SS-AAEA Journal of Agricultural Economics *2008 Articles*

An Analysis of Repayment Among Clients of the Microfinance Institution Esperanza International, Dominican Republic

Gabriela L. Salazar

Abstract

This research considers default among borrowers of Esperanza International, a microfinance institution in the Dominican Republic. Though Esperanza holds high repayment rates, it is of value to examine the 3 to 5 percent of clients that have not had success with the program. If success is defined as repayment and can be correlated with socio-economic characteristics, it may point towards the development of remedial programs and/or interventions. In coordination with organizational interests, this study examines 15,104 loans divided amongst 8,991 borrowers between April 2005 and October 2007. Default for each loan (defined as the failure to repay any quota for 120 days) is considered against gender, marital status, number of dependents, level of education, age, size of loan, type of microenterprise, and regional office. Results of a first linear regression indicate that regional office is most important among included variables. This is followed by education, gender, and marital status - with women, those with less education, and those classified as cohabitating defaulting less often. A second linear regression indicates that an alternate categorical division of microenterprise does not improve the variable's significance. Two final regressions consider default separately among borrowers that were and were not identified as Dominican-Haitian. These results showed that Dominican-Haitians defaulted least often when widowed or married, and defaulted most often at the Santo Domingo office. Overall these results call for further investigation, particularly into dissimilarities among Esperanza's various branches.

The author is a student at Cornell University. Her advisor was Calum Turvey. Gabriela can be reached at gls21@cornell.edu.

I. Introduction

In the past 30 years, microfinance has materialized as an important tool in poverty alleviation and economic development. Having down-scaled and redesigned financial products for low resource individuals, microfinance was most recently recorded as serving 54.9 million clients worldwide (Tedeschi, 2006). With locally attuned loan officers and social collateral features, microfinance institutions (MFIs) mollify the information asymmetries and other barriers that have traditionally excluded the poor and extreme poor from formal financial services. In Latin America the industry has burgeoned, making significant developments towards sustainability and profitability (Ledgerwood & White, 2006). Nevertheless, the Microcredit Summit Campaign has estimated that only 6.1% of the poorest families in Latin America have access to microfinance services, a figure that indicates considerable demand and potential for growth (Gibbons & Meehan, 2002).

MFIs have drawn attention for their overall positive impact and low rates of default, but tend to be more volatile. A large percentage of total assets are generally contained in their loan portfolios so that relatively small escalations in default can significantly affect overall performance (Ledgerwood & White, 2006). Because the understanding of repayment rates and trends is valuable in measuring MFI performance and impact, this study will consider default among clients of Esperanza International, a faith-based MFI that targets the extreme poor in semi-rural, rural, and marginalized areas of the Dominican Republic.

Dominican Republic

In 2004 the Dominican Republic ranked as a lower-middle income country (UN, 2007) with a GDP growth rate of 7.5% (ECLC, 2007). The country's population was recently estimated as 9.8 million, of which a reported 44.5% lived in poverty and 22% in extreme poverty (ECLAC, 2006).[1] Among 177 countries the DR ranks 79th with a Human Development Index of 0.779, less than the regional average for Latin America and the Caribbean (UNDP, 2008). Over time, the level of education achieved in the country has increased. As measured by the UNDP (2004), the net primary enrollment rate has been most recently measured as 88%, up from 57% in 1991. True to trends elsewhere, poverty is more severe in rural areas of the country (Mora-Baez, 2003; McDonald & Ledgerwood, 1999; ECLC, 2007).

With respect to entrepreneurial prospects, a 2008 World Bank Report measured that it would cost 31.1% of GDP per capita to start a business in the DR, compared with an average among OECD member countries of 5.2% per capita. The study also found that 13.3% of Dominican adults and firms are listed in public credit registries and 35.4%

[1] Poverty rate is measured as the percentage of population with incomes amounting to less than twice the cost of a basic food basket. Extreme poverty rate is measured as the percentage of the population with incomes amounting to less than the cost of a basic food basket.

in private registries. This compares with respective OECD averages of 8.6% and 59.3%, indicating that relatively fewer Dominican adults participate in the formal financial sphere.

Microenterprises in the Dominican Republic

Between 1998 and 1999 a national sample survey found that 28% of the DR's economically active population headed or was employed by a small or micro enterprise (Ortiz, 1999).[2] These enterprises, which included all those with annual sales of less than $1.2 million, comprised more than 23% of the GDP at that time. Noting the significance of small and micro enterprises, President Leonel Fernandez recently increased funding to the National Office of the Promotion and Support of Micro, Small and Medium sized businesses (CIG, 2007).

The national survey additionally revealed a relatively even distribution of enterprises among women and men, with 52% owned by women, 40% owned by men, and 8% owned jointly. Among what was classified as micro and small enterprises, 52% were further classified as subsistence. These enterprises had little or no assets, utilized no or very basic technology, had very low sales per worker, and generated paid employment at a relatively low rate. These are the range of enterprises that Esperanza and similar MFIs serve.

Geographically, subsistence enterprises were evenly split between urban and rural areas and were concentrated in commerce.[3] The majority of these business owners, 83.4%, had only ever received a primary education, and 86.1% kept no written registry of sales activities. Only 7% of subsistence enterprises received any form of credit from Banks, NGOs, or another financial intermediary and 64.6% were recorded as having never received credit (Ortiz, 1999). These findings are notably consistent with the Microcredit Summit Campaign's estimations (Gibbons & Meehan, 2002).

Within the informal market, moneylenders and rotating savings and credit associations (ROSCAs) are the more common facilitators of financial services. Money-lenders have been generally documented as charging 12-40% interest per month, rates that are too costly for the majority of Esperanza's clients (Findley, 2005). The ROSCA system, referred to as a "san" or "san caliente" (Findley, 2005), is common but extensive data on its workings is not readily available.

Microfinance in the Dominican Republic

Since the mid 1980s, microfinance has gathered momentum in the Dominican Republic and offered an attractive alternative to borrowing in the informal market (Espinal & Grasmuck, 1997; McDonald & Ledgerwood, 1999). Commercial and

[2] A *micro*enterprise was defined as having 1-11 employees with annual sales of less than $60,000 and a *small* enterprise was defined as having 11-50 employees with annual sales of $60,000-1,200,000
[3] Commerce included all sales.

development banks, other regulated financial institutions, cooperatives and savings and credit associations, non-governmental organizations, and government programs presently offer microfinance services. Microfinance in the country is more heavily geared towards microenterprise development but products have also been developed for small-scale agricultural operations, home improvement and/or construction, and general consumption needs (Findley, 2005).

In the 1980s, several key non-governmental microfinance institutions were founded. These included the Association for the Development of Microenterprises (ADEMI), the Dominican Association for the Women's Development (ADOPEM), the Fund for Development (FONDESA), the Program for the Assistance of Small Firms, Banco de la Mujer (The Women's Bank), and the Dominican Development Foundation (FDD). According to the Rating Fund, the FDD, FONDESA, ADOPEM, and ADEMI have since become the largest and most sustainable in the country. After a macroeconomic crisis between 1989 and 1991, these MFIs exhibited relative resilience. When 8 of 23 commercial banks collapsed, ADEMI notably thrived, removing subsidies in 1991 and eventually becoming a development bank. In general, these MFIs showed an initial bias towards men but by the end of the 1980s, incorporated a balanced count of women (Grasmuck, 2000).

Esperanza International

Esperanza is a Christian integral development organization founded in 1995 by David Valle of the Seattle Mariners. It aims to serve the poorest 50% of the population with microfinance, educational, vocational, and health services and is presently registered in the US as a non-profit and in the Dominican Republic as an NGO.

Figures from 2006 illustrate Esperanza's comparatively small size. In that year it held a gross loan portfolio of US$877,236 with 9,465 active borrowers. Since 1999, Esperanza has disbursed roughly 43,000 loans with a repayment rate of 96-98% and with close to 87% of loan associates taking out consecutive loans. Esperanza charges an annual interest rate of 68.6% and requires that at least 2% of each loan be placed into savings. Esperanza has 12 established offices in regions where little financial competition from other NGOs, banks, or government programs exists. (Findley, 2006).

In 2002, the Dominican Republic's Bank of Reserves contacted the Grameen Foundation USA with interest in a Grameen replication initiative. The Grameen Foundation USA is an offshoot of the Grameen Bank and works as a technical and training resource for MFIs. After conducting a survey of microfinance in the country, the foundation selected Esperanza for its emphasis on the extreme poor and women. As a Grameen partner, Esperanza then began implementing the Grameen Bank methodology. This included a explicit focus on solidarity lending in groups known as "Banks of Hope." These group loans have most recently accounted for 96% of Esperanza's borrowers and for 85% of the organization's loan portfolio. Also characteristic of the

Grameen model are Esperanza's door-to-door banking services, and an effort to design products according to client needs. This refers namely to a by-weekly repayment schedule that corresponds to local payment and consumption patterns (Findley, 2005).

Eligibility for an Esperanza loan is currently based on an individual's sources of income, income level, housing and living conditions, total assets, and socio-cultural development level. Individuals will be turned away if they hold a fixed income higher than the national minimum salary for small businesses but all potential associates must nevertