women, who are denied formal sector employment due to lack of education and collateral, by providing them with opportunities of engaging in the informal sector activities.

Microfinance can play an important role in providing alternative sources of income to many of the households living in poverty in Fiji. Microfinance institutions together with NCSMED have been providing basic business skills training and microcredit to the poor and the rural community, particularly unemployed women, by enabling them to venture into productive activities and thus improving household income. Women’s gaining access to labour market of any type has particular importance to households and the aggregation economy as well. In return, a source of income has also contributed to women’s socio-economic power within the household.

Most of microfinance institutions are not part of the regulated financial institution (Whiteside, 2011). They have been operating informally or semi-informally; however they are closely supervised by NCSMED.
CHAPTER FOUR: DEMAND FOR MICROCREDIT FROM MICROFINANCE INSTITUTIONS

4.1 INTRODUCTION

Microcredit provides important and timely capital to the poor households to establish income generating projects, diversify income sources and assets to further boost income and ultimately enable the poor to leap out of poverty (Atieno, 2001; Togba, 2012). Traditionally, the poor were often denied access to formal credit as they lacked collateral, education and they were seen as risky clients. Failure to secure formal credit, poor households had to rely on informal finance sources to finance their income generating activities as well as to provide protection finances such as credit for weddings, funerals and other consumption smoothening purpose. However, usually a very high interest rate was charged for informal lending and often dangerous means are adopted to recover credit in instances where clients faced difficulty in meeting their regular repayment.

Since the 1970’s microfinance emerged as an important financial tool to fill the gap which was unable to be filled by the formal financial system with respect to providing financial, economic and social support to the poor and also to partially address some of the problems faced with informal credit. In Fiji it is estimated that around 66% (in total 109,000) of the households do not have access to financial services (Battacharjee et al., 2009). The microfinance programme was introduced in Fiji in 1998 through a government initiative. Since then with support from the Fiji Government and international donors, microfinance institutions (MFIs) have assisted the poor who have limited income earning sources and limited access to formal banks’ loans.

However, microfinance’s outreach in terms of number of borrowers and amount of borrowing remain low despite its presence in Fiji for more than a decade, as evidenced in Table 1-1. Therefore, it is important to analyze factors determining the demand for microcredit by microfinance clients in Fiji. To date there has been no such empirical study examining the demand for microcredit undertaken in Pacific island countries of which Fiji is a member. This study will make a contribution to the existing literature, not
only to fill the gap of assessing microcredit in small island countries, but also to address estimation issues such as sample selection bias and endogeneity bias which received limited attention in the existing microcredit literature. 

The rest of the chapter is organized as follows: Section 4.2 provides a brief background of the microfinance sector in Fiji focusing on its roles. Section 4.3 reviews the literature. Section 4.4 presents sampling method and summarizes sample statistics. Section 4.5 outlines model specifications and estimation methodologies. Section 4.6 discusses empirical findings. And Section 4.7 draws conclusions.

4.2 MICROFINANCE INSTITUTIONS’ SERVICES IN FIJI

In general, microfinance institutions provide services of collecting savings, providing loans and assistance in setting up and managing micro-business.

4.2.1 Services Provided by MFIs

- Collecting Savings

In Fiji, formal banks are not able to deliver their financial services to households in remote regions due to cost-effectiveness reasons (Sibley, 2010, p30). Sharma and Reddy (2002) found 69% of indigenous Fijians living in rural and deprived urban areas of Fiji do not have a convenient and secure means of managing money and may not have access to reliable banking services. The level of financial exclusion experienced by urban dwellers is not known. A survey of the demand for rural banking services by Tebut Research (2005) undertaken for the Reserve Bank of Fiji found that despite the high demand for savings services in rural areas, 65% of respondents did not have a bank account and 76% of respondents kept money in cash at home.

All these, together with the relatively high cost of transport between savers’ houses and financial institutions, call for the emergence of a financial institution whose services can be provided at the savers’ houses. Microfinance institutions not only have offices in major towns/cities in Fiji where they deal with all kinds of businesses with clients, but

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5 Sponsored by the Pacific Financial Inclusion Program, ANZ bank started its rural banking program of collecting savings from rural households.
also send staff regularly to visit individual clients in remote regions to collect savings and provide loans. This clients’ home based management is therefore attractive to people who live far away with regular but small savings, given the relatively high transport cost between homes and towns/cities.

- Providing Loans

Formal banks offer secured loans by charging a fixed amount of administration fee and loan interest, among which the security and high service fee for small loans is unaffordable to people with limited income. In contrast, microfinance institutions provide loans, irrespective of whether they are small or large, with a small service fee (up to three percent in most of the cases), but at a higher interest rate than that charged by formal banks. The total cost of repaying microfinance loans in most cases turn out to be less than the cost of repaying formal bank loans. The poor in Fiji are generally in short-term need of small loans to purchase small items such as farming tools, fertilizers, seeds and fishing nets for productive purposes, and mats to attend traditionally important events such as weddings and funerals. The flexible loan service of microfinance institutions is therefore more suitable for people in need of small loans.

An alternative to the formal banks’ credit assessment before approving loan applications, a microfinance institution takes clients’ regular deposits as their capacity for repaying loans. An initial loan with an amount of less than two hundred Fijian dollars will be approved, given the loan applicant has savings of at least 150 Fijian dollars with the microfinance institution. Clients build up credit upon on time repayments, which leads to steadily increasing loans that will be approved by MFIs.

- Providing Training and Advices Pertaining to Micro-Business

Apart from financial services, microfinance institutions also provide assistance to poor people with regards to identifying potential micro-business projects (mainly in areas of agriculture, handicraft, fishing, market vendor and small dairy shops) as well as equipping them with relevant production and managerial skills. This function makes microfinance institutions act beyond the scope of merely being financial service providers, and serve more like a cooperation unit targeting at eliminating poverty.
4.2.2 The Poor’s Demands for MFIs’ Services

The poor’s needs for microfinance institutions’ services rely on depositing savings, requesting small loans for production and/or consumption purposes, as well as training and support to assist to turn their traditional skills into products.

Savings are important for households to enhance future income sustainability. Proper uses of savings in Fijian households include improving children’s education, purchasing product assets such as farming tools and livestock, starting a business, investment, home improvement and applying for loans. Besides this, in Fijian cultures important life events such as births, birthdays, weddings and funerals also require significant input of savings. For ordinary households with limited income sources, savings come into being slowly and in small amounts. Depositing small amounts of savings thus becomes difficult for people located in remote areas due to costly transport between homes and formal banks. Hence, microfinance institutions’ service of collecting savings from homes makes deposits easy and secure in this regard.

Many poor households at times find short-term shortage of small amounts of cash to meet consumption and/or production needs as previously described. Given high fixed administration fees, apart from interest rates charged by formal banks’ loans, together with collateral requirements, microfinance institutions’ unsecured loans at the cost of higher interest rates, but with low administration fees become relatively affordable to the poor.

Many poor, particularly women and those living in squatter settlements, community owned land or living on land without proper land titles, find it difficult to access credit from formal financial institutions. They lack collateral which is one of basic requirements to obtain formal bank loans. In Fiji most of the iTaukei community living in rural areas as well semi-urban areas occupy communal owned land. This means they do not have proper land titles to provide as collateral to secure credit.

In addition, about 40% of the Fijian population is engaged in the informal sector, contributing to about 3.4% of GDP (Battacharjee et al., 2009). In most of the cases people involved in the informal sector do not keep proper records of their business
activities and cash flow, and hence they are faced with significant challenges in getting access to formal sector credit. Traditionally, Banks would not provide credit in absence of consistent savings or collateral. Most of subsistence farmers, such as rice farmers, dalo farmers, cash crop farmers, do not have any regular sources of income to demonstrate their ability to make regular loan repayments.

The third need of the poor originates from their needs of turning their traditional skills into practical ways to broaden their income earning sources which can turn true through managing agriculture-based micro-businesses. This requires a small amount of investment capital and the poor mastering entrepreneurial skills. A microfinance institution is able to assist in both regards with its financial services and assistance from local organizations to provide the poor with training and support.

4.2.3 The Poor’s Participation in the Microfinance Scheme

Given the above analysis on the availability of MFI services and the demand for savings, loans for production and consumption purposes from rural areas in Fiji, we should expect a large number of people in Fiji engaged in MFIs’ services. According to the Singh (2010) by the year 2010 there were 24,000 microfinance institution members accounting for around 3 percent of Fiji’s total population, and 90 percent of MFI beneficiaries were women. According to Sibley (2010, p14), ‘women, the unemployed and those with lower income and education levels appear to have less access to financial services in Fiji.’ Singh (2011) suggests that MFIs broaden ‘the access to finance – especially to the poor, rural communities and women’. The majority of MFI participants are women, because they are ‘more likely to invest in children’s education, health care and on home improvements’ and ‘the rate of return to money lent to women is more compared to men’ (Singh 2011).

It is therefore obvious that low income and remoteness are major factors restricting individuals’ access to formal financial systems and thus, this group of individuals is likely to become savers with MFIs. There is also evidence that women compared to men have more access to microfinance credit. Apart from the gender factor, are there other factors affecting an individual’s access to microfinance credit?
Given that there have been no detailed studies attempting to answer the above question, the current study, with an effort to identify and quantify effects of factors determining members’ access to microfinance loans, will therefore make an important contribution to the literature by filling the mentioned gap.

4.3 LITERATURE REVIEW

4.3.1 Control Factors’ Impacts

There are a few studies that explain accessibility to MFI loans and amount of microloans. Researchers have suggested a comprehensive set of socio-economic factors as determinants of demand for microloans. However, evidence of these factors’ performance is mixed in the existing literature, varying from case to case and depending on loan uses. For instance, positive effect of education on microloan accessibility was found in Okurut et al. (2005), Bakhshoodeh and Karami (2008), Imai et al. (2010) and Onyeagocha (2012), while negative impact of education was found in Manrique and Ojah (2004) and Barslund and Tarp (2008). Pitt and Khandker (1998), who investigated amount of loans, found that education’s impact varied by gender with positive impact within the group of males and negative impact within the group of females, while Burgess et al. (2005) found positive but insignificant impact of literacy on access to microcredit.

Evidence of age’s impact is also mixed. Positive impact of age was found in studies such as Okurut et al. (2005), Imai et al. (2010) and Onyeagocha (2012), while negative impact of age was found in Manrique and Ojah (2004) and Barslund and Tarp (2008). Pitt and Khandker (1998) found that age’s impact varied by gender with a positive impact within the group of females and a negative impact within the group of males. Imai et al. (2010) further identified a quadratic relationship between age and microloan accessibility.

On income’s impact, a consistent positive relationship between loan size and borrower’s income was identified in studies such as Hulme et al. (1996), Rahman (1998), MkNelly and Stack (1998), Cohen and Sebstad (1999), Morduch (1999a). Positive impact of income on microcredit accessibility was also evident in some studies like Bakhshoodeh
and Karami (2008). For reasons of positive effect of income, Cohen and Sebstad (1999) argued that poor borrowers may drop out of programmes which insisted on progressive increases in loan size; Hulme et al. (1996) and Rahman (1998) claimed MFIs restricted poor borrowers’ access to larger loans; and McNelly and Stack (1998) suggested that poor households were reluctant to incur debt. Manrique and Ojah (2004), by classifying income into transitional and permanent income, found that permanent income was positively associated with access to consumption loan, while transitional income was negatively associated with access to consumption loan.

As an alternative to household income, the household assets variable is also used as another measure of household wealth in the literature. Evidence of household assets is also mixed. For instance, Okurut et al. (2005) found that household assets have a positive impact on access to microloans in Uganda’s Northern Division, but a negative impact in the Central and Eastern Divisions. However, Barslund and Tarp (2008) found a negative impact of household assets on access to loans in Vietnam. The authors claimed that ‘when households have assets they are better able to manage these (consumption) needs without relying on informal credit’ (Barslund and Tarp, 2008, p.497). Barslund and Tarp’s (2008) further argued that MFIs restricted poor borrowers from borrowing larger loans.

On the other hand, Barslund and Tarp (2008) found household assets were positively associated with loan size within the homogeneous group of borrowers, which supports their hypothesis that a larger asset ‘may also improve the loan terms which households are offered, making it cheaper to obtain a loan’ (p.492). It is also true that larger loans are required by the expansion of micro-businesses, if they are used for productive purposes. Such hypothesis was supported in studies such as Onyeagocha (2012) and Bakhshoodeh and Karami (2008), which found that potential productive assets including farm size and land had positive impacts on microloan size.

Apart from household income and household assets, household expenditure is also used in some studies to explain the need for microloans, since poor households spent a larger share of their loans on smooth consumption (Dunn et al., 1996; Sinha and Matin, 1998;
Zaman, 1999; Barslund and Tarp, 2008). Positive impact of household expenditure was claimed in Barslund and Tarp (2008) and empirically evidenced in Okurut et al. (2005).

As a productive asset, land’s impact is also not clear in the literature. As discussed in the above, Bakhshooodeh and Karami (2008) found land’s positive impact on accessibility to loans. Burgess et al. (2005) found that land’s impact was positive but not statistically significant. Okurut et al. (2005) however found that land per adult equivalent had a negative effect on access to microloans. Similarly, Barslund and Tarp (2008) also evidenced negative effect of land on access to microloans.

Impact of geographical location was also found ambiguous. Imai et al. (2010) found that urban people had higher accessibility to microloans than rural people in the Heckman sample selection model, but in a probit model they found a weak negative impact of urban dummy. A strong negative impact of urban dummy was however found by Okurut et al. (2005) who argued that people located in rural areas were more inclined to borrow microloans due to the inconvenient nature of transport.

Similarly, evidence of performance of other control factors, such as number of adults, number of dependents, family size and gender, is also mixed in the literature.

4.3.2 Empirical Research Methodologies

Investigation of access to microfinance loans is conducted by using limited dependent variable models, given the nature of binary or categorical dependent variables. For instance, Burgess et al. (2005) used the probit model to explain why individuals borrow loans from microfinance institutions in India. Probit model was also applied in case study of Vietnam by Barslund and Tarp (2008) and another case study of India by Imai et al. (2010). Manrique and Ojah (2004) used the bivariate probit model to examine the accessibility of different types of microcredits in Spain, due to the significant correlation between real estate loans and the disturbance terms of the probit equations for credit unconstrained status and for holding consumers. Okurut et al. (2005) employed the logit model to study microcredit accessibility. And Bakhshooodeh and Karami (2008) used the ordered probit model to explain access to microcredit in rural Iran.
Assessing microcredit size is mainly conducted by means of least squares estimation in most earlier studies such as Hulme et al. (1996), Rahman (1998), McKnelly and Stack (1998), Cohen and Sebstad (1999), Morduch (1999a), Barslund and Tarp (2008) and Onyeagocha (2012). However, least squares estimators are not able to address sample selection effect which arises as the consequence of unobservable non-borrowers’ microloan amount. To capture unobserved individual and village-level heterogeneity as the consequence of the quasi-experimental survey design, Pitt and Khandker (1998) used the bivariate tobit fixed-effects estimator to explain cumulative loan amount by gender in Bangladesh. To control sample selection bias, Okurut et al. (2005) used the Heckman sample selection model to investigate microcredit’s size in Uganda.

As we see from the above reviews, choice of estimators not only depends on the qualitative or quantitative nature of the dependent variable, but also depends on the sample structure. Moreover, choice of estimators should also be based on the concerns of yielding efficient, consistent and unbiased estimates. Therefore, efforts should also be put on addressing potential bias. Apart from sample selection bias, another two types of bias, namely omitted variable bias and endogeneity bias, however, rarely received attention in the literature of demand for microcredit. For instance, Okurut et al. (2005) used literacy dummy rather than levels of education, and land dummy rather than other more meaningful measures of assets. Household income and expenditure were not considered. All these may have led to omitted variable bias, which is likely to be the case in Okurut et al. (2005) since Pseudo R-squared reported was as low as 0.04 despite a huge sample size of 75888 observation. The third type of bias, namely endogeneity bias, is also a prominent problem in the microcredit literature, since household income, assets and expenditure are likely to be endogenous due to the fact that they can be explained by other determinants of loan accessibility or loan size, and that microloans are likely to induce increase in household income, assets and expenditure if loans are used for productive purposes. However, addressing endogenous bias received very limited attention in the literature.
4.4 SAMPLING AND SAMPLE STATISTICS

4.4.1 Sampling

During 2011 we carried out field work in the provinces of Ba, Rewa, Naitasiri and Macuata. Ba falls in the Western Division; Rewa and Naitasiri are located in the Central Division while Macuata is in the Northern Division. These are the four provinces in Fiji where microfinance services are widely available. Western Microfinance is the main microfinance service provider in the Western Division and hence, 60 of their loan clients were randomly picked within the Ba province. Similarly, Fiji Council of Social Services is the main and oldest microfinance provider in the Central Division and hence, we randomly selected 70 of their loan clients within Naitasiri and Rewa provinces in this division. We took two provinces in the Central Division, as they jointly form the greater Suva area and there is hardly any difference between the two provinces. Similarly, Northern Microfinance is the main service provider in the Northern Division and we randomly selected 40 of their loan clients.

Secondly, we picked equal numbers of non-loan clients (savers with an intention of taking a loan in the future) from the three divisions. After identifying the loan clients and their villages, with the help of microfinance officers we identified all non-loan clients and randomly picked equal numbers of savers from the list from corresponding divisions. Some of the villages, settlements and Tikina (districts) had savers only, so we eliminated such areas to restrict our focus to areas where we picked our loan clients. This was done to enable better comparisons between borrower and non-borrower groups. We ensured that both the groups shared the same characteristics.

In total 340 clients were interviewed. Due to incomplete information on socio-economic aspects for 11 clients, 329 clients are included in the analysis in the end. Among 329 sample observations, 119 were in the Western Division, 137 were in the Central Division and 73 in the Northern Division.
4.4.2 Sample Statistics

To investigate microcredit accessibility and microcredit size, a wide set of control factors are considered and classified into three categories: demographic characteristics, household characteristics and dummy variables to correct for bias caused by geographical locations and ethnical cultures. Personal characteristics include gender, female and spouse’s respective education levels and ages. Education is represented by two binary variables, namely education above primary and up to secondary qualifications and education above secondary qualifications which in this study is equivalent to up to a tertiary qualification. These two proxies are in contrast with education up to primary qualifications. Apart from age, age squared is included to capture the quadratic effect of age. Household characteristics represent economic and social status of a household. This class of control factors includes spouse’s employment status, number of children, number of adults, number of females, household monthly income and/or assets, and monthly expenditure per adult equivalent. Another set of dummy variables are also considered to differentiate between urban areas and rural areas, between iTaukeis and Indo-Fijians, and between the Western Division, Northern Division and the Central Division.

Explanation of the dependent variables and control factors is summarized in Table 4-1. Mean and standard deviations of all variables by group of MFI participants are summarized in Table 4-2.

Table 4-1: Dependent variables and control factors

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description of Variables</th>
<th>Nature</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BORROWER</td>
<td>Microcredit borrower in contrast with mere savers</td>
<td>binary</td>
</tr>
<tr>
<td>CLOAN</td>
<td>Cumulative loans from MFIs</td>
<td>quantitative</td>
</tr>
<tr>
<td>CLOAN_PROD</td>
<td>Cumulative production loans from MFIs</td>
<td>quantitative</td>
</tr>
<tr>
<td>CLOAN_CONS</td>
<td>Cumulative consumption loans from MFIs</td>
<td>quantitative</td>
</tr>
<tr>
<td><strong>Control factors: personal characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WOMAN</td>
<td>MFI member is a woman</td>
<td>binary</td>
</tr>
<tr>
<td>SEC_SP</td>
<td>Spouse has up to secondary school qualification</td>
<td>binary</td>
</tr>
<tr>
<td>Variables</td>
<td>Borrowers &amp; Non-Borrowers</td>
<td>Non-Borrowers</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td>$n = 329$</td>
<td>$n = 158$</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>s.d</td>
<td>Mean</td>
</tr>
</tbody>
</table>

6 Household monthly income refers to the total income earned by all household members, which includes the income from all sources such as wages and salaries, agriculture, self-employment and own consumption.

7 Adult equivalent: child between the age 0-14 is treated as half adult and any person over age 14 is treated as 1 adult. Total household expenditure is divided by number of adult equivalent.
**Dependent Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
<th>Value</th>
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<tbody>
<tr>
<td>BORROWER</td>
<td>0.519</td>
<td>0.500</td>
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<td>CLOAN (F$)</td>
<td>877</td>
<td>1706</td>
</tr>
</tbody>
</table>

**Control factors: personal characteristics**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>WOMAN</td>
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<td>SEC_SP</td>
<td>0.717</td>
<td>0.450</td>
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<td>TER_SP</td>
<td>0.100</td>
<td>0.300</td>
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<td>AGE_SP (years)</td>
<td>45.41</td>
<td>12.93</td>
</tr>
<tr>
<td>SEC</td>
<td>0.781</td>
<td>0.414</td>
</tr>
<tr>
<td>TER</td>
<td>0.075</td>
<td>0.265</td>
</tr>
<tr>
<td>AGE</td>
<td>41.36</td>
<td>12.17</td>
</tr>
</tbody>
</table>

**Control factors: household characteristics**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUNEMP_H</td>
<td>0.246</td>
<td>0.431</td>
</tr>
<tr>
<td>CHILDREN</td>
<td>1.790</td>
<td>1.644</td>
</tr>
<tr>
<td>ADULTS</td>
<td>3.565</td>
<td>1.631</td>
</tr>
<tr>
<td>EARNERS</td>
<td>1.452</td>
<td>0.847</td>
</tr>
<tr>
<td>FEMALES</td>
<td>2.723</td>
<td>1.580</td>
</tr>
<tr>
<td>INCOME (F$)</td>
<td>1120</td>
<td>929</td>
</tr>
<tr>
<td>ASSET (F$)</td>
<td>1889</td>
<td>2541</td>
</tr>
<tr>
<td>EXPPC (F$)</td>
<td>535</td>
<td>488</td>
</tr>
</tbody>
</table>

**Control factors: geography and ethnicity**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>URBAN</td>
<td>0.641</td>
<td>0.480</td>
</tr>
<tr>
<td>WESTERN</td>
<td>0.361</td>
<td>0.481</td>
</tr>
<tr>
<td>NORTHERN</td>
<td>0.221</td>
<td>0.416</td>
</tr>
<tr>
<td>ITAUKEI</td>
<td>0.924</td>
<td>0.265</td>
</tr>
</tbody>
</table>

Our sample covers 329 microfinance institution members, amongst which 158 members are purely savers, 130 members borrowing micro loans for productive purpose and 41 members have been borrowing small loans for consumption purpose. Decriptive statistics in Table 4-2 show that average cumulative loan per member is 877 Fijian.

---

8 Out of sampled 340 households, 11 households’ data do not eventually used for analysis due to unusable responses.
dollars with a great dispersion of 1706 Fijian dollars, while average cumulative loan is 2150 Fijian dollars within the group of production loan borrowers and 220 Fijian dollars within the group of consumption loan borrowers.

Out of all MFI member interviewees, 87.2 percent are women. The proportion of women remains similar across different groups. On average, 71.7 percent of the interviewees’ spouses have secondary school qualifications, with the highest proportion of 76.9 percent within the group of production loan borrowers and the lowest proportion of 56.0 percent within the group of consumption loan borrowers. Only 10 percent interviewees’ spouses have tertiary education, with the highest proportion of 19.5 percent within the group of consumption loan borrowers and the lowest proportion of 6.9 percent within the group of non-borrowers. The rest, 18.3 percent of interviewees’ spouses, have primary school education.

On average 78.1 percent of MFI members have secondary school education. By group, more consumption loan borrowers (82.9 percent) have secondary school education than production loan borrowers (80 percent) and non-borrowers (75.3 percent). On average 7.5 percent of MFI members have tertiary education. By group, more production loan borrowers (10 percent) have tertiary education compared to consumption loan borrowers (7.3 percent) and non-borrowers (5.6 percent). Given most of members are women, the above statistics indicate that generally women’s secondary school education ratio is higher than their husbands’ secondary school education ratio, while women’s tertiary education ratio is lower than their husbands’ tertiary education rate.

The average age of MFI members is 41.361 years, and their spouses’ average age is 45.41 years. By group among members, the highest average age is seen in the group of non-borrowers (43.11 years) and the lowest average age is seen in the group of production loan borrowers (39.71 years). The difference in average age between consumption loan borrowers and production loan borrowers is negligible.

With respect to household characteristics, on average 24.6 percent of household heads are nearly unemployed. By group, more household heads of consumption loan borrowers are nearly unemployed (36.5 percent) than those of non-borrowers (25.3 percent) and
production loan borrowers (20 percent). On average each household has 1.79 children. By group, households of consumption loan borrowers have the largest average number of children 1.88, followed by average 1.82 children among non-borrower households, and 1.73 children among households of productive loan borrowers. Each household on average has 3.57 adults and 1.45 earners. The average number of adults and earners are highest among the group of productive loan borrowers (3.62 and 1.52 respectively), and least among the group of consumption loan borrowers (3.29 and 1.27 respectively). Moreover, number of females in the household is also considered as a control factor due to their roles and contributions towards the family’s non-economic activities. On average there are 2.72 females in the household of a microfinance member. By group, the number of females is highest among the group of productive loan borrowers (2.78 females), followed by the group of non-borrowers (2.75 females) and the group of consumption loan borrowers (2.46 persons). In terms of household income and assets, on average each household has a monthly income of F$1120 and monthly assets of F$1889. By group, households of productive loan borrowers have the highest average income and assets (F$1265 and F$2710 respectively) and households of consumption loan borrowers have the lowest average income and assets (F$870 and F$1186 respectively). On average, the monthly expenditure per adult equivalent of microfinance member’s household is F$535, with the highest expenditure seen in the group of productive loan borrowers (F$604) and lowest expenditure seen in the group of consumption loan borrowers (F$477).

Geographically, around 64.1 percent of the sample MFI members are located in urban areas. By group, the ratio is highest among productive loan borrowers (69.2 percent) and lowest among consumption loan borrowers (56 percent). Of all the sample MFI members, 36.1 percent are from the Western Division, 22.1 percent are from the Northern Division, while the remaining 41.8 percent are from the Central Division. Of all the non-borrowers, 36 percent are from the Western Division, 21.5 percent from the Northern Division, while 42.5 percent are from the Central Division. Of all the productive loan borrowers in the sample, 36.9 percent are from the Western Division, 19.2 percent from the Northern Division and the remaining 43.9 percent are from the Central Division. Of all the consumption loan borrowers, 34.1 percent are from the
Western and Northern Divisions, and 31.8 percent are from the Central Division. Ethnically, as high as 92.4 percent of the sample MFI members are iTaukei, and only 7.6 percent are Indo-Fijians.\(^9\) By group, the iTaukei’s ratio is highest in the group of productive loan borrowers (93.8 percent) yet the lowest in the group of consumption loan borrowers (87.8 percent).

4.5 MODELS AND ESTIMATION METHODOLOGIES

Analysis of demand for microcredit will be conducted in two parts. First, it will investigate probabilities of being MFI loan beneficiaries on top of saving in MFIs, that is, why some savers are microcredit beneficiaries and why the other savers remain merely savers. Second, it will investigate determinants of microcredit size.

4.5.1 Demand for Microloan: Theoretical Framework

The decision to take micro-credit from an institution can be considered in the form of a utility function where the borrower chooses to buy at most one financial service from a set of differentiated services in the financial market. In such a case, borrower \(i\)'s utility from the purchase of service \(j\) is:

\[
U_y = U(V_j, X_i)
\]

where \(V_j\) is a matrix of service characteristics including price, easy access and availability of the service, and \(X_i\) is a matrix of consumer tastes including consumption preference and capacity. The indirect utility model expresses utility as a function of characteristics of the service itself and the other factors that will give satisfaction to the borrower.

On the other hand, the demand side of the financial market looks at factors that influence clients’ demand for financial services. According to the demand theory, the demand function expresses quantity demanded of the service as a function of the service’s price, prices of competitors, and income of the borrower. Functionally, the relationship between demanded of the service and prices is as follows:

\(^9\) This is consistent with the real fact that a majority of microfinance members in Fiji are iTaukei and only less than 10 percent are Indo-Fijians.
\[ Q^d_i = f(V, PC, X_i) \]

where \( Q^d_i \) is demand of the service, \( V \) is a matrix of the service’s characteristics including price and quality, \( PC \) is a matrix of prices of competitors’ services, and \( X \) is a matrix of household characteristics. Note that the subscript \( j \) is removed from the demand equation due to the fact that the decision has been made by the client on choosing the particular service \( j \).

Since \( V_j \) in the utility function and \( V \) and \( PC \) in the demand function are household-invariant variables, while the unit of our analysis is at the household level, characteristics at the service level should not be considered in the above models. This also holds for institutional characteristics for the same reason. Therefore, it is possible to model demand for micro-credit at the household level as:

\[ Cr_i = f(X_i, Z) \]

where \( Cr \) is amount of micro-credit, \( X \) is a matrix of household characteristics, and \( Z \) captures effects of other factors such as geographical location which is again household-variant. Note that \( X \) is defined here in a broad way not only referring to household socio-economic statuses but also key features of household members.

### 4.5.2 Investigation of Microloan Accessibility: the Logit Model

Microcredit accessibility is measured by a binary variable, which is named as BORROWER in our analysis. BORROWER has value 1 to microfinance loan borrowers and 0 to microfinance non-borrowers (that is, merely savers). The binary nature of the dependent variable requests a probability model to be used, and in the current study, a logit model is adopted.

The probability of becoming a MFI loan beneficiary is related with control factors \( X \)s in a non-linear form as follows

\[ p = P[L \leq \beta_0 + \sum_{i=1}^{k} \beta_i X_i] = \frac{1}{1 + e^{-(\beta_0 + \sum_{i}^{k} \beta_i X_i)}}. \] (4.1)
where \( p \) is the probability that a MFI client borrows loans from MFIs, \( L \) is the logistic random variable, and \( X_i \) is a matrix of control factors.

Marginal probability effect (MPE) of \( X_i \) on the probability that \( \text{BORROWER} = 1 \) is non-constant and can be computed as:

\[
\frac{\partial p}{\partial X_i} = \lambda \left[ \beta_0 + \sum_{i=1}^{k} \beta_i X_i \right] \beta_i
\]

where \( \lambda \) is the logistic function.

Probability that a MFI client borrows microloans is estimated as:

\[
\hat{p} = \frac{e^{(\beta_0 + \sum_{i=1}^{k} \beta_i X_i)}}{1 + e^{(\beta_0 + \sum_{i=1}^{k} \beta_i X_i)}} \quad \text{for} \ \text{BORROWER} = 1
\]

\[
1 - \hat{p} = \frac{1}{1 + e^{(\beta_0 + \sum_{i=1}^{k} \beta_i X_i)}} \quad \text{for} \ \text{BORROWER} = 0
\]

If \( \hat{p} \) is greater than a threshold value, say 0.5, we say that the MFI member is likely to be a microcredit beneficiary.

### 4.5.3 Investigation of Microloan Size: the Heckman Sample Selection Model

To further distinguish between larger and smaller microloans, this study also investigates size of microloans by assessing cumulative loans (denoted as CLOAN) using the whole sample including not only microloan borrowers but also non-borrowers.

There are two reasons that non-borrowers are not excluded in the analysis of microcredit size. First, poor households are generally in need of loans for either consumption purposes due to temporary shortage of money, or for production purposes in order to alleviate poverty. Second, non-borrowers and borrowers share common characteristics in many aspects such as limited income sources, limited access to formal financial systems and low education qualifications. Hence, non-borrowers should not be regarded as they will definitely remain the non-borrowing status, and instead should be treated as their borrowing behavior is not observable when the survey was conducted. Therefore, excluding non-borrowers will impose the non-random sampling problem.
Inclusion of non-borrowers in the sample however makes the dependent variable CLOAN a censored series since it has a concentration of observations at zero values. Inappropriate dealing with the censored dependent variable would lead to sample selection bias. As a solution, the Heckman’s two-stage estimation procedure is employed to control sample selection bias. In the first stage, the Heckman procedure proposes a sample selection model which distinguishes borrowers from non-borrowers:

\[
\begin{align*}
    \text{BORROWER}_i^* & = W_i' \gamma + u_i = 1 \quad \text{if} \quad W_i' \gamma + u_i > 0 \\
    \text{BORROWER}_i^* & = W_i' \gamma + u_i = 0 \quad \text{if} \quad W_i' \gamma + u_i < 0.
\end{align*}
\] (4.4)

where \( W \) is a matrix of control factors, some of which are instrumental variables distinguishing borrowers from non-borrowers, and \( u \) is the error term.

Differentiation between borrowers and non-borrowers is conducted through a probit model as follows:

\[
p = \Phi(\gamma_0 + \sum_{i=1}^n \gamma_i W_i) = \int_{-\infty}^{t} \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}t^2} dt
\] (4.5)

where \( \Phi \) is the probit function, and \( t = \gamma_0 + \sum_{i=1}^n \gamma_i W_i \).

The second stage of the Heckman procedure proposes the structural equation to explain loan size:

\[
\ln CLOAN_i = X_i' \beta + \varepsilon_i
\] (4.6)

where \( \ln \) is natural logarithm, \( X \) is a matrix of control factors, and \( \varepsilon \) is the error term in the structural equation.

It is assumed that \( \varepsilon_i \) and \( u_i \) follow bivariate normal distribution with means zero, variances one and constant standard error \( \sigma \). Correlation between \( \varepsilon_i \) and \( u_i \) is denoted by \( E(\varepsilon_i | u_i) = \beta_u u_i \), where \( \beta_u = \rho \sigma \). Sample selection bias arises when \( \beta_u \neq 0 \).

Expected value of \( \ln CLOAN_i \) conditional on observable \( W_i \) and the actual selection outcome BORROWER, is given as
\[
E(\ln CLOAN_i | W_i, BORROWER_i) = E[E(\ln CLOAN_i | W_i, u_i) | \omega_i, BORROWER_i]
\]
\[
= E[(X_i'\beta + \beta_{u_i}u_i) | W_i, BORROWER_i]
\]
\[
= X_i'\beta + \beta_{u_i}E(u_i | W_i, BORROWER_i)
\]  \hspace{1cm} (4.7)

The relative likelihood \(E(u_i | W_i, BORROWER_i = 1)\) is equivalent to \(E(u_i | u_i > -W_i'\gamma)\), where \(-W_i'\gamma\) is the cutoff threshold for MFI savers to be eligible to microcredit. Since \(u_i\) follows a standard normal distribution, together with the inverse Mills ratio (IMR), \(E(z_i | z_i > c) = \frac{\phi(c)}{1 - \Phi(c)}\), \(^{10}\) the relative likelihood is further developed into

\[
E(u_i | u_i > -W_i'\gamma) = \frac{\phi(-W_i'\gamma)}{1 - \Phi(-W_i'\gamma)}.
\]  \hspace{1cm} (4.8)

Given the symmetric property of a standard normal distribution, the preceding equation becomes

\[
\frac{\phi(-W_i'\gamma)}{1 - \Phi(-W_i'\gamma)} = \frac{\phi(W_i'\gamma)}{\Phi(W_i'\gamma)} \equiv \lambda(W_i'\gamma),
\]  \hspace{1cm} (4.9)

where \(\lambda(.)\) is the IMR, measuring the ratio of the probability density function to the cumulative distribution function. Plugging Equation (4.9) into Equation (4.7) yields

\[
E(\ln CLOAN_i | W_i, BORROWER_i) = X_i'\beta + \beta_{u_i}\lambda(W_i'\gamma) = X_i'\beta + \rho \sigma \epsilon \lambda(W_i'\gamma).
\]  \hspace{1cm} (4.10)

The performance of \(\lambda(.)\) is used to gauge whether there is sample selection bias. Given that \(\sigma\) is positive, the sign of \(\rho\) will indicate the direction of selection bias.

4.5.4 The Endogeneity Issue

According to discussion in Section 3, bidirectional causality is likely to exist between demand for microcredit (both accessibility and size) and household income (or assets) as well as household expenditure. It is less likely for the other control factors in the models of demand for microcredit to be endogenous. For instance, interviewee and spouse’s

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\(^{10}\) Refer to Appendix A1 for the derivation of the IMR.
education is unlikely to be endogenous because their education was received decades ago.

If endogeneity is detected in the analysis of microcredit accessibility, to obtain unbiased and consistent estimates, the instrumental variables probit estimator (IVPROBIT), which is essentially the probit model with continuous endogenous regressors, should be applied instead of the usual binary dependent variable estimators. In the analysis of microcredit size, instrumental variables Heckman estimator (IVHECKMAN) should be employed if endogeneity is identified.

For any instrumental variables estimator, instrumental variable (IV) estimation procedure is a two-stage estimation procedure. In the first stage, problematic continuous variable $X_K$ is estimated with a least squares estimator by using valid instrumental variables including internal IVs, namely all other control factors which are exogenous in the system, and external IVs which are not part of the system. A predicted series can therefore be generated for $X_K$ from the first stage, which removes randomness of the problematic variable. The second stage involves a usual probability regression procedure using the predicted series $\hat{X}_K$ to replace $X_K$. A maximum likelihood estimator is adopted in the second stage to yield unbiased estimates. The whole procedure is actually based on estimating the reduced-form equations.

Three concerns should be taken care of when using instrumental variable estimators. First, the choice of an IV should be made based on the fact the IV is strongly correlated with the problematic variable $X_K$, not correlated with the error term and does not directly lead to changes in the dependent variable of the system. Using weak instruments would increase bias in the estimation, as argued by Hill et al. (2011, p.411) ‘when using a weak instrument, the instrumental variables estimator can be badly biased, even in large samples, and its distribution is not approximately normal.’ The strength of instrumental

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11 Note that a two-stage IV estimation procedure is different from two regressions. The former is based on a reduced form of a system of equations, while the latter is composed of two regressions.
variables can be assessed in the first stage regression by testing whether external instrumental variables jointly have statistically significant effect on $X_K$, which can be decided by an $F$ or Chi-sq test.

The second concern in an IV estimation procedure is the identification issue. To test for identification of parameters in the structural model, which is equivalent to testing for the validity of the surplus moment conditions, relevant external instruments and exogenous variables (referred to as internal instruments) should be used to compute the IV estimates of parameters in the structural model and obtain the estimated residuals. Estimated residuals are regressed on all available instruments and $NR^2$ is computed from this regression. If all of the surplus moment conditions are valid, then $NR^2$ follows a chi-squares distribution, that is, $NR^2 \sim \chi^2_{(L-B)}$ where $L$ is number of valid external variables and $B$ is number of endogenous variables. Moreover, in order to identify (or alternatively, consistently estimate) structural parameters of the system from the reduced-form equations, IV estimation requires that the number of external instrumental variables should be no less than the number of endogenous explanatory variables. There are a few tests have been developed in the literature to test for the null hypothesis of overidentification, that is, a joint null hypothesis that the external instruments are valid instruments. Among those tests, the Sargan test applies when errors are homoskedastic, while Hansen’s $J$-test applies when errors are heteroskedastic. Under the assumption of conditional homoskedasticity, Sargan’s statistic becomes Hansen’s $J$ statistic (Hayashi, 2000, p.227).

The last concern in the IV estimation is to test whether the problematic variable $X_K$ is indeed endogenous. Tests for this purpose are under the null hypothesis that $X_K$ is exogenous, i.e. $H_0: X_K$ is uncorrelated with $e$, $\text{cov}(X_K, e) = 0$. The logic of the tests is to see whether the estimated residual in the first stage is significant when it is added to regression model of the second stage. The null of exogeneity is now equivalent to test for significance of the estimated residual from the first stage, which can be tested using the $z$ test in the context of a probability regression and the $t$ test in the context of a least squares regression. In the IVPROBIT model, the exogeneity test is conducted by a Wald parameter test which tests for the null hypothesis that $\alpha_{thrho} = 0$. $\alpha_{thrho}$ is the Fisher’s
Z transformation of ρ (rho) in the estimation process. Rho is the correlation between the errors in the probit model equation and the reduced-form equation for the endogenous regressor. The null of ρ being equal to zero indicates that the problematic variable is in fact exogenous. If the estimated ρ is insignificant, the null of exogeneity is not rejected and a plain probit or logit regression could be used. Otherwise the IVPROBIT regression should be used.

4.6 EMPIRICAL FINDINGS

In order to answer the question ‘why do people in Fiji need to borrow from microfinance institutions despite the high interest rates charged by MFIs’, the current study considers a comprehensive set of socio-economic factors including personal demographics such as education and age, household characteristics such as household income, expenditure, family size and household head’s employment status, as well as geographical and ethnicity dummy variables.

In the literature household assets and household income are used alternatively to measure financial status. The reasons why household income rather than household assets is used in this study can be seen as follows. First, household income is a measure of cash flow, which is what poor Fijian families need urgently; while assets, which include houses, land, cars, furniture and other household items, cannot be transformed into cash immediately upon demand. Secondly, since in Fiji most of the land as part of assets is communally owned and is not easily available for lease, land cannot be used as a collateral item for applying loans. Poor Fijian families hardly have other valuable items which can be used as collateral. As a contrast, household income more accurately reflects sustainable repayment capability, and therefore stands out as a more secure measure for collateral.

Household expenditure, measured by expenditure per adult equivalent, also enters the model simultaneously with household income. Reasons for including expenditure come from concerns towards measuring demand for consumption loans and the fact that Fijian households more or less divert part of their loans for consumption. However, inclusion of expenditure and income simultaneously should be based on the precondition of no
multicollinearity problem. Multicollinearity does not exist in the current study because the coefficient of correlation between the two series is only 0.39. Using both expenditure and financial status variables simultaneously is also practised in studies like Okurut et al. (2005).

Inclusion of the expenditure and income variables simultaneously may also lead to the endogeneity problem. Theoretically it should be the case because expenditure to a great extent is decided by household income, and that expenditure and income can individually be explained by other socio-economic factors which are used to explain demand for microloans. To address endogenous bias, instrumental variables estimators are employed in the analysis.

Besides endogeneity bias, there are two other types of bias that possibly arise in the analysis, namely sample selection bias and omitted variable bias. The former will be corrected by applying the Heckman sample selection model in assessing microloans’ size, and the latter is avoided by considering a comprehensive set of socio-economic factors. To avoid loss of estimation efficiency, only control factors significant for at least 10% level are kept in the regression output.

4.6.1 Determinants of Microcredit Accessibility

The IVPROBIT estimator is adopted in the analysis of microcredit accessibility to control endogenous effect if it exists. The IVPROBIT estimation procedure is a two-stage estimation procedure with the first stage using a least squares estimator to assess the problematic variable(s) and the second stage using the predicted series to replace the actual series in order to remove randomness of the series. However, this two-stage procedure is based on reduced-form equation, rather than literally two stages of estimation.

4.6.1.1 The IVPROBIT Estimator: the First-Stage Regression Output and Exogeneity Tests’ Output

The first-stage of the IVPROBIT estimation requires including valid external instrumental variables. Choice of external instrumental variables should be based on the criteria that (1) they are highly correlated with the problematic variable, (2) they are not correlated with the error term of the binary dependent variable model, and (3) they do
not directly lead to changes in the binary dependent variable. Valid external instrumental variables for household income (INCOME) include interviewee’s education (SEC and TER), spouse’s education (SEC_SP and TER_SP), female’s age (AGE) and money transferred to the household (TRANSFER). Valid external instruments for household expenditure per adult equivalent (EXPPC) include SEC, TER, SEC_SP, TER_SP and TRANSFER. These two sets of instruments are positively associated with household income and expenditure respectively, while they do not directly affect household’s choice of whether to borrow microloans. Strength of these external instrumental variables is evidenced by the Wald $F$ statistics being greater than the benchmark value of 10 in both least squares regressions presented in Table 4-3.

As shown in Table 4-3, household income is positively associated with MFI member and spouse’s education, MFI member’s age, transfers that household received, number of household earners and urban dummy. Household expenditure per adult equivalent is positively associated with MFI member and spouse’s education, spouse’s age which is subject to diminishing rate, household income, transfers that household received and urban dummy, while negatively associated with household head’s nearly unemployment status, family size, and Western and Northern Division dummies.

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>lnINCOME</th>
<th>lnEXPPC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coeff.</td>
<td>t-stat</td>
</tr>
<tr>
<td>Constant</td>
<td>8.192</td>
<td>52.67</td>
</tr>
<tr>
<td>SEC</td>
<td>0.227</td>
<td>3.00</td>
</tr>
<tr>
<td>TER</td>
<td>0.615</td>
<td>3.55</td>
</tr>
<tr>
<td>SEC_SP</td>
<td>0.309</td>
<td>2.89</td>
</tr>
<tr>
<td>TER_SP</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>AGE</td>
<td>0.006</td>
<td>2.27</td>
</tr>
<tr>
<td>AGE_SP</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>AGESQ_SP</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>lnINCOME</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>lnTRANS</td>
<td>0.017</td>
<td>2.18</td>
</tr>
</tbody>
</table>

Table 4-3: Least squares estimation of household income and expenditure
To test for identification of parameters in the IVPROBIT estimator, both external instruments and exogenous variables (referred to as internal instruments) are included in the probit model to obtain the estimated residuals. Estimated error term is regressed on all available instruments and $NR^2$ is computed from this regression. The observed statistic $NR^2 = 0.4606$ while $\chi^2_{(7-2),5\%} = 11.070$, therefore the null hypothesis that all of the surplus moment conditions are valid is not rejected, the evidence that structural parameters can be consistently estimated.

In order to test for endogeneity of lnINCOME and lnEXPPC respectively, estimated residuals from household income and expenditure per adult equivalent regressions are used as additional explanatory variables in the probit model. The Wald test for the null hypothesis that neither estimated residuals is significant, that is, lnINCOME and lnEXPPC are respectively exogenous, yields observed $\chi^2 = 10.25$ which is greater than 5% critical value $\chi^2_{(2),5\%} = 5.991$. The null of exogeneity is hence rejected at the 5% level, providing evidence of endogeneity problem in the probit model. Therefore, the IVPROBIT estimator should be employed to avoid endogeneity bias caused by household income and expenditure per adult equivalent.

4.6.1.2 The IVPROBIT Model: the Second-Stage Regression Output

Replacing the actual lnINCOME and lnEXPPC series with the predicted series from the first stage removes the randomness of lnINCOME and lnEXPPC, and yields consistent estimates as follows:
\[
\hat{\text{BORROWER}} = -5.25 + 0.07\text{AGE}_\text{SP} - 0.0006\text{AGESQ}_\text{SP} + 0.33\text{NUNEMP}_\text{H}
\]

\[
z = (-3.12) (1.96) (-1.87) (1.79)
\]

\[
\text{MPE} = (0.03) (-0.0002) (0.13)
\]

\[
-0.85\ln\hat{\text{INCOME}} + 1.57\ln\hat{\text{EXPPC}} + 0.21\text{CHILDREN} - 0.39\text{URBAN}
\]

\[
z = (-2.38) (3.59) (2.45) (-2.06)
\]

\[
\text{MPE} = (-0.34) (0.63) (0.08) (-0.15)
\]

\[
n = 329 \quad \text{Chi}^2(9) = 28.43 \quad P > \text{Chi}^2 = 0.0002
\]

As evident, among personal demographics, household characteristics as well as geographical and ethnicity dummy variables, only six factors are found to have direct and significant association with explaining MFI members’ access to microcredit. The overall significance of these eight factors is verified by the observed Wald Chi-squared statistic of 28.43, which is highly statistically significant at the 1% level. Inclusion or exclusion of other control factors described in Section 4 slightly changes but does not alter performance of included explanatory variables, which provides evidence of robustness of regression results. Dropping insignificant variables from regression not only improves estimation efficiency, but also contributes to an increase in the number of degrees of freedom and hence estimation stability.

Both estimated coefficients and marginal probability effects are reported in the above equation. The focus is on marginal probability effect for interpretation purpose. Specifically, keeping other factors unchanged, an increase of one year in spouse’s age (AGE SP) increases the probability of borrowing MFI loans by 3 percentage points, which is, however, subject to a slight reducing rate of 0.02 percentage points upon per additional squared years (AGESQ SP). Provided that most interviewees are women, this indicator further reflects effect of males on microcredit accessibility. Head of the household’s employment status has a significant impact on microcredit accessibility. It is found that, keeping other factors unchanged, head of the household’s nearly unemployed status (NUNEMP H) is associated with higher probability of 13 percentage points. Given that the average ages of interviewees and their spouses are more than 40 years, head of the household’s employment status is actually employment status of interviewee or interviewee’s spouse.
On household’s financial status, household income (INCOME) is found to be negatively associated with access to microcredit. One percent increase in household income dramatically reduces the probability of borrowing MFI loans by 34 percentage points. Given the finding in the first stage of the IVPROBIT model that household income is positively contributed by education of interviewees and their spouses as well as number of earners, INCOME in this model measures the household’s stable and sustainable capacity of self-financing household’s needs. Therefore, it is within expectation that INCOME has a negative effect on the demand for microcredit. The same result was also found in Barslund and Tarp (2008).

On the other hand, household expenditure per adult equivalent (EXPPC) is included to measure a household’s potential financial need for microcredit due to increased expenditure and unexpected external shocks such as buying gifts and giving donations to churches. Inclusion of estimated INCOME and estimated EXPPC simultaneously does not impose the multicollinearity problem, since the coefficient of correlation between estimated INCOME and estimated EXPPC is as low as 0.3496, a level similar to that between actual income and expenditure. Estimated expenditure per adult equivalent is found to be positively associated with access to microcredit, with one percent increase in EXPPC increasing the probability of microcredit accessibility by 63 percentage points. This indicates that given other factors, particularly household financial status, remain constant among households, microcredit accessibility to a great extent is for the reason of smoothing consumption and external shocks. The same findings and arguments are respectively seen in Okurut et al. (2005) and Barslund and Tarp (2008).

On household members’ composition, it is found that number of children (CHILDREN) is positively associated with the household’s access to microcredit. This is reasonable because children’s education is an important expense in Fiji and some poor households need to borrow small loans to pay tuition fees. Our analysis shows that one additional child in the household would increase the household’s probability of borrowing MFI loans by 8 percentage points.

Moreover, it is found that geographical location also contributes to a household’s access to microcredit. It is found that rural households are more likely to become beneficiaries
of microfinance institutions’ small loans. It is found that, given other factors remain the
same, a rural household’s probability of borrowing MFI loans is 15 percentage points
higher than that of a urban household. Interestingly, rural households’ difficulty in
obtaining loans from the formal financial sector and other informal sources is the main
contributor for the difference in microcredit accessibility between rural and urban
households.

4.6.1.3 Predicted Probabilities of Borrowing MFI Loans

With the application of Equation (4.3), the probability of a MFI member being a
microcredit beneficiary, that is, Pr (BORROWER = 1), is predicted for each individual
in the sample. Predicted probability by group is reported in Table 4-4.

<table>
<thead>
<tr>
<th>Groups of MFI Members</th>
<th>All Members</th>
<th>Non-Borrowers</th>
<th>Borrowers</th>
<th>Borrowers of Productive Loan</th>
<th>Borrowers of Consumption Loan</th>
</tr>
</thead>
<tbody>
<tr>
<td>pr(BORROWER = 1)</td>
<td>0.517</td>
<td>0.490</td>
<td>0.541</td>
<td>0.552</td>
<td>0.505</td>
</tr>
</tbody>
</table>

The average predicted probability for the whole sample of MFI members is 0.517,
slightly higher than the benchmark of 0.5, suggesting in general that MFI members are
slightly more inclined to borrow micro loans than not to borrow. By group, non-
borrowers (that is, MFI savers only) are unlikely to be microcredit beneficiaries since
their average predicted probability of 0.490 is less than the benchmark probability of
0.5, while borrowers have an average predicted probability of 0.541, among whom
productive loan borrowers have an average predicted probability of 0.552 and
consumption loan borrowers have a predicted probability of 0.505.

It is worth noting that the gap of likelihood between borrowers and non-borrowers is not
significant, which is contributed by the relatively homogenous characteristics of MFI
members, including borrowers and non-borrowers. Moreover, the predicted probability
for the group of non-borrowers is close to the benchmark probability of 0.5, suggesting
it is possible for non-borrowers to become microcredit beneficiaries. This finding is
consistent with our expectation that non-borrowers have similar demand for microcredit as borrowers.

Another interesting finding was that the consumption loan borrowers’ average predicted probability marginally equals the benchmark probability of 0.5, suggesting that although poor families are likely to be in shortage of cash, they do not definitely resort to MFIs for small loans, provided there is an availability of alternative loan sources such as relatives, friends and neighbors. Although the productive loan borrowers’ average predicted probability is highest among all groups, it is only slightly higher than the benchmark probability.

4.6.2 Determinants of Microcredit Size

Having identified the factors contributing to access to MFI loans and probabilities of individuals being microcredit beneficiaries in the preceding section, we then aim to further find out determinants of cumulative microfinance loan size which has non-zero values for borrower observations whereas a ‘zero’ for non-borrower observations. However, it is not appropriate to read non-borrowers’ ‘zero’ cumulative loans as zero, since, as discussed in the above context, mere savers who haven’t borrowed loans indeed have the need and potential to become microfinance loans’ beneficiaries, either for productive or consumption purposes. This is evidenced by the empirical finding in the preceding section that non-borrowers’ average predicted probability is not much different from that of borrowers. Treating non-borrowers’ cumulative loan amounts literally as zero would artificially eliminate the heterogeneous characteristics among non-borrowers. When the MFI cumulative loan amounts are assessed using the whole sample, including borrowers and non-borrowers, it may lead to the censored problem and therefore, the artificial sample selection bias. Hence, the Heckman selection model is adopted to correct sample selection bias if there is any. The Heckman two-stage estimation procedure yields regression results as shown in Table 4-5.

<table>
<thead>
<tr>
<th>Table 4-5: Determinants of MFI loan size: regression with sample selection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First step (selection):</strong></td>
</tr>
<tr>
<td>Dependent variable: BORROWER</td>
</tr>
<tr>
<td><strong>Second step:</strong></td>
</tr>
<tr>
<td>Dependent variable: Cumulative Loan Size</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Explanatory Variable</th>
<th>Coefficient</th>
<th>z-stat</th>
<th>Coefficient</th>
<th>z-stat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-10.36</td>
<td>-7.55</td>
<td>-16.01</td>
<td>-6.67</td>
</tr>
<tr>
<td>TER_SP</td>
<td>-0.49</td>
<td>-1.69</td>
<td>-0.57</td>
<td>-2.52</td>
</tr>
<tr>
<td>AGESQ_SP</td>
<td></td>
<td></td>
<td>-0.0004</td>
<td>-5.54</td>
</tr>
<tr>
<td>SEC</td>
<td>-0.69</td>
<td></td>
<td>-2.94</td>
<td></td>
</tr>
<tr>
<td>TER</td>
<td></td>
<td></td>
<td>-1.39</td>
<td>-3.82</td>
</tr>
<tr>
<td>ln(INCOME_hat)</td>
<td>3.53</td>
<td>10.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(EXPPC_hat)</td>
<td>0.91</td>
<td>5.53</td>
<td>-1.08</td>
<td>-6.24</td>
</tr>
<tr>
<td>NUNEMP_H</td>
<td>0.52</td>
<td>2.48</td>
<td>-0.27</td>
<td>-2.02</td>
</tr>
<tr>
<td>CHILDREN</td>
<td>0.13</td>
<td>2.41</td>
<td>-0.19</td>
<td>-3.94</td>
</tr>
<tr>
<td>EARNERS</td>
<td></td>
<td></td>
<td>-0.55</td>
<td>-4.78</td>
</tr>
<tr>
<td>ITAUKEI</td>
<td>0.46</td>
<td>1.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(TRANSFER)</td>
<td></td>
<td></td>
<td>-0.04</td>
<td>-2.17</td>
</tr>
<tr>
<td>ln(SAVINGS)</td>
<td>0.75</td>
<td>9.58</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Inverse Mills Ratio

\[ \rho = 0.299 \]
\[ \sigma = 0.845 \]
\[ \lambda = 0.253, 1.75 \]

\[ n = 329 \]
Censored \( n = 159 \)
Uncensored \( n = 170 \)
Wald \( \chi^2(11) = 140.21 \) \( p = 0.000 \)

As shown in Table 4-5, in the first stage, namely the selection regression, where the dependent variable is a binary variable BORROWER, SAVINGS is used as the instrumental variable to distinguish borrowers from non-borrowers. SAVINGS is found to be a good instrumental variable, because it turns out as a significant variable with positive sign in the first stage, but insignificant in the second stage of the Heckman sample section procedure. This suggests that saving size is used as a short-listing tool to screen MFI members with low savings from being MFI loan beneficiaries.

Apart from savings, some control factors, which are used in the second stage, are also found significant in the first stage. For instance, spouse's tertiary education is found to be an important factor that reduces a household’s likelihood of becoming a microcredit borrower. This is reasonable since spouses with good education background are likely to
have a stable job and hence it is less likely for the household to borrow microloans. Other control factors which are found significant in the first stage include household expenditure level, household head’s nearly unemployment status and number of children, which are respectively positively associated with the likelihood of being borrowers due to the demand for consumption loans.

The estimated coefficient $\hat{\lambda}$ on the IMR has a positive sign and is significant at the 10 percent level. This, together with the estimated rho of 0.26, suggests that correlation between the errors in the probit model equation and the reduced-form equation is significant. This further indicates that the selection bias problem more or less exists in the current study. Therefore, the Heckman sample selection model should be adopted in order to correct the selection bias arising from using the censored dependent variable lnCLOAN.

Heckman’s second stage estimation suggests that, the MFI loan amount is associated with the interviewee and spouse’s education level, spouse’s age, household income, household expenditure per adult equivalent, household head’s employment status, household member structure, ethnicity and amount of transfers. Specifically, given other factors remain unchanged, spouse’s tertiary education reduces the loan amount by 0.57 percent, and the interviewee’s secondary education and tertiary education reduces loan amounts by 0.69 percent and 1.39 percent respectively. Furthermore, spouse’s age has a quadratic impact on loan amount, and the estimated coefficient suggests that loan amount is reduced by 0.0004 percent upon per additional squared year.

The endogenous effect of household income is found significant with a positive contribution towards loan size. It is found that given other factors remain unchanged, one percent increase in household income is associated with a 3.53 percent increase in the loan amount. This finding is consistent with what is claimed by a number of studies such as Hulme et al. (1996), Rahman (1998), MkNelly and Stack (1998), Cohen and Sebstad (1999), Morduch (1999), Barslund and Tarp (2008) and Onyeagocha (2012).

The positive impact of income on loan size does not conflict with the negative impact of income on loan accessibility, which was identified in the analysis of microcredit
accessibility. The negative impact of household income on accessibility, which is consistent with what is found in Barslund and Tarp (2008), is due to the fact that better-off households are able to manage productive and/or consumption needs without resorting to MFI microloans. However, once a household is eligible for MFI loans and becomes a MFI loan beneficiary, loan size is positively associated with household income. This is because MFIs may restrict the access of poor borrowers to larger loans (Hulme et al., 1996; Rahman, 1998), poor households are reluctant to incur debt (McNelly and Stack, 1998), poor borrowers may drop out of programmes which insist on progressive increases in loan size (Cohen and Sebstad, 1999), and on top of these, productive loan borrowers would continue borrowing microloans to expand micro-business as a result of making profit out of micro-business.

Another endogenous variable, expenditure per adult equivalent EXPPC, is negatively associated with loan size. The magnitude suggests that one percent increase in EXPPC reduces the microloan amount by 1.08 percent. This, together with expenditure’s positive impact on loan accessibility which was found in the analysis of microcredit accessibility, suggests that although higher expenditure increases the likelihood of accessing microloan due to demand for smoothing consumption, loan borrowers are concerned about the cost of borrowing microloans for consumption purposes and thus, households with higher expenditure do restrict themselves from resorting to MFIs. The negative impact of expenditure on loan size may also be due to the fact that consumption loan borrowers use microloans for urgent consumption uses only, which also explains the finding that only 41 out of 171 loan borrowers are consumption loan borrowers. This finding, together with the fact that the majority of borrowers use at least part of microloans for productive purposes, in turn implies that households which are engaged in micro-business under the co-operation scheme are able to finance their household expenditure rather than relying on microloans to soothe consumption and finance shocks. This is therefore taken as the evidence of MFIs’ success towards improving living standards of low income families in Fiji.

Household head’s nearly unemployment status and number of children, both of which are factors that increase household expenditure, are found to negatively associate with
loan size. Number of earners also contributes to reduce the cumulative microloan amount due to the favorable reason that it broadens household’s income earning sources and hence reduces household’s dependency on microloans. Amount of transfer that household receives also soothes household’s dependency on microloans. The iTaukei is found to have a higher demand for microloans than Indo-Fijians. Specifically, household head’s nearly unemployment status reduces cumulative loan size by 0.27 percent, given other factors remain unchanged. Similarly, one additional child reduces the cumulative loan amount by 0.19 percent; one additional earner reduces the cumulative loan amount by 0.55 percent; one percent increase in annual transfers reduces the cumulative loan amount by 0.04 percent; while iTaukei borrowers are on average associated with 0.46 percent more cumulative loans than Indo-Fijian borrowers.

4.7 CONCLUSIONS

This study investigated the demand for microfinance institutions’ loans. The analysis was conducted in two parts, investigating microcredit accessibility and microcredit size respectively, with efforts on controlling sample selection effects and endogenous effects.

To summarize empirical findings, age of spouse (mainly refers to male since most interviewees were females) had a quadratic impact on both clients microcredit accessibility and cumulative loan amount; household income had a negative effect on clients access to microcredit, while it was positively associated with cumulative loan size; household expenditure per adult equivalent, household head’s nearly unemployment status and number of children were respectively positively associated with clients access to microcredit, while they respectively had negative impacts on cumulative loan amount. In addition, with respect to explaining accessibility, urban microfinance clients were less likely to borrow from MFIs than clients in rural areas. In terms of explaining cumulative loan amount, three additional socio-economic factors, namely education (of both spouse and interviewee), number of earners and amount of transfers that household received, were found effective in reducing clients’ dependency on microloans.
CHAPTER FIVE: MICROCREDIT’S IMPACT ON POVERTY REDUCTION

5.1 INTRODUCTION

The underlying objective of the microfinance institutions (MFIs) is to increase income of the poor households through the provision of financial services such as saving, credit, insurance together with basic business training. It is assumed that access to financial services will allow poor households to diversify their income sources through self-employment opportunities (such as canteen, fishing, weaving, sewing, handicraft, baking) and investment. An increase in income will further assist accumulation of assets and ultimately allow the households to break out of the poverty cycle and improve their welfare. The unique intervention of the microfinance is seen as an alternative to subsidise development financial schemes such as the rural and agricultural financial schemes which were often highly politically motivated, involved high costs, characterized by corrupt practices, default, misaligned incentives and were mostly focused in urban areas (Imai et al., 2010).

While advocates of microfinance believe that microcredit is important for addressing poverty and improving the welfare of the poor household, others either argue that microcredit has no impact on poverty or claim that it actually diminishes the welfare of the recipient. Among the critics, some believe that microfinance fails to reach the poorest of the poor. Studies such as Hashemi and Rosenberg (2006) and Karnani (2007) argue that the destitute poor may hesitate to borrow credit due to fear of not meeting repayments or high interest rates attached with credit. Lack of ability to make regular repayments and high interest rates can potentially trap poor households in huge debts, a situation which many households like to avoid. However, high interest rates are essential for the sustainability of MFIs. Therefore, it becomes an unviable or unavailable service for the poorest. Karnani (2007) further argues that even if the poor borrow, they are more likely to invest their credit in less risky business, which is likely to give them limited returns.

The critics of microfinance also argue that poor clients are likely to use credit for non-intended purposes such as paying medical expenses and luxury items (e.g. alcohol, tobacco and entertainment) which are unlikely to give any returns. Hence,
such clients will have great difficulty in meeting the repayments and they may take further loans or may simply sell off their fixed assets like land to pay off their credit. This is likely to diminish the welfare of households. Similarly, failure or poor performance of microfinance income projects will increase the burden of households.

While voluminous empirical literature examining poverty reduction impact of microcredit failed to produce any conclusive evidence, the analyses show that impact is mainly context specific. The nature of microcredit’s poverty reduction impact is influenced by factors such as geography, culture, business skills, attitude towards debt and availability of the market. The majority of empirical studies have been conducted in the Asian region, while some have been carried out in Africa, Latin America and other regions; there are no detailed studies on any of the South Pacific Island countries.

Despite one of the leading economies in the South Pacific, Fiji’s economy has performed poorly in recent years and poverty has increased. Microfinance in Fiji was introduced in the late 1990’s as a mechanism to address poverty by providing income generating activities. To date there are ten MFIs serving the Fijian population. These MFIs provide credit facility to poor households for income generating activities (such as canteen business, sewing business, handcraft, fishing, poultry, piggeries, bee farming, transport business, market vendor, and bakery) as well as for activities such as education, funerals, weddings, and home improvement. Apart from credit facility, MFIs in Fiji also provide basic business training to equip them with relevant production and managerial skills. This function makes microfinance institutions act beyond the scope of merely being financial service providers, and serve more like a cooperation unit targeting at eliminating poverty. With MFIs’ services and supports, poor households are able to turn their traditional skills into products.

However, there have been no detailed studies evaluating microcredit’s impact on this matter. This study attempts to examine microcredit’s poverty reduction impact on microfinance clients using household data in Fiji. To control microfinance’s endogenous effect, two-stage probit least squares (TSPLS) estimator is used to examine microcredit accessibility’s impact on poverty reduction, and a three-stage least squares (3SLS) estimator is further used to assess productive loans’ impact.
The rest of the study is organized as follows: Section 5.2 reviews the literature, Section 5.3 outlines model specifications and estimation methodologies, Section 5.4 discusses empirical findings on microcredit’s impact on poverty reduction, and Section 5.5 draws conclusions.

5.2 LITERATURE REVIEW

Poverty reduction impacts of microcredit were surveyed in the literature through investigating microcredit’s impact on household consumption, asset accumulation and household income. There are two streams of views based on empirical observations.


In contrast, the second stream of studies has a negative view about microcredit’s role in poverty reduction. For instance, Morduch (1998) did not find any positive impact of microcredit on consumption in Bangladesh, nor did Chandoevwit and Ashakul (2008) in case study of Thailand. In addition, Augsburg et al. (2012) found that access to microcredit had a negative impact on consumption in Bosnia. In terms of microcredit’s impacts on household income, no evidence of positive impact was found in studies such as Amin et al. (2003) in Bangladesh, Matul and Tsilikounas (2004) in Tuzla (Bosnia), Chandoevwit and Ashakul (2008) in Thailand, Karlan and Zinman (2009) in the Philippines, and Karlan and Valdivia (2011) in Peru.

In summary, the evidence shows that impacts of microcredit are highly context
specific. Difference in conclusions on poverty reduction effects of microcredit could be partly due to geographical location of microfinance projects and other conditions, and partly due to different methodologies used in different studies.

5.3 MODELS AND ESTIMATION METHODOLOGIES

The current study uses household income to measure poverty. There are three reasons of using income rather than consumption (or alternatively, expenditure) and assets in the case study of Fiji. First, subsistence agriculture and farming are common in Fiji. This makes consumption expenditure difficult to measure. Second, since most of land in Fiji is communally owned, it is difficult to evaluate individual households’ ownership of land. As a contrast, household income, particularly regular income, more accurately reflects household’s development sustainability. Therefore, improvement in household income is taken as the indicator of poverty reduction.

The linkage between microcredit and household income could be bidirectional. On one hand, household income’s significant impact on microcredit accessibility and size were identified in a number of studies such as Hulme et al. (1996), Rahman (1997), MkNelly and Stack (1998), Cohen and Sebstad (1999), Morduch (1999), Manrique and Ojah (2004) and Okurut et al. (2005). And on the other hand, microcredit’s impact on household income is also widely survey in studies such as Karlan and Zinman (2009), Imai et al. (2010), Chan and Ghani (2011), Al-Mamun et al. (2012) and Boonperm et al. (2013). Therefore, an endogeneity problem may arise when one investigates the relationship between microcredit and household income, which however received limited attention in the existing literature.

Empirical analysis in this study is composed of two parts: assessing microcredit accessibility’s poverty reduction impact and assessing microcredit size’s poverty reduction impact. To take heed of the potential endogeneity problem, which is imposed to the core explanatory variable of interest, namely loan accessibility in the first part of the quantitative analysis and loan size in the second part, two-stage probit least squares (TSPLS) estimator and two-stage least squares (TSLS) estimator will be used respectively in two parts.
5.3.1 Microcredit Accessibility’s Impact on Income: the Two-stage Probit Least Squares Estimator

An instrumental variable estimator to be used in this part should be able to constrain predicted BORROWER values from the first stage of regression ranging between the interval \([0, 1]\), while there is no limitation on the range of predicted household income values. The two-stage probit least squares estimator implements all the necessary procedures for obtaining consistent estimates for the coefficients as well as their corrected standard errors to address endogenous effect if there is any. This two-stage estimation method, described in Maddala (1983), is applied to simultaneous equations models where the first endogenous variable is continuous and the other endogenous variable is dichotomous. The simultaneous equations model for the current study is defined as follows:

\[
\ln INCOME_i = \phi BORROWER_i + \sum_{m=1}^{k} a_m X_{m,i} + u_i \\
BORROWER_i = \phi \ln INCOME_i + \sum_{n=1}^{k} \beta_n X_{n,i} + v_i
\]  

(5.1a)  

(5.1b)

where \(\ln INCOME\) is natural logarithm of household income, \(BORROWER\) is the binary variable with value 1 for microfinance loan beneficiary and 0 otherwise, and \(X\) is a matrix of other control factors including socio-economic variables and the intercept term. The subscript \(i\) denotes the \(i\)th individual, \(m\) and \(n\) are the \(m\)th and \(n\)th control factors which are identified as important in the two equations. The two error terms \(u\) and \(v\) are error terms of the two simultaneous equations respectively, and they are assumed to be uncorrelated to each other, that is, \(\text{cov}(u_i, v_i) = 0\).

The assumption of no correlation between \(u_i\) and \(v_i\) is important, since it ensures the system to be estimated in a way that addresses endogenous effect, which arises as follows. Equation (5.1a) associates \(\ln INCOME\) associated with \(u_i\), while Equation (5.1b) associates \(BORROWER\) with \(\ln INCOME\); these lead to correlation between \(BORROWER\) and \(u_i\) in (5.1a), provided both \(\hat{\phi}\) and \(\hat{\phi}\) are respectively significant in corresponding equations. Similarly, there would be correlation between \(\ln INCOME\) and \(v_i\) in Equation (5.1b). Estimating Equations (5.1a) and (5.1b) individually would fail to control randomness of \(BORROWER\) in (5.1a) and \(\ln INCOME\) in (5.1b).
Instead one should adopt an instrumental variables (IV) estimator (also referred to as two-stage least squares estimator) which uses valid instruments to remove randomness of problematic variables and yield consistent estimates. Given the nature of the simultaneous equations (5.1a) and (5.1b) where the dependent variable in the first equation is a continuous variable while the dependent variable in the second equation is a binary variable, these two questions will be estimated by using the two-stage probit least squares (TSPLS) estimator.

5.3.2 **Productive Loan Size’s Impact: the Two-stage Least Squares Estimator**

The second part of impact analysis aims to assess loan size’s impact on household income. Since consumption loans are borrowed for the purpose to meet urgent or occasional needs of unexpected household expenditure, they are not expected to have a positive impact on increasing household income. Therefore, it is more reasonable to look at the poverty reduction effect of loans which are used for productive purposes. Examination of productive loans’ impact within a more homogeneous subsample, which is composed of borrowers who have been borrowing loans from MFIs and have been using at least part of loans for income generating activities, will also improve estimation efficiency and reduce estimation bias.

As evidenced in studies such as Hulme et al. (1996), Rahman (1998), McKnelly and Stack (1998), Cohen and Sebstad (1999), Morduch (1999) and Okurut et al. (2005)\(^{12}\), household income/expenditure is an important factor in explaining loan size. Therefore, the core control factor of interest, namely cumulative loan amount (denoted by CLOAN) is likely to be endogenous in explaining household income. Accordingly, a simultaneous equations system is set up to assess cumulative loans’ impact on poverty reduction within the group of productive loan borrowers:

\[
\ln INCOME_i = \beta \ln CLOAN_i + \sum_{m=1}^{r} \xi_{m} X_{m,i} + \epsilon_i
\]  

\[ (5.2a) \]

\[
\ln CLOAN_i = \omega \ln INCOME_i + \sum_{n=1}^{s} \zeta_{n} X_{n,i} + e_i
\]  

\[ (5.2b) \]

---

\(^{12}\) Okurut et al. (2005) found positive impact of household expenditure on loan size, while the other studies found positive impact of household income on loan size, which was also evidenced in the preceding chapter analyzing determinants of microcredit accessibility and size.
In the above equation \( \ln \text{INCOME} \) is natural logarithm of household income and \( \ln \text{CLOAN} \) is natural logarithm of cumulative productive loan. \( X \) is a matrix of other factors including socio-economic variables and the intercept term. The subscript \( i \) denotes the \( i \)th individual, \( m \) and \( n \) are \( m \)th and \( n \)th control factors respectively in the two equations. The two error terms \( e \) and \( e_i \) are error terms of the two equations respectively, and they are assumed to be uncorrelated to each other, that is, \( \text{cov}(e, e_i) = 0 \).

Similar to the system of Equations (5.1a) and (5.1b), the assumption of no correlation between \( e_i \) and \( e \) is important in system of Equations (5.2a) and (5.2b) in order to address endogeneity effects. Endogeneity problem may arise in system (5.2) as follows: \( \ln \text{INCOME} \) is associated with \( e_i \) in Equation (5.2a) while Equation (5.2b) associates \( \ln \text{CLOAN} \) with \( \ln \text{INCOME} \), leading to correlation between \( \ln \text{CLOAN} \) and \( e_i \) in (5.2a), provided both \( \hat{e} \) and \( \hat{e}_i \) are respectively significant in corresponding equations. Similarly, there could be correlation between \( \ln \text{INCOME} \) and \( e_i \) in Equation (5.2b). Estimating Equations (5.2a) and (5.2b) individually would fail to control randomness of \( \ln \text{CLOAN} \) in (5.2a) and \( \ln \text{INCOME} \) in (5.2b). Therefore, if endogeneity exists in the endogenous equations model (5.2), an IV estimator should be employed with valid instruments to remove randomness of problematic variables and yield consistent estimates.

Since in the system of (5.2) the dependent variable in one equation is the endogenous explanatory variable of the other equation, this system can be consistently estimated by the three-stage least squares (3SLS) estimator, which is applied to simultaneous equations systems with dependent variable in each equation being a continuous variable. Under 3SLS estimation, the dependent variable of a structural equation will have its usual interpretation as the left-hand-side variable in an equation with an associated disturbance term. All dependent variables are explicitly taken to be endogenous to the system and are treated as correlated with the disturbances in the system's equations, while all other variables in the system are treated as exogenous to the system and uncorrelated with the disturbances. Exogenous variables are further taken as internal instruments for endogenous variables. Three-stage estimation is based on an iterated generalized least squares (IGLS) estimation procedure, and allows estimation to iterate over the estimated disturbance covariance matrix and
parameter estimates until parameter estimates converge to actual but unknown population parameters.

5.3.3 Tests for Instrument Strength, Instrument Validity and Endogeneity

Testing for the endogeneity problem and correcting for it are important in quantitative analyses because the usual least squares estimators in the presence of endogeneity problem will result in biased and inconsistent estimates. Moment-based instrumental variables (IVs) estimation should be applied instead, if endogeneity is detected.

IVs estimation procedure is essentially two steps of least squares regression. Suppose in an equation

\[ Y_i = \pi_0 + \sum_{h=1}^{K} \pi_{h,k} X_{h,k} + w_i \]  

(5.3)

where \( X \) is a matrix of control factors including \( X_K \) which is assumed to be endogenous, i.e. \( X_K \) is correlated with the error term \( w_i \). The first stage least squares regression will have \( X_K \) as the dependent variable, while all exogenous control factors \( X_{h,h\neq K} \) as internal instrumental variables. Efficient IV estimation also requires valid external instrumental variables (denoted by \( Z_s \)) which are not included in Equation (5.3). The first stage of least squares estimation is based on the following equation where strength of IVs can be tested:

\[ X_{K,j} = \gamma_0 + \sum_{j=1}^{K} \gamma_j X_{j,j} + \sum_{l=1}^{L} \theta_l Z_{l,j} + \mu_i \]  

(5.4)

The first stage produces a predicted series of \( X_K, \hat{X}_K \). The second stage of least squares estimation of Equation (5.3) with \( \hat{X}_K \) replacing \( X_K \) yields \( w_i^* \) which is now uncorrelated with regressors including \( \hat{X}_K \). The second stage regression will yield unbiased estimates given the other assumptions of a classical linear regression model are met.

There are in total three issues that need to be taken heed of in the IV estimation procedure. Firstly, in order to consistently estimate parameters, the number of external instrumental variables, \( L \), should be no less than the number of endogenous
explanatory variables, $B$. When $L = B$, there are just enough IVs to conduct the IV estimation, and parameters are just identified, i.e. parameters can be just consistently estimated; when $L > B$, the model is said to be overidentified, i.e. we have more instrumental variables than are necessary for the IV estimation.

Secondly, the choice of an instrumental variable $Z_l$ should be made based on the fact that it makes IV estimators more consistent and efficient than least squares estimators. This requires that $Z_l$ should be a strong instrument, namely, it is strongly correlated with $X_K$ but not directly correlated with the dependent variable of the equation. Otherwise ‘the amount of bias in the instrumental variables estimator can become large’ (Hill et al. 2011, p435). Strength of instrumental variables can be assessed in the first stage regression by testing whether external instrumental variables $Z_s$ jointly have significant effect on $X_K$, which can be decided by an F or Chi-sq test.

Furthermore, external instrumental variable $Z_l$ should be valid, that is, $Z_l$ should not correlate with $w_i$. Hill et al. (2011) argue that ‘a valid instrument must be uncorrelated with the regression error term. If this condition fails then the resulting moment condition is invalid and the instrumental variable estimator will not be consistent’ (p421). They further argue that only ‘in the case in which we have $L > B$ instruments available, we can test the validity of the $L – B$ extra, or surplus, moment conditions’ (p421). Validity of instrumental variables can be tested as follows: (1) Use the instrumental variables estimator to regress the dependent variable of interest on all $X$s and all hypothesized $Z$s, and obtain predicted $w_i$; (2) Regress predicted $w_i$ on all $X$s and all hypothesized $Z$s, and obtain the $NR^2$ statistic. If all surplus moment conditions (that is, instrumental variables) are valid, test statistics follow Chi-squared distribution with $L – B$ degrees of freedom, that is, $NR^2 \sim \chi^2_{(L-B)}$. This test is called the Sargan test, which is valid if predicted $w_i$ are homoskedastic. In the presence of heteroskedastic predicted $w_i$, the more general test Hansen’s J-test should be adopted. Under the assumption of conditional homoskedasticity, Sargan’s statistic becomes Hansen’s J statistic (Hayashi 2000, p227).

The last concern in the IV estimation is how to test whether an explanatory variable $X_K$ is endogenous. Tests for this purpose are under the null that $X_K$ is exogenous, i.e. $H_0: X_K$ is uncorrelated with $w_i$, $\text{cov}(X_K, w_i) = 0$. The logic of the tests is to see
whether the estimated residual from Equation (5.4), $\hat{\mu}_i$, is significant in the following auxiliary equation:

$$Y_i = \pi_0 + \sum_{k=1}^{K} \pi_{k} X_{k,i} + \lambda \hat{\mu}_i + w_i \tag{5.5}$$

The null of exogeneity is now equivalent to test for significance of $\hat{\mu}_i$, i.e. $H_0: \lambda = 0$. This can be tested using the $t$ test in Equation (5.5). In a general model where more than one variable is tested for endogeneity, an $F$ test can be used to test for the null of joint significance of the coefficients on the included residuals. There are several versions of the test which are generally referred to as Hausman tests in the literature.

### 5.4 EMPIRICAL FINDINGS

As discussed in the above context, assessment of MFIs’ impact on poverty reduction is conducted through two parts, namely, assessing microloan accessibility’s impact in the first part and assessing loan size’s impact in the second part. Evidence of poverty reduction effect of MFIs is observed if, (1) households borrowing microloans have higher income than households without borrowing microloans, given other socio-economic factors remain fixed for all households under investigation; or (2) households with larger cumulative productive loan amount have higher income than households with smaller cumulative productive loan amount, given other factors remain the same for all households.

Instrumental variables estimators are employed in both parts to correct endogeneity bias of microcredit accessibility and size. Identifying appropriate instrumental variables is a key issue in addressing endogeneity issues. Based on empirical findings found in Chapter 4 which explained determinants of microcredit accessibility and size, microcredit accessibility is explained jointly by age of interviewee’s spouse (mainly males, same throughout the context), household head’s employment status, household income, household expenditure, number of children, and urban or rural location of household; while loan size is explained jointly by tertiary education of spouse, age of spouse, interviewee’s secondary and tertiary education, household income, household expenditure, household head’s employment status, number of children, number of earners, ethnicity, and amount of transfer that household receive.
per year. This shall provide important information on valid instrumental variables that can be considered in the current study to address MFIs’ endogenous effect in poverty reduction. Note that since the estimation procedure in Chapter 4 was based on reduced forms while the current chapter’s analyses are based on estimating simultaneous equations systems which are recursive structures, valid instrumental variables to be used in the current chapter are not limited to the above stated socio-economic factors. In the following two sections, identifying valid instruments and testing for endogeneity of loan accessibility/size are carefully addressed.

5.4.1 Loan Accessibility’s Impact

Since microloan accessibility is a binary variable while household income is a continuous variable, the simultaneous equations system presented in Equation (5.1) will be estimated by the two-stage probit least squares (TSPLS) estimator, which implements all the necessary procedures for obtaining consistent estimates for the coefficients as well as their corrected standard errors.

5.4.1.1 Feasibility and Validity of the Simultaneous Equations Model

The TSPLS estimator only allows a system to be composed of one continuous dependent variable equation and the other binary dependent variable equation. In the analysis to assess the system presented in Equation (5.1) we find household expenditure remains a relevant factor in explaining loan accessibility, while from analyses in Chapter 4 we understand that household expenditure is an endogenous variable which is affected by microloans. As a solution, expected household expenditure, which is calculated based on estimated relationship presented in Table 4-3 in Chapter 4, is used to replace the actual expenditure series rather than including it in the system as another dependent variable. This is reasonable since expenditure may lead to demand for consumption loans while it is less likely to affect in household income. Meanwhile, expenditure can be explained by household income, but is less likely to be explained by demand for loans, which shows the simultaneity of household expenditure in the system is less strong than household income and demand for loan. This is the reason why Equation (5.1) was set up by using household income and loan accessibility as dependent variables in the two equations system.
Our analysis in this study finds that while, in the simultaneous equations system, household income is well explained by spouse and interviewee’s education, interviewee’s age, transfer that household receives per year, number of earners and urban or rural area where household is located, loan accessibility at the same time is to the utmost jointly explained by expected household expenditure ($\ln \hat{EXPPC}$), whether household has access to national electricity (henceforth ‘ELEC’), and number of members (MEMBERS). Note the slight difference in two sets of factors respectively explain income and loan accessibility between those which were identified in Chapter 4 and those which are identified in the current chapter. The difference originates from different estimation procedures of IV estimators adopted respectively in the two chapters, with household income being instrumented by an ordinary least squares estimator in the first stage of instrumental variables probit estimation procedure to explain loan accessibility which is the issue of interest in Chapter 4, while income which is the issue of interest in this chapter being investigated simultaneously together with loan accessibility through an interaction procedure. Also, the difference in estimation procedures is necessary due to the different natures of dependent variables of interest in the two chapters.

5.4.1.2 Strength of Instruments

Given the factors, namely $\ln \hat{EXPPC}$, ELEC and MEMBERS, have been identified to instrumental loan accessibility, it is important to test these three instruments’ strength in order to avoid the ‘weak instruments’ issue. Testing for strength of instrumental variables is based on Equation (5.4) where the above stated socio-economic factors are used as internal and external instrumental variables. The strength of external instruments $\ln \hat{EXPPC}$, ELEC and MEMBERS is tested by a Wald parameter test which produces an F-statistic as 12.75. Since the observed F-statistic is greater than the critical value at the 5% significance level $F_{(3,317)} = 2.60$ and even the benchmark value of 10 which is widely adopted in the empirical literature, the null hypothesis of weak instruments is rejected. Therefore, there is lack of evidence that $\ln \hat{EXPPC}$, ELEC and MEMBERS are weak instruments.
5.4.1.3 Validity of Instruments

It is also important to test instrument validity to avoid over-stating the endogeneity issue. An instrument is valid when it is highly relevant to the endogenous control variable but uncorrelated to the variable of interest. According to discussion on demand for loan, household expenditure is one of the important factors leading to borrowing behavior, while it does not directly contribute to increase household income; Access to electricity, which can be interpreted as household’s easy access to public infrastructure and therefore measures remoteness better than the urban/rural classification, means easier access to microfinance loans in urgent but occasional needs, while it does not directly contribute to increase household income. Similarly, number of members, which on one hand captures the demand for consumption loans to meet occasional needs of household expenditure, and on the other hand may capture demand for productive loans given availability of labor in the household, does not directly lead to increase of household income. Hence $\ln \hat{EXPPC}$, ELEC and MEMBERS seem to be valid instruments given the above grounds.

Yet, a formal test for instruments’ validity is still requested from the econometric aspect, which is conducted by using the Sargan or Hansen’s $J$-test test. In our analysis, since the instrumental variables heteroskedasiticy test yields the Pagan-Hall general test statistic of 11.606, which is less than the $\chi^2$ critical value at the 5% level $\chi^2_{(10)} = 18.307$, the null hypothesis of homoskedastic errors is not rejected. Therefore, the Sargan test is adopted, which yields a statistic $NR^2$ of 3.685. Since $L - B = 1$ in the current case, the $\chi^2$ critical value at the 5% level is $\chi^2_{(1)} = 3.841$. As the Sargan statistic is less than the critical value, we do not reject the null hypothesis that all the surplus moment conditions are valid. Hence, there is lack of evidence to suggest the included instruments $\ln \hat{EXPPC}$ and ELEC are correlated with household income regression error term. Validity of $\ln \hat{EXPPC}$, ELEC and MEMBERS as instruments is therefore evidenced.

5.4.1.4 Endogeneity of Loan Accessibility

The last concern in addressing endogeneity issue is whether the suspected variable, loan accessibility BORROWER, is endogenous in the income equation. To formally test for the null hypothesis that BORROWER is exogenous, firstly a logit or probit
estimator is used to assess BORROWER on the above stated control factors including those used to explain household income and those used to explain loan accessibility, that is, Equation (5.4). Secondly, predict and save the error term as $\hat{\mu}_i$. Thirdly, the predicted error $\hat{\mu}_i$ is included into the household income equation to have an auxiliary income equation. Performance of $\hat{\mu}_i$ in this auxiliary income equation is taken as the evidence whether loan accessibility BORROWER is exogenous or not. Specifically, insignificance of $\hat{\mu}_i$ is in support of the null hypothesis that the problematic variable (in this case, BORROWER) is uncorrelated with $w_i$, the error term from the structural equation.

The $t$ statistic for estimated coefficient on $\hat{\mu}_i$ is $-8.04$, less than the critical value at the 5% level for 319 degrees of freedom $-1.96$. The null hypothesis of insignificance of $\hat{\mu}_i$ is rejected. The Hausman test suggests that there lacks evidence that BORROWER should be exogenous.

Note that the above tests are based on the standard two-stage least squares procedure while the regression results presented below are obtained from an iterative estimation of the simultaneous equations system.

### 5.4.1.5 Simultaneous Equations System: Results

The two-stage probit least squares estimation of the simultaneous equations system (1) yields consistent estimates. Regression results with corrected standard errors are summarized in Table 5-1. Apart from the above tests of instruments strength, instruments validity and endogeneity, these stated concerns are also confirmed by the results that all instrumental variables are highly significant in the system, that the structural parameters are able to be consistently estimated with a short recursive procedure of 3 iterations, and that both BORROWER in the household income equation and lnINCOME in the loan accessibility equation are statistically significant.
Table 5-1: Poverty reduction effect of loan accessibility

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>lnINCOME</th>
<th>BORROWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>8.105</td>
<td>-2.552</td>
</tr>
<tr>
<td>lnINCOME</td>
<td>0.403</td>
<td>-0.854</td>
</tr>
<tr>
<td>TER</td>
<td>0.342</td>
<td>0.342</td>
</tr>
<tr>
<td>TER_SP</td>
<td>0.289</td>
<td>0.289</td>
</tr>
<tr>
<td>AGE</td>
<td>0.011</td>
<td>0.011</td>
</tr>
<tr>
<td>lnTRANS</td>
<td>0.020</td>
<td>0.020</td>
</tr>
<tr>
<td>EARNERS</td>
<td>0.269</td>
<td>0.269</td>
</tr>
<tr>
<td>URBAN</td>
<td>0.214</td>
<td>0.214</td>
</tr>
<tr>
<td>lnXPPCE</td>
<td>1.398</td>
<td>1.398</td>
</tr>
<tr>
<td>MEMBERS</td>
<td>0.192</td>
<td>0.192</td>
</tr>
<tr>
<td>ELEC</td>
<td>-0.536</td>
<td>-0.536</td>
</tr>
</tbody>
</table>

Sample size: 329

F(8, 320) (p > F) / χ²(4) (p > χ²) = 29.87 (0.000) / 48.43 (0.000)

Adjusted / Pseudo R-squared = 0.4132 / 0.1063

Note: lnXPPCE is obtained from regression analysis in Chapter 4, while lnINCOME and BORROWER are obtained from estimating this simultaneous equations system.

5.4.1.6 Robustness of Estimates

The TSPLS estimator allows coefficients in the simultaneous equations system for the two variables of interest, namely household income and loan accessibility, to be simultaneously and consistently estimated with corrected standard errors. The TSPLS estimates in this chapter where poverty reduction effect is the focus of interest are highly consistent with the IVPROBIT estimates reported in Chapter 4 where demand for loan was the focus of interest.

Comparison of the two chapters’ estimation results suggests that, in explaining household income, socio-economic factors such as both interviewee and spouse’s education, interviewee’s age, transfer that household receives, number of earners, and urban location are important determinants in both analysis. Consistency is also reflected in the high similarity in magnitudes of effect, and education’s magnitudes are slightly higher in the previous chapter. With the inclusion of simultaneously estimated BORROWER variable in the current chapter’s analysis, regression of household income’s goodness of fit measured by adjusted R² increases from 0.2936 in the IVPROBIT estimation to 0.4132 in the TSPLS estimation. This, together with
The positive and highly important performance in the income equation, provides a strong evidence that loan accessibility significantly promotes household income and helps to alleviate poverty in Fiji.

In explaining loan accessibility, the following socio-economic factors are found important in both chapter’s analyses, namely, \( \ln \text{INCOME} \), \( \ln \text{EXPPC} \), household’s member composition (number of members in the current chapter, while number of children in Chapter 4), and location indicator (easy access to public infrastructure ELEC in the current chapter, while URBAN in Chapter 4). Performances of the above stated factors are also consistent in the two chapter’s analyses, with estimated coefficients on two comparable factors, namely \( \ln \text{INCOME} \) and \( \ln \text{EXPPC} \), are highly similar to respective coefficients in the two chapters. Two additional factors such as spouse’s age and household head’s employment status were also found important in the IVPROBIT model in Chapter 4, but are not significant in the current TSPLS estimation. Despite the small number of significant factors that have been identified in the current chapter, the TSPLS model specification exhibits higher overall significance of regression than the IVPROBIT model in Chapter 4, with \( \chi^2(4) \) of 48.43 in the current chapter is more significant than \( \chi^2(7) \) of 28.43 in the previous chapter. This shows that, compared to estimating the reduced form through two steps of regressions, the iterative estimation procedure enables estimates to converge more closely to population parameters and hence errors are further minimized.

Nonetheless, different estimators have been employed in the two studies because of the different focus in the second stage of regressions. Also high consistency in estimation results further confirms the validity of model specifications and robustness of estimates in both studies of poverty reduction and demand for loan.

5.4.1.7 Interpretation of Coefficients

Interpretation of results in this chapter only focuses on the household income equation for poverty reduction effect. Refer to Chapter 4 for results interpretation of loan accessibility effect. According to estimation results summarized in Table 5-1, loan accessibility BORROWER is the most significant contributor towards poverty reduction for MFIs members under study. The coefficient of 0.403 on \( \hat{\text{BORROWER}} \) suggests that, average household income of borrowers is 49.6 percent (= exp(0.403))
– 1) higher than non-borrowers’ household income, given other factors remain constant. This is within the expectation that, given more than three quarters of microloans are at least partly used for productive purposes (refer to Chapter 4 for summary statistics), income generating activities become an important source of income for households which have limited income sources.

Tertiary education of both interviewee and spouse is the second largest contributor towards increasing household income for sample observations. Given other factors are taken into consideration, average household income of interviewees with tertiary education is 40.7 percent (= exp(0.342) – 1) higher than that of interviewees without tertiary education, while spouse’s tertiary education increases household income by 33.5 percent (= exp(0.289) – 1).

Effect of number of earners on poverty reduction is also evident. The coefficient of 0.269 indicates that an additional earner on average increases household income by 30.9 percent (= exp(0.269) – 1), assuming other situations are the same among households.

As is expected, geographical location also plays an important role in poverty reduction in Fiji. The result suggests that, holding the other predictor variables at any fixed value, microfinance members located in urban area have 23.9 percent (= exp(0.214) – 1) higher household income than microfinance members located in rural area. This is consistent with lower urban poverty found based on 2008/2009 Household Income and Expenditure survey.

Another two factors which are identified by the TSPLS estimator as significant explanatory factors are transfer that household receives and interviewee’s age. The coefficient on lnTRANS of 0.02 suggests that household income increases by 0.19 percent (= 1.1^0.02 – 1) upon a 10 percent increase in transfer, given other factors remain fixed. Similarly, the coefficient on AGE of 0.011 suggests that increase of an additional year in age linearly increases household income by 1.11 percent (= exp(0.403) – 1).

The above findings on performance of control factors are within expectation, and they are significant for at least the 10 percent level.
5.4.2 Loan Size’s Impact

On top of the finding that loan accessibility has a positive impact on poverty reduction in the preceding section, we further look at the effect of loan size. Since consumption loans are used to meet unexpected household expenditure and do not directly generate income, this section’s analysis only focuses on productive loans’ effect with the sample of borrowers who use the least part of loans for income generating activities. We use the cumulative loan amount to denote loan size due to measurability of data. Since both cumulative loan size and household income are continuous variables, the simultaneous equations system (5.2a) and (5.2b) will be estimated by a three-stage least squares (3SLS) estimator, which allows an iterative procedure for the estimates to converge to population parameters.

5.4.2.1 Feasibility and Validity of the Simultaneous Equations Model

The 3SLS estimator allows a system to be composed of a number of continuous dependent variables equations. In each structural equation the dependent variable is an explanatory variable in other structural equations. All dependent variables in the system are assumed to be endogenous and the rest of the explanatory variables are treated as exogenous and used as instruments for endogenous variables in the 3SLS estimation procedure. The 3SLS estimation procedure iterates over the estimated disturbance covariance matrix and parameter estimates until the parameter estimates converge.

The system presented in Equations (5.2a) and (5.2b) is only composed of two structural equations explaining household income and cumulative loans. The third variable household expenditure lnEXPPC, which is considered in the above context and is likely to be endogenous as it can be explained by the endogenous variable household income, is not included in the system. This is due to our presumption and empirical findings in the current section that, expenditure only affects demand for consumption loans which do not incur income generating micro-business and hence do not directly induce household income to increase.\textsuperscript{13} Given the lack of impact

\textsuperscript{13} Our trial analysis, by including lnEXPPC as an additional explanatory variable in the structural lnCLOAN equation and at the same time it is the dependent variable in the third structural equation explained by lnINCOME and some other explanatory variables, finds that lnEXPPC is not significant in explain cumulative loan size, in both samples composed of all borrowers and productive loan
household expenditure on productive loans which can further enhance household income, our focus is to examine poverty reduction impact of loans, the prerequisite condition of being a structural equation that the endogenous variable should be an explanatory variable in some other structural equations is not met for lnEXPPC. Therefore, the system of Equations (5.1a) and (5.1b) composed of equations explaining household income and cumulative loan size is reasonable.

Despite the presumption that all the other explanatory variables are regarded as exogenous variables and included in the estimation procedure as instrumental variables, testing for strength and validity instruments and endogeneity of lnCLOAN in the system are conducted to provide solid statistical evidence regarding the validity and feasibility of the structural equations system (5.2).

5.4.2.2 Strength and Validity of Instruments

Our analysis the 3SLS estimator, which produces consistent results for the lnINCOME and lnCLOAN equations given the system of (5.2a) and (5.2b) is composed of the two structural equations. Strength and validity of instruments can be seen from the significance of individual explanatory variables in each regression and the overall significance of each regression. Nonetheless, instruments’ strength and validity are individually tested by a joint significance test and Sargan test in the case of homoskedasticity via a TSLS estimation procedure. Tests’ procedures were described in detail in the above context, and in this section we briefly present tests’ outcomes.

In estimating the current structural equations system to assess productive loans’ impact on poverty reduction, it is found that lnINCOME is jointly effectively explained by cumulative loans (lnCLOAN), spouse’s tertiary education (TER_SP), number of earners (EARNERS) and urban/rural location (URBAN), and simultaneously lnCLOAN is jointly effectively explained by lnINCOME, number of females (FEMALES) and convenient access to public infrastructure like electricity (ELEC). In the current section’s analysis serving to explain lnCLOAN’s impact on lnINCOME, testing for strength and validity of instruments is therefore on testing for borrowers only. Further, compared to the two structural equations system, the trial three equations systems have poorer goodness-of-fit for all structural equations regressions.
lnCLOAN’s explanatory variables, namely FEMALES and ELEC, which are used to instrument lnCLOAN in the lnINCOME equation (5.2a).

Before proceeding with statistical tests, it is understandable that more females can directly lead to more demand for productive loans because of females’ skills and their availability to be engaged in unincorporated business while, without engaging in micro-business they do not necessarily render more income to the households within the group under study. Therefore, FEMALES is believed to be a good instrument in this case. As discussed in the previous section, household’s easy access to public infrastructure like electricity, measures remoteness better than the urban/rural classification and means easier access to microfinance loans, while it does not directly contribute to increase household income if households are not engaged in micro-business with the facility of microloans.

The strength of FEMALES and ELEC as instrumental variables for lnCLOAN is statistically tested by a Wald parameter test which produces a significant F-statistic of 10.56 with p-value of 0.005. Therefore the null hypothesis of weak instruments is rejected, the conclusion that FEMALES and ELEC are strong instruments.

Coming to the statistical test for instruments’ validity, given the instrumental variables heteroskedasticity test yields the Pagan-Hall general test statistic of 3.299 with a p-value 0.654, leading to non-rejection of the null hypothesis of homoskedastic errors, therefore the Sargan test statistic is adopted with the statistic $NR^2$ of 2.174 and p-value of 0.141. Hence there is no evidence that we should reject the null hypothesis that all the surplus moment conditions are valid.

**5.4.2.3 Endogeneity of Loan Size**

The last concern in addressing the endogeneity issue is whether the suspected variable, loan size lnCLOAN, is endogenous in the income equation. According to the setting-up of a valid simultaneous equations system, endogeneity of variables can be evidenced by their significant performances in each other’s equation. Based on this standard, both lnINCOME and lnCLOAN are endogenous variables in the two structural equations system because our analysis found that lnCLOAN is significant in the lnINCOME equation and at the same time lnINCOME is significant in the lnCLOAN equation.
Statistical test of endogeneity is only imposed on testing for endogeneity of \( \ln \text{CLOAN} \) in the \( \ln \text{INCOME} \) equation to serve the purpose of assessing loan size’s impact on poverty reduction. With valid instruments, two versions of the Hausman test yield an F statistic of 9.090 with a p-value of 0.003 from the Wu-Hausman test and a \( \chi^2 \) statistic of 8.928 with a p-value of 0.003, leading to rejection of the null hypothesis that \( \ln \text{CLOAN} \) is exogenous. Therefore strong evidence is found that \( \ln \text{CLOAN} \) is endogeneous in the equation explaining household income.

Note that the above tests are based on the standard two-stage least squares procedure, while the regression results presented below, are obtained from an iterative estimation procedure.

**5.4.2.4 Simultaneous Equations System: Results**

The 3SLS estimation of the simultaneous equations system (5.2) yields consistent estimates with its capability of correct endogeneity bias. Regression results are summarized in Table 5-2. Apart from the above tests of instruments strength, instruments validity and endogeneity, these stated concerns are also confirmed by the results that all instrumental variables are highly significant in the system, that the structural parameters are able to be consistently estimated, and that both \( \ln \text{CLOAN} \) in the household income equation and \( \ln \text{INCOME} \) in the loan size equation are statistically significant.

<table>
<thead>
<tr>
<th>Table 5-2: Poverty reduction effect of loan size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent variable</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>Coeff.</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
</tr>
<tr>
<td><strong>( \ln \text{CLOAN} )</strong></td>
</tr>
<tr>
<td><strong>( \ln \text{INCOME} )</strong></td>
</tr>
<tr>
<td><strong>TER_SP</strong></td>
</tr>
<tr>
<td><strong>EARNERS</strong></td>
</tr>
<tr>
<td><strong>URBAN</strong></td>
</tr>
<tr>
<td><strong>SAMPLE SIZE</strong></td>
</tr>
<tr>
<td>( \chi^2 (p &gt; \chi^2) )</td>
</tr>
</tbody>
</table>
5.4.2.5 Bidirectional Association between Productive Loans and Income

Since income and demand for loan are two major variables in the current chapter’s study of explaining demand for loan as well as in the last chapter’s study of assessing poverty effect of microcredit, it is worth comparing regression results from both studies to check estimation robustness, particularly when the endogeneity issue is addressed in both studies.

