

INTRODUCTION

“Money, says the proverb, makes money. When you have got a little, it is often easy to get more. The great difficulty is to get that little.”

-Adam Smith, Wealth of Nations, 1776.

According to the United States Census Bureau, 10.1 percent of Vermont residents live in poverty (US Census Bureau, 2001). For a family of four, “poverty” is defined as an annual income less than or equal to \$17,761, the 2001 poverty threshold (US Census Bureau, 2001).¹ The 60,000 Vermonters who live below these thresholds are spread throughout the state - county poverty levels range from 7.1 to 14.8 percent - but most live in rural areas away from urban centers. Orleans, Essex, and Caledonia counties, which have the highest poverty rates, are in the “Northeast Kingdom,” a sparsely populated rural region. Chittenden and Washington counties, which have the lowest poverty rates, include two of Vermont’s largest urban areas (Burlington and Montpelier, respectively). Distance from urban areas is correlated with poverty, possibly because of a lack of access to urban employment centers.

Research on the relationship between rural locations and poverty has shown that transportation is a primary determinant of self-sufficiency and poverty alleviation in a rural state like Vermont (Gueron, 1991; Polit and O’Hara, 1989). As is the case with most rural areas, a well-established system of public transportation does not exist in the state. Less than 1 percent of Vermont commuters rely on public transportation to get to work. As a consequence, many employers expect or require that employees have access to a vehicle or have their own vehicle (Baldasaro, 2001). Most welfare recipients and

¹ For an individual this threshold is \$8,959, for a family of two it is \$11,531. (US Census Bureau, 2001).

many other low-income individuals, especially those who are jobless, lack the savings or income necessary to acquire a loan or to purchase a car on their own. In other words, acquiring a loan requires some financial collateral and/or proof of repayment ability. Especially in rural areas like Vermont, income cannot be attained without transportation and transportation cannot be attained without income.

The Vermont Development Credit Union (VDCU) has reacted to this problem. As one of hundreds of low-income lenders in the United States, VDCU confronts the traditional credit rationing problems of adverse selection, asymmetric information, and moral hazard and provides credit to those who, due to lack of collateral or poor financial history, are unable to obtain credit from traditional lenders. For example, one government-supported program managed by VDCU is Working Wheels, a program for Welfare-to-Work clients in the state of Vermont designed to provide car loans (and thus transportation) for those who cannot obtain loans elsewhere.

Yet the establishment of this program does not guarantee its success. As Jonathan Morduch (1999) and others have illustrated, many organizations and programs in the market of credit for the “unlendable” may rely heavily on state and federal funding or subsidies and donor and lender generosity. It should be noted that without help from these outside sources the market for low-income lending would be less robust (Morduch, 1999; Hollis, 1998). For any non-traditional lender the questions arise: How is low-income lending used? How is credit rationed in this market? How can we determine if such a program is socially and economically efficient?

To confront these queries for the Vermont case this work takes an in-depth look at the Working Wheels program. Using a unique data set manually assembled from VDCU

client files and qualitative evidence from program clients, this paper addresses three specific questions. First, who is granted a Working Wheels loan? Second, what is the client repayment record of the program? Third, what monetary and non-monetary returns are realized by the program?

Organization

The remainder of this paper is divided into five chapters. Chapter One briefly outlines the general fundamentals of low-income lending, the Vermont Development Credit Union, and the Working Wheels program. Chapter Two reviews previous research on transportation, low-income lending, lender organization, social return, and credit rationing theory. Chapter Three introduces the data set and then empirically describes WW loan allocation and repayment. Chapter Four estimates the return of the WW program. Chapter Five provides qualitative analysis of the program obtained from personal interviews with WW clients. This final chapter is followed by a brief summary of the work as well as some conclusions about credit rationing, repayment, and social return in the market for low-income, low-collateral car loans.

CHAPTER 1: Theoretical Background

“...to provide banking services and credit to those who need it most.”
–VDCU Mission Statement

1.1 Low-income lending at the VDCU

Over the last 35 years a large movement has attempted to fill the gap left by traditional financial institutions for collateral-free and low-income lending. In 1976, through a project that quickly grew into the renowned Grameen Bank, Professor Muhammad Yunus began providing small loans to poor people in Bangladesh. These were people without credit histories, stable incomes, or stable financial assets. By making collateral-free loans available, Yunus opened the doors on the previously non-existent market for low-income banking. The market for “banking for the unbankable” was thus born. Through the creation of this market and support from government subsidies and private generosity, Grameen Bank has provided millions of people around the world with the financial edge necessary to move towards self-sufficiency (Grameen Bank, 2001).

The extraordinary success of Grameen Bank in helping to alleviate poverty over the last 35 years has inspired and led to the creation of thousands of similar organizations in the developing and developed world. These organizations provide the historically “unbankable” with the financial base required to build the credit history and collateral they had previously been lacking.

The Vermont Development Credit Union (VDCU) is a non-profit financial institution based in Burlington, VT that caters to traditionally “unbankable” clients. The mission of VDCU is “to create wealth and promote economic development by bringing affordable capital and financial services to low-income and other traditionally

underserved people”(VDCU mission statement, 2001). Since its foundation in 1989, VDCU has grown considerably. Currently, VDCU has over 8,000 members who are not only shareholders, but are also either financially or socially underprivileged in some way, or are somehow affiliated with a non-profit or religious organization which caters to low-income people in the state (VDCU, 2001). In the year 2000 VDCU made over \$11 million in loans to low and moderate- income Vermonters (VDCU, 2000).

Working Wheels (WW) is one of many low-income lending programs at VDCU. Unlike many other programs at the credit union, WW is funded by a government grant, in this case as part of the Temporary Assistance to Needy Families (TANF) welfare program. In theory, this external support provides the lender with some additional room for error, allowing them to be less reliant on turning a financial profit on each loan.

In 1996, TANF replaced the Aid to Families with Dependent Children (AFDC), Emergency Assistance, and Job Opportunities and Basic Skills Training (JOBS) programs as a result of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (Hershkoff, 1997). The primary initiatives of the TANF program include providing temporary assistance to needy families subject to strict work requirements and a finite eligibility period, and helping needy adults secure employment as a means to self-sufficiency. Similar to the earlier JOBS Program, which provided “federal matching funds for state welfare-to-work” programs without indicating specifically how these programs were to be designed, TANF set up block grants that allow each state to cater to its individual service needs and thus best serve local participants. Consequently, new assistance programs differ from region to region in terms of types of benefits, application processes, and eligibility (Hershkoff, 1997).

While the Family Support Act of 1988 and the JOBS Program both provided transportation for welfare recipients who could not get to work due to inadequate access to transportation, welfare reform has since eliminated this provision and transportation support is no longer directly available (Perlmutter, 1997; Gueron, 1991). As a consequence, some states, including Vermont, have found it necessary to use TANF block grants to create transportation programs for welfare-to-work clients.

The WW program is an example of such a transportation program. Working Wheels was created by VDCU, the Vermont Department of Social Welfare, and the five Community Action Agencies (CAAs) in Vermont (Bennington Rutland Opportunity Council (BROC), Central Vermont Community Action Council (CVCAC), Champlain Valley Office of Economic Opportunity, Inc. (CVOEO), Southeastern Vermont Community Action (SEVCA), and North East Kingdom Community Action (NEKCA)). The program was started in response to the lack of adequate public transportation in the state and the subsequent necessity of private automobile access for workers. An examination of Vermont commuter statistics points to this lack of transportation: the Center for Rural Studies (VT) reports that only 0.78 percent of the employed population who did not work at home relied on public transportation to get to work². (Means of public transportation included in this study are bus or trolley bus, subway or elevated rail, railroad, ferryboat, and taxicab. Private commuting methods reported in the study are transportation by car, truck, van, motorcycle, bicycle, walking, and “other means.”³)

As a result of this lack of public commuting options, many employers in Vermont expect employees to have private transportation. Most educational institutions also

² Approximately 5.9 percent of all persons employed in Vermont in 1990 worked at home.

³ For a complete summary of the Center for Rural Studies commuter statistics, see Appendix Table A.1.

assume personal means of transport. However, many underprivileged people seeking a job or to further their education have neither the money nor the credit rating necessary to purchase a car.

Working Wheels was initiated to alleviate the transportation problem by providing car loans to welfare-to-work clients in the state of Vermont to enable borrowers to purchase or repair an automobile. Started in October 1998, the program is funded by five \$50,000 grants from the Aid to Needy Families with Children (ANFC), one issued to each community action association in the state⁴. In 1998 each agency turned control of their Working Wheels funds over to VDCU so that VDCU's assets as a financial institution could be utilized: the money can be lent more efficiently by an established lending and banking institution than by CAAs not accustomed to granting and maintaining loans (Bullard, 2001). Also, the VDCU is able to leverage the grant money with its other deposits and is thus able to lend out more than the amount of the grant (Bullard, 2001).

The program attempts to cater specifically to the “unlendable” population in a number of ways, including employing alternative forms of collateral such as rent-to-own payments and other informal credit records. Additionally, WW aims not only to make successful loans within the program, but also strives for longer-term benefits for the client by incorporating informal financial training for borrowers into the program. Ideally, through this education and a successful loan on record, WW can help individuals overcome the “unlendable” label.

1.2 The Process

⁴ ANFC was the name for the Vermont TANF program. The program has since changed names and is now called “Reach Up.”

To date, 227 loans totaling \$540,746.85 have been granted through this program. Nearly all Working Wheels clients are referred to VDCU by one of the five CAAs in the state. Those who are not referred by CAAs are generally already VDCU members, or are referred by friends, employers, or car dealers. Most participants in the program are from low-income households, defined in Vermont as those with incomes less than or equal to 80 percent of median regional household income (Hogarth *et al.*, 2000; VDCU, 2001). Median household income in Vermont is estimated at \$35,210, which is slightly less than the national median value of \$37,005 (US Census Bureau, 2001). By these figures, the low-income threshold for the state of Vermont is \$28, 168. It is not atypical for WW participants with dependents to have household incomes less than half of this amount (VDCU, 2001).

Upon submitting an application, each WW candidate is classified as Type 1, Type 2, or Type 3. A Type 1 WW client is someone who, at the time of application, was an ANFC or Reach Up Participant⁵. Type 2 WW clients are those who have participated in ANFC and/or Reach Up within six months of applying to WW but are not currently ANFC/Reach Up recipients. All clients who are not Type 1 or Type 2 are classified as Type 3.

1.2.1 Personal Information

Information on each WW applicant's sex, residence, employment, and credit history, credit rating, current job status and perceived motivation level (1-3 scale,

⁵ Aid to Needy Families with Children/Reach Up (ANFC/RU), is run by the Department of Social Welfare of Vermont. This program provides statewide "transitional assistance" according to Vermont's Welfare Restructuring Project and the Department of Social Welfare guidelines. In partnership with community-based organizations, the Vermont Department of Social Welfare provides job preparation, work, and support services to state residents through ANFC/RU.

1=lowest, 3=highest) is gathered by a VDCU loan officer⁶. A report of loan “barriers” and “compensating factors” is also recorded. Examples of barriers and compensating factors can be found in Table 1.1.⁷

Table 1.1: Examples of Barriers and Compensating Factors

<u>Barriers</u>	<u>Compensating Factors</u>
Bankruptcy	Good Mortgage/Rental payment
Delinquencies	Good Non-traditional References
Income	Stable Employment/Income
Job History	Stable Residence
Insufficient Credit	Positive Credit History
Medical Debts	Low Unsecured Debt

Source: VDCU Development IDL/IHIP Assessment Form, Vermont Development Credit Union, 2001.

As the data will show, these factors are important determinants of WW loans. The depth with which VDCU records barriers and compensating factors is one important difference between the credit union and other lending institutions. More complete descriptions of each barrier and compensating factor are provided in Chapter 4.

1.2.2 Credit Scores

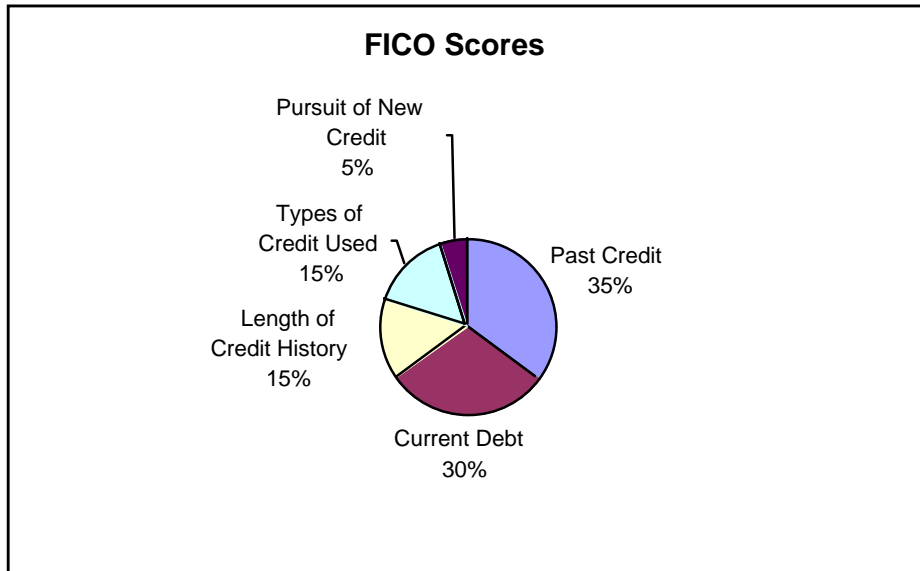
Like most lenders, VDCU also relies on credit bureau scores in their WW application analysis. Credit bureau scores, also called FICO (Fair, Isaac and Company) scores, attempt to predict future risk based on credit history. An individual with a higher credit score is considered less risky than an individual with a lower credit score. Credit scores are related to five variables: payment history, amounts owed (current level of

⁶ It should be noted that there is one officer at the credit union responsible for handling most WW loans. This helps ensure that a similar standard is applied to all WW applicants.

⁷ For a complete list of barriers and compensating factors, as well as other initial assessment information collected, see assessment forms in appendix.

debt), length of credit history, types of credit used, and new (outstanding) credit (Fair, Isaac and Company, 2001). The algorithms used to calculate these scores are copyrighted by Fair, Isaac and Company, but the weight assigned to each variable is public. As shown in Figure 1.1, 35 percent of the score is dependent on credit/payment history, 30 percent depends on current debt levels, 15 percent on how long credit has been in use (length of credit history), 15 percent on the types of credit used, and 5 percent on the current pursuit of credit.

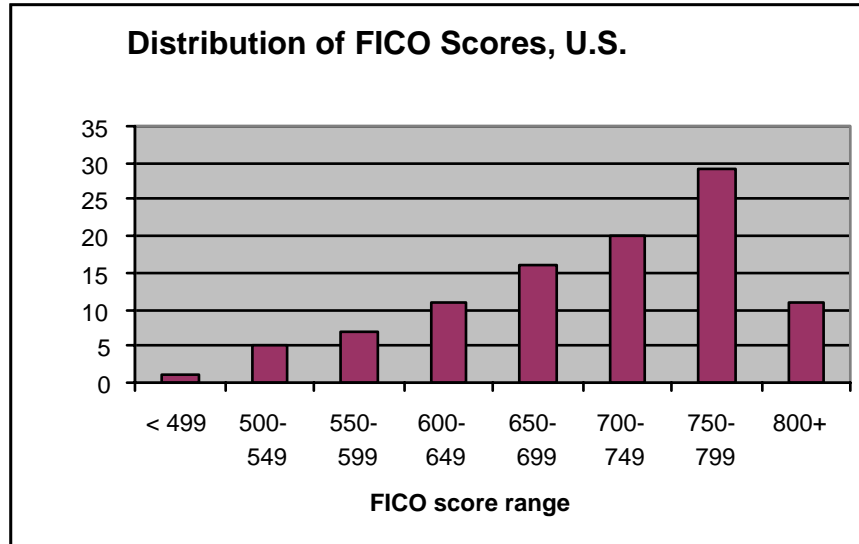
Figure 1.1: Credit Score Determination



Source: www.myfico.com

Credit scores range between 350 and 950. The national mean score is 670 and the median is greater than 700. Nearly half (49 percent) of scored consumers in the U.S. have credit scores between 700 and 799 (Fig. 1.2) (Fair, Isaac and Company, 2001).

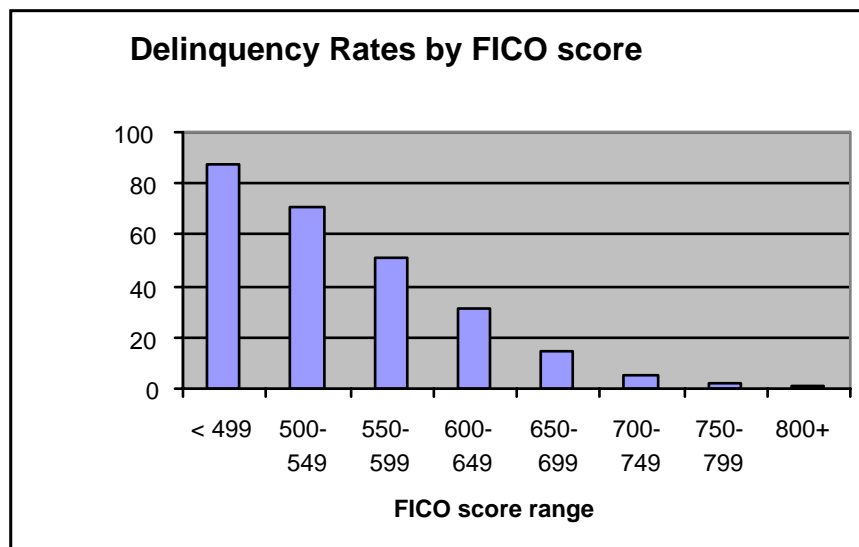
Figure 1.2: US FICO Score Distribution



Source: www.myfico.com

National credit delinquency rates by borrower credit score are illustrated in Figure 1.3.

Figure 1.3: Delinquency Rates by Credit Score

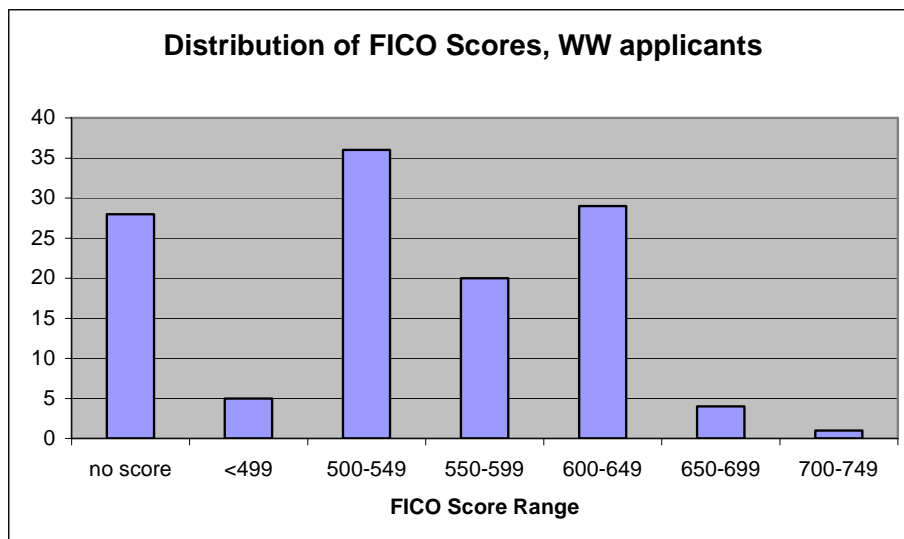


Source: www.myfico.com

As indicated above, those with higher credit scores are less likely to have delinquent loans. Consumers with scores less than 600 are especially risky, as this group is delinquent at least 50 percent of the time. These risky individuals are often considered “unbankable.”

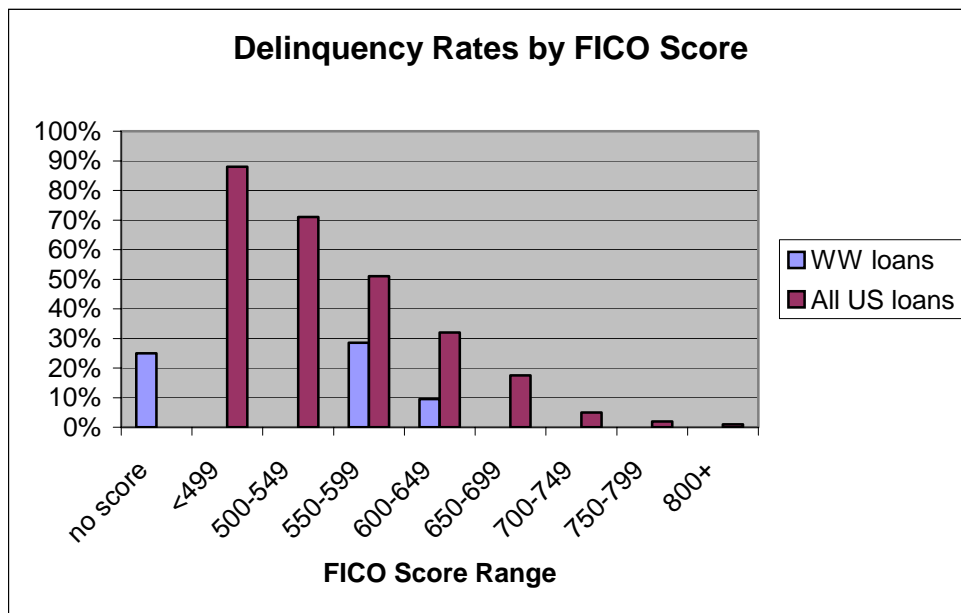
Most WW clients have credit scores between 450 and 650 (VDCU, 2001). Figure 1.4 shows the distribution of FICO scores among WW applicants.

Figure 1.4: WW Applicant Credit Scores



From Figures 1.3 and 1.4 one can see that credit scores of WW applicants are generally scores characteristic of high-risk borrowers. More than 60 percent of WW applicants have credit scores less than 600, the point at which delinquency rates exceed 50 percent. Figure 1.5 illustrates WW delinquency rates by FICO score as calculated from sample data alongside the rates for all US loans.

Figure 1.5: WW vs. National Delinquency



As Figure 1.5 shows, according to sample data, delinquent WW loans are those of participants with either no credit score or credit scores between 550 and 650. WW delinquency will be discussed in more detail in Chapter 3.

Figures 1.4 and 1.5 also indicate that a high proportion of WW applicants and delinquent WW lenders do not have credit scores. A person will not have a credit score if no undisputed credit or trade line has been updated in the last 6 months or if no record is at least six months old. People under the age of 18 also do not have credit scores (Fair, Isaac and Company, 2001). Women and immigrants are other groups that commonly do not have credit scores: women because they often share credit with a spouse under the spouse's name, and immigrants because they have not been in the country long enough to

establish credit. Traditionally speaking, banks will generally be hesitant to loan to those with low or non-existent credit scores.

1.2.3 Non-traditional Sources

While credit scores may be one industry standard for credit allocation, VDCU prides itself on heavy consideration of other indicators when determining whether to grant a loan. These indicators, which can include references from landlords to proof of on-time, rent-to-own payments are considered essential by loan officers at the credit union (Baldasaro, 2001). Loan officers also look to find a “good sense” of the applicant’s character via personal meetings with the applicant and speaking with references (Baldasaro, 2001). VDCU considers the lender-borrower relationships facilitated by such meetings a crucial element to the success of WW and other low-income lending programs (Baldasaro, 2001; Bullard, 2001). A report compiled by VDCU in collaboration with the University of Vermont determined that in addition to “credit union structure,” “mission focus,”⁸ “counseling-based methods,” and “community and other resource partnerships” were the four primary factors contributing to the credit union’s success (Kolodinsky *et al.*, 2000). According to this report and employee testimony, social capital in the form of lender-borrower and other relationships is a primary area of investment as well as an essential asset at the VDCU (Bullard, 2001, Kolodinsky *et al.*, 2000).

1.3 Qualification

⁸ The VDCU Mission is “to create wealth and promote economic development by bringing affordable capital and financial services to low-income and other traditionally underserved populations. “(VDCU, 1999).

Each WW loan application is classified as qualified, near-term qualified (NQ), or long-term qualified (LTQ). Qualified applicants are offered loans at a fixed interest rate of 9.5 percent if the vehicle is used as collateral and 14.5% if the vehicle is not used as collateral (Baldasaro, 2002)⁹. Near-term qualified applicants are those who, after some changes are made, the officer anticipates could be qualified within a few weeks. Long-term qualified applicants are expected to need six months or more before they will realistically be qualified for the loan. All NQ and LTQ applicants are presented with an “action plan” that proposes a strategy to get the applicant to where they need to be in order to qualify for a loan. Action plans can include lowering the loan amount, collecting more references, finding a reliable co-signer, setting up a debt repayment plan, or intense credit rebuilding starting with a savings plan overseen by VDCU¹⁰. Jason Baldasaro, the VDCU loan officer responsible for the majority of WW loans, estimates there is a 50-60 percent initial turn down rate on WW loans. That is, 50-60 percent of applicants are initially classified as NQ or LTQ. In a sample of 123 WW applicants, the initial turn down rate was 59 percent. More application and qualification specifics are reported in Chapter 4.

The WW loan application process relies on traditional and non-traditional resources for credit allocation. In order to more completely understand and analyze this program, the next section looks at previous research on low-income lending and its implications for WW car loans.

⁹ Car loan interest rates can vary dramatically. One with flawless credit may be able to get a rate just above the prime rate (currently 4.75%, has ranged from 9.5% to 4.75% since 1998 (Federal Reserve Bank)) while some predatory lenders or car dealers have been known to impose a 19% interest rate on riskier consumers. However, it should also be noted that loans for used cars are likely not awarded the prime rate.

¹⁰ For more examples, see VDCU IDL/IHIP Assessment form, appendix.

CHAPTER 2: Review of Literature

Many different factors influence the structure and operation of the WW program. In order to fully understand this program it is important to consider previous research on transportation, low-income lending, organizational structure, social return, and credit rationing as they apply to this case. This chapter provides a brief review of the relevant literature in these five related areas.

2.1 Transportation

While little formal research has been conducted on the importance of transportation for welfare recipients and other low-income individuals, Gueron and Pauly (1991) note that in rural areas like Vermont personal transportation is critical, as public transportation, car-pooling, and other ride share or alternative systems are not well established. In a survey of welfare job search program participants, between 5 and 10 percent of those who did not complete the program claimed that transportation issues were the main reason for discontinuing participation. Research conducted by Polit and O'Hara (1989) also confirms this necessity. Their study of non-urban Welfare-to-Work programs concluded that "[limited] transportation may constitute a formidable constraint in rural areas."

A report compiled by Kolodinsky, Stewart, Bullard, and Holmberg (2000) based on a survey administered to a random sample of 390 VDCU members found that 15.6 percent of members included in the survey considered themselves to have transportation problems in some capacity. Of this 15.6 percent, 50 percent did not have a car and 10 percent said they could not afford fuel. (Other transportation problems reported included lack of driver's license (29 percent) and inability to drive due to a disability (19 percent))

(Kolodinsky *et al.*, 2000).) Additionally, more than fifteen percent of those surveyed said public transportation (primarily bus systems) was an “unsatisfactory transportation option” (Kolodinsky *et al.*, 2000).

Interviews with VDCU Working Wheels clients also confirmed how seriously a lack of transportation can affect one’s ability to get to work, school, or the local community action agency in the state of Vermont (WW Clients, 2001). As one woman complained, “My car died...I was unable to get to work- I was unable to get my daughter to school...I wasn’t working and she just wasn’t going to school...it was really bad.” (WW Clients, 2001).

2.2 Low-income Lending

Very little formal research is available on low-income car loans. One exception is Attanasio, Goldberg and Kyriazidon (2000), who use data from the Consumer Expenditure Survey (1984-1995) to test a model of consumer loan demand and determine the significance of borrowing constraints in the car loan market. Following earlier work on borrowing limits by Juster and Shay (1964), Attanasio *et al.* determined that while the demand for loans for those individuals who do not face financial constraints should be a direct function of the interest rate (the price of the loan), the demand for those who are limited financially should be more reliant on borrowing limits than on interest rates. Results of the Attanasio *et al.* study show that “credit constraints are binding for some groups in the population, in particular for young and low-income households.” (Attanasio *et al.*, 2000).

Despite the paucity of formal research available on car loans for low-income individuals, extensive literature exists on low-income lending in more general terms.

Low-income lending and microfinance programs are increasing rapidly across the globe, with currently around 8 to 10 million households participating in such programs worldwide. Given the current rate of growth, some speculate that this number will reach 100 million by 2005 (Morduch 1999, World Bank, 2001). The Community Reinvestment Act of 1977, encouraging financial institution involvement in such programs, has led to a notable increase in US low-income lending as well (Morduch; O'Brien, 1998). Morduch (1999) notes that the recent increase in Non-Government Organizations (NGOs) both in the US and abroad has also contributed to the low-income lending movement, as has the recent interest in the notion of "social capital" by academics and others¹¹. The success of early low-income lending programs, many of which have realized loan repayment rates in the area of 95 percent¹², has likely also contributed to the recent rise in new programs (Morduch, 1999).

Clearly, the rise in programs has led to increased visibility and interest in these programs, as well as the development of research into the success and efficiency of these programs. A few of the most prominent findings are briefly outlined below.

2.2.1 The Importance of Organizational Structure

Our own reading of literally hundreds of wills in which merchants testify to the great good accomplished by these loan funds, as well as the clear evidence that very little of this capital was lost, attest to the enormous social and economic value of this instrumentality of social rehabilitation. (Jordan, 1959, p.267 in Hollis and Sweetman, 1998 p.1877)

While most current low-income and small- loan organizations are less than 15 years old, institutions that lend to those without collateral have been operating

¹¹ Social capital is the term used to describe the components of social organization such as norms, networks, and trust which can contribute to or detract from any project.

¹² Since the inception of loan programs at VDCU, the overall repayment rate has been 99.5% (Bullard, 2002).

successfully since at least the mid 1400s (Hollis and Sweetman, 1998). In a review of six early, international, long-lived microcredit and collateral-free lending organizations, Hollis and Sweetman use these organizations as guides to determine how the current market for low-income lending can become more sustainable. The effects of subsidies, the importance of savings and other funding mechanisms, the ideal size of organizations, and loan size restrictions are some of the issues explored via historical hindsight. While Hollis and Sweetman acknowledge the danger in making direct parallels between mid-century and modern day organizations due to obvious cultural and societal differences, they contend that due to structural similarity between institutions over time, important lessons can still be learned. Most notably, the authors find that deposit (or savings) based organizations like VDCU generally last longer and serve significantly more clients more efficiently than do organizations which acquire funds primarily from donation or government subsidy¹³. These results imply that a solid organizational structure in addition to large levels of capital form the foundation for a sustainable and successful (both socially and financially) lending operation.

Case studies of more recent organizations also find that organizational structure plays an important role in the success of a lending institution catering to low-wealth individuals. In a paper examining credit constraint in Guatemala, Braham *et al.* (1996) maintain that due to their structure and the ability of credit unions to ease strict constraints on low-income individuals imposed by other financial institutions, credit unions are a good channel through which to make low-income financial services more efficient. Brahm *et al.* state “Credit unions...unlike borrowing groups and targeted lending programs...can be effective full-service intermediaries, which offer saving

¹³ WW is the one of few programs at VDCU partially funded by the government through “free capital.”

opportunities, make loans, and provide other financial services to members.” Similar to Hollis and Sweetman (1998), the authors argue that this provision of a network of financial services is an essential element of an efficient program.

Related to this, Hogarth and O’Donnell (2000) have shown that low- income households that obtain a bank account are more likely to demand other financial services such as car loans, mortgages, credit cards, etc. These findings imply that the idea of the self- perpetuation of benefits of a financial education may hold some merit, a belief at the heart of VDCU, Working Wheels and other Welfare-to-Work programs. This is one reason why all borrowers are required to become “members” (i.e. shareholders) of the credit union by opening a small (minimum balance of \$5) savings account at VDCU.

In addition to the organizational structure of a lending institution, the manner in which the institution implements this structure can have an important effect on transaction outcomes. As more information circulates between lender and borrower, it becomes easier to determine the riskiness of the borrower: the asymmetric information problem is reduced or eliminated. Beyond that, social ties between borrowers and lenders can also improve borrower access to credit by building a sort of “social collateral” through social capital in the form of trust between parties (van Bastelaar, 2000; Chakravarty and Scott, 1999). In other words, community ties and links to Community Action Agencies (CAAs) may reduce the moral hazard problem¹⁴ by providing a preliminary screening of potential WW clients. In these ways, social ties between a lender and a borrower can decrease the negative results of imperfect information in small transactions like low-income loans.

¹⁴ Moral hazard is the risk faced by a lender that a borrower has been dishonest about his or her financial situation, has incentive to accept a large amount of risk, or has not entered into the lending agreement with the intention of abiding by the contract.

Logistic regressions run by Chakravarty and Scott (1999) to predict the probability of being rationed for credit as a function of variables expressing borrower characteristics and lender/borrower relationships support this hypothesis. They find that the strength and duration of lender/borrower relationships “significantly lower the probability of being rationed in the consumer loan market.”

These results are directly applicable to the case of VDCU and WW, which take pride in getting to know each client and his or her needs and capabilities. Sixty-seven percent of VDCU members surveyed by Kolodinsky *et al.* (2000) thought that VDCU performed “much better” than other banks in the personal service arena. Only 5.9 percent rated personal service performance as “worse” than other banks. Moreover, 83 percent reported that VDCU was “better” than other banks at providing help for obtaining a loan while 6.5 percent reported the credit union was “worse” (Kolodinsky, 2000).

2.3 Social Return

Unlike those of more traditional institutions, the goals of most low-income lending institutions extend beyond the realm of financial profits. Low-income lending is often seen as a means for personal and financial growth and change as well as a means for social and political change (Yunus, 2000). Like that of nearly all similar institutions, VDCU considers its mission to be “not for profit, but for people” (VDCU, 2001). This is not the case among most traditional financial institutions. While low-income lending programs can and do provide financial benefits for beneficiaries, they can also provide otherwise unrealized social, non-monetary benefits (such as the residual benefits of transportation like employment and the self-sufficiency that comes from mobility) by granting credit to those who may not be able to acquire credit elsewhere.

Because non-monetary benefits are difficult to quantify, the complete (that is, social, personal, and economic) value of these programs is often not fully recognized. Measuring the return of such programs is an extraordinary challenge. Some have suggested that in the case of programs not financed by external sources, cost-benefit analysis is irrelevant. The argument follows that in such a case, since no costs are being incurred by governments or other providers, society only realizes benefits. Morduch (2000) points out that while this zero-cost principle may hold some truth, it is not always the case that the zero-cost option is the most accurate. That is, in some cases it may be appropriate to consider opportunity costs with respect to *how* lending is carried out. Support for this argument exists in the popularly accepted “squared poverty gap” model of Foster, Greer, and Thorbecke (1984). This model logically argues that how and where funds are used determines how beneficial they are. By using marginal return analysis, the model shows that raising the income of a poor borrower by one dollar has an impact five times the size as loaning a less poor borrower the same dollar. Most low-income lending programs, including Working Wheels, follow this logic and are consequently targeted specifically towards those who cannot otherwise get credit.

For the case of subsidized or other externally supported programs, cost-benefit analysis is much more straightforward than for the unsubsidized case. One simple and commonly applied model (Morduch, 1999; Khandker, 1998) calculates the ratio between subsidy values and realized borrower benefits and uses this to analyze the cost-benefit relationship. Again, the problem here lies in measuring benefits (especially non-monetary benefits). To remedy this problem Morduch suggests that since the total value of all benefits is often not only a collection of monetary and non-monetary but also inter-

temporal benefits, costs should be weighed against the present value of the flow of future benefits to attain the most reliable cost-benefit ratio (Morduch, 1999).

2.4 Win-win challenged

Much research on low-collateral and low-income lending suggests that organizations which follow guidelines of good banking and institutional organization will also be the most successful in lending to the “unlendable,” and will thus profit both financially and socially. However, work by Jonathan Morduch (2000) challenges what he refers to as the “win-win” notion. Morduch argues that, although the good banking/effective low-income credit success connection is prominent in the literature of effective alternative credit rationing, little logical or empirical backing for the “win-win” is ever presented. Others have also argued that it may be the case that the necessity of good management and organization may actually cause problems for socially minded programs in trying to acquire capital (Conning, 1999).

Hulme and Mosley (1996) also caution that in addition to institutional structure, institutional successes can also work against the cause and retard innovation.

Ironically, it is the success of the “first wave” finance-for-the-poor schemes...that is the greatest obstacle to future experimentation. Most designers and sponsors have abandoned innovation...(Hulme and Mosley, 1996).

It is important to understand both the win-win argument as well as the arguments against it.

2.5 Credit Rationing Theory

Skepticism of low-income lending also finds support in much of the literature on credit rationing. Most notably, Stiglitz and Weiss (1981, 1992) show that when demand exceeds supply in credit markets, equilibrium in these markets may be characterized by

rationing. Lenders will grant loans dependent on the interest rate they receive, the initial collateral requirement, and the probability the loan will be repaid. The expected return for the lender is a function of these determinants, and lenders seek to maximize returns by screening clients to determine their riskiness, imposing collateral requirements for loans, and controlling interest rates to keep risky borrowers out of the market.

To model how loans will be granted, it is necessary to closely examine the case of both borrowers and lenders. Extensive work by Stiglitz and Weiss on credit rationing (1992, 1981) has shown that it is commonly the case that excess demand exists in loan markets. As a result of this, many credit markets are defined by credit rationing in equilibrium. In order to maximize returns on a loan, lenders are concerned with both the interest rate they receive on the loan and how risky the loan is. Riskiness can be interpreted as the probability that the loan will not be repaid. Clearly, not all borrowers have the same probability of paying back a loan. The bank wants to loan to those who have the highest probability of repayment and this thus serves as their primary criteria for rationing. In order to distinguish borrowers with higher probabilities of repayment from potentially less capable borrowers, lenders employ a number of screening devices. In addition to historical and personal information about the borrower, Stiglitz and Weiss show that interest rates and collateral requirements also serve as screening devices.

CHAPTER 3: Empirical Analysis

3.1 How are WW loans granted?

In order to determine how WW allocates credit, it is important to understand how other lenders screen for loans. Most traditional lenders rely on the “5-C” approach to assessing the quality of a lender (Federal Reserve, 2001). The 5-Cs stand for capacity, collateral, condition, character, and capital (Federal Reserve, 2001). As discussed earlier, while capacity for repayment, current financial condition, and “character”¹⁵ are included in the credit score measure, credit scores do not account directly for collateral and capital. WW loans are small loans (usually between \$500 and \$5,000) requiring little collateral that are made to low- or near low-income applicants. Thus, as a result of the nature of these loans, neither financial collateral nor total applicant capital are generally large positive factors for WW applicants. While important, credit scores are generally not emphasized as a primary factor in WW loan allocation process.

To get an idea of credit score application as they apply to the WW case, it is useful to see how credit would be rationed in the WW applicant pool if the percentage of WW applicants awarded credit was unchanged, but loan qualification was based on credit score alone. This exercise is carried out in Table 3.1. Mean credit scores, the proportion of the given population who have a credit score, and the proportion who qualified under the WW allocation system are provided for qualified and not qualified WW applicants as well as for the 51 sample applicants with the highest credit scores and the 72 sample applicants with the lowest credit scores. Table 3.1 illustrates that if VDCU still accepted only 51 (41.5 percent) of the 123 applicants, but acceptance was determined solely by

¹⁵ “Character” is defined as a measure of the borrower’s willingness to pay. This measure includes payment history, credit report information, and information from previous lenders (Federal Reserve, 2001).

credit score (that is, those with the highest credit scores are granted loans first and those with low or no credit scores are granted loans last), 58.8 percent of those granted loans under the new, credit score- based system would have also been granted loans under the actual WW screening system. The mean credit score for qualified applicants would rise from 593 to 613.

Table 3.1: Loan Allocation: WW vs. Credit Score Alone

	Mean Credit Score	Proportion with credit score	Proportion Qualified under WW screening process
Actual Loan Decision			
QUALIFIED (N=51)	593 (50.5)	0.86 (0.34)	1.0 (0.00)
NOT QUALIFIED (N=72,)	554 (49.0)	.72 (.45)	0 (0.00)
Ordered by Credit Score			
51 HIGHEST SCORES (Q)	613 (33.3)	1.0 (0.00)	.5882 (.49)
72 LOWEST SCORES (NQ)	523 (21.9)	0.61 (0.49)	0.29 (0.45)

Since more than 40 percent of loans granted under a system based solely on credit scores would not have been qualified in the general WW screening process, it is apparent that VDCU relies on other factors in allocating loans. One explanation for the reliance on factors other than credit score may lie in the objective function of VDCU and similar low-income lending institutions: low-income lenders may determine loan allocation based not only on the probability of repayment, but also on the returns to the borrower and society. However, it could also be the case that information other than applicant credit score offers a better assessment of client risk and is thus a preferred way to allocate credit. This chapter uses WW applicant data and probit analysis to estimate the magnitude and direction of various determinants of WW loan approval.

3.2 Data

VDCU loan assessment forms, the VDCU electronic database, and the VDCU loan file archives provide valuable information on personal characteristics, financial, employment, and credit history, as well as character references for each WW applicant from 1998 to the present. Perhaps the most useful source of data are the assessment forms, since they are completed by VDCU loan officers at the time of application and provide a good indication of what characteristics loan officers are looking for in a WW client¹⁶. According to WW loan officers, there is no single factor or set of factors that determines qualification. Rather, each decision is made from an examination of the overall application (Baldasaro, 2001). A copy of the most current version of this form is included in the appendix of this paper.

Two possible sources of sample selection bias deserve mention. The first concerns incomplete and/or inconsistent record keeping. For example, it may be the case that a loan officer did not bother to completely fill out an application for a borrower he or she recognized as an obvious denial. In such a case, the data would not completely describe the case for denial. To the extent that observations with missing variables are dropped from estimation, we may be left with a slightly better applicant pool than we would have otherwise. The loan officer responsible for the majority of applications in the sample indicated that this was an uncommon occurrence, so this type of selection bias is likely inconsequential. The second source stems from the fact that this analysis estimates the determinants of a successful loan application for a sample of applicants, not for the general population. This is a very important distinction. As noted by Stiglitz and Weiss

¹⁶ A single officer processed over 90 percent of applications in the sample. VDCU is currently moving away from this pattern of having one officer who specializes in WW loans and there are now several officers who work on the applications as they come in.

(1982), self-selection can drive people out of a market. That is, in some cases people may not apply for a loan on the assumption that they cannot get one. These self-rationed individuals are not included in this model and are an important excluded group to recognize. There is no way to determine whether these self-selected individuals would or would not have been offered loans and how this would change the overall credit allocation. It is thus necessary to emphasize that for this model the population in question is strictly the population of those who *submit a WW loan application*.

The data consists of a sample of 123 applicants. Of these, 51 applicants (41.5 percent) were immediately offered loans and 72 applicants (58.5 percent) were not. It is important to note that in a small percentage of cases individuals may have submitted more than one application over the course of the program. However, different applications from the same individual are not identical as many credit determining variables change over time. Additionally, the presence of some repeat applicants in the sample (7 of the 123 applications were filed by applicants with previous applications in the sample) allows us to test whether prior application helps one acquire credit. Thus, repeat applicants do not threaten the quality of the sample¹⁷, but may actually strengthen the story told.

As noted in chapter 2, VDCU employs a variety of screening devices in their loan process. The VDCU client files provided a rich set of data for most or all applicants. All variables can be roughly divided into four categories: 1) personal information, 2) history, 3) barriers, and 4) compensating factors. Table 3.2 provides means and standard deviations for the entire sample (column 1), and for qualified and not qualified applicants (columns 2 and 3, respectively). A brief description of each variable is also provided in

¹⁷ Models run without repeat applicants were not significantly different from those which included repeats.

the table. Further descriptions are included where necessary later in the text. Variables noted with a single asterisk (*) are variables for which the means of the qualified and not qualified populations are statistically different from each other at the $\alpha = .10$ level in a two-sample t-test. Variables marked with a (**) indicate statistically different populations at the $\alpha = .05$ level. A correlation table reporting partial correlations of all variables is included in the appendix (Appendix Table A.2).

Table 3.2: Summary of Variables

		(1)	(2)	(3)
VARIABLE	DESCRIPTION	SAMPLE	QUALIFIED	NOT QUAL.
Qualified	1 if qualified, 0 otherwise.	0.41 (0.49)	1.00 (0.00)	0.00 (0.00)
Personal Information				
Single**	1 if single applicant, 0 otherwise.	0.74 (0.44)	0.63 (.49)	0.82 (.39)
Co-applicant**	1 if co-applicant, 0 otherwise.	0.26 (0.44)	0.37 (0.49)	0.18 (0.39)
Low-income** (n=117)	1 if income is less than 80% of median regional household income, 0 otherwise.	0.73 (0.44)	0.86 (0.34)	0.64 (0.48)
History				
Recorded Credit Score** (n=95)	Applicant credit score, blank if no credit score is recorded- reported by credit bureau.	571.4 (53.2)	592.91 (50.57)	553.72 (49.04)
Has no credit score	1 if applicant does not have a recorded credit score, 0 otherwise- reported by credit bureau.	0.23 (0.42)	0.16 (0.36)	0.28 (0.45)
Previous application**	1 if have submitted a previous WW loan application, 0 otherwise- determined from VDCU records.	0.17 (0.38)	0.37 (0.49)	0.04 (0.20)
Barriers				
Number of Barriers**	Number of barriers recorded by loan officer at time of application.	1.6 (0.89)	1.35 (0.87)	1.82 (0.88)
Delinquencies**	1 if delinquencies in past, 0 otherwise – reported by credit bureau.	0.69 (0.46)	0.59 (0.50)	0.78 (0.42)
Available Income	1 if no income is available for loan repayment because of other financial responsibilities, 0 otherwise- determined by loan officer.	0.12 (0.32)	0.08 (0.27)	0.15 (0.36)
Job history	1 if employment history is poor, 0 otherwise- reported by applicant, employer, and/or CAAs.	0.26 (0.44)	0.29 (0.46)	0.25 (0.44)
Medical Debts	1 if applicant has outstanding medical debts, 0 otherwise- reported by applicant and credit bureau.	0.06 (0.24)	0.04 (0.20)	0.08 (0.28)
Insufficient Credit	1 if applicant has insufficient credit/ credit history, 0 otherwise- reported by credit bureau.	0.23 (0.42)	0.18 (0.39)	0.28 (0.45)

Tax Liens	1 if applicant has faced tax liens, 0 otherwise.	0.01 (0.09)	0.00 (0.00)	0.01 (0.12)
Other Barriers	1 if applicant has “other” barriers, 0 otherwise.	0.08 (0.27)	0.10 (0.30)	0.07 (0.26)
Compensating Factors				
Number of Compensating Factors**	Number of compensating factors recorded by loan officer at time of application.	2.9 (1.5)	4.10 (1.40)	2.19 (1.10)
Good Mortgage**	1 if applicant has good mortgage in past, 0 otherwise- reported by credit bureau.	0.30 (0.46)	0.57 (0.50)	0.11 (0.32)
Good Non-traditional references**	1 if applicant has good non-traditional references such as positive references from a landlord or good rent-to-own payment history, 0 otherwise-reported by applicant, verified by the references.	0.19 (0.39)	0.35 (0.48)	0.08 (0.28)
Low unsecured debt*	1 if applicant has low unsecured debt at time of application, 0 otherwise-reported by the credit bureau and loan officer.	0.17 (0.37)	0.24 (0.43)	0.13 (0.33)
Positive credit history**	1 if applicant has a good credit history (no serious delinquencies, etc.), 0 otherwise- determined by the credit bureau.	0.14 (0.35)	0.29 (0.46)	0.04 (0.20)
Positive VDCU history**	1 if applicant has a positive history with VDCU, 0 otherwise-determined by VDCU records.	0.10 (0.30)	0.24 (0.43)	0.01 (0.12)
Stable employment	1 if applicant has stable employment, 0 otherwise-determined by contact with employer.	0.29 (0.45)	0.35 (0.48)	0.25 (0.44)
Stable residence	1 if applicant has stable residence, 0 otherwise-reported by applicant, verified by loan officer.	0.66 (0.47)	0.71 (0.46)	0.64 (0.48)
VDCU Priority**	1 if VDCU payment will be primary financial concern, 0 otherwise-determined by loan officer and applicant.	0.89 (0.30)	0.82 (0.39)	0.94 (0.23)
History of high debt resolution**	1 if applicant has resolved a large debt in past, 0 otherwise.	0.03 (0.17)	0.08 (0.27)	0.00 (0.00)
Other Compensating Factors**	1 if applicant has “other” compensating factors, 0 otherwise.	0.06 (0.24)	0.17 (0.38)	0.00 (0.00)

Note: Unless otherwise indicated, n=123 for all variables.

Probit analysis was used to estimate the magnitude and direction of each of the loan assessment variables on loan qualification. The results of this estimation are reported in the next section.

3.3 Empirical Model

3.3.1. Probit Estimation

A probit regression model is used to estimate WW loan allocation. Since the dependent variable is a dummy variable indicating whether or not the loan was granted, the standard Ordinary Least Squares (OLS) model is inappropriate.¹⁸ The probit technique offers a less erroneous estimation. A brief explanation of this technique follows.

Formally, we can define a latent variable y^* such that

$$y^* = \mathbf{X}_i\boldsymbol{\beta} + \varepsilon_i \quad (1)$$

where ε_i has normal distribution, $\varepsilon_i \sim N(0, \sigma^2)$ (Greene, 1997).

We do not observe the probability of loan approval, only the discrete success or failure of the application process. Thus y , not y^* is the observed variable. y is a discrete variable such that

$$\begin{aligned} y &= 1 \quad \text{if } y^* > 0, \\ y &= 0 \quad \text{if } y^* \leq 0. \end{aligned} \quad (2)$$

When $y=1$ the i th application is qualified (granted a loan). When $y=0$ the i th application is not qualified.

¹⁸ The Linear Probability Model (LPM) is one standard model used to express a dichotomous dependent variable as a linear combination of one or more right hand side variables. However, several problems arise with the LPM including: (i) the marginal probability is determined as a constant, which is unrealistic, (ii) LPM does not bound the predicted values (implying in this case that predicted values could be less than zero or greater than one, which does not make sense when measuring probability), and (iii) the LPM has a high potential for heteroskedasticity in the disturbance term.

Thus, the probability that $y = 1$ (the i th application is qualified) is

$$\begin{aligned}\text{Prob}(y = 1) &= \text{Prob}(y^* > 0) \\ &= \text{Prob}(\mathbf{X}_i\boldsymbol{\beta} + \boldsymbol{\varepsilon}_i > 0) \\ &= \text{Prob}(\boldsymbol{\varepsilon}_i > -\mathbf{X}_i\boldsymbol{\beta}).\end{aligned}\tag{3}$$

(Greene, 1997; Johnston and DiNardo, 1997).

Assuming that the distribution is symmetric, the probability $y = 1$ is simply the cumulative distribution of y^* , $F(\mathbf{X}_i\boldsymbol{\beta})$;

$$\begin{aligned}\text{Prob}(y = 1) &= \text{Prob}(y^* > 0) \\ &= \text{Prob}(\boldsymbol{\varepsilon}_i < \mathbf{X}_i\boldsymbol{\beta}) \\ &= F(\mathbf{X}_i\boldsymbol{\beta}).\end{aligned}\tag{4}$$

(Greene, 1997).

For this model, $\mathbf{X}_i\boldsymbol{\beta}$ is defined as

$$\mathbf{X}_i\boldsymbol{\beta} = \beta_0 + \beta_1 (\text{personal information variables}) + \beta_2 (\text{history variables}) + \beta_3 (\text{barriers variables}) + \beta_4 (\text{compensating factor variables}) + \varepsilon,$$

and $F(x_i)$ is the standard normal distribution function defined as

$$F(x_i) = \Phi(x_i) = \int_{-\infty}^{x_i} \frac{1}{\sqrt{2\pi}} e^{-\frac{t^2}{2}} dt\tag{5}$$

The above is used to estimate WW loan allocation. Both coefficients and marginal changes in probability are reported. That is, β_i and $\partial\Phi/\partial x_i$ are reported for each variable. The interpretation of the β_i coefficient is that each unit increase in x_i leads to an increase in latent variable y^* of β_i standard deviations; β_i does not measure the change in the observed value. By calculating the slope of the probability function one obtains the change in probability ($\partial\Phi/\partial x_i$) of loan success, which is a more convenient representation of the model¹⁹.

¹⁹ Reported changes in probability are calculated from the mean of the distribution.

3.3.2 Estimating the Model

Probit models were estimated with an initial focus on compensating factor and barrier category variables (controlling for credit scores in addition to selected personal information and history category variables).

Because of the potential complementary relationship between barriers and compensating factors, results are presented in three categories. The first category models WW loan allocation as a function of application “barriers,” the second models loan allocation as a function of “compensating factors” recorded, and the third uses a combination of barriers and compensating factors to determine allocation. A summary of all models is reported in Appendix Table A.3.

A. Barrier Models

Barrier-based models are presented in two stages. Stage A (denoted A_B for clarity of notation) presents loan qualification as modeled only by the “number of barriers” variable and some control variables. Stage B (B_B) replaces the aggregate “number of barriers” with dummy variables reflective of individual barriers (e.g. delinquencies and job history). The reason for this division is to determine whether the total number of barriers or the presence of specific barriers most strongly influence loan allocation. Some barrier category variables were excluded in the stage B regression due to not enough variation or a high correlation with another barrier category variable.

Probit coefficients, marginal probabilities, and p-values of barrier-based probit models are presented in Table 3.4. A single asterisk (*) indicates variables significant at the $\alpha = .10$ level. A double asterisk (**) indicates variables significant at the $\alpha = .05$ level.

Table 3.4: Barrier Models

	Stage A _B	Stage B _B
Single	-0.47 [-0.18] (0.16)	-0.44 [-0.17] (0.21)
Low-income	1.11** [0.42] (0.00)	0.89** [0.33] (0.02)
Previous Application	1.72** [0.65] (0.00)	1.85** [0.70] (0.00)
Number of Barriers	-0.32* [-0.12] (0.06)	
Delinquencies		-0.66 [-0.25] (0.10)
Job History		0.26 [0.10] (0.43)
Has No Credit Score	3.83** [1.44] (0.04)	2.92 [1.10] (0.17)
Credit Score	0.01** [0.006] (0.01)	0.01** [0.003] (0.03)
Constant	-5.34** [-2.02] (0.01)	-4.69** [-1.77] (0.04)
χ^2 Likelihood Ratio Test	$\chi^2_6=62.10$	$\chi^2_7= 61.49$
Pseudo R ²	.3960	.3921

Notes:

Coefficients estimated from a probit model. Estimates of marginal changes in probability are presented in [].

P-values presented in ().

* = significant for $\alpha = .10$

**significant for $\alpha = .05$

It should be restated that variable “credit score” assumes the value of the applicant credit score. In the case where an applicant does not have a credit score, this variable assumes the value zero. Variable “has no credit score” is a dummy variable valued at 1 for all applicants who do not have a credit score, and zero for all other applicants.

Stage A_B

Stage A_B results indicate that personal information variable “low-income” and historical variable “previous application” both significantly increase (p-value = 0.00 for each) the probability of attaining credit in this model. In light of research on lender-borrower relationships, the positive effect of “previous application” is not surprising. A repeat applicant will have already begun to establish a reputation at the credit union and this reputation will likely be of a positive nature. For example, applicants with previously successful loans would be in good standing with the program and more likely to be given a new loan. Similarly, if a previously NQ or LTQ applicant submits a repeat application, but has shown evidence of working hard in order to qualify for a loan, possibly according to a VDCU/WW “action plan,” their dedication will likely make a favorable impression on the loan officer and also increase their chance of loan approval.

The positive coefficient on “low-income” is unexpected by traditional standards, but less surprising for the WW case. This result suggests that being low-income actually *increases* the chance of qualifying for a loan. While this would seem counterintuitive for most lenders, it is consistent with the WW mission to cater specifically to those in need. This important point will be explored in more depth later.

Stage A_B results also reported the “number of barriers” variable significant at the 0.10 level (p value = 0.00), indicating that the total number of barriers does have a negative influence

on loan allocation. That is, all else equal, an applicant with more recorded barriers is less likely to acquire a loan than an applicant with fewer barriers. This result is consistent with traditional credit rationing and risk screening theories.

Credit scores also have a significant effect on loan allocation according to stage A_B results. In this model, variable “has no credit score” (p-value = .04) has a positive effect on loan allocation. This indicates that, all else equal, applicants without credit scores are *more* likely to acquire a loan than those with credit scores. This result is difficult to interpret. It is possible that there are several different factors responsible for this positive coefficient. For example, it could be that some low-risk (i.e. creditworthy) applicants do not have credit scores because for some reason (age, gender, etc.) they have never had access to credit. It could also be the case that those with credit scores have low scores, and possibly other lurking factors as well, which negatively affect their chance for loan qualification. This notion is explored in the presentation of subsequent allocation models. Variable “credit score” is positive and significant, with an estimated marginal change in probability of .01 per credit score point, indicating that for applicants with credit scores, a higher score increases the probability of a successful application.

Stage B_B

Similar to findings in stage A_B, stage B_B results also report “low-income” and “previous application” as significant and positive determinants of loan qualification. Barrier variables “delinquencies” and “job history” are included in the stage B_B model. As aforementioned, not all recorded barrier variables are included in this model as a result of the low representation of these variables in the sample and their high correlation with other model variables²⁰ (see

²⁰ For example, while only present in 3 percent of the applicant sample, the “bankruptcy” variable, indicating whether an applicant was facing or had faced current or previous bankruptcy, is perfectly correlated with loan “denial.”

Appendix Table A.2). Of the two barrier variables ultimately included in the model, neither “job history” nor “delinquency” is statistically significant for $\alpha = .10$.

As in the stage A_B model, stage B_B reports the “credit score” variable as positive and significant at the $\alpha = .05$ level, but unlike in the stage A_B model variable “has no credit score” is not significant in the stage B_B regression. Thus by this model, having a credit versus not having a credit score does not significantly change the probability of loan allocation, but given that one has a credit score a higher score is preferable to a lower score. In this model no specific barriers are reported as significant determinants of WW loan allocation.

Stage A_B and B_B barrier-based results imply that in addition to previous WW application and low-income status, credit scores and the total number of barriers recorded have a significant effect on WW allocation. No specific barriers were determined to have significant effects on loan qualification.

B. Compensating Factor Models

Similar to the barrier-based models presented above, compensating factor- based models are also presented in two stages. Stage A (denoted A_{CF}) uses only control variables and the “number of compensating factors” variable on the right hand side. Stage B (B_{CF}) does not use “number of compensating factors,” but instead uses specific compensating factors (and control variables) as independent variables. Again, the motivation behind running both models is to determine whether it is the total number of compensating factors recorded for an individual or specific compensating factor variables that affect loan allocation.

Compensating Factor probit models are presented in Table 3.5.

Table 3.5: Compensating Factor Models

	Stage A _{CF}	Stage B _{CF}
Single	-0.29 [-0.11] (0.45)	-0.29 [-0.11] (0.48)
Low-income	1.08** [0.40] (0.01)	1.16** [0.43] (0.01)
Previous Application	1.54** [0.56] (0.00)	1.86** [0.69] (0.00)
Number of Compensating Factors	0.58** [0.21] (0.00)	
Good Mortgage		0.59 [0.22] (0.18)
Good Non-Traditional		1.04** [0.39] (0.02)
Low Unsecured Debt		0.36 [0.13] (0.45)
Stable Residence		-0.71* [-0.26] (0.07)
Stable Employment		0.56 [0.21] (0.16)
Has No Credit Score	0.67 [0.25] (0.19)	3.81* [1.40] (0.07)
Credit Score	0.01 [0.001] (0.30)	0.01** [0.003] (0.01)
Constant	-4.85** [-1.79] (0.02)	-6.49** [-2.39] (0.01)
χ^2 Likelihood Ratio Test	$\chi^2_6=82.22$	$\chi^2_{10}=77.68$
Pseudo R ²	.5243	.4954

Notes:

Coefficients estimated from a probit model. Estimates of marginal changes in probability are presented in [].

P-values presented in ().

* = significant for $\alpha = .10$

** = significant for $\alpha = .05$

Stage A_{CF}

Stage A_{CF} used only personal information, historical control variables, and the “number of compensating factors” variable to model allocation. As in the barrier-based models, variables “low-income” and “previous application” are both significant and positive at the 0.05 level in the A_{CF} model. Stage A_{CF} also indicates “number of compensating factors” has a significant effect (p-value = 0.00) on qualification. As expected, the coefficient for this term is positive, indicating that as the total number of compensating factors increases, the probability of qualification also increases (all else held equal). Credit score variables are not significant in this model.

Similar to the exclusion of certain barrier variables, not all compensating factor variables are included in stage B_{CF} as a result of a low representation in the sample and/or a high correlation with an included variable. As in the A_{CF} model, variables “low-income” and “previous application” both remain significant in the B_{CF} regression. “Good non-traditional references,” and “stable residence” are also all statistically significant at the 0.10 level. “Good non-traditional references” is a variable identifying whether an applicant has references from “non-traditional” sources as a part of his or her application. Examples of non-traditional references include letters from landlords stating that a tenant has consistently made on time and complete payments, or records from a rent-to-own agency that document past on-time payments from the applicant (Baldasaro, 2001). “Good non-traditional references” has a positive effect on loan allocation in the B_{CF} model. The high significance (p-value = 0.00) of “good non-traditional references” is of particular importance in this model as it provides evidence of the program’s

commitment to using alternative methods to verify creditworthiness. The application of this variable is one way in which WW distinguishes itself from traditional loan programs.

Variable “stable residence” has a negative effect on qualification in the B_{CF} model. This variable is a dummy variable that indicates whether an applicant has a stable place to live. For example, someone who has lived in the same location for several months is considered to have a stable residence (Baldasaro, 2002). One possible explanation for the counterintuitive negative coefficient on this variable is the same “need-catering” effect used to explain the negative coefficient on the “low –income” variable. That is, it is likely that those who cannot afford a \$2000 automobile will not have a stable residence. Thus, in order to cater to the target population, it is necessary that the program provide for those without a stable place to live. However, more likely, this flipped sign is the result of an estimation error due to an incomplete model that does not account for all relevant factors and consequently may suffer from problems of multicollinearity or omitted variable bias.

Insignificant compensating factor variables included in the B_{CF} model are “good mortgage,” “low unsecured debt,” and “stable employment.” The lack of significance on variable “good mortgage” is somewhat perplexing, as this is generally an important factor for lenders. However the insignificant “stable employment” result should not be surprising given the nature of the applicant population. Since WW is a welfare-to-work program, many applicants are jobless (less than one third of all applicants are stably employed at the time of WW application (Table 3.2)). In order to cater to the target population the program cannot put significant weight on current employment.

Credit score variables “has no credit score” and “credit score” are also both positive and significant in this model.

The χ^2 and pseudo R^2 values for the B_{CF} model are $\chi^2_{10} = 77.68$ and .4654 respectively. While these values are higher than those reported for barrier- based models, a model combining both barrier and compensating factor category variables presents the most comprehensive representation of loan allocation. This “complete” model is presented in the next section of the paper.

C. Complete Models

Based on the above results, both barrier models and compensating factor models provide a reasonable model of WW loan allocation. However, more convincing is a model based on significant compensating factors that also controls for barriers. One such model is presented in Table 3.6.

In addition to previously introduced variables, the complete model includes two additional variables. These variables are included to capture the effect of the interaction between credit score variables and variable “good mortgage.” Interaction term “good mortgage and has no credit score” is calculated by multiplying recorded values for “good mortgage” and “has no credit score” for each observation. This variable allows one to determine how having a good mortgage and a good credit score affect loan allocation. If the applicant has a good mortgage but no credit score, the variable will assume value = 1. In all other cases the variable will be equal to 0. Similarly, variable “good mortgage and credit score” represents the relationship between variables “good mortgage” and “credit score.” If an applicant has a good mortgage and a credit score, the interaction term “good mortgage and credit score” will equal the applicant’s credit score. If the applicant does

not have a good mortgage and/or a credit score, variable “good mortgage and credit score” will equal 0. The effects of these and other complete model variables are discussed below.

Table 3.6: Complete Model

Personal Information	
Single	-0.41 [-0.15] (0.32)
Low-income	0.95** [0.35] (0.04)
History	
Previous Application	2.12** [0.79] (0.00)
Compensating Factors	
Stable Residence	-0.47 [-0.18] (0.23)
Good Mortgage	-10.34* [-3.88] (0.08)
Good Non-traditional References	1.68** [0.63] (0.00)
Barriers	
Delinquencies	-0.67 [-0.25] (0.15)
Job History	0.12 [0.05] (0.76)
Credit Score	
Has No Credit Score	-1.06 [-0.40] (0.72)
Credit Score	0.01 [0.0003] (0.85)
Interaction Terms	
Good Mortgage and Has No Credit Score	11.5* [4.31] (0.05)
Good Mortgage and Credit Score	0.02* [0.007] (0.06)
Constant Term	
Constant	-1.17 [-0.44] (0.70)
χ^2 Likelihood Ratio Test	$\chi^2_{12} = 81.78$
Pseudo R ²	.5215

Notes:

Coefficients estimated from a probit model. Estimates of marginal changes in probability are presented in [].

P-values presented in ().

* = significant for $\alpha = .10$ ** = significant for $\alpha = .05$

In this model, variables “low-income,” “previous application,” “good mortgage,” and “good non-traditional references” are significant at the $\alpha = .10$ level or better. Interaction variables “good mortgage and credit score,” representing the effect of the combination of the variables “good mortgage” and “credit score,” and “good mortgage and has no credit score,” representing the joint effect of variables “good mortgage” and “has no credit score,” are also both significant at the $\alpha = .10$ level.

As in previous models, “low-income” and “previous application” variables have positive effects on loan allocation, as does “good non-traditional references.” Results indicate that all else equal, a “low-income” applicant is more likely to acquire a loan than a non-low income applicant. This “need-catering” effect is likely a direct result of the WW mission to cater to the “unlendingable” low-income population.

An applicant who has filed a previous WW application has a better chance of loan qualification than a first-time program applicant. If previous program application is accepted as a proxy for the establishment of lender/borrower relationships, this result confirms the hypothesis that these sorts of relationships are an important determinant of WW loans. Also, applicants with good non-traditional references have a better chance of qualifying for a WW loan than otherwise identical applicants without such reference. Again, this result illustrates how WW stretches the bounds of traditional risk screening techniques to assist potential low-income lenders.

Despite the negative coefficient on the “good mortgage” variable, because of significant interaction terms “good mortgage and credit score” and “good mortgage and has no credit score,” the existence of a good mortgage does not necessarily impair loan qualification. This point is most clearly illustrated through a set of examples.

First suppose there are two applicants who are identical in every capacity but one has a good mortgage and one does not. If both applicants have a credit score of less than 563, the applicant with the good mortgage will have less of a chance of acquiring the loan. If both applicants instead have credit scores greater than 563, the applicant with the good mortgage will have a better chance of getting a loan. This is illustrated in Table 3.7. The first column of this table provides hypothetical credit scores and the second column provides the effect of having a good mortgage for the given credit score.

Table 3.7: Effects of “good mortgage”

Credit Score	Effect of “good mortgage”
510	-0.36
550	-0.08
570	0.04
600	0.24
650	0.58

If individuals have relatively high credit scores (> 563), having a “good mortgage” increases the probability of obtaining a loan. Conversely, if an applicant has a relatively low credit score (< 563), having a “good mortgage” impairs the applicant’s chance of getting a loan. One possible explanation for this effect relies on the assumption that acquiring a mortgage requires a good credit score. Thus, if one had a good mortgage and currently has a low credit score, they are likely not as well off in terms of credit and finances as they were at the time they had their mortgage. In these cases, “good mortgage” may represent a decline in the applicant’s creditworthiness since the time of their mortgage and would thus have a negative effect on loan allocation. On the other hand, if an applicant has a reasonably good credit score (> 563) and a good mortgage, the good mortgage is seen as an indication of creditworthiness and consequently increases the chance of loan qualification. If an applicant does not have a credit score, “good

mortgage” is also a positive influence on qualification. A good mortgage increases the probability of acquiring a loan by .43 for a credit score-less individual.

Higher credit scores have a consistently positive effect on qualification. If two people, both with good mortgages, are identical in every way except for their credit score, the person with the higher credit score will have a better chance of getting a loan. For example, all else equal, a 10-point increase in credit score will increase an applicants probability of loan qualification by .07 above the person with the lower credit score. A 50-point credit score increase will increase the probability of qualification by .035 and an increase of 100 points will increase this probability by .71. Thus while credit score variable coefficients themselves are not significant, the significance of the aforementioned interaction terms indicate that when considered in conjunction with variable “good mortgage,” credit scores are important WW loan determinants.

Traditionally, credit scores and good mortgages are two primary loan allocation indicators. That together they also have a significant effect for WW loan allocation indicates that while WW may weight other variables differently from other lenders and in some cases rely on different criteria (i.e. non-traditional references), traditional factors such as good mortgage and credit scores are in no way disregarded in the WW allocation process.

As results from Table 3.6 show, the χ^2 value for the complete and most preferred model is 81.78 and the pseudo R^2 value is .5215. In this complete model, collection of personal, historical, compensating factor, and interaction variables all affect loan qualification, indicating that WW allocation relies on both traditional and less standard credit allocation methods.

3.3.3 Loan Allocation Summary

Empirical results confirm that qualification for a WW loan is dependent on a variety of determinants. As would be expected, the model indicates that a good mortgage and a high credit score can have positive effects on loan determination (Table 3.6). Less predictably, the model also shows that a variety of social capital in the form of lender/borrower relationships as represented by past experiences with the credit union with the program (“previous application”) also positively affect loan qualification. This result is consistent with the theory of vanBastelear (2000) and Chakravarty and Scott (1999) that established relationships between the borrower and lender can be an asset to loan qualification.

Results also indicate that low-income status²¹ can actually help an applicant qualify for a loan, suggesting a “need-catering” effect is present within the WW loan allocation process. This result, along with the significance of non-traditional references such as landlord testimony or record of a responsible rent-to-own payment clearly indicate some differences exist between WW allocation and traditional credit allocation models (Stiglitz and Weiss, 1981). However, that credit scores become most significant when paired with the existence or previous existence of a good mortgage signifies that the WW process allows for and entrusts traditional credit indicators as well.

²¹ (Income less than or equal to 80 percent of median regional income.)

3.4 Who repays loans?

Having determined how WW loans are allocated, it is necessary to look at which loans are repaid and which loans are not. Clearly, if the program faces a large delinquency rate, or a certain borrower trait is determined to be a determinant of delinquency, the allocation system may need to be reworked.

Combined, all loans at VDCU face a delinquency rate of between 1.43% (Bullard, 2002), which is about average for a lender of VDCU's size (Baldasaro, 2002). Of the 51 WW loans granted in the sample, only 6 were delinquent by one month or more. Unfortunately, due to the small size of the sample, econometric analysis could not successfully be performed on these data. However, the observation of population characteristics and statistical trends can provide an alternative examination of the data. The means and standard deviations of all qualified loan characteristics are presented in Table 3.8 alongside the means and standard deviations of the same characteristics among all delinquent and not-delinquent loans²². Variables for which the delinquent population was significantly different from the not-delinquent population at the $\alpha = .10$ level are identified by a single asterisk (*). Those statistically different at the $\alpha = .05$ are identified by at double asterisk (**).

²² Unfortunately, information on the nature of each delinquency (that is, whether the loan ended in default or was simply late on a payment) was not available at the time of this draft and will be included in the final version of the paper.

Table 3.8: Delinquent Loan Characteristics

VARIABLE	VALUE	QUALIFIED	DELINQUENT	NOT-DELINQUENT
Loan Amount**	Amount of loan granted.	2729.61 (1981.81)	4326.63 (2862.22)	2480.07 (1740.22)
Personal Information				
Single	1 if female and single applicant, 0 otherwise.	0.43 (0.50)	0.50 (0.54)	0.42
Co-applicant	1 if co-applicant, 0 otherwise.	0.37 (0.49)	0.50 (0.54)	0.35
Low-income (n=117)	1 if low-income, 0 otherwise.	0.86 (0.34)	1.0 (0.00)	0.85 (0.36)
Motivation	1 if motivation is perceived as "low", 2 if motivation is perceived as "average" and 3 if motivation is perceived as "high."	2.06 (0.53)	2.4 (0.54)	2.02 (.52)
TANF	1 if recipient is currently participating in TANF program, 0 otherwise.	0.28 (0.45)	0.20 (0.44)	0.29 (0.46)
History				
Credit score (n=95)	applicant credit score.	592.91 (50.57)	598.62 (25.02)	592.32 (52.66)
Has credit score	1 if applicant has credit score, 0 otherwise.	0.86 (0.35)	0.66 (0.51)	.86 (0.34)
Previous application	1 if have submitted a previous WW loan application, 0 otherwise.	0.37 (0.49)	0.40 (0.54)	0.36 (0.48)
Result of Previous Application	1 if previous loan application was offered loan, 0 if it was not. If more than 1 previous application has been submitted variable "result of previous..." is assigned the mean value of each applications "result of previous..." value.	0.18 (0.38)	0.16 (0.40)	0.19 (0.37)
Barriers				
Number of barriers	Number of barriers recorded by loan officer at time of application.	1.35 (0.87)	1.5 (1.04)	1.33 (0.85)
Delinquencies*	1 if delinquencies in past, 0 otherwise.	0.59 (0.50)	0.00 (0.00)	0.62 (0.49)
Available Income	1 if no income available for loan repayment, 0	0.08 (0.27)	0.33 (0.51)	0.08 (0.28)

	otherwise.			
Job history	1 if employment history is poor, 0 otherwise.	0.29 (0.46)	0.50 (0.54)	0.26 (0.44)
Medical Debts	1 if applicant has outstanding medical debts, 0 otherwise.	0.04 (0.20)	0.00 (0.00)	0.04 (0.20)
Insufficient Credit	1 if applicant has insufficient credit/ credit history, 0 otherwise.	0.18 (0.39)	0.33 (0.51)	0.15 (0.36)
Other Barriers	1 if applicant has “other” barriers, 0 otherwise.	0.10 (0.30)	0.00 (0.00)	0.11 (0.31)
Compensating Factors				
Number of compensating factors**	Number of compensating factors recorded by loan officer at time of application.	4.10 (1.40)	5.33 (1.03)	3.93 (1.37)
Good mortgage*	1 if applicant has good mortgage in past, 0 otherwise.	0.57 (0.50)	0.83 (0.40)	0.53 (0.50)
Good non-traditional references	1 if applicant has good non-traditional references, 0 otherwise.	0.35 (0.48)	0.33 (0.51)	0.35 (0.48)
Low unsecured debt**	1 if applicant has low unsecured debt at time of application, 0 otherwise.	0.24 (0.43)	0.83 (0.40)	0.15 (0.36)
Positive credit history	1 if applicant has a positive credit history, 0 otherwise.	0.29 (0.46)	0.50 (0.54)	0.26 (0.44)
Positive VDCU history*	1 if applicant has a positive history with VDCU, 0 otherwise.	0.24 (0.43)	0.00 (0.00)	0.26 (0.44)
Stable employment	1 if applicant has stable employment, 0 otherwise.	0.35 (0.48)	0.33 (0.51)	0.35 (0.48)
Stable residence	1 if applicant has stable residence, 0 otherwise.	0.71 (0.46)	0.66 (0.51)	0.71 (0.45)
VDCU Priority	1 if VDCU payment will be primary financial concern, 0 otherwise.	0.82 (0.39)	0.83 (0.40)	0.82 (0.38)
Other Compensating Factors	1 if applicant has “other” compensating factors, 0 otherwise.	0.17 (0.38)	0.16 (0.40)	0.15 (0.36)

The 51 loans granted in the sample range in size from \$375 to \$8000, with an average loan size of \$2729.61. The average size of a delinquent loan is \$4326.63 while the average size of a non-delinquent loan is \$2480.07. Two sample t-tests show that this difference is significant at the $\alpha = .05$ level, indicating that delinquent loans are generally larger than those which are not delinquent.

The number of compensating factors is also significantly different between the delinquent and not delinquent loan populations at the $\alpha = .10$ level (p-value = .01). As reported in Table 3.8, the average number of compensating factors for delinquent borrowers is 5.33 while the mean number of compensating factors for non-delinquent borrowers is 3.93, indicating that delinquent borrowers typically have a higher number of reported compensating factors than their non-delinquent counterparts. Additionally, delinquent borrowers are recorded as having a significantly lower incidence of previous delinquencies than non-delinquent borrowers. The mean value of the “previous delinquencies” variable is .62 for non-delinquent borrowers and only .33 for delinquent borrowers. Delinquent borrowers are also recorded with a significantly higher record of good mortgage. The “good mortgage” variable for the delinquent population has mean value .83 while this value is only .53 for the non-delinquent population. Statistically significant differences in the “low unsecured debt” variable also exist between the two populations. This trait is much more prevalent among delinquent borrowers (mean = .83) than among non-delinquent borrowers (mean = .15). There is also a significant difference in mean values of the “positive credit history” variable; one half (.50) of all delinquent sample members are recorded as having a positive credit history compared to only 26 percent of the non-delinquent population. No members of the delinquent

population are recorded as having a positive history with the credit union (“positive VDCU history”).

One must be cautious in attempting to determine causality between borrower characteristics and delinquency, especially considering the small size of the delinquent population. For this reason, Table 3.9 reports the values of variables that are statistically different between delinquent and not-delinquent populations for each of the six delinquent borrowers.

Table 3.9: Delinquent Borrowers

	Borrower 1	Borrower 2	Borrower 3	Borrower 4	Borrower 5	Borrower 6
Loan Amount	6000	1000	----	7898.15	4835.04	1900
Delinquencies	0	0	0	0	0	0
Number of Compensating Factors	5	5	5	7	4	6
Good Mortgage	0	1	1	1	1	1
Low Unsecured Debt	0	1	1	1	1	1
Positive VDCU History	0	0	0	0	0	0

From Table 3.9, one can see that a claim that larger sized loans are more likely to go delinquent is not accurate, even for the small sample. An examination of all six delinquent loans indicates that only two of these borrowers (borrowers 4 and 5) were granted loans with amounts greater than the sample average. On the other hand, Table 3.9 also indicates that some variable-delinquency correlations may be more credible. For example, the fact that not one of the delinquent borrowers was recorded as having a positive history with the credit union implies that sample delinquent borrowers were most likely new to the credit union. This fact supports the importance of established

relationships between VDCU and its past clients. It is also interesting to note that no delinquent borrowers had faced previous delinquencies at the time of WW application.

Some level of delinquency is inevitable in any lending program. Even strict risk assessment and screening procedures are not perfect. Especially when, as in the case of the WW program, applicant populations become “riskier” by industry standards, this system imperfection must be accepted (Stiglitz and Weiss, 1981). Hopefully, if patterns among delinquent lender traits emerge, these characteristics can be isolated and screened for in the future. Unfortunately, sample size limits the use of this technique for the WW case. While it is interesting to note statistical differences between the delinquent and non-delinquent borrowers in the sample, the sample is simply not large enough to make any solid distinctions between the two populations.

CHAPTER 4: Working Wheels Rate of Return

4.1 Background

While WW relies on the same factors as most lenders to determine loan allocation, the way in which WW uses these factors and the program's tolerance of a slightly higher than average delinquency rate indicate that the goals of this program go beyond the realm of financial profits. As noted earlier, low-income loans are commonly seen as a vehicle for personal and financial growth and change in addition to social and/or political change (Yunus, 2000). Employment and poverty reduction are two primary objectives of most alternative lending organizations. While low-income lending programs can and do provide financial benefits for beneficiaries, they can also provide otherwise unrealized social benefits by awarding credit to those who would otherwise be considered "unlendable." Called "outreach benefits" by some (Khandker, 1998), these benefits can be both monetary and non-monetary (such as the residual benefits of transportation like employment and the self-sufficiency that comes from mobility) and can be difficult to quantify precisely. Because such returns are hard to measure they are often not quantified, and as a result the complete (that is, social, personal, and economic) value of these programs commonly goes unobserved.

Since the first solid attempts to quantify returns from programs like WW inspired by the Community Reinvestment Act of 1977, cost-benefit comparisons have generally been considered the most appropriate way to quantify social return (Morduch, 1999; Khandker, 1998)²³. However, it has also been suggested that in the case of programs not financed by subsidy, cost-benefit analysis is irrelevant since governments or other

²³ Earlier research attempting to measure social welfare based on distribution of income also applied cost-benefit and marginal return analysis. This point is discussed in more detail later in the chapter.

providers incur no costs. By this argument, since programs are privately funded, society has no costs and thus realizes only benefits. Opponents of this idea argue that private funds can be counted towards investment in the public interest (Morduch, 1999).

Fortunately, for the case of subsidized or other externally supported programs such as WW, cost-benefit analysis is much more straightforward than for the unsubsidized case. As noted earlier, one simple and commonly applied model (Morduch, 1999; Khandker, 1998) calculates the ratio between subsidy values and realized borrower benefits and uses this to assess borrower returns. This measure is specified in terms of the cost to society per one-dollar benefit to borrowers (Morduch, 1999; Khandker, 1998). In an estimation of a similar ratio, Kolodinsky *et al.* (2001) estimated that the cost to the credit union per one dollar provided to low-income borrowers by all VDCU lending programs combined was .0096, or less than one cent. Unlike other programs at VDCU, WW is funded by a capital grant. Thus, returns from this program can be measured in relation to the costs of funding the program. Such a measure would provide some indication of the efficiency of the lending program and the returns to society realized as a result of the program.

As already noted, the challenges to measure social return and total social welfare have been troubling economists for decades. The much-cited “squared poverty gap” model of Foster, Greer, and Thorbecke (1984) is one example of a model that argues that how and where funds are used determines how beneficial they are. A reasonable social return calculation must at least attempt to account for this outreach effect. Through marginal return analysis, Foster *et al.* demonstrate that raising the income of a poor borrower by one dollar has an impact five times the size as loaning a less poor borrower

the same dollar. Most low-income lending programs, including Working Wheels, follow this logic and in an effort to help increase social returns are targeted specifically towards those who cannot otherwise get credit. The challenge is to prove that the theory holds by somehow quantifying these returns.

4.2 Measurement Strategy

Khandker (1998) cites three distinct approaches that can be used to measure returns, “financial viability,” “economic viability,” and the previously noted “outreach” indicator. In order for a program to be financially viable it must be independently sustainable, that is, the program interest rate must meet or exceed the costs of lending each dollar (Khandker, 1998). For a program to be economically viable, dollar returns from the program to the lender must meet or exceed the opportunity cost of the initial program investment. A program measured by outreach considers the population served and measures returns based on the nature of this population. Each of these measures is imperfect. For example, the fact that a program makes money (is financially viable) does not mean that it is having a desirable impact on society or its target population. Similarly, program outreach does not ensure that either society or program participants ultimately benefit from the program. Externalities, such as the costs of gasoline and repairs in the case of WW, may compromise program intention if these costs would not have been faced without the program’s influence. The complete measure will attempt to account for each of these three areas of analysis and will measure costs and benefits as they apply in all arenas.

In addition to accurately recording costs and benefits, when attempting to measure net changes in social welfare one must be cautious to account properly for direct transfer

payments. As defined by Gittinger (1982), transfer payments are entries in the cost/benefit ledger that represent a shift of assets or liabilities from one party to another. Transfer payments do not alter net costs or benefits to society as a whole, but instead simply shift the allocation of resources. Common examples of transfer payments include taxes or welfare payments. In the case of taxes, money is transferred from individual to government accounts. In the case of welfare payments as they apply to the WW example, if the total amount of welfare benefits issued remain constant, payments are transferred from one recipient to another, and if the total amount of benefits issued is allowed to fluctuate payments are transferred from recipients to taxpayers. In either case society as a whole realizes no net costs or benefits with regard to welfare payments.

However, marginal return analysis can quickly complicate the theory of transfers in the case of social welfare. In a 1920 discussion of income inequality, Dalton argued that while transfers may not reflect dollar changes in the cost-benefit account for society as an entity, they might increase social welfare as a result of a more even income distribution (Dalton, 1920). This argument is in direct contrast to Pareto's strictly additive notion that in order to increase societal welfare (as determined by income) the increase of one individual's welfare must not subtract from the welfare of any other individual. According to Pareto, unless total income increases at a rate faster than that of the population, social welfare cannot increase.

Dalton is not alone in rejecting Pareto. Rothschild and Stiglitz (1970, 1973), Atkinson (1970), Sen (1976), Foster *et al.* (1984), and others have used marginal benefit analysis to determine that when measuring poverty, a transfer from a wealthier individual to a less wealthy person should lead to a net decrease in the poverty measure and should

thus increase overall social welfare. As explained by Atkinson (1970, p. 247), “If we make a transfer of income d from a person with income y_1 to a person with a lower income y_2 (where $y_2 \leq y_1 - d$), then the new distribution should be preferred.” This research indicates that in some cases, while account benefits remain unchanged, transfers do affect total welfare. Clearly this poses an additional challenge to monitoring changes in social welfare.

In addition to an understanding of cost- benefit analysis and the role of transfer payments in this analysis, estimating returns on WW loans requires identifying some very important preliminary clarifications and assumptions. First, this simple return calculation is a measure of the value of the TANF grant as a result of the existence of this program compared to the value of the grant in the absence of WW. It is assumed that if the program was not run, the value of the grant would equal the potential value of the \$250,000 in capital as determined by current bond rates. This amount can be thought of as the opportunity cost of capital and will be explained in more detail below. While an ideal measure would calculate program returns and then compare them to returns from alternative, poverty-reducing applications of the grant, due to the difficulty of calculating these returns, compatible return measures were not available for other potential grant uses. For this reason, bond interest rates are used to determine the opportunity cost of capital. Additionally, this model also assumes that because the program caters to a generally “riskier than average” clientele, anyone acquiring a loan through WW could not have acquired credit through a program with a lower interest rate. For simplicity, it is also assumed that WW clients *could* have acquired a loan from a predatory or other risk-

based lender. Finally, for this exercise the average change in income as a result of WW is assumed to be positive. This point is addressed in more detail later.

4.3 Costs

Borrower Costs

Potential costs exist for three groups for the WW model: (i) borrowers (ii) the credit union, (iii) the public (through government grant). For the borrower costs are minimal. Since it is assumed that if borrowers had not acquired a WW loan they would have instead taken a high-interest, risk-based loan, additional costs for fuel and car registration and maintenance are not incurred through WW participation.

Interest payments are also not included as borrower costs. While payments are a cost to the borrower, they are an asset to the credit union. Thus, when calculating the net change to society from this transaction, transfer payments cancel themselves out. Thus, aside from possible transaction costs including getting to and from the credit union, the borrower faces no direct costs by participating in WW.

Lender Costs

The second group of costs is costs incurred by the lender. In the case of WW, the program realizes few costs, as the program is subsidized by government grant. However, loan officer compensation, materials, and other credit union resources (space, etc.) are costs incurred by VDCU (Table 4.1).

Figure 4.1: Lender Costs

Lender Costs	Program Cost / Loan	Program Cost / Year
Loan Officer Compensation and Other VDCU Resources (granted WW loans)	\$380	\$28,500
Loan Officer Compensation and Other VDCU Resources (other WW applications)	\$253	\$19,000
TOTAL	\$633	\$47,500

According to a report compiled by Tim Kranz, the financial officer at VDCU, it currently costs approximately \$190.00 per hour to operate the lending department at the credit union (Kranz, 2002). This figure includes loan officer compensation, as well as space and material costs. It is estimated that on average a WW loan takes approximately 2 hours to complete (Baldasaro, 2002). By this estimation, the average WW loan costs the credit union approximately \$380.00. Assuming 75 WW loans are granted each year, this translates to credit union costs of approximately \$28,500 for granted WW loans each year before delinquencies are accounted for (Table 4.1). If time spent interviewing and assessing program applicants who do not qualify for loans (approximately 60 percent of all applicants) is estimated at approximately 100 hours per year²⁴, the credit union will face annual costs of approximately \$19,000²⁵ for processing these applications. When credit union costs from both granted and not granted loans are added together, credit union costs from WW are estimated at \$47,500 per year (Table 4.1).

²⁴ The 100 hours/ year estimate is based on the assumptions that approximately 1 hour is spent on each not qualified WW loan and between 175 and 180 applications are processed each year.

²⁵ Estimate based on costs of loan officer compensation and space and material costs of \$190/ hour (Kranz, 2002).

Public Costs

The third and final group of costs is also the most straightforward group, costs to the public (through the taxpayer supported welfare grant). Given that the \$250,000 awarded to the WW program is to be used for the public good, costs to the public are simply equal to the opportunity cost of the grant money. For this model it is assumed that the most efficient alternative use of the money would be to invest it in the form of a government bond. If the grant money was invested in bonds, it could make 4.8%²⁶ per year (which could then be used for public purposes). By these figures, the opportunity cost of capital for the grant is approximately \$12,000.

When combined, annual costs for the WW program can be summarized by the contents of Table 4.2. (Program costs based on allocation of 75 WW loans annually.)

Figure 4.2: Costs of Working Wheels

Costs	Cost / Loan	Cost of Program
Private	---	---
Credit Union	\$633	\$47,500
Public	\$160	\$12,000
TOTAL	\$793	\$59,500

When summed, borrower, lender, and public WW program costs total approximately \$793 per loan. Assuming an average of 75 WW loans are granted each year, costs across the entire program total approximately \$59,500.

²⁶ The current rate on a 7-year treasury bond. The rate for a 7-year bond is used because with the initial grant amount the program is expected to run for approximately 7 years from inception.

4.4 Benefits

As aforementioned, while costs are not easily calculated, they are much easier to estimate than benefits. This is due largely in part to the fact that most benefits cannot be quantified and it is often difficult to determine which benefits are the direct result of the WW loan, that is, it is difficult to assign causation. For example, while access to a car may help someone acquire a large promotion because they are able to work more flexible hours, the car is likely not the only factor responsible for the promotion. Like costs, benefits can be broken down and measured in three distinct categories: (i) borrower (ii) lender and (iii) public.

Borrower Benefits

Borrower-realized benefits can arguably come in an uncountable number of forms. For practicality, I have limited this measure to those benefits that are realized by all or most of the WW borrower population. Borrower-benefits estimated below are limited to avoided interest payments and income and salary increases. Excluded benefits include, but are in no way limited to financial education, improved credit records, increased leisure time, and access to more employment options.

For most WW clients, one of two things is true; they either could not attain credit anywhere else, or the only places they could acquire credit were from dealers or predatory lenders charging very high interest rates. For those who were “unlendable” without WW, the very attainment of a loan is a benefit. For those who could only attain credit from “expensive” sources, the benefit of WW can be seen as the amount saved by acquiring credit at the lower, WW rate. The actual amount of the loan is considered a transfer payment and is thus included in neither cost nor benefit calculations.

For the purposes of the social return calculation I assume that all WW borrowers could have attained credit from an expensive source. Most risk-based and predatory lending programs charge between 17 and 20 percent for a personal loan such as a car loan (Baldasaro, 2002). As noted earlier, average annual returns on WW loans are approximately 9% before delinquency is accounted for (Kranz, 2002). This indicates that WW rates are between 8 and 11% lower than risk-based or predatory lenders. On a loan of \$2200 this means a difference of between \$176 and \$242 each year.

A second benefit to the borrower is the realized change in income as a result of WW participation. Since WW is a Welfare-to-Work program, this benefit is especially important.

Calculating these benefits for the WW program was a particular challenge, as no data were available on income fluctuations from WW participation. It was thus necessary to impose a hypothetical distribution of income changes to the program²⁷.

Currently, in the state of Vermont, the minimum wage is \$6.25 /hour and maximum TANF benefits are just over \$600 /month (the equivalent of working full-time for approximately \$3.75 /hour) (Vermont Department of Labor, 2002). For a full-time employee making minimum wage, monthly before-tax income is approximately \$1000. If it is assumed that as a result of their new means of transportation the average WW client goes from being unemployed to being hired full-time for minimum wage, the average salary would be \$12,500 /year. If the participant was previously receiving full TANF benefits, the reduction in welfare would be approximately \$7,500, so the net

²⁷ Could actual program-induced changes be obtained this measure would be much more credible. This is an important point for further research.

increase in income would be approximately \$5,000²⁸. Clearly, not every WW client will realize such a dramatic change in income. For example, some applicants may have already had a job when applying to WW, but as a result of the program were able to get a higher paying job, or work longer hours. For many of these people, the above income increase is likely an overestimate. Instead, supposing that as a result of WW the average client realized a \$1/hr increase in income, annual individual benefits would be approximately \$2,000. Assuming that the average annual wage increase as a result of WW falls somewhere in the range of \$2,000 to \$5,000, increases across the entire program can be estimated at between \$150,000 and \$375,000 annually²⁹. Quantified borrower benefits are summarized in Table 4.3.

Table 4.3: Borrower Benefits from Working Wheels

Borrower Benefits	Annual Benefits/ Borrower	Annual Program Benefits
Avoided Interest	\$176 - \$242	\$13,200 - \$18,150
Wage increase	\$2,000-\$5,000	\$150,000 - \$375,000
TOTAL	\$2,176 - \$5,242	\$163,200 - \$393,150

As seen in Table 4.3, annual borrower benefits sum to between \$2,176 and \$5,242. Assuming 75 loans are granted each year, these numbers imply program-wide borrower benefits of between \$163,200 and \$393,150.

Other benefits to borrowers not included in this calculation are the convenience and benefits of self- transportation including the luxuries of more time and/or options, an improved credit record, a financial education, and an improved quality of life. Since so

²⁸ Equivalent to a full-time, hourly wage increase of \$2.50.

²⁹ Calculations based on the assumption that an average of 75 WW loans are granted each year.

many benefits are left out of this calculation, any estimation return will be an estimation of the lower bound of returns.

Lender Benefits

Direct benefits to the credit union are mostly non-monetary. While interest payments are collected by the credit union, interest is considered a straight transfer from borrower to lender. Since interest payments are an inherent component to any lending program, any account for transfer of wealth and marginal effects is not applicable in this situation. Benefits realized by the credit union thus include primarily satisfying their mission to reach out to an underserved population and exposing more people to the credit union. Increased institution exposure implies more business for the credit union in the future. Because they are difficult to measure, these benefits are also not included in this return calculation.

Public Benefits

Public benefits of the program include a possible decrease in unemployment and a reduction in local need for welfare. Benefits to the public could also include the improved payment of other debts by WW clients (as a result of a financial education and extra money available from avoided risk-based lending). These benefits are not included in this calculation.

Adding all measured borrower, lender, and public benefits yields estimated annual benefits of between \$163,200 and \$393,150 (Table 4.4).

Table 4.4: Benefits of Working Wheels

Benefits	Benefit / Loan	Benefit of Program
Borrower	\$2,176 - \$5,242	\$163,200 - \$393,150
Lender	Positive but unmeasured	Positive but unmeasured
Public	Positive but unmeasured	Positive but unmeasured
TOTAL	\$2,176 - \$5,242+	\$163,200 - \$393,150+

4.5 WW Return

Social return can be calculated by first subtracting total costs from total benefits to acquire a net benefit calculation (Table 4.5). Once net benefits have been calculated, the returns of the program can be expressed as the ratio of net benefits to total costs. This number expresses the dollar returns to the program per dollar expense. In this exercise, the WW return is calculated as between approximately 175 and 560 percent. This range, while large, should be interpreted as a lower bound for estimates of WW return since, as previously noted, while most costs are accounted for, many benefits are excluded from the calculation. Thus, as a result of an underestimation of total benefits, total returns will also be conservatively estimated.

Table 4.4: Net Working Wheels Returns

Net Returns			
	Costs	Benefits	Benefits- Costs
Private	---	\$163,200 - \$393,150	\$163,200 - \$393,150
Credit Union	\$47,500	Positive but unmeasured	-\$47,500
Public	\$12,000	Positive but unmeasured	-\$12,000
TOTAL	\$59,500	\$163,200 - \$393,150	\$103,700 - \$333,650

According to the estimates presented above, for the assumptions noted earlier, while costs may be incurred by both society and the general public (depending on the actual value of benefits for each group), WW has a net positive effect on society of between \$103,700 and \$333,650 each year. If net benefits are divided by costs, program returns can be calculated at between 1.75 and 5.60. These numbers indicate that each additional dollar spent on the program has an impact valued between approximately \$1.75 and \$5.60. This suggests that WW is an efficient program with a definitively positive effect.

It is interesting to notice that if benefit calculations only accounted for avoided predatory interest rates and did not also include wage increases as a result of the program, net benefits would be negative (the program would face net costs). That clients are able to get a job, or a better job, is essential to the success of the program.

It is also possible that benefits may not be underestimated as previously suggested, but rather overestimated as a result of wage increase over estimates³⁰. For example, it is unlikely that *all* WW clients will receive wage increases as a result of the program. While an attempt to control for this was made by estimating income benefits on the basis of mean estimates, there is no guarantee that the numbers used are not still an

³⁰ Large levels of serious delinquency or default could also lower net benefit estimation.

overestimation. However, even if the wage benefit number is too high, as long as at least 30 borrowers (40 percent of all borrowers) each year receive an annual wage increase of \$1 per hour on a full time job, the program will make positive returns. If half (37) of each year's WW clients realize wage increases averaging \$1 per hour on a full time job (\$2,000 per year), returns would range between 25 and 55 percent above the initial investment, depending on avoided interest figures³¹. While lower than previous estimates, these are still encouraging returns.

Working Wheels is an important, socially-driven program with an important, socially-driven mission. Estimated, albeit conservative numerical analysis of this program indicates that if social welfare is assumed to be additive, Working Wheels is also an efficient program. However, more convincing than numbers is actual client testimony. Chapter 5 also examines program returns, but in contrast to the above estimation presents returns in an individual and qualitative fashion.

³¹ The 25 to 55 percent range was calculated assuming at the lower bound that no benefits from avoided interest were realized by any WW clients, and at the upper bound that benefits of \$242 from avoided interest were realized by each WW client.

CHAPTER 5: Qualitative Evidence: Working Wheels Voices

While empirical analysis of the WW program provides a reasonable estimation of program benefits and drawbacks, to really capture the effects of this program it is necessary to go beyond the numbers. Regardless of the technique used or the amount of data available, there are certain effects that cannot be quantified. To begin to capture these effects requires a more qualitative and personal analysis of the program that is not calculated and reported by an analyst, scholar, or other outsider, but instead results from direct feedback from those whom the program actually affects. For that reason, what follows is a collection of stories and interpretations of WW and its implications from those people who have been directly affected by the program³².

The need for help: Linda and Cheryl

Linda is a formerly unemployed cashier. While she was looking for a job, her old car stopped working and she was left immobile. She didn't have enough money to repair or replace the vehicle but desperately needed transportation. She was offered a loan for a very old car ("a real lemon") from a used car dealer, but because of her low credit score and lack of income, the interest rate on this loan was just under 20%. Smart enough to realize that this rate was very high and the car would likely not last long, Linda declined the offer. An employee at the nearby Community Action Agency who was helping her find work suggested she apply for Working Wheels.

³² Client names have been changed in all cases

“Having a car is a big deal in Vermont, especially in the rural areas because how else are you going to get around? I really needed a car so I could get to work but I didn’t have the money- it was a real problem. I went to VDCU because their interest rates were much lower than the used car dealer’s. They were really nice about everything and helped me find a good car for me- it’s really hard to find a decent car that is reliable- especially in Vermont... I got a Subaru, and they set me up with a plan of \$129 a month. It was hard, but I did it...In the end it (the car) really made the difference for me...

“...It (WW) is a great program. First, if someone wants to build their credit it is one way to do it- and for low-income people I think it is a good tool to teach budgeting and responsibility...and as far as getting people to work and off welfare it is a very smart program. I know lots of people besides me have gone to VDCU for loans, they understand how hard it is for a lot of us.”

Across the state in Bennington, Cheryl also found herself in a near- helpless situation. Her car had died completely and there was no public transportation to where she needed to go, leaving her without any way to get to work. Overwhelmed by the situation, she weighed her options;

“I was in real trouble and didn’t know what to do. I didn’t even bother with the regular banks because I knew they would reject me...who is going to bother with me? And the local dealers all knew that I didn’t have much money so they were all going to sock me for interest...”

Fortunately, while in BROCC, the Community Action Agency in Bennington, a sign reading “Need a car to get to Work?” caught her eye. She asked the agency about the ad and they told her about VDCU and Working Wheels. With the help of the agency Cheryl made her way to Burlington and met with a loan officer who eventually replaced her anxiety with a loan for a small used car,

“They really respected me, they really do have the little person in mind...”

Since she first saw the poster in BROC and subsequently became a member of the credit union, Cheryl has successfully paid off her WW loan, and in doing so helped build herself a credit history. In addition to the loan counseling, she credits the VDCU with improving her credit history and financial knowledge, as well as her ability to own her own home.

“...It’s nice getting the newsletter (it has) good tips for saving money, avoiding cutthroat lenders and things like that... Before I was introduced to the programs at VDCU I never dreamed I could own a house... I saw this thing in their newsletter that said “even you can afford a house.” I said, hey, if I can get this car and all this other stuff why not? ...they gave me the hope that I could buy a home, which I did- and it’s great.”

The Process: Karen

Karen lives in the Rutland area with her daughter Sarah. After a series of misfortunes she has been working hard to turn her life around for herself and Sarah. As is the case for many clients, the WW process, while ultimately rewarding, was neither easy nor without frustration for Karen.

“I am a single parent trying to get back on my feet. Having finally overcome unemployment I was working two jobs at Killington without my own transportation and was relying on the bus and walking to work and to the store and things which meant I was working all day and getting home really late at night... it took so much time, which made parenting an even greater challenge. Someone at voc. rehab told me about Working Wheels and I went to check it out. At first it was a real struggle to get the loan, I didn’t have any credit references or bank accounts or anything. It took a while, but Jason helped me get things together and I finally got a loan for a little car- they gave me \$2,000 the first time- I was really excited, it (having a car) made everything better...at least for a little while. My car died after about 2 months. It was totally non-fixable and I didn’t have any money to fix it anyway. So I was paying on this loan and the car wasn’t even running...it was a real disappointment and I was really upset. Thankfully, voc. rehab turned around and helped me pay off the rest of the loan and after a little while I was able to get another loan from the credit union. This time it was a bigger loan...

“...The second loan is a lot better...it is just so great to have a car again! I got a used S.U.V. which is totally great for the mountain, it’s just what I need...”

“Now I have an account at the credit union and my payments are just taken out monthly, which is great because I don’t have to worry about them being on time- I just deposit my paycheck to my account and they take the money out when it is due...”

“Things aren’t easy. I have been a single parent for six years now and have had to work really hard. They (VDCU) were really helpful and continue to be really helpful, they have really made things easier for me... There are so many people in Vermont who could use their help...people that aren’t working and are trying to work and maybe just don’t know about these programs, you know...it would be good if they could extend their services more.”

The Outcome: Changing Lives

In addition to providing loans for low-income individuals at a reasonable rate , individual accommodation, a sincere respect and concern for the client, the chance to build or re-build a credit history, and a financial education are all things that set VDCU and the Working Wheels program apart from other lenders in the eyes of WW patrons. While the values of respect, confidence, and hope cannot be mathematically measured, the importance of these things is evidenced in the words of gratitude and praise for the program from those who know the benefits of this program better than any analyst or accountant.

“At the point that I first walked into the credit union I really couldn’t afford a loan, but they (VDCU) were willing to work with me and make it work anyway. They were very good to work with, I think because they were willing to do what I wanted and could do- not what was best for them or what they wanted. That really made me feel good. It is such a good program and it enabled me to keep going back to work- to get there every day and keep my job. It also helped me build my credit back up. I actually ended up getting a second loan through them as well, which was way easier than the first, way faster. They were really good to work with, it was a really positive experience, no negative anything- everything was all good.”

“One thing I’ll tell you, though, Jason is a hell of a good man...the biggest thing is he listens- you can almost hear the wheels turning in his brain-trying to figure something out, to make something work for you...

“We live in the richest country in the world but people lose their jobs and their homes every day- it’s disgusting. Most people are in denial; they can’t understand how people can’t be surviving...but it’s tough out there...I think the difference is they understand that up there (at VDCU). That matters so much.”

CONCLUSION

This thesis has introduced the transportation barrier faced by poor people in the state of Vermont and the solution to this program presented by the Working Wheels low-income car loan program at the Vermont Development Credit Union: providing small loans to those who otherwise would have difficulty attaining credit in a non-predatory environment. Three questions about this program have been addressed: how is credit allocated in the program, which Working Wheels loans are repaid, and what are the benefits and/or costs of an alternative or outreach lending program such as Working Wheels.

The motivation behind this program and the way in which it is instituted suggest that Working Wheels does not allocate loans in the same way as traditional lenders. While many of the same criteria used for risk-assessment in most lending programs are also employed in the Working Wheels allocation process, the way in which some of these criteria are applied is different for the Working Wheels case. For example, previous program experience as measured by the “previous application” variable is determined to have a positive influence on loan allocation. This result suggests that lender/borrower relationships are an important way in which applicants establish a reputation of reliability and credibility with the credit union. Previous research on low-income lending and lender-borrower relationships also supports this result (Chakravarty and Scott, 1999). “Non-traditional references,” including proof of on-time rent or rent-to-own payments are also determined to have a significant and positive influence on the probability of loan qualification. This result illustrates that while the program does accept more “traditional”

proof of creditworthiness, it is willing to forgo traditional risk measures in the presence of alternative assessments.

Low-income status also has a positive effect on Working Wheels allocation, indicating that low-income individuals are more likely to obtain credit through the program than applicants who are not low-income. The positive coefficient on the “low income” variable implies a “need-catering” effect is present in the program wherein those who would generally be considered more risky and consequently would be less likely to be granted a loan, are given some priority in the Working Wheels system. While a clear departure from traditional credit-rationing practices, this result is consistent with the mission of the VDCU and the Working Wheels program. Finally, a good past mortgage and credit scores are also important determinants of loan allocation. Depending on the combination of variables, “good mortgage” effects can be positive or negative. A larger credit score is preferable to a smaller score in all cases.

Insufficient data were available to determine with any certainty how delinquent loans differ from loans which are not delinquent. However, for the sample, no delinquent lenders had had past delinquencies nor were any delinquent borrowers recorded with a “positive VDCU history” at the time of application.

A simple and restricted cost-benefit analysis assessing the costs and benefits to borrowers, lenders, and the public, indicates that the Working Wheels program realizes annual benefits to society of between \$103,700 and \$333,650. A conservative rate of return of this program is calculated at between 1.75 and 5.6 dollars for each dollar spent. These results indicate that Working Wheels is achieving their mission efficiently.

Personal interviews with clients also suggest that Working Wheels is successfully “helping people help themselves”(VDCU Mission Statement, 2000). While any research based on individual case studies is easily disputed, in this case client testimony of positive WW experiences adds additional evidence to already convincing quantitative analysis to show the effectiveness of this program. That low-income loan programs like Working Wheels are able to ignore traditional rules of credit rationing and determining client riskiness and still be effective indicates that despite their departure from traditional loan allocation practices, these programs are a worthwhile and important part of both the loan market and the Welfare-to-Work program.

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