Yet, comparison can only be made sense when the same sample is used in both studies. However, as stated in the above context, to assess productive loans’ impact on improving household income, a subsample which is composed of only productive loan borrowers is used in the current section’s analysis; while in Chapter 4, with application of the Heckman sample selection model, the study explaining loan size employed a whole sample composed of consumption loan borrowers, productive loan borrowers and non-borrowers. The whole sample is less homogeneous in terms of observations’ characteristics, while the subsample used in the current section has relatively high homogeneity. Therefore, it is expected that sets of control factors in the two studies will differ, and that magnitudes of same control factors commonly used in the two studies will also differ. This is the case as we compare results in Table 5-2 with results in Table 4-5.

Nonetheless, in the analysis of determinants of loan size in Chapter 4, we came to the major conclusion that

‘once a household is eligible for MFI loans and becomes MFI a loan beneficiary, loan size is positively associated with household income, because MFIs may restrict the access of poor borrowers to larger loans (Hulme and Mosley, 1996; Rahman, 1998), poor households are reluctant to incur debt (MkNelly and Stack, 1998), poor borrowers may drop out of programmes which insist on progressive increases in loan size (Cohen and Sebestad 1999), and on top of these productive loan borrowers would continue borrowing microloans to expand micro-business as a result of making profit out of micro-business.’\(^{14}\)

\(^{14}\) Cited from Chapter 4.
Given more than three quarters (130/171) of observed loans are on borrowers who use at least part of loans for productive purposes, the above finding from Chapter 4 regarding the relationship between loan size and income mainly reflects the relationship between productive loan and income. If a similar observation is further evidenced in the current section’s analysis which only focuses on productive loan borrowers, a solid bidirectional positive association between productive loans and household income is therefore confirmed, which is the case as we shall see from Table 5-2.

As presented in Table 5-2, on one hand, cumulative productive loan, after its endogeneity being controlled, is the largest contributor towards enhancing household income. Its coefficient of 0.582 indicates that household income would be 5.70% (=1.1^{0.582} – 1) higher for households with 10% higher cumulative productive loans, given other factors remain fixed among productive loan borrowers. On the other hand, household income, after its endogeneity being controlled, is also the largest contributor towards the increase in demand for productive loans. The coefficient of 0.749 suggests that cumulative productive loan amount would be 7.40% (=1.1^{0.749} – 1) higher for households with 10% higher income, given other factors remain the same among productive loan borrowers.

The bidirectional association between income and productive loans is reasonable, because households that benefit from income generating activities would continue borrowing microloans to expand micro-business. This provides important evidence of the success of MFIs as a medium of help to reduce poverty in Fiji.

- Determinants of Income: Other Factors

Apart from productive loan, tertiary education of spouse (mainly refers to husbands since the majority of interviewees are females) is one of few factors importantly explaining household income among productive loan borrowers. The coefficient of 0.262 of spouse’s tertiary education suggests that, given other factors are the same among observations, household income would be 29.95% (=exp(0.262) – 1) higher for households with interviewee’s husband endowed with a tertiary education.

Urban location is the third largest contributor towards alleviating poverty among productive loan borrowers. The coefficient of 0.142 indicates that urban households
have 15.26% \(=\exp(0.142) - 1\) higher household income than households located in rural areas, provided other conditions remain the same. Number of earners is the fourth important contributor, with an additional earner bringing an extra 13.09% \(=\exp(0.123) - 1\) to household income, assuming the other factors are fixed.

- **Determinants of Productive Loan: Other Factors**

Apart from household income, which indicates the need for productive loans to maintain and expand micro-business in the bidirectional association, number of females (FEMALES) and access to electricity (ELEC) are found as another two important factors in explaining demand for productive loans. FEMALES indicate availability of flexible labour for micro-business, and ELEC as a measure of convenient access to public infrastructure indicates the possibility of turning available home resources into income through income generating activities. The coefficient of 0.056 on FEMALES suggests that an additional female in the family would bring 5.76% \(=\exp(0.056) - 1\) more household income, keeping other factors the same. Similarly, easy access to public infrastructure endows households with a likelihood of earning 31.13% \(=\exp(0.271) - 1\) extra income than households without access to public infrastructure, assuming other factors remain fixed.

The above identified determinants are significant for at least the 10 percent level in the household income and productive loan size equations respectively. All included control factors are jointly highly significant in the corresponding equation, with chi-squared statistic and corresponding p-value of 92.61 and 0.000 respectively for the income equation, and 35.82 and 0.000 respectively for the productive loan equation. Furthermore, as we shall note, very few factors are significant in the simultaneous equations system, while goodness-of-fit for each structural equation is relatively high with R-squared 0.2625 for the income equation and 0.3069 for the productive loan equation. This suggests that, within the subsample composed of productive loan borrowers, who use at least part of microloans for productive purposes and have been running micro-business, high proportions of variation in household income and productive loans are individually explained by only a few factors. This further provides evidence that productive loan borrowers share a high level of homogenous characteristics.
5.5 CONCLUSIONS

This chapter investigated microcredit’s impact on poverty reduction. The analysis was conducted in two steps, investigating microcredit accessibility’s impact and productive loan’s impact respectively. A comprehensive set of socio-economic factors were considered as explanatory variables, among which endogeneity bias of loan accessibility and household expenditure were corrected in the two-stage probit least squares estimation procedure to assess loan accessibility’s impact on poverty reduction, while endogeneity bias of productive loan size was corrected in the three-stage least squares estimation procedure to assess productive loan’s impact on poverty reduction.

A positive impact of loan accessibility on household income was identified in the first step, while a bidirectional positive association between productive loan and household income was evidenced in the second. This provides important evidence that microcredit schemes in Fiji are making achievements in helping to alleviate poverty by lending microloans and providing basic training to poor households. Together with the finding in Chapter 4 that households with lower income are in greater need of access to microcredit, the above evidence further confirms that microcredit scheme in Fiji is effective in helping the poorest of the poor.
CHAPTER SIX: MICROLOANS’ IMPACT ON WOMEN EMPOWERMENT

6.1 INTRODUCTION

Since 1970’s microcredit is being widely recognized and globally accepted as a poverty alleviation mechanism by donor agencies and government (Tavanti, 2013; Hulme and Mosley, 1996; Matin et al., 2002). Microcredit is a mechanism of giving out small amounts of credit to poor and vulnerable individuals or groups, particularly women, to enable them to establish and improve their own self-employment activities and hence, improve their welfare through increased and additional source of income (Otero, 1999; Nawaz, 2010; Onyuama, 2008; Al-Mamun et al., 2012; Rahman, 2010; Holland and Wang, 2011; Hermes and Lensink, 2011). Microcredit is also seen as mechanism to promote women empowerment. Some of the channels through which microcredit initiatives contribute to the socio-economic empowerment of women can be summarized as follows. Firstly, microcredit initiatives create employment opportunity, enhance productivity, give economic security, improve nutritional and health status, and enhance the housing conditions of the rural and disadvantaged women (Hulme and Mosley, 1996). Secondly, microcredit schemes tend to have a special influence on poor and rural women in the area of social empowerment, awareness and education, self-esteem, sense of dignity, organizational and managerial skills and mobilization of collective strength (Pitt and Khandaker, 1998). These positive socio-economic changes subsequently help women to be more independent and more financially solvent in their families and localities.

In contrast, some studies argue that microcredit delimits women empowerment. Studies such as Tinker (1990), Charles Stewart Mott Foundation (1989) and Greenhalgh (1988) argue that women’s engagement in outside work may only increase her responsibility without increasing her contribution and bargaining power in the household. Moreover, studies such as Garikipati (2008) and Goetz and Gupta (1996) argue that credits are usually controlled by husbands, which further complicates women’s position in the
household and society at large. Access to microcredit can also lead to domestic violence within the household (see Rahman, 1998; Schuler et al., 1997).

While a number of studies examined the impact of microcredit on women empowerment, all of these studies are based in large developed and developing countries. To date no detailed studies have attempted to examine the impact of microcredit in small island countries in any aspect. The aim of this chapter is to empirically examine the contribution of microfinance credit on social and economic empowerment of women in a small island nation like Fiji. While some progress has been made to promote gender balance in Fiji, gender inequality is largely evidenced in all aspects of life, including employment, health, wealth accumulation, violence and politics in rural as well as urban areas. In Fiji, women make up only 38 percent of the work force and the majority are employed in low-paid sectors. Fijian women are also constrained by lack of collateral, as most of the Fijian land is communally owned, which deprives poor women of any opportunity to access formal credit for any lucrative business proposal. Due to lack of cash income and control over major household assets, women are faced with many challenges in life, including health, nutrition and violence. It is assumed that access to micro-finance credit can help to improve women empowerment in Fiji by providing them income earning opportunities which will enhance their contribution and control of assets within their household, and hence improve their bargaining power.

Data for this study is based on surveys conducted in several areas in Fiji. Information on microfinance members was provided by three major microfinance institutions in Fiji, namely Fiji Council of Social Services (FCOSS) microfinance, Western Microfinance (WM) and Northern Microfinance Cooperative (NMC). FCOSS microfinance serves the needs from the Central Division, WM caters for the Western Division and NMC provides microfinance services to the Northern Division.

Given the lack of any detailed studies addressing women empowerment in small island countries in the South Pacific, this study attempts to fill the gap in the literature, particularly on the impact of microfinance credit on women empowerment. The rest of the chapter is organized as follows: Section 6.2 presents measures of women empowerment. Section 6.3 specifies models and estimation methodology. Section 6.4
summarizes sample statistics. Section 6.5 discusses empirical findings on the impact of microfinance credit on women empowerment. And Section 6.6 draws conclusions.

6.2 MEASURING WOMEN EMPOWERMENT

There have been several attempts in the literature to define empowerment, and the authors acknowledge the degree of difficulty involved in measuring the concept. For instance, Hashemi et al. (1996, p637) stated that “developing a valid and reliable measure of empowerment was one of the most difficult tasks of this study. Behaviour and attitudes that might be used to measure women’s empowerment in one society may have no relevance in another”. They further argued that definition of empowerment is baffling due to many reasons and hence, structured surveys are limited in providing an understanding of it.

Hashemi et al. (1996) formulated an ‘empowerment index’ made up of eight indicators, such as ‘women’s economic contribution to the household; mobility; ability to make small and large purchases; ownership of productive assets; involvement in major decision making; freedom from family domination; and political awareness. They used an arbitrary selected cut off point as five, meaning that any one getting at least five out of eight is considered to be empowered or else not. Kabeer (2001) formulated a number of empowerment indicators to examine individual as well community empowerment. She used testimonies from the borrowers to formulate the indicators instead of theoretical indicators or indicators based on pre-conceived ideas. Moreover, Ackerly (1995) suggested that even though empowerment cannot be measured directly, a number of proxies can be used instead to quantify the concept of empowerment.

Similarly, Li et al. (2011) in their study to assess female empowerment, constructed 24 questions and each of the questions were used as an indicator of the empowerment. The questions were formulated on four dimensions of the female behavior; ‘control over financial resources, mobility, and ability to make independent purchase and involvement in household decision making’. Thus, Hashemi et al. (1996), Zaman (1997), Kabeer (2001) and Li et al. (2011) clearly point out that the concept of empowerment has many dimensions, ranging from individual level, to the household and the community at large.
Kabeer (2001) further demonstrates that a number of these dimensions cannot be measured.

Drawing from the literature, this study will attempt to quantify the impact of microcredit on women empowerment in Fiji. This study aims to directly measure women empowerment based on the response obtained in face-to-face interviews administered on sampled clients of three selected microfinance institutions. A range of questions reflecting different dimensions of women’s lives in the study area were incorporated in the detailed questionnaire. In particular, the survey attempts to gather information on control over assets, mobility, involvement in household decision-making, power against abuse, and general knowledge. A number of questions have been asked to quantify women’s empowerment in each of the above dimensions.

The above mentioned dimensions are control over assets, decision making, mobility, awareness and abuse. Measurement of these indices is explained below:

- Control over Assets Indices

The first set of the indicators attempt to measure women’s control over financial and physical assets. Women interviewees were asked questions such as whether they purchased assets such as cash, livestock, machinery using their own money, and whether they were allowed to keep earnings from sales of such assets. A woman is assumed to have control over the asset if she can keep earnings from sales of any asset or she buys any asset using her own money. Assets are grouped into three categories; namely financial assets, livestock, and machinery. Financial assets consist of jewelry, cash and savings. Livestock consists of poultry, ducks, goats, pigs and cows. Machinery consists of sewing machinery, weaving machinery, fish nets and boats. If a woman bought any of the livestock mentioned above using her own money and/or she was allowed to keep earnings from selling livestock, she was presumed to be empowered and thus was given a score of one. A score of zero was given to a woman interviewee otherwise. Similarly, if a woman bought any of the machinery stated above using her own money and/or she was allowed to keep the proceeds from sale of it, she was presumed to be empowered, and thus was given a score of one or else zero. Likewise, if a woman had cash or
savings, and it was not taken away from her by force, she was presumed to be empowered and thus was given a score of one or else zero otherwise. If a woman bought any jewelry using her money and/or she was allowed to keep the proceeds from sale of it, she was presumed to be empowered and she was given a score of one or else zero. Similar indices were also computed for clothes.

- **Joint Decision-making Indices**

The joint decision-making right of a woman indicates her husband’s respect towards her, it is therefore widely regarded as an important measure of a wife’s empowerment within the household. See, for example, Kabeer (1998) and Mahmood (2003). Some women may not necessarily have control of any assets described in the preceding dimension; however, they could be consulted in either purchase or sale of such household assets. Regarding joint decision-making, a woman interviewee in our survey was also asked questions such as whether her husband consulted her with respect to the sale or purchase of livestock and machinery. If the household did not own any of the above assets, it was irrelevant to ask such a question and so she was given a score of zero. A woman interviewee was also asked whether she was consulted with respect to the repair of their house. A score of one was given if she was consulted and zero otherwise.

- **Mobility Indices**

Hashemi et al. (1996) and Zaman (1998) considered mobility as an important indicator of women empowerment in addition to control over assets and joint decision-making. A woman is presumed to be empowered, if she is allowed to go to places on her own. We have considered a number of indicators for mobility such as; whether she can freely visit her parents’ home, the microfinance office, town, health centre and other places such as friends’ homes and weddings. If a woman was allowed to visit a place on her own, then she was given a score of one or else zero. We have considered each of these indicators separately so as to avoid putting subjective weights to this.

- **Abuse Indices**
Abuse is also a major form of discrimination being faced by women in Fiji (ADB, 2006; Tuiketei and Rokoduru, 2010). In this study we posed two questions on abuse such as (1) ‘you have been physically abused’ to measure physical abuse. A score of one was given if the women did not report physical abuse; and (2) ‘do you use a contraceptive’ and ‘do you make the decision of using it in consultation with your husband’. A score one was given if a woman was able to use a contraceptive independently or else zero.

- Awareness Indices (General knowledge)

A number of question were asked to the women respondents to find out females awareness on female minimum marriage age, divorce procedure, women support centres, women’s right to work, and HIV/Aids.

6.3 MODEL SPECIFICATION

Given the nature of the empowerment indicator, the impact of the microfinance loan on women empowerment is examined by the use of the logistic regression estimator. A number of studies favoured using the logic model in analyzing microcredit and gender empowerment (Garikipati, 2008; Zaman, 1999; Li et al., 2011). Ideally in analyzing the impacts of credit on women, two categories of women are compared – treatment group (women who have obtained credit) and control group (women who do not have access to credit).

The problem of selection bias is commonly noted in microfinance literature, which if uncontrolled, can possibly mislead the statistical relationship between access to credit and empowerment. Selection bias can result when the control and treatment group differ in unobservable characteristics. If there is a relationship between these characteristics and empowerment indicators and hence coefficient will be biased. Another form of selection bias is caused by non-random placement of projects (see, Li et al., 2011).

Following Hullme and Mosley (1996) and Coleman (1999, 2006) we approached selection and non-random placement bias by including microfinance saver clients (clients who started saving but have not taken loans) from the same village as credit clients in our control group. This means that both credit participants and non-credit...
participants were from the same village and they were both members of the microfinance institution. In Fiji, before one can qualify for loan from microfinance institutions, they first need to save with this microfinance institution for at least three months and have at least $150 of saving. This study will address the impact of microcredit on gender empowerment. We will further address the problem by examining effect of productive loans on gender empowerment.

6.3.1 The Empirical Model

As described in the above section, each women empowerment index only takes on values 1 and 0, with 1 for a woman interviewee being empowered when her answer to a corresponding question is ‘yes’ or ‘generally yes’ and 0 otherwise. Since the target of the current study is to investigate microfinance’s impact on women empowerment, the WEI is the dependent variable. Given the binary nature of the dependent variable, a model to be adopted should ensure the expected value of an empowerment indicator ranges between 0 and 1, where the concept of probability fits it. This makes the analysis equivalent to estimating a woman interviewee’s probability of being empowered.

If the probability that a woman interviewee is empowered is denoted by $p$, i.e., $P[WEI = 1] = p$, then the probability of a woman interviewee is not empowered is $1 - p$, i.e., $P[WEI = 0] = 1 - p$. To assess the relationship between $X_i$ and women empowerment, the logit model, which is widely used in the literature (see for instance, Hashemi et al., 1996; Zaman, 1999; Garikipati, 2008; Basher, 2007; Li et al., 2011), is employed in this study. The logit model relates the cumulated probability with control factors $X$s in the form as follows

$$p = P[L \leq \beta_0 + \sum_{i=1}^k \beta_i X_i] = \Phi(\beta_0 + \sum_{i=1}^k \beta_i X_i) = \frac{1}{1 + e^{-\left(\beta_0 + \sum_{i=1}^k \beta_i X_i\right)}}$$

(6.1)

where $p$ is non-linearly related to control factors $X$s. Marginal effect of $X_i$ on the probability that $WEI = 1$ can be computed by the following non-constant function:

$$\frac{\partial p}{\partial X_i} = \frac{\partial \Phi(f(X_i))}{\partial f(X_i)} \frac{\partial f(X_i)}{\partial X_i} = \frac{\left[1 \left(1 + e^{-\left(\beta_0 + \sum_{i=1}^k \beta_i X_i\right)}\right)\right]}{\left(1 + e^{-\left(\beta_0 + \sum_{i=1}^k \beta_i X_i\right)}\right)^2} \frac{\partial (\beta_0 + \sum_{i=1}^k \beta_i X_i)}{\partial X_i} = \phi\left[\beta_0 + \sum_{i=1}^k \beta_i X_i\right] \beta_i$$

(6.2)
Probabilities that $WEI = 1$ and $WEI = 0$ are predicted as

$$p = \frac{e^{(\beta_1 + \sum_{i=1}^{t} \beta_i x_i)}}{1 + e^{(\beta_1 + \sum_{i=1}^{t} \beta_i x_i)}} \quad \text{for } WEI = 1$$

$$1 - p = \frac{1}{1 + e^{(\beta_1 + \sum_{i=1}^{t} \beta_i x_i)}} \quad \text{for } WEI = 0$$

(6.3)

6.3.2 Dependent Variables and Control Factors

The current study aims to examine microfinance loans’ impact on women’s empowerment in Fiji. Therefore the dependent variable of a logit model is a women empowerment index. As discussed in the preceding section, women empowerment is measured by 22 indices for the case study of Fiji, and these indices are not combined into one single index to avoid measurement bias resulting from arbitrary method of combining. This means a system of 22 equations with each WEI as the dependent variable in an equation will be assessed individually in this study. Abbreviations of the 22 WEIs are summarized in Table 6-1. Group-variant descriptive statistics of these indices will be reported in the next section.

<table>
<thead>
<tr>
<th>Indices</th>
<th>Description of Indices</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICA</td>
<td>Independent control over cash</td>
</tr>
<tr>
<td>IJ</td>
<td>Independent control over jewelry</td>
</tr>
<tr>
<td>IM</td>
<td>Independent control over machinery</td>
</tr>
<tr>
<td>IL</td>
<td>Independent control over livestock</td>
</tr>
<tr>
<td>IFE</td>
<td>Independent control over furniture and electronics</td>
</tr>
<tr>
<td>ICL</td>
<td>Independent control over clothes</td>
</tr>
<tr>
<td>JM</td>
<td>Joint decision making on machinery</td>
</tr>
<tr>
<td>JL</td>
<td>Joint decision making on livestock</td>
</tr>
<tr>
<td>JFE</td>
<td>Joint decision making on furniture and electronics</td>
</tr>
<tr>
<td>JR</td>
<td>Joint decision making on repairing items</td>
</tr>
<tr>
<td>MPH</td>
<td>Free mobility to parents’ house</td>
</tr>
<tr>
<td>MMFI</td>
<td>Free mobility to MFI office</td>
</tr>
<tr>
<td>MHC</td>
<td>Free mobility to health centre</td>
</tr>
</tbody>
</table>
The core control factor of interest is the one indicating woman interviewees’ different engagement in the microfinance programme. A wide set of other control factors have been considered and those found effective in explaining women empowerment in Fiji are classified into three categories: demographic characteristics, household characteristics and dummy variables to control for bias caused by geographical locations and cultures.

Engagement in the microfinance programme is widely found in the literature as an effective instrument in promoting women’s empowerment measured by many empowerment indicators (see for instance, Hashemi et al., 1996; Zaman, 1999; Pitt et al., 2003). However, there is mixed evidence of impacts of other factors such as education, household head’s occupation, and household size.

Explanation of the above control factors is summarized in Table 6-2. Group-variant descriptive statistics of control factors will be reported in the next section.

Table 6-2: Control factors used to explain variation in women empowerment indices

<table>
<thead>
<tr>
<th>Control factors</th>
<th>Description of Control Factors</th>
<th>Nature</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MFI’s impact</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BORROWER</td>
<td>Woman interviewee borrows from MFI or not</td>
<td>binary</td>
</tr>
<tr>
<td><strong>Personal characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEC_H</td>
<td>Husband has up to secondary school qualification</td>
<td>binary</td>
</tr>
<tr>
<td>TER_H</td>
<td>Husband has up to tertiary school qualification</td>
<td>binary</td>
</tr>
</tbody>
</table>
### Household characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE_H</td>
<td>Husband age (years)</td>
<td>quantitative</td>
</tr>
<tr>
<td>AGESQ_H</td>
<td>Husband age squared (years squared)</td>
<td>quantitative</td>
</tr>
<tr>
<td>SEC_W</td>
<td>Woman has up to secondary school qualification</td>
<td>binary</td>
</tr>
<tr>
<td>TER_W</td>
<td>Woman has up to tertiary school qualification</td>
<td>binary</td>
</tr>
<tr>
<td>AGE_W</td>
<td>Woman age (years)</td>
<td>quantitative</td>
</tr>
<tr>
<td>AGESQ_W</td>
<td>Woman age squared (years squared)</td>
<td>quantitative</td>
</tr>
</tbody>
</table>

### Dummy variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUNEMP_H</td>
<td>Husband is nearly unemployed</td>
<td>binary</td>
</tr>
<tr>
<td>CHILDREN</td>
<td>Number of children in the house (persons)</td>
<td>quantitative</td>
</tr>
<tr>
<td>ADULTS</td>
<td>Number of adults in the house (persons)</td>
<td>quantitative</td>
</tr>
<tr>
<td>INCOME</td>
<td>Household monthly income (F$)</td>
<td>quantitative</td>
</tr>
<tr>
<td>ASSET</td>
<td>Household monthly assets (F$)</td>
<td>quantitative</td>
</tr>
<tr>
<td>URBAN</td>
<td>Household is located in urban area</td>
<td>binary</td>
</tr>
<tr>
<td>WESTERN</td>
<td>Household is located in Western division</td>
<td>binary</td>
</tr>
<tr>
<td>NORTHERN</td>
<td>Household is located in Northern division</td>
<td>binary</td>
</tr>
<tr>
<td>ITAUKEI</td>
<td>Woman interviewee is an iTaukei</td>
<td>binary</td>
</tr>
</tbody>
</table>

#### 6.3.3 The Endogeneity Issue

According to what was presented in the preceding section regarding control factors used to explain women’s empowerment in the current study, household income/asset is likely to be endogenous in the system since it can be explained by husband and woman’s education, husband’s employment status and microfinance loans if they are used for productive purpose.\(^\text{15}\) Instrumental variables probit estimator (IVPROBIT) which is essentially Probit model with continuous endogenous regressors should be applied instead of usual binary dependent variable estimators to avoid estimation bias and inconsistency if endogeneity problem is detected.

IVPROBIT estimation procedure is composed of two stages of regression. In the first stage, problematic continuous variable \(X_k\) is estimated with a least squares estimator by

\(^{15}\) Husband and woman’s education however is unlikely to be endogenous because their education was done decades ago and therefore is not likely to be affected by other control factors in the system.
using valid instrumental variables including internal IVs, namely all other control factors which are exogenous in the system, and external IVs which are not part of the system. A predicted series can therefore be generated for \( X_k \) from the first stage, which removes randomness of the problematic variable. The second stage involves a usual probability regression procedure using the predicted series \( \hat{X}_k \) to replace \( X_k \). A maximum likelihood estimator is adopted in the second stage to yield unbiased estimates. The whole procedure is actually based on estimating the reduced-form equations.

Three concerns should be taken into consideration when using instrumental variable estimators. First, the choice of an IV should be made based on the fact that the IV is strongly correlated with the problematic variable \( X_k \), not correlated with the error term and does not directly lead to changes in the dependent variable of the system. Using weak instruments would increase bias in the estimation, as argued by Hill et al. (2011, p411) ‘when using a weak instrument, the instrumental variables estimator can be badly biased, even in large samples, and its distribution is not approximately normal.’ Strength of instrumental variables can be assessed in the first stage regression by testing whether external instrumental variables jointly have statistically significant effect on \( X_k \), which can be decided by an \( F \) or Chi-sq test.

The second concern in an IV estimation procedure is the identification issue. In order to identify (or alternatively, consistently estimate) structural parameters of the system from the reduced-form equations, IV estimation requires that the number of external instrumental variables should be no less than the number of endogenous explanatory variables. There are a few tests that have been developed in the literature to test for overidentification of instruments, that is, a joint null hypothesis that the excluded instruments are valid instruments. Among those tests, the Sargan test applies when errors are homoskedastic, while Hansen’s \( J \)-test applies when errors are heteroskedastic. Under the assumption of conditional homoskedasticity, the Sargan’s statistic becomes the Hansen’s \( J \) statistic (Hayashi, 2000, p227).

The last concern in the IV estimation is to test whether the problematic variable \( X_k \) is indeed endogenous. Tests for this purpose are under the null hypothesis that \( X_k \) is exogenous, that is, \( H_0: X_k \) is uncorrelated with \( \varepsilon \), \( \text{cov}(X_k, \varepsilon) = 0 \). The logic of the tests is
to see whether the estimated residual in the first stage is significant when it is added to
the logit model in Equation (3). The null of exogeneity is now equivalent to test for
significance of the estimated residual from the first stage, which can be tested using the z
test in the context of a probability regression. In a general model with more than one
variable is tested for endogeneity, an $F$ or Chi-squared test can be used to test for the
null of joint significance of the parameters of the included residuals.

Apart from household income and assets which could be endogenous variables, the core
factor of interest BORROWER may be endogenous as well. It is believed that on one
hand loan borrowing would improve women’s empowerment, while on the other hand
women with higher empowerment are more inclined to borrow small loans. This
bidirectional linkage between women empowerment and microcredit accessibility, if it
exists, surely impose endogeneity problem when regressing women empowerment on
microcredit accessibility.

6.4 SUMMARY STATISTICS OF WEIS AND CONTROL FACTORS

6.4.1 Descriptive Statistics of the WEIs

Descriptive statistics of the women empowerment indices (WEIs) and control factors
which are used for analysis in this chapter were summarized in Tables 6-1 and 6-2.
Women empowerment indices, whose generation was described in the preceding
section, are grouped into five broad categories, namely empowered with independent
control over assets, joint decision making, free mobility, power against abuse, and
knowledge about general information. Table 6-3 summarizes mean proportion and
standard deviation of all the women empowerment indices by type of microfinance
institution clients. Table 6-4 presents association by means of mean and variances
between individual WEIs and type of MFI clients (borrowers and non-borrowers). This
will provide preliminary evidence whether there is statistically significant difference
between women borrowers’ empowerment and that of women non-borrowers with
respect to WEIs. Control factors which are used to explain variation in women
empowerment indicators are classified into three types, namely personal characteristics,
household characteristics, and different types of dummy variables to control for bias
caused by differences in geographical location, ethnicity and type of microfinance institution clients. Table 6-5 summarizes descriptive statistics of control factors by type of MFI clients.

Table 6-3: Proportion of women empowerment indices by type of MFI clients (out of 1)

<table>
<thead>
<tr>
<th>WEI</th>
<th>Borrowers &amp; Non-Borrowers</th>
<th>Non-Borrowers</th>
<th>Borrowers</th>
<th>Borrow for Production Purpose</th>
<th>Borrow for Consumption Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 287</td>
<td>n = 137</td>
<td>n = 150</td>
<td>n = 113</td>
<td>n = 37</td>
</tr>
<tr>
<td></td>
<td>Mean s.d</td>
<td>Mean s.d</td>
<td>Mean s.d</td>
<td>Mean s.d</td>
<td>Mean s.d</td>
</tr>
<tr>
<td>Independent control over assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>.540 .499</td>
<td>.328 .471</td>
<td>.733 .444</td>
<td>.761 .428</td>
<td>.648 .483</td>
</tr>
<tr>
<td>Jewelry</td>
<td>.327 .470</td>
<td>.284 .452</td>
<td>.366 .483</td>
<td>.389 .489</td>
<td>.297 .463</td>
</tr>
<tr>
<td>Livestock</td>
<td>.421 .494</td>
<td>.306 .462</td>
<td>.526 .500</td>
<td>.548 .499</td>
<td>.459 .505</td>
</tr>
<tr>
<td>Furniture &amp; Electronics</td>
<td>.226 .419</td>
<td>.109 .313</td>
<td>.333 .472</td>
<td>.398 .491</td>
<td>.135 .347</td>
</tr>
<tr>
<td>Clothes</td>
<td>.432 .496</td>
<td>.328 .471</td>
<td>.526 .500</td>
<td>.575 .496</td>
<td>.378 .492</td>
</tr>
<tr>
<td>Joint decision making</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machinery</td>
<td>.494 .500</td>
<td>.350 .479</td>
<td>.626 .485</td>
<td>.672 .471</td>
<td>.486 .507</td>
</tr>
<tr>
<td>Livestock</td>
<td>.564 .496</td>
<td>.394 .490</td>
<td>.720 .450</td>
<td>.725 .448</td>
<td>.703 .463</td>
</tr>
<tr>
<td>Furniture &amp; Electronics</td>
<td>.243 .430</td>
<td>.124 .330</td>
<td>.353 .479</td>
<td>.424 .496</td>
<td>.135 .346</td>
</tr>
<tr>
<td>Free mobility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents’ house</td>
<td>.902 .297</td>
<td>.832 .375</td>
<td>.967 .180</td>
<td>.982 .132</td>
<td>.918 .276</td>
</tr>
<tr>
<td>MFI office</td>
<td>.682 .466</td>
<td>.613 .488</td>
<td>.746 .436</td>
<td>.761 .428</td>
<td>.702 .463</td>
</tr>
<tr>
<td>Health centre</td>
<td>.655 .476</td>
<td>.620 .487</td>
<td>.686 .465</td>
<td>.672 .471</td>
<td>.729 .450</td>
</tr>
<tr>
<td>Town</td>
<td>.752 .432</td>
<td>.722 .449</td>
<td>.780 .415</td>
<td>.796 .404</td>
<td>.730 .450</td>
</tr>
<tr>
<td>Other places</td>
<td>.512 .500</td>
<td>.299 .459</td>
<td>.706 .456</td>
<td>.707 .456</td>
<td>.702 .463</td>
</tr>
<tr>
<td>Power against abuse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical abuse</td>
<td>.466 .499</td>
<td>.262 .441</td>
<td>.653 .477</td>
<td>.654 .477</td>
<td>.648 .483</td>
</tr>
<tr>
<td>Contraceptive</td>
<td>.331 .471</td>
<td>.270 .445</td>
<td>.386 .488</td>
<td>.380 .487</td>
<td>.405 .497</td>
</tr>
<tr>
<td>General knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Among the five types of WEIs, the highest average proportion of women empowerment is seen in the mobility category. On average, around 90.2 percent of women are free to visit their parents’ homes, 75.2 percent of women are free to visit towns, 68.2 percent of women are free to visit microfinance institution offices, 65.5 percent of women are free to visit health centres, while 51.2 percent make independent decisions on visiting other places such as friends’ homes and weddings. In general, borrowers have more mobility empowerment than women non-borrowers; and women in the category of borrowing for production purpose are more empowered than women in the category of borrowing for consumption in terms of visiting places, except in visiting health centres.

The second highest average proportion of women empowerment is seen in the general knowledge category. On average, around 84.6 percent of women are aware of HIV-Aids, 69.6 percent of whom know the national minimum marriage age, 68 percent support women’s right of working outside of the house, only around half of women know about the function of the Women Crisis Centre (WCC), and less than one third of the women know about divorce procedures. Needs for relevant services are the reason for low proportions of women having knowledge on WCC and divorce procedures. In general, more borrowers have general knowledge on the above aspects than women non-borrowers; and more women in the category of borrowing for production purpose are aware of the above information than women in the category of borrowing for consumption. Exceptions are seen in knowledge on Women’s Crisis Centre and divorce procedures, where non-borrowers have higher proportions than borrowing-for-consumption women.
The third highest average proportion of women empowerment is seen in the category of joint decision making. On average 56.4 percent of women are consulted by husbands regarding buying or selling livestock, 49.4 percent of are consulted regarding buying or selling machinery, 38.3 percent have joint decision making towards repairing items, while only 24.3 percent share decision making with husbands regarding buying or selling furniture and electronics. In general, women borrowing for production purposes have higher joint decision making empowerment than women borrowing for consumption purposes, while women non-borrowers have the lowest proportion in this regard.

The lowest average proportion of women empowerment is evenly seen in the categories of independent control over assets and power against abuse. Among items that women could deal with independently, cash is the asset that more than half (54 percent) of women in the total sample have empowerment over, followed by clothes (43.2 percent), livestock (42.1 percent), machinery (36.2 percent), jewelry (32.7 percent), and furniture and electronics (22.6 percent) respectively. In general, women borrowing for production purposes are more empowered than women borrowing for consumption purposes, who are more empowered than women non-borrowers. Compared to empowerment level over joint decision making, the proportions of empowered women over corresponding items are systematically lower.

In the case of women’s empowerment against abuse, it is found that on average 46.6 percent of woman interviewees are able to stand up against physical abuse, and only one third of woman interviewees are able to use contraceptive without consulting with their husbands. Again, more woman borrowers are empowered in these regards than women non-borrowers.

The above presentation of mean proportion of women being empowered displays varied levels of difference in women empowerment between borrowers and non-borrowers. It is therefore important to look at the association between women empowerment indices and types of microfinance institution clients, which will provide evidence of whether those differences are statistically substantial and further provide a preliminary idea whether borrowing from MFIs helps to improve women’s empowerment.
Prior to testing for differences in population means, analysis of variance should be conducted to test whether the two samples have equal population variances. Bartlett’s test for equal variances is employed in the current study, and chi-square statistics together with probability values are reported in Table 6-4. Based on the analysis of variance, two-sample \( t \) test is carried out to test for association with the null hypothesis that the two samples have no difference in mean. Two-sample \( t \) statistics and probability values are reported in Table 6-4 to decide level of association between empowerment indices and type of MFI clients.

Table 6-4: Tests for equal population variances and means of women empowerment indices between women borrowers and women non-borrowers

<table>
<thead>
<tr>
<th>WEI</th>
<th>Bartlett’s Test for Equal Variance</th>
<th>Two-sample ( t ) Test for Equal Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>chi(^2)</td>
<td>( p)-value</td>
</tr>
<tr>
<td><strong>Independent control over assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>0.5196</td>
<td>0.471</td>
</tr>
<tr>
<td>Jewelry</td>
<td>0.6039</td>
<td>0.437</td>
</tr>
<tr>
<td>Machinery</td>
<td>1.4934</td>
<td>0.222</td>
</tr>
<tr>
<td>Livestock</td>
<td>0.8884</td>
<td>0.346</td>
</tr>
<tr>
<td>Furniture &amp; Electronics</td>
<td>23.0792</td>
<td>0.000</td>
</tr>
<tr>
<td>Clothes</td>
<td>0.5237</td>
<td>0.469</td>
</tr>
<tr>
<td><strong>Joint decision making</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machinery</td>
<td>0.0256</td>
<td>0.873</td>
</tr>
<tr>
<td>Livestock</td>
<td>1.0249</td>
<td>0.311</td>
</tr>
<tr>
<td>Furniture &amp; Electronics</td>
<td>18.8841</td>
<td>0.000</td>
</tr>
<tr>
<td>Repair</td>
<td>18.3158</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Free mobility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents’ house</td>
<td>71.7225</td>
<td>0.000</td>
</tr>
<tr>
<td>MFI office</td>
<td>1.8274</td>
<td>0.176</td>
</tr>
<tr>
<td>Health centre</td>
<td>0.2934</td>
<td>0.588</td>
</tr>
<tr>
<td>Town</td>
<td>0.8630</td>
<td>0.353</td>
</tr>
<tr>
<td>Other places</td>
<td>0.0053</td>
<td>0.942</td>
</tr>
<tr>
<td><strong>Against abuse</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical abuse</td>
<td>0.8551</td>
<td>0.355</td>
</tr>
</tbody>
</table>
For WEIs such as independent control over furniture & electronics, joint decision making right over furniture & electronics and repair, free decision on visiting parents’ house, general knowledge on marriage age, women work rights and HIV-Aids, since the observed Bartlett’s chi-square statistics are greater than the critical statistics at the 5 percent significance level 3.847, leading to corresponding probability values less than the value of 5 percent, the null of same population variances is rejected. This suggests that these stated WEIs have different population variances between group of borrowers and group of non-borrowers. There is not enough evidence that the null of each of the rest of WEIs has the same population variance between group of borrowers and group of non-borrowers should be rejected. The above findings should be factored into the two-sample \( t \) tests for association between WEIs and types of MFI clients.

Coming to test for association between WEIs and types of MFI clients, the null of the same population mean between two groups’ WEI proportions is tested against the two-tailed alternative hypothesis. For WEIs such as independent control over jewelry, free visiting to health centre and town, general knowledge on Crisis Centre and divorce procedure, corresponding probability that absolute critical value at the 5 percent level 1.96 being greater than absolute observed \( t \) statistic is greater than 5 percent. This means that statistically there is no difference between borrowers and non-borrowers in terms of women empowerment measured in purchasing jewelry, visiting health centres and towns, as well as knowledge on crisis centre and divorce procedure. For the rest WEIs, two-sample \( t \) tests find a significant mean difference between the two groups. This in turn indicates borrowing from MFIs, rather than merely saving in MFIs, has a significant impact on women empowerment measured by most WEIs.
6.4.2 Descriptive Statistics of Control Factors

To assess microcredit’s impact on women’s empowerment, the current study considers a comprehensive set of control factors covering personal characteristics (including husband’s education, husband’s age, woman’s education, and woman’s age), household characteristics (including husband is nearly unemployed, number of children, number of adults, household monthly income, and monthly assets), and dummy variables to control for potential selection bias caused by differences in geographical location (urban in contrast with rural, Western Division and Northern Division in contrast with Central Division), ethnicity (iTaukei in contrast with Indo-Fijian) and type of microfinance institution clients (borrower in contrast with non-borrower). Mean and standard deviation of these control factors are reported in Table 6-5.

<p>| Table 6-5: Descriptive statistics of control factors by type of MFI clients |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|
| WEI | Borrowers &amp; Non-Borrowers | Non-Borrowers | Borrow for Production Purpose | Borrow for Consumption Purpose |</p>
<table>
<thead>
<tr>
<th>n</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>287</td>
<td>.522</td>
<td>.500</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>137</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>113</td>
<td>.1</td>
<td>.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>s.d</td>
<td>Mean</td>
<td>s.d</td>
<td>s.d</td>
</tr>
<tr>
<td>-----</td>
<td>----------------</td>
<td>--------</td>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>MFI’s impact</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borrower (ratio, out of 1)</td>
<td>.522</td>
<td>.500</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Personal characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>husband up to secondary school qualification (ratio, out of 1)</td>
<td>.703</td>
<td>.457</td>
<td>.715</td>
<td>.452</td>
</tr>
<tr>
<td>husband up to tertiary school qualification (ratio, out of 1)</td>
<td>.114</td>
<td>.319</td>
<td>.080</td>
<td>.272</td>
</tr>
<tr>
<td>husband age (years)</td>
<td>45.22</td>
<td>13.16</td>
<td>46.77</td>
<td>14.76</td>
</tr>
<tr>
<td>woman up to secondary school qualification (ratio, out of 1)</td>
<td>.783</td>
<td>.412</td>
<td>.759</td>
<td>.429</td>
</tr>
<tr>
<td>woman up to tertiary school qualification (ratio, out of 1)</td>
<td>.076</td>
<td>.266</td>
<td>.058</td>
<td>.235</td>
</tr>
<tr>
<td>woman age (years)</td>
<td>41.10</td>
<td>12.18</td>
<td>42.95</td>
<td>13.59</td>
</tr>
<tr>
<td>Household characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>husband nearly unemployed (ratio, out of 1)</td>
<td>.254</td>
<td>.436</td>
<td>.262</td>
<td>.441</td>
</tr>
<tr>
<td>number of children (persons)</td>
<td>1.780</td>
<td>1.656</td>
<td>1.802</td>
<td>1.781</td>
</tr>
<tr>
<td>number of adults (persons)</td>
<td>3.567</td>
<td>1.675</td>
<td>3.620</td>
<td>1.778</td>
</tr>
<tr>
<td>monthly income (F$)</td>
<td>1120</td>
<td>948</td>
<td>1073</td>
<td>1233</td>
</tr>
<tr>
<td>monthly assets (F$)</td>
<td>1782</td>
<td>2295</td>
<td>1382</td>
<td>2071</td>
</tr>
</tbody>
</table>
Descriptive statistics of control factors summarized in Table 6-5 show that on average, 70.3 percent of MFI clients’ husbands have up to secondary school qualifications. By group, more husbands of borrowers borrowing for production purposes have up to secondary school qualifications than husbands of non-borrowers and borrowers borrowing for consumption purposes. On average 11.4 percent of interviewees’ husbands have up to tertiary qualifications. By group, more husbands of borrowers borrowing for consumption purposes have up to tertiary qualifications than husbands of borrowers borrowing for production purpose and non-borrowers. The average age of husbands of all interviewees is 45.22 years, non-borrowers’ husbands have the highest average age while husbands of borrowers borrowing for production purposes have the lowest average age.

On average 78.3 percent of MFI women clients have up to secondary school qualifications. By group, more borrowers borrowing for consumption purposes have up to secondary school qualifications than borrowers borrowing for production purposes and non-borrowers. On average 7.6 percent of MFI women clients have up to tertiary qualifications. By group, more borrowers borrowing for production purposes have up to tertiary qualifications than borrowers borrowing for consumption purposes and non-borrowers. The average age of all women interviewees is 41.1 years, and non-borrowers have a higher average age than borrowers.

With respect to household characteristics, on average 25.4 percent of husbands of women interviewees are nearly unemployed. By group, more husbands of borrowers borrowing for consumption purposes are nearly unemployed than those of non-borrowers and borrowers borrowing for production purposes. On average each household has 1.78 children up to 14 years old. There is no significant difference across
groups in this regard. Each household on average has 3.57 adults over 14 years. There is no significant difference across groups in this regard. In terms of household income and assets, on average each household has a monthly income of F$1120 and monthly assets of F$1782. By group, households of borrowers borrowing for production purposes have a higher income and more assets than those of non-borrowers and borrowers borrowing for consumption purposes.

Geographically, around 65.1 percent of women interviewees are located in urban areas. By group, the ratio is highest among borrowers borrowing for production purposes and lowest among borrowers borrowing for consumption purposes. Of all women interviewees, 35.1 percent are from the Western Division, 21.2 percent are from the Northern Division while the remaining 43.7 percent are from the Central Division. Among all non-borrowers, 35 percent are from the Western Division, 20.4 percent from the Northern Division while the remaining 44.6 percent are from the Central Division. Among all borrowers borrowing for production purposes, 35.3 percent are from the Western Division, 18.5 percent from the Northern Division and the rest 46.2 percent are from the Central Division. Among all borrowers borrowing for consumption purposes, 35.1 percent are from the Western Division, 32.4 percent from the Northern Division and the rest 32.5 percent are from the Central Division. Ethnically, as high as 94.7 percent of all women interviewees are iTaukei, and only 5.3 percent are Indo-Fijians. The ratio is even higher in the group of borrowers borrowing for production purposes. Among all MFI women client interviewees, 39.3 percent (= 113/287) are borrowers borrowing for production purposes, 12.9 percent (= 37/287) are borrowers borrowing for consumption purposes, and the rest 47.8 percent (= 137/287) are non-borrowers.

6.5 EMPIRICAL FINDINGS

Impact of microcredit on women empowerment in Fiji in the current analysis is studied through examining 22 women empowerment indices. Our sample only covers members of MFIs to maintain a reasonable level of homogeneity in the sample and thus regression goodness-of-fit. In each of the logit model with each of the 22 WEIs as the dependent

16 This is consistent with the real fact that a majority of microfinance members in Fiji are iTaukei and only less than 10 percent are Indo-Fijians.
variable, control factors include binary variable representing whether a woman is a borrower of MFIs in contrast with a non-borrower, but still a member of MFIs, personal characteristics, household characteristics, and geographical and ethnicity dummy variables. This means that we target to investigate the impact of access to MFI loans on women empowerment as opposed to non-loan members of MFIs.

6.5.1 Exogeneity of Household Income/Assets

Before proceeding to present regression results, the suspected endogeneity problem should be sorted out. The household characteristic control factor household income/asset is likely to be endogenous because it can be explained by the other included control factors such as husband and woman’s education, husband’s employment status and microfinance loans if it is used for productive purposes. To test for the endogeneity of these potential problematic variables, we need external instrumental variables together with other exogenous variables in the system to explain household income/asset in the first stage of regression. Electricity and transfer (government transfer and land lease income) are used as an instrument. Necessary econometric test were carried out to test validity of the instruments. The test for endogeneity of INCOME or ASSET, the Wald test of exogeneity is conducted individually for each IVPROBIT regression, whereas INCOME or ASSET is a significant factor to explain women’s empowerment. Our regression analysis finds that INCOME is significant for at least 10 percent level in five instances including independent control over cash and clothes (ICA and ICL), free mobility to parents house, microfinance office and health centre (MPH, MMFI and MHC), and ASSET is significant for at least 10 percent level in ten instances including independent control over jewelry, machinery, livestock and furniture and electronics (IJ, IM, IL and IFE), all measures related to joint decision making (JM, JL, JFE and JR), free mobility to other places (MO), and knowledge on crisis centre (KCC). Wald test statistics for the above stated models are summarized in Table 6-6 where dash ‘-’ indicates insignificant performance of INCOME and ASSET.

As we see from Table 6-6, in the IFE model where ASSET is used, the Wald chi-squared statistic of 3.80 is marginally equal to the 5 percent level critical value of 3.841 for 1 degree of freedom. This provides evidence that the null hypothesis of exogeneity is
rejected at the 5 percent level. Wald chi-squared statistics for the other 11 models stated in the above are all less than the 5 percent level critical value. This leads to the conclusion that ASSET is the endogenous variable in the probability model explaining women’s independent control over furniture & electronics, and that INCOME and ASSET are either insignificant or exogenous factors in the rest of women empowerment models. Therefore, the endogenous effect of ASSET needs to be controlled in the IFE model in order to avoid biased estimates. For this reason, the binary dependent variable model is estimated by using instrumental variables probit estimator (IVPROBIT) for the IFE model and usual LOGIT estimator for the rest of the 21 women empowerment models.

Table 6-6: Wald statistics for exogeneity of INCOME or ASSET in women empowerment IVPROBIT models

<table>
<thead>
<tr>
<th>WEIs</th>
<th>H₀: coefficient on estimated residual = 0</th>
<th>Wald chi-squared stat</th>
<th>Prob (Chisq_critical &gt; Chisq_observed)</th>
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</thead>
<tbody>
<tr>
<td>Independent control over assets</td>
<td></td>
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</tr>
<tr>
<td>ICA</td>
<td>0.00</td>
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<td>IJ</td>
<td>1.59</td>
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<td>IL</td>
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<tr>
<td>Against abuse</td>
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<tr>
<td>PPA</td>
<td>-</td>
<td>-</td>
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<td>PC</td>
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<tr>
<td>KMA</td>
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6.5.2 Impact of Access to Microcredit and Other Factors on Women Empowerment

Given the large number of women empowerment indicators, presentation of regression results is organized in a concise way. Marginal effects of control factors rather than coefficients are reported, since the former is the more important and easier indicator to quantify and interpret control factors’ impacts. Corresponding standard errors (and thus z statistics) of estimated coefficient and marginal effects are very close, leading to the same conclusion on the significance of a control factor. Estimated coefficients, standard errors and z statistics are not presented in the context but available upon request. Significance of a control factor is indicated by using italics. In this way, 22 logit regressions are fit into Table 6-7.

Each column in Table 6-7 represents a separate logit model with a different WEI as the dependent variable, and explanatory variables are listed in rows followed by measures of goodness-of-fit indicators. In total 18 explanatory variables including different functional forms of essential control factors are considered in the analysis. Explanatory variables are presented by category. To avoid loss of efficiency in estimation, only control factors which are significant for at least 10% level are kept in each of 22 WEI regressions, except that the essential variable BORROWER always remains in the regressions irrespective of its significance or not. Those remaining explanatory variables are found sufficient to correct sample selection and estimation bias.

- Goodness-of-Fit of Logit Models

Three measures, namely likelihood ratio (LR), Pseudo R-squared and overall predicted percentage correct, are employed to evaluate the overall model fit for each of the 22 logit models. Statistics of these measures are summarized in the last three lines of Table 6-7.
The LR statistics show that the null hypothesis that included control factors are jointly unimportant in explaining the variation of the dependent variable is rejected at the 5% level for all logit regressions, since the observed LR statistics are respectively greater than critical values at the 5% level. The overall correct prediction ranges between 65.15 percent for the IJ model to 90.94 percent for the MPH model. The Pseudo R-squared statistics are reasonably high for most of the logit regressions, except for the IJ model where Pseudo R-squared is less than 0.10. The KMA model has the highest Pseudo R-squared statistic of 0.309 while the IJ model has the lowest Pseudo R-squared statistic of 0.098 which is still acceptable for the survey data analysis. The above goodness-of-fit statistics suggest that the logit models fit the data well and can be used to predict the probability of women empowerment in different aspects.

- Access to Loans’ Impacts on Women’s Empowerment

Regression results show that the coefficients of the binary variable BORROWER have the expected positive signs in all models, and are significant for at least 10% level in most of the empowerment models except for IJ (independent control over jewelry), MHC (free mobility to health centre), MT (free mobility to town), KCC (knowledge on WCC), and KDP (knowledge on divorce procedures). This means that apart from the above stated WEIs, women borrowers (i.e. MFI savers and borrowers at the same time) are significantly more empowered than non-borrowers (i.e. merely savers).

In the case of women’s empowerment with regards to dealing with jewelry (IJ), there is no statistical evidence that women borrowers are more empowered than women non-borrowers. This, together with the statistic that only 32.7% of all woman interviewees have independent control over jewelry, suggests that when it comes to handling valuable items which are only related to women, most women are not confident and need to consult with husbands, irrespective of whether they are borrowers or non-borrowers.

In the case of free mobility to health centres and towns (MHC and MT), there is no significant difference of empowerment between borrowers and non-borrowers. This, together with the statistics that 65.5% of woman interviewees could freely visit health centres and 75.2% could freely visit towns, suggests that in terms of basic daily living
needs, the majority of women MFI members, irrespective of borrowers or non-borrowers, have equal empowerment.

Another case where there is no difference between borrowers and non-borrowers is women’s general knowledge on WCC and divorce procedures (KCC and KDP). Sample statistics show that 49.8% of woman MFI members know about WCC and only 30.3% know about divorce procedures. The absence of a gap between two groups of women in the two aspects to a great extent is due to a lack of difference in the environment, chances and necessities where both topics are discussed. One thing worth noting is that the proportion of women knowing about WCC is significantly higher than the proportion of women knowing about divorce procedures. This is highly consistent with the situation in Fiji where the domestic violence issue is more prominent than the divorce issue.

For the rest of the women empowerment indices, there is strong evidence that women borrowers are more empowered than women non-borrowers. The most significant improvement in women borrowers’ empowerment relies on borrowers’ control over cash (ICA), machinery (IM), livestock (IL) and clothes (ICL). These show that providing women sources of income one is able to increase their contribution and control over household wealth. This further shows that women in Fiji generally use their savings to acquire productive goods for the household. However, when it comes to less productive and luxury personal or household assets, referred to as independent control over jewelry (IJ) in the current analysis, or furniture and electronics (IFE), even woman borrowers’ empowerment is limited. This shows that earnings from microfinance activities are not sufficient to acquire these items. Overall, the study does confirm that access to microfinance credit improves women’s control over productive assets, which gives her better security within the household.

It is generally perceived that women in Fiji lack inheritance rights to land and other important assets which act as major deterrence to obtaining access to formal credit and improving their welfare (ADB, 2006). Moreover, due to lack of education together with the labour market discrimination, women were mainly employed in low paying areas such as the garment industry. Therefore women in Fiji generally lack means to improve their control over household assets and resources. Many women in Fiji further suffer
hardship and poverty if they lose employment in the garment industry due to the significant downsize of this industry.

In addition women in rural areas are mainly engaged in the subsistence sector, and some are involved in producing goods in small scale for markets. Some of the semi-commercial activities they are involved in includes; fishing, making handicraft, selling fruits and vegetables. However, due to lack of finance and financial literacy these women are not able to expand their business activities and improve their welfare.

Microfinance institution can play an important role in providing credit, training and encouragement to these women needed to establish income generating activities. A well thought business plan can provide a very important means to women to improve their joint family welfare. Furthermore, access to credit can encourage existing business women to take greater risk and expand their business activities.

The second significant improvement in women borrowers’ empowerment relies on borrowers enjoying a wider range of empowerment towards joint decision making over all items designed in this study including machinery (JM), livestock (JL), furniture & electronics (JFE), and household item repair (JR).

Improvement in women borrowers’ empowerment is also seen in terms of free mobility to parents’ homes (MPH), microfinance offices (MMFI) and other places (MO) which include friends’ homes and weddings. The rationale for the difference in borrowers and non-borrowers’ mobility in the above measures relies on the fact that woman borrowers with their own income derived from micro-business activities (as most borrowers are engaging in productive activities) are capable of paying the costs of visiting parents, friends and microfinance offices, without putting financial burdens on husbands. This is reasonable since it is believed that financial independence brings more confidence and general independence to women.

The last but not least important evidence of improvement in women borrowers’ empowerment is reflected in women’s knowledge on national minimum marriage age (KMA), women’s rights to work (KWRW) and HIV-Aids (KA). This is possible since with engagement in micro-business activities women borrowers have more chances to
interact with people and institutions, which increase the possibility of introducing them to common and general knowledge.

The magnitude of microcredit accessibility’ impact is seen from the estimated marginal effect of BORROWER in Table 6-7.

By order of quantitative significance given statistical significance, assuming other factors remain the same for both groups, women borrowers’ empowerment is most significantly improved in the aspect of knowledge on national minimum marriage age (KMA) with an increased probability of 0.47 in contrast with the reference group women non-borrowers. Followed by increased probability of 0.45 on joint decision on household item repair (JR) and 0.44 on empowerment against physical abuse (PPA) increased by probability of 0.44. The probability increased by 0.42 on free mobility to places such as friends’ homes and weddings (MO), 0.39 on independent control over cash (ICA), 0.27 on joint decision on livestock (JL), 0.26 and 0.25 respectively on women’s rights to work (KWRW) and joint decision on machinery (JM). Followed by increased probability of 0.18 on independent control over clothes (ICL), 0.16 on joint decision on furniture and electronics (JFE), and independent control over livestock (IL) respectively, 0.13 and 0.12 on free mobility to microfinance offices (MMFI) and independent control over machinery (IM) respectively, and 0.11 and 0.10 on empowerment on contraceptive (PC) and knowledge on aids (KA) respectively. The least significant improvement in terms of women empowerment is seen on free mobility to parents’ homes (MPH), where borrowers’ probability of gaining this type of empowerment is 0.08 higher than that of reference group non-borrowers. For the rest of the six women empowerment models, the positive effect of microfinance loans is not statistically significant.

Overall, it is safe to conclude that in Fiji access to microfinance loan provides empowerment to most aspects of a women’s life.

• Personal Characteristics’ Impacts on Women’s Empowerment

Coming to other control factors’ impact on women microfinance clients’ empowerment, our findings are highly consistent with our expectation and empirical findings in the
literature. For example, we find husbands with tertiary education and above have a better understanding about women’s empowerment and therefore, are more effective in assisting women to improve their empowerment. A husband education’s significant effect is seen in all dimensions of women empowerment including independent control over cash, machinery and livestock (ICA, IM and IL), joint decision making on machinery and livestock (JM and JL), empowerment against physical aids and contraceptive (PPA and PC), free mobility to towns (MT), and knowledge on divorce procedures (KDP). The highest marginal effect of a husband’s tertiary education is seen on PPA with a magnitude of 0.52, while the lowest marginal effect is seen on KDP with a magnitude of 0.19. Compared to husband’s tertiary education, husband’s secondary school education is less significant, statistically and quantitatively, and is only effective in promoting women’s empowerment on two aspects, namely independent control over cash (ICA) and power against physical abuse (PPA).

Husband’s age is found to be another important factor in explaining women’s empowerment. It is interesting to find that husbands in the young age group are generally more flexible and understanding than husbands in the older age group in most cases. A significant negative impact of husband’s age is seen on all empowerment dimensions including independent control over machinery and livestock (IM and IL), joint decision making on machinery and livestock (JM and JL), power against physical abuse (PPA), free mobility to parents’ homes (MPH), and knowledge on marriage age and divorce procedures (MDP). This suggests that younger husbands are more influenced by their environment where they are exposed to knowledge on women empowerment, while older husbands are more influenced by traditional ideas and cultures regarding women’s social and economic status in the family. The marginal effect of husband’s age ranges from -0.05 on JM to -0.002 on MPH. The negative effect of a husband’s age is subject to an increasing rate on three instances JM, PPA and KMA. On one particular aspect, mobility to town (MT), effect of husband’s age is found significant but positive, suggesting younger husbands are less flexible in allowing their wives to visit town alone. This shows that the young generation is more receptive to change.
Women’s education is found to be another important factor contributing to enhancement on women’s empowerment by 9 out of 22 indices. Women’s secondary school education is important in improving their empowerment on independent and joint decision making on furniture and electronics (IFE and JFE), joint decision making on repair (JR) and knowledge on women’s right of work (KWRW). The marginal positive effect of women’s secondary school education ranges from 0.11 on JFE to 0.26 on JR. Similar to husband’s education, there is also strong evidence that the higher the education of a woman, the higher the probability of her gaining empowerment. Women’s tertiary education’s positive impact is seen in more empowerment indices with higher marginal effect. We find that, provided other factors remain the same, women’s tertiary education improves the probability of women gaining knowledge on the minimum national marriage age (KMA) by 0.15, independent control over machinery (IM) by 0.22, free mobility to other places (MO) by 0.23, knowledge on women’s right to work (KWRW) by 0.26, power against physical abuse (PPA) by 0.33, and joint decision making on repairing household items (JR) by 0.58. However, we also find one exceptional regarding women education’s effect: women’s secondary school education is found to reduce the probability of gaining information on Women Crisis Centre by 0.23. This, together with the insignificant impact of women’s tertiary education in this regards, suggests women with less than secondary education have more chances to be exposed to knowledge on WCC, given other factors remain the same. This in turn seems to indicate domestic violence in Fiji is a more prominent issue among couples where the women are less educated.

Effect of women’s age is somehow mixed. In many instances women’s age does not affect women’s empowerment. However, this control factor statistically significantly reduces probabilities of women gaining independent control over cash (ICA) and independent and joint control over furniture and electronics (IFE and JFE) by 0.006 respectively. This is possible since, firstly, senior women generally have limited income sources, and thus are less empowered on aspects regarding finance, and secondly, senior women are more likely to follow traditional ideas and cultures regarding women’s social and economic status within a family. Yet, woman’s age is found to increase the probability of women gaining knowledge on divorce procedures (KDP) by 0.01. This is
reasonable given the above stated evidence of positive effect of women’s education up to secondary school level and the contemporary situation that less educated women in Fiji are mainly senior women. Moreover, age itself to some extent should also be regarded as an indicator of accumulated knowledge. This explains why women’s age has a positive effect on empowerment indexed by general knowledge particularly on divorce procedures and HIV-Aids (KA).

• Household Characteristics’ Impacts on Women’s Empowerment

Coming to household characteristics’ effect on women empowerment, the most significant factor turns out to be the husband’s employment status. We find that if a husband is nearly unemployed, he is likely to be more demanding in many aspects including control over cash, furniture & electronics and livestock (ICA, IFE, JFE and JL), physical abuse (PPA) and restricting women’s mobility to parents’ homes and even the health centre (MPH and MHC). Noteworthy is that these aspects belong to the first four dimensions of women empowerment but not the last dimension pertaining to women’s knowledge. As shown, this factor not only represents husband’s social and economic status, but also plays an important role in developing women’s empowerment pertaining to their economic and social status in the family. The marginal effect of husband’s nearly unemployed status ranges from -0.22 for the ICA model to -0.08 for the MPH model. One exception is also observed. It is found that, assuming other factors remain the same, a husband’s nearly unemployed status increases the probability of women’s empowerment against contraceptive abuse by 0.13. This exception is, however, still possible and consistent with our interpretation above, since refusing to use contraceptives is at the risk of a costly abortion, and thus a husband with limited income becomes flexible with his wife in this regard.

We find the number of children more or less increases women’s empowerment in most regards. Its positive impact is statistically significant on free mobility to all places except women’s parents’ homes (MMFI, MHC, MT and MO). This is possible since in the Fijian (both iTaukei and Indo-Fijian) culture mothers rather than fathers spend more time with children and take them to all kinds of events and places. The number of children also effectively reduces abuse on women, either physical or contraceptive (PPA
and PC), and increases the probability of women gaining knowledge on AIDS (KA). The significant marginal effect of the number of children on women empowerment ranges from 0.02 on KA to 0.07 on PC.

Similar to number of children, number of adults is found to have a more or less positive impact on women’s empowerment in many aspects. But its significant effect is limited to independent and joint decision making on machinery (IM and JM) and knowledge on marriage age (KMA) with marginal effect ranging from 0.03 to 0.04. To compare, we see that other adult family members’ impact on women’s empowerment through sharing knowledge and providing advice is not as effective as husband and wife’s intrinsic perception of setting a good example for their children.

The last type of household characteristic under consideration is household income or assets. Income and assets are alternative indicators for each other representing household’s economic status. They enter the model in a mutually exclusive way to avoid overlapped effects from the two indicators. Our analysis finds household income and asset effectively improves women’s empowerment in the dimension of independent control over assets, joint decision making and free mobility. Specifically, household income significantly enhances women’s empowerment in the aspects of handling cash and clothes (ICA and ICL), free mobility to parents’ homes (MPH), microfinance offices (MMFI) and health centre (MHC); while household assets significantly improves women’s empowerment on independent and joint decision making in almost all aspects (IJ, IM, IL, IFE, JM, JL, JFE and JR), as well as mobility to other places (MO). The largest quantitative significance of household income/assets is seen on independent control over furniture & electronics (IFE) with a marginal effect of 0.15, while the least quantitative significance is seen on independent control over machinery (IM) and mobility to parents’ homes (MPH) with a marginal effect of 0.04 respectively. It is also interesting to observe household assets reduce the probability of women’s knowledge on WCC by 0.05. This is probably true because in the Fiji situation domestic violence is more prominent in poor families than in well-off families, therefore women in poor families are in more need of acquiring information on Women Crisis Centre.

- Geography and Ethnicity’s Impacts on Women’s Empowerment
Coming to the last category of control factors, urban women are found to have more empowerment than rural women in terms of joint decision making on machinery (JM), power against contraceptive abuse (PC), and knowledge on marriage age (KMA), divorce procedures (KDP) and AIDS (KA). Effect of urban location is quantitatively high with a magnitude of marginal effect ranging from 0.15 for the PC model to 0.30 for the JM model.

The Central Division, which is the reference division for the Northern and Western divisions, provides a more flexible environment to develop women’s empowerment in many aspects such as independent control over clothes, jewelry, machinery and livestock (ICL, IJ, IM and IL), joint decision making on machinery (JM), free mobility to microfinance offices, health centre and towns (MMFI, MHC and MT), as well as knowledge on marriage age, the crisis centre, women’s right to work and AIDS (KMA, KCC, KWRW and KA). However, in one instance, namely free mobility to other places (MO), women in the Western Division have higher empowerment than women in the other two divisions (the least developed Northern Division and the most developed Central Division) with increased probability of 0.30. This is probably true given the Western Division is a more open community due to the tourism industry, and thus people have more chances to be exposed to the open environment and are flexible in visiting friends and attending events and functions. The Western Division is the hub of the tourism industry in Fiji as it hosts most of the multi-national hotels and also the main port of entry to Fiji for visitors.

The last control factor we examine in this women empowerment study is ethnicity. There are two main ethnicities (iTaukei and Indo-Fijians) covered in this study and they have different cultures and customs. For instance, compared to Indo-Fijians, iTaukei follows a more flexible and open culture and iTaukei people are more ready to adapt themselves to new ideas and environments. Secondly, most iTaukei are Christians and by going to churches regularly, they have more chances to interact with people including those from other countries and thus are more exposed to different cultures and ideas. Ignoring the above differences between the two ethnicities in the analysis of women’s empowerment might lead to estimation bias.
Our study finds that, on top of the subjection of women to men being a universal custom in the whole Fijian community, married Indo-Fijian women are further less empowered than married iTaukei women in some aspects. The difference in women empowerment between Indo-Fijians and iTaukei is highly significant in the instance of free visiting parents (MPH). The marginal effect of ethnicity is highly statistically and quantitatively significant for the MPH model with a magnitude of 0.21. Given the ethnic composition that only 5.3 percent women microfinance members in our sample are Indo-Fijians and the rest are iTaukei, and the sample fact that 9.8 percent women members cannot freely visit their parents, our finding on the significant effect of ethnicity on women’s freedom of visiting parents reflects that the Indian traditional idea still prevails among the Indo-Fijian community. This finding is so true and consistent with the sample statistics that 73.3 percent of 15 women Indo-Fijian members while only 6.3 percent of 272 women iTaukei members are limited with the freedom of visiting parents.
Table 6-7: Microfinance’s marginal effect on women empowerment

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<td>Dummy variables’ impacts</td>
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<td>ITAUEKI</td>
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</tbody>
</table>

Goodness-of-fit measures

| Likelihood ratio stat | 63.75 | 38.93 | 99.87 | 98.87 | 74.56 | 50.49 | 49.02 | 86.43 | 90.51 | 39.55 | 28.69 | 43.17 | 37.26 | 59.46 | 69.87 | 71.87 | 41.34 | 39.89 | 38.95 | 47.38 |
| Pseudo R-squared         | 0.253 | 0.098 | 0.150 | 0.200 | 0.231 | 0.238 | 0.225 | 0.176 | 0.278 | 0.118 | 0.219 | 0.157 | 0.107 | 0.239 | 0.236 | 0.309 | 0.125 | 0.154 | 0.117 | 0.213 |
| Overall predicted percentage correct | 76.66 | 65.16 | 72.47 | 77.00 | 71.78 | 74.56 | 73.87 | 79.44 | 74.56 | 73.52 | 72.47 | 90.94 | 75.96 | 71.43 | 80.84 | 74.22 | 77.70 | 69.69 | 72.47 | 70.38 | 85.02 |

Note: Italic means control factor is insignificant. The rest are all significant for at least10% level. IVPROBIT is used for the IFE model, and LOGIT is used for the rest 21 models.
6.5.3 Consequences of Ignoring the Endogeneity Problem

Access to microcredit might be another endogenous variable in the study of women empowerment. Theoretically it is believed there is bi-directional linkage between women empowerment and women’s access to microcredit (Mosley, 2001). However, testing for endogeneity of microcredit accessibility in the empirical studies of women empowerment is kind of difficult given the two variables share almost the same set of control factors. The difficulty of testing for endogeneity is particularly evident when there are multiple indices for women empowerment which require different combinations of control factors. This leads to difficulty in identifying appropriate instrumental variables to test and control for endogeneity of microcredit accessibility, the BORROWER variable in the current study. Instrumental variables used in this thesis such as ELECTRICITY, EARNERS and TRANSFER are not respectively valid instruments for BORROWER, as there is no evidence in our empirical analysis that they individually contribute to microcredit accessibility while do not directly lead to women empowerment development. Given this background, without standard endogeneity test procedure and IV estimation procedure, any attempt to control for endogeneity might instead lead to or increase bias artificially, as argued by Hill et al. (2011).

Despite the risk of obtaining biased estimates, we attempt to address the endogeneity of BORROWER in the current study, in order to have a rough comparison of microcredit accessibility’s impact on women empowerment between regressions with and without efforts spent on controlling for endogeneity.

As we argued in the preceding paragraph and as seen from regressions in Chapter 4 and in this chapter, the set of control factors that are used in predicting BORROWER are no different from those that are used in explaining women empowerment indices. This has determined the bias in results we present in Table 6-8. Without valid instrumental variables, testing for endogeneity and accordingly obtaining test statistics for evidence of endogeneity are thus void. And the standard two-stage least squared estimator, which is based on a reduced-form equation and procedure of iteration between the first stage regression outcome and its application in the full model, is therefore unfeasible too. Violation of the standard TSLS procedure surely leads to unreliable estimates as well.
As a solution to infeasibility of the standard TSLS procedure in this attempt, we literally used two stages of logit regressions with the first stage obtaining predicted probability of being BORROWER and the second stage assessing women empowerment by using predicted probability to replace the binary BORROWER. The predicted BORROWER series, BORROWER-hat, was obtained from Chapter 4’s analytical results. The second stage provides evidence of women empowerment impact of control factors including BORROWER-hat.

With efforts to control for endogeneity of BORROWER, the attempted regressions yield estimates highly consistent to those presented in Table 6-7, except for BORROWER-hat. Performance of BORROWER-hat and goodness-of-fit measures are summarized in Table 6-8.

Comparing Tables 6-7 and 6-8, we find no significant difference between the two sets of regressions in terms of Pseudo-R² and overall predicted percentage correct for corresponding WEI regressions. The main difference relies on the performance of BORROWER in Table 6-7 and BORROWER-hat in Table 6-8, as expected. In Table 6-7, positive effect of BORROWER is significant in most WEI regressions except in IJ, IFE, MHC, MT, KCC, and KDP regressions. However, in Table 6-8, positive effect of BORROWER-hat is significant in only several regressions such as ICA, ICL, JR, PPA, MO, KMA and KWRW, BORROWER-hat’s effect on women empowerment even becomes negative in the regression of IM, JFE and KCC although negative effect is not statistically significant. Bias of BORROWER-hat’s performance is also seen from its very large magnitudes, such as 1.049 in the ICA model, 0.886 in the ICL model, 0.836 in the JR model, 1.241 in the PPA model, 0.710 in the MO model, 0.684 in the KMA model and 0.512 in the KWRW model.

Despite differences stated in the above, the attempted efforts to control for endogeneity of BORROWER to some extent verified our findings about positive contribution of microcredit accessibility to women empowerment development at least in most of the 24 aspects we considered. And due to the inappropriate procedure of addressing endogeneity in this attempt, we resort to our analytical results summarized in Table 6-7, where BORROWER is regarded as exogeneity, as the final results for the current topic.
Table 6-8: Microcredit accessibility’s impact on women empowerment indices with BORROWER’s endogeneity corrected

<table>
<thead>
<tr>
<th>WEIs</th>
<th>Marginal effect of predicted BORROWER</th>
<th>z-stat</th>
<th>Pseudo-R^2</th>
<th>Overall predicted percentage correct</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent control over assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA</td>
<td>1.049</td>
<td>3.48</td>
<td>0.1901</td>
<td>69.69%</td>
</tr>
<tr>
<td>IJ</td>
<td>0.138</td>
<td>0.60</td>
<td>0.0966</td>
<td>67.60%</td>
</tr>
<tr>
<td>IM</td>
<td>-0.209</td>
<td>-0.75</td>
<td>0.1420</td>
<td>72.13%</td>
</tr>
<tr>
<td>IL</td>
<td>0.164</td>
<td>0.53</td>
<td>0.1883</td>
<td>70.73%</td>
</tr>
<tr>
<td>IFE</td>
<td>0.070</td>
<td>0.35</td>
<td>0.1419</td>
<td>79.44%</td>
</tr>
<tr>
<td>ICL</td>
<td>0.886</td>
<td>2.81</td>
<td>0.2345</td>
<td>75.61%</td>
</tr>
<tr>
<td><strong>Joint decision making</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>JM</td>
<td>0.427</td>
<td>1.14</td>
<td>0.2095</td>
<td>75.26%</td>
</tr>
<tr>
<td>JL</td>
<td>0.460</td>
<td>1.55</td>
<td>0.1859</td>
<td>71.08%</td>
</tr>
<tr>
<td>JFE</td>
<td>-0.014</td>
<td>-0.07</td>
<td>0.1411</td>
<td>78.75%</td>
</tr>
<tr>
<td>JR</td>
<td>0.836</td>
<td>2.69</td>
<td>0.1451</td>
<td>70.03%</td>
</tr>
<tr>
<td><strong>Against abuse</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>PPA</td>
<td>1.241</td>
<td>3.17</td>
<td>0.1829</td>
<td>69.69%</td>
</tr>
<tr>
<td>PC</td>
<td>0.078</td>
<td>0.32</td>
<td>0.1091</td>
<td>71.08%</td>
</tr>
<tr>
<td><strong>Free mobility</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MPH</td>
<td>0.077</td>
<td>0.77</td>
<td>0.1696</td>
<td>91.29%</td>
</tr>
<tr>
<td>MMFI</td>
<td>0.201</td>
<td>0.94</td>
<td>0.1450</td>
<td>71.78%</td>
</tr>
<tr>
<td>MHC</td>
<td>0.167</td>
<td>0.73</td>
<td>0.1051</td>
<td>70.38%</td>
</tr>
<tr>
<td>MT</td>
<td>0.148</td>
<td>0.82</td>
<td>0.2330</td>
<td>81.18%</td>
</tr>
<tr>
<td>MO</td>
<td>0.710</td>
<td>2.49</td>
<td>0.1492</td>
<td>65.51%</td>
</tr>
<tr>
<td><strong>General knowledge</strong></td>
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</tr>
<tr>
<td>KMA</td>
<td>0.684</td>
<td>2.53</td>
<td>0.1202</td>
<td>73.52%</td>
</tr>
<tr>
<td>KCC</td>
<td>-0.409</td>
<td>-1.52</td>
<td>0.1290</td>
<td>68.99%</td>
</tr>
<tr>
<td>KDP</td>
<td>0.162</td>
<td>0.65</td>
<td>0.1521</td>
<td>71.78%</td>
</tr>
<tr>
<td>KWRW</td>
<td>0.512</td>
<td>1.93</td>
<td>0.0703</td>
<td>68.99%</td>
</tr>
<tr>
<td>KA</td>
<td>0.075</td>
<td>0.54</td>
<td>0.1822</td>
<td>87.46%</td>
</tr>
</tbody>
</table>

6.5.4 Predicted Probabilities of Women’s Empowerment by Group

The last aspect we look at in the empirical analysis is the prediction power of our models. This requires a comparison between predicted probabilities and proportions of women empowerment indices by type of microfinance institution clients. Predicted probabilities are summarized in Table 6-9 below while proportions are descriptive statistics which were reported in Table 6-3 in the above context.
Overall, there is no significant difference between figures in Table 6-9 and those in Table 6-3, particularly for groups of all members, non-borrowers, borrowers and borrowing for productive purpose respectively, with maximum gap of 0.045 on joint decision making on furniture & electronics (JFE) for the group of borrowers borrowing for production purposes. However, more or less a gap is found for the group of borrowers borrowing for consumption purposes. Maximum gaps of 0.149 and 0.140 are found on joint and independent decision making on furniture & electronics (JFE and IFE) respectively. Though the range is still within expectations, it is still an indication that modeling women empowerment for the group of borrowers borrowing for consumption purposes is more difficult than the other groups namely non-borrowers and borrowers borrowing for productive purposes. In general, we take the above as an additional indicator of high explanation power of our logit models in assessing women empowerment for microfinance institution clients.

Table 6-9: Predicted probabilities of WEIs by type of MFI clients (out of 1)

<table>
<thead>
<tr>
<th>WEIs</th>
<th>All members</th>
<th>Non-Borrowers</th>
<th>Borrowers</th>
<th>Borrowing for Productive Purpose</th>
<th>Borrowing for Consumption Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent control over assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICA</td>
<td>0.537</td>
<td>0.328</td>
<td>0.733</td>
<td>0.763</td>
<td>0.644</td>
</tr>
<tr>
<td>IJ</td>
<td>0.327</td>
<td>0.285</td>
<td>0.367</td>
<td>0.389</td>
<td>0.299</td>
</tr>
<tr>
<td>IM</td>
<td>0.357</td>
<td>0.277</td>
<td>0.440</td>
<td>0.459</td>
<td>0.382</td>
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<tr>
<td>IL</td>
<td>0.416</td>
<td>0.307</td>
<td>0.527</td>
<td>0.545</td>
<td>0.471</td>
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<tr>
<td>IFE</td>
<td>0.227</td>
<td>0.109</td>
<td>0.333</td>
<td>0.352</td>
<td>0.275</td>
</tr>
<tr>
<td>ICL</td>
<td>0.426</td>
<td>0.328</td>
<td>0.527</td>
<td>0.566</td>
<td>0.408</td>
</tr>
<tr>
<td><strong>Joint decision making</strong></td>
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</tr>
<tr>
<td>JM</td>
<td>0.489</td>
<td>0.350</td>
<td>0.627</td>
<td>0.658</td>
<td>0.532</td>
</tr>
<tr>
<td>JL</td>
<td>0.562</td>
<td>0.394</td>
<td>0.720</td>
<td>0.738</td>
<td>0.665</td>
</tr>
<tr>
<td>JFE</td>
<td>0.246</td>
<td>0.124</td>
<td>0.353</td>
<td>0.376</td>
<td>0.284</td>
</tr>
<tr>
<td>JR</td>
<td>0.385</td>
<td>0.131</td>
<td>0.613</td>
<td>0.629</td>
<td>0.566</td>
</tr>
<tr>
<td><strong>Against abuse</strong></td>
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<tr>
<td>PPA</td>
<td>0.462</td>
<td>0.263</td>
<td>0.653</td>
<td>0.663</td>
<td>0.623</td>
</tr>
<tr>
<td>PC</td>
<td>0.323</td>
<td>0.270</td>
<td>0.387</td>
<td>0.379</td>
<td>0.412</td>
</tr>
<tr>
<td><strong>Free mobility</strong></td>
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</tr>
<tr>
<td>MPH</td>
<td>0.899</td>
<td>0.832</td>
<td>0.967</td>
<td>0.974</td>
<td>0.945</td>
</tr>
<tr>
<td>MMFI</td>
<td>0.677</td>
<td>0.613</td>
<td>0.747</td>
<td>0.766</td>
<td>0.687</td>
</tr>
<tr>
<td>MHC</td>
<td>0.652</td>
<td>0.620</td>
<td>0.687</td>
<td>0.707</td>
<td>0.623</td>
</tr>
<tr>
<td>MT</td>
<td>0.745</td>
<td>0.723</td>
<td>0.780</td>
<td>0.790</td>
<td>0.748</td>
</tr>
<tr>
<td>MO</td>
<td>0.516</td>
<td>0.299</td>
<td>0.707</td>
<td>0.721</td>
<td>0.664</td>
</tr>
</tbody>
</table>
6.5.5 Impacts of Productive and Consumption Loans

From the preceding section we found borrowers (including borrowing for productive purposes and borrowing for consumption purposes) are more empowered than non-borrowers in many instances. In most models predicted probabilities are very close to sample statistics for non-borrowers and borrowers borrowing for productive purpose, while for borrowers borrowing for consumption purpose there are comparably noticeable gaps between estimated probabilities and samples statistics. This makes it necessary to differentiate between productive loans and consumption loans’ impact on women’s empowerment, and identify in which instances consumption loans work to improve women’s empowerment and in which instances consumption loans do not work.

Model specification to serve this purpose remains the same as those in Table 6-7 in the preceding section, except that the binary variable BORROWER, which distinguishes borrowers from non-borrowers, is replaced by BORROW_PROD which distinguishes borrowers borrowing for production purposes from the other two groups, namely borrowers borrowing for consumption purposes and non-borrowers, and BORROW_CONS distinguishing borrowers borrowing for consumption purposes from the other two groups. Since regression results on performance of other control factors remain highly consistent with those presented in the preceding section, we only summarize the estimated marginal effect of BORROW_PROD and BORROW_CONS in this section.

As reported in Table 6-10, productive loans have a positive effect on women’s empowerment in all instances, and its effect is statistically significant for at least 10 percent level in most models except in the IJ, IFE, MHC, MT, KCC and KDP models.
This finding is in line with BORROWER’s impact on women’s empowerment in the preceding section. Similarly, consumption loans also have a positive impact in all dimensions of women empowerment except for the KDP model. However, the statistical significance of the positive effect of consumption loans on women empowerment is limited to 11 out of 22 empowerment indices.

Compared to the previous set of logit model with BORROWER to assess microfinance loans’ impact on women empowerment, the new set of logit models with BORROW_PROD and BORROW_CONS have no lower goodness-of-fit measured by likelihood ratio statistics, Pseudo-R$^2$ and overall predicted percentage correct.

<table>
<thead>
<tr>
<th>Loans by Purpose</th>
<th>Borrowing for Productive Purpose</th>
<th>Borrowing for Consumption Purpose</th>
<th>Likelihood ratio statistic</th>
<th>Pseudo-R$^2$</th>
<th>Overall predicted percentage correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>WEIs</td>
<td>marginal effect z-statistic</td>
<td>marginal effect z-statistic</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>ICA</td>
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<td>.346 5.04</td>
<td>63.70</td>
<td>0.2527</td>
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<tr>
<td>U</td>
<td>.052 0.81</td>
<td>.050 0.54</td>
<td>23.25</td>
<td>0.0980</td>
<td>64.81</td>
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<tr>
<td>IM</td>
<td>.154 2.24</td>
<td>.007 0.08</td>
<td>40.69</td>
<td>0.1555</td>
<td>73.87</td>
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<tr>
<td>IL</td>
<td>.156 2.13</td>
<td>.137 1.20</td>
<td>50.60</td>
<td>0.2001</td>
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</tr>
<tr>
<td>IFE</td>
<td>.347 0.98</td>
<td>.056 0.20</td>
<td>105.28</td>
<td>-</td>
<td>78.05</td>
</tr>
<tr>
<td>ICL</td>
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<td>.144 1.18</td>
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<td>72.47</td>
</tr>
<tr>
<td>JM</td>
<td>.274 3.68</td>
<td>.185 1.89</td>
<td>56.84</td>
<td>0.2394</td>
<td>75.61</td>
</tr>
<tr>
<td>JL</td>
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<td>.274 4.01</td>
<td>51.29</td>
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<td>74.91</td>
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<tr>
<td>JFE</td>
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<td>.002 0.02</td>
<td>55.94</td>
<td>0.1974</td>
<td>80.84</td>
</tr>
<tr>
<td>JR</td>
<td>.473 7.45</td>
<td>.534 6.65</td>
<td>86.53</td>
<td>0.2783</td>
<td>74.56</td>
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<tr>
<td>Against abuse</td>
<td>PPA</td>
<td></td>
<td>.445 6.46</td>
<td>90.16</td>
<td>0.2667</td>
</tr>
<tr>
<td></td>
<td>PC</td>
<td></td>
<td>.106 1.03</td>
<td>40.11</td>
<td>0.1180</td>
</tr>
<tr>
<td>Free mobility</td>
<td>MPH</td>
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<td></td>
<td>MMFI</td>
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<td>.129 2.07</td>
<td>43.87</td>
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</tr>
<tr>
<td></td>
<td>MHC</td>
<td></td>
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<tr>
<td></td>
<td>MT</td>
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<td>60.05</td>
<td>0.2392</td>
</tr>
<tr>
<td></td>
<td>MO</td>
<td></td>
<td>.407 6.22</td>
<td>69.61</td>
<td>0.2369</td>
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<td>General knowledge</td>
<td>KMA</td>
<td></td>
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<td>71.87</td>
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<tr>
<td></td>
<td>KCC</td>
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<td>0.1258</td>
</tr>
<tr>
<td></td>
<td>KDP</td>
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<td>-.055 -0.68</td>
<td>44.73</td>
<td>0.1595</td>
</tr>
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</table>
### 6.6 CONCLUSIONS

This study investigated microfinance loans’ impact on women’s empowerment. To measure women empowerment in all dimensions of life covering dependent control over assets, joint decision making, free mobility, power against abuse and general knowledge, in total 22 indices were used. Sample statistics showed that women microfinance members in general enjoyed limited empowerment particularly in those instances with respect to financial status. Proportion of women being empowered varied significantly across different measures of empowerment and across groups of microfinance members.

Empirical analysis was based on estimating a system of 22 logit models individually. The core control factor of interest is BORROWER which differentiated microfinance loan borrowers from microfinance members who only saved but did not borrow. Given the empirical evidence of different prediction powers between two sub-groups within the borrower category, borrowers borrowing for productive purpose (BORROWER_PROD) were further distinguished from those borrowing for consumption purpose (BORROWER_CONS) to further identify women empowerment effect of microfinance by loan purposes. Furthermore, to control for estimation bias, this study included other control factors covering demographic characteristics, household characteristics as well as geographical and ethnical dummy variables.

On estimation methodology, the endogeneity issue was discussed and formally tested in the logit models. It was found that the household asset was endogenous for the model of independent control over furniture and electronics. The endogenous effect of household asset in this instance was controlled for with the application of instrument variables probit estimator, while the rest of the 21 women empowerment models were estimated by using the usual logit estimator. The issue of endogeneity on access to microcredit was
also addressed. But due to lack of valid instrumental variables we resorted to regression results from models treating microcredit accessibility as exogenous.

Regression results showed that women microfinance loan borrowers were generally more empowered than women microfinance members but non-borrowers, and further that women borrowing for productive purpose had higher probability of being empowered than women borrowing for consumption purpose in many instances. Drawing from the summary statistics it can be seen that women are generally less empowered in all dimensions. However, with access to microfinance credit they are able to increase their empowerment in all five dimensions. More specifically, women who had access to microfinance loans generally had more control over assets, greater mobility, were consulted in important household decisions and had more common knowledge. Therefore, it can be concluded that more and more poor women should be provided with access to microfinance credit.
CHAPTER SEVEN: CONCLUSIONS AND POLICY SUGGESTIONS

7.1 CONTRIBUTIONS OF THIS STUDY

Poverty rate in Fiji has more than doubled over the last three decades and currently about forty percent of the population is living below the poverty line. Similarly, the unemployment rate has significantly increased due to lack of formal sector employment creation, high number of school drop-out as well as graduates entering the labour market.

After gaining independence in 1970, Fiji adopted and practised import substitution policies for the first one and half decades. In 1984 Fiji introduced export oriented policies, however, only after the 1987 military coup a major shift to export oriented policies was experienced. Some of the major policy changes brought about after 1987 include labour market reform, public sector reform and taxation reform. At the same time the government provided a number of incentives to attract direct foreign investment into the economy. Some of incentives include tax free zone and tax free factories. Despite the shift in policy, the economy achieved limited success in terms of economic growth and employment creation; and more and more people fall below poverty line due to the sluggish performance of the economy.

On the other hand, policies such as the introduction of value added tax and public sector reform (including privatization and removal of government subsidies) had major implications on the economy and welfare of the poor. The shift in policy consequently improved the efficiency and competitiveness of the economy through industrialization and developing the manufacturing sector. At the same time, it also led to the neglect of the rural and agriculture based activities. For instance, removal of subsidies and state support from the rice industry contributed to the demise of the rice industry in Fiji. In addition, limited support in terms of institutions and infrastructure development was provided to the farmers to transfer them into alternative income generating activities. More recently, expiry of land leases and gradual removal of preferential sugar prices forced many farmers to move out of their farms. As a result of the policy shift combined
with the lack of land reforms, many people moved to towns and cities in the hope of obtaining better paying jobs.

Theoretically, it is anticipated that the expansion of the industrial sector in urban areas would be able to effectively absorb resources which are released from rural areas and the agricultural sector. However, despite the incentives provided to the manufacturing sector, performance of the manufacturing sector was not strong enough to absorb resources released from farms and rural areas in Fiji. Growth in the formal sector employment was not sufficient to cater for the increasing labour force, which created a huge unemployment and underemployment problem in Fiji. This further increased poverty and hardship of the people.

In the light of increasing poverty and unemployment rate on one hand and the limited ability of the formal sector to provide sufficient employment opportunities on the other hand, policy makers and non-government organizations are forced to take actions to promote the informal sector to absorb surplus resources in the economy. Microfinance is seen as an important policy tool for promoting the development of the informal sector. Since the late 1990s Fiji government, with assistance from NGOs and donor agencies, has been actively promoting the microfinance programme in Fiji. The government provided grants to a number of non-government organisations to implement the microfinance scheme, and promoted microfinance as one of the strategies to address poverty.

It is generally believed that poor and rural communities lack access to formal financial services. Poor community lacks collateral and hence they are regarded as risky borrowers by formal financial institutions. Rural areas in Fiji are distant and less populated, formal financial institutions cannot continue their usual business in rural areas due to high management costs. These gave reasons to policy makers to promote microfinance to provide better access to credit to the poor and people living in rural areas. Advocates of the microcredit programme believe that access to credit will allow the poor and rural population to establish income generating activities and hence boost their income. Increase of income acquired through income generating activities and productive inputs will enable the poor to leap out of the poverty trap. As a matter of fact,
a number of poor households have taken advantage of the microcredit scheme and engaged in micro and small business, many of whom have ventured into profitable entrepreneurial activities.

While the advocates of the microfinance programme believe that microcredit has a positive impact on improving the welfare of households, critics believe that there is no positive impact and it may also have severe negative impacts at times. Empirical studies related to microcredit are country specific studies. Engagement in the microcredit scheme and comprehensive socio-economic factors are used as control factors to assess microcredits’s impacts on poverty reduction, women empowerment and other socio-economic aspects. Limited number of studies also stress on determinants of accessibility to microcredit. Although socio-economic control factors discussed and utilized in the literature are similar across different country specific studies, the effect of microcredit on different aspects remains case specific because of heterogeneity in economic structures, cultures and customs across different countries. This explains the reasonability of mixed results found in the literature and why the debate remains unsettled.

A number of empirical studies on microcredit have been conducted mainly in Asia, Africa and Latin America, however, to date no detailed studies examining the impact of microcredit have been conducted in small island states like Fiji. This study has contributed to the debate on the impact of microcredit from the perspective of a small island state which reflects different characteristics from many big developed and developing countries. It is also a contributor to the existing literature in terms of methodologies focusing on addressing bi-directional causality, which is insufficiently addressed in the literature.

The current study assessed the impact microcredit provided by three major microfinance institutions in Fiji, namely, Fiji Council of Social Services, Microfinance West and Cooperative Microfinance North. Based on the stratified random sampling method, a sample including both borrowers and non-borrowers were randomly drawn from lists of members provided by each microfinance institution in the above. The impact of
microcredit was assessed with respect to microcredit’s impact on poverty reduction and its impact on women empowerment.

7.2 SUMMARY OF METHODOLOGIES AND EMPIRICAL FINDINGS

Chapters Four, Five and Six are main chapters of the thesis investigating determinants of demand for micro-loans, micro-loans’ impact on poverty reduction, and micro-loans’ impact on women empowerment, respectively. The methodologies adopted in these differ from one another due to different types of dependent variables and model specifications, but share same features of addressing the endogeneity issue.

Chapter Four examined the determinants of demand for microcredit in Fiji. Demand for microcredit was conducted in two steps: (1) determinants of microcredit accessibility, and (2) determinants of microcredit size. Since two control factors, namely household income and expenditure, were found endogenous, instrumental variables estimators were adopted in both steps. Provided microcredit accessibility was a binary variable, the first step’s estimation employed the instrumental variables probit estimator. Provided cumulative loan amount was a censored dependent variable, the second step’s analysis was based on the Heckman selection model which corrected selection bias.

Empirical analysis in Chapter Four suggested that spouse age, household expenditure per adult equivalent, household head’s nearly unemployment status, number of children, and rural locality positively contributed to microfinance institution members’ likelihood of taking loans, while household income reduced the likelihood of accessing microcredit. With respect to microloan size, positive determinants included household income and iTaukei ethnicity, while negative determinants included spouse age, both member and spouse’s tertiary education, household expenditure per adult equivalent, household head’s nearly unemployment status, number of children, number of earners and amount of transfers that the household receives.

Chapter Five examined the effect of microcredit on household income. The analysis was conducted in two steps: (1) investigating microcredit accessibility’s impact, and (2) investigating productive loan’s impact. In the first step endogeneity bias of loan accessibility and household expenditure were corrected in the two-stage probit least
squares estimation procedure, while in the second step endogeneity bias of productive loan size was corrected in the three-stage least squares estimation procedure.

Empirical analysis in Chapter Five suggested that microcredit accessibility and socio-economic factors including, tertiary education of both member and spouse, member’s age, number of earners in the household, urban locality and transfers that the household receives had positive effects on improving household income. With respect to microcredit size’s impact on household income, evidence was also found that, microcredit size, spouse’s tertiary education, number of earners and urban locality are positive contributors to enhance household income. Findings in this chapter provided important evidence of successful poverty reduction effect of the microfinance scheme in Fiji.

Chapter Six examined effect of microcredit on women empowerment. Choice of this socio-economic aspect to further investigate microcredits’s impact was due to the perception that more women were joining the labour force and taking up low paid jobs as a result of increasing hardship faced by households. With women’s involvement in the work force, women’s perception towards gender equality and enhancing their empowerment becomes an increasingly important concern in Fiji.

Twenty-two indicators were adopted to measure various aspects of women empowerment and these indicators were broadly classified into five categories including, control over household asset, joint decision making, mobility indices, power against abuse indices and general knowledge. Twenty-two regressions were run accordingly. The analysis was conducted in two steps: (1) individually assessing microcredit accessibility’s impact on the twenty-two aspects of women empowerment, and (2) individually assessing productive loan accessibility’s impact on the twenty-two aspects of women empowerment. Since the dependent variable women empowerment index in each regression was a binary variable, regressions, with one exception, were individually assessed by the logit estimator. The exception was the regression of independent control over furniture and electronics, where endogeneity bias caused by household asset was identified and corrected with the application of instrumental variable probit estimator in both steps.
Empirical analysis in Chapter Six generally evidenced similar impacts of microcredit accessibility and productive loan accessibility on women empowerment. Positive impacts were found on most regressions of women empowerment indices. The most significant improvement in women borrowers’ empowerment relied on borrowers’ control over cash, machinery, livestock and clothes. Positive impacts of microcredit on women empowerment were also reflected in improving women’s mobility including, mobility to parent place, microfinance office and other places like weddings and friends’ place, women’s power against physical and sexual abuse, women’s knowledge on daughter’s marriage age, women’s working right and deadly diseases like HIV. However, microcredit’s impact was limited in some aspects such as, women’s independent control over jewelry, furniture and electronics, women’s mobility to town and health centre, women’s knowledge on Women Crisis Centre and divorce procedures.

In summary, it has been found that microcredit has a positive impact on poverty and women empowerment of microfinance clients in Fiji. The above conclusions are expected to be applied to small island countries with similar background, like some other Pacific Island countries and Caribbean countries.

7.3 POLICY SUGGESTIONS

This study endorses the effort made by the Fiji government in promoting microfinance/microcredit scheme in Fiji as a mechanism to address poverty. Poverty in Fiji is likely to reduce with increased access to microcredit. However, the outreach of the microcredit scheme has been limited over the last decade, and more efforts need to be made to promote the scheme. The introduction of mobile technology and M-Paisa in the microfinance sector is commendable as it may reduce costs of depositing savings and delivering micro loans, and provide better communication to build good relations with clients.

The Fiji government should relook its welfare programme and provide greater support for income generating projects. Income generating projects are found to provide sustainable income sources, because clients with income generating activities are likely to re-invest part of the profits from their business, and hence will be able to increase
their income in the long term. Sustainable income sources not only address poverty, but also improve women empowerment since they enhance women’s financial status in the household.

Our findings on the limited effect of microcredit on promoting women’s general knowledge in a few aspects suggests that, apart from providing credit, depositing and financial training, microfinance institutions should also provide educational talks on pressing issues facing women. Microfinance institutions should furthermore promote networking among clients, and mobile technology can play an important role in building the network. This will allow women to share knowledge on issues facing their gender, apart from allowing them to market their products. Effective networking can also assist in expanding microfinance service to wider population.

Microfinance’s success can also promote the concept of inclusive growth to be more widely perceived. The Asian Development Bank defines inclusive growth as ‘growth that not only creates new economic opportunities, but also ensures equal access to the opportunities created for all segments of the society, particularly for poor’ (Ali and Son, 2007, p12). Given strong evidence of positive impacts of microcredit on poverty reduction and women empowerment in Fiji, microcredit can be effectively used as one of the mechanisms to achieve inclusive economic growth, particularly in the informal sector in countries that share similar economic structure, cultures and customs.

Borrowers need credit for microenterprise and for consumption. Regulatory definition should not limit the access to loan for enterprise purpose, as that would deny the poor’s access to credit for valid purposes. Empirical evidence shows that people are likely to use microloans for consumption even if they have borrowed loans stating otherwise. In addition, there should be limits on amount of loan that a first time borrower can take; however there should not be limits on maximum amount on subsequent loans that a client with proven financial records. This is important to ensure sustainability of microfinance institutions since bigger subsequent loans are easier to manage.

At the same time, there should be limits to overall loan portfolio of microfinance institutions. All deposit taking microfinance institutions should be subject to prudential
supervision from Reserve Bank of Fiji. Non-prudential supervision can be applied to credit only microfinance institutions that use shareholder fund or fund taken from regulated financial institutions such as commercial banks. There should be prudential supervision for all government subsidized microfinance institutions to ensure their effectiveness. There should also be legal limits on the amount of deposits kept at the microfinance institutions by individual clients. This will act as deterrence for money laundering and misappropriation of fund by microfinance institutions.

Microloan providers can appoint agents or team leaders in distant rural areas to facilitate the provision of finance services. Microfinance institutions will provide fund to agents on weekly or monthly basis to enable agents to loan out to needy clients. These agents can also collect repayment from clients.

7.4 FURTHER RESEARCH

Further research is needed to compare the performance of different types of microfinance service providers in Fiji. Recently, it has become mandatory for commercial banks to provide microfinance service, and more private microfinance institutions have joined to provide microfinance services in Fiji. It is important to find out which microfinance model (such as government subsidies, commercial bank or private providers) is more effective in reaching the poorest of the poor and improving their welfare in the context of small Island countries.

It is also important to examine the impact of microcredit using other methodologies such as Natural Experiment and Propensity Score Matching to check the robustness of positive impacts of microcredit. Due to resource and time constraints, it was not possible to explore alternative techniques in this thesis, which, however, can be taken up in future research.
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APPENDIX

Appendix for Chapter 4: Derivation of the Inverse Mills Ratio (IMR)

Assume that $z$ is normally distributed with mean zero and variance one and $\phi(z)$ is the standard normal density function:

$$\phi(z) = \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{(z-\mu)^2}{2\sigma^2}\right) = \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{z^2}{2}\right).$$

Accordingly the normal cumulative density function $\Phi(z)$ is written as:

$$\Phi(z) \equiv \int_{-\infty}^{z} \phi(z)dz.$$

By the characteristics of the normal cumulative density distribution,

$$\int_{-\infty}^{c} \phi(z)dz = 1 - \Phi(c).$$

Therefore the relative likelihood for $z$ to be within $[c, +\infty)$, $E(z|z > c)$, is

$$E(z|z > c) = \frac{\phi(z)}{1 - \Phi(c)} = \int_{-\infty}^{c} \frac{z\phi(z)}{1 - \Phi(c)}dz = \frac{1}{1 - \Phi(c)} \int_{-\infty}^{c} z\phi(z)dz.$$

Substituting (A4.1) into (A4.3) yields

$$E(z|z > c) = \frac{1}{1 - \Phi(c)} \int_{-\infty}^{c} \frac{z}{\sqrt{2\pi}} \exp\left(-\frac{z^2}{2}\right)dz = -1 \cdot \frac{1}{1 - \Phi(c)} \int_{-\infty}^{c} d\Phi(z) = \frac{\phi(c)}{1 - \Phi(c)}.$$

The relative likelihood $E(z|z > c) = \frac{\phi(c)}{1 - \Phi(c)}$ is the inverse Mills ratio (IMR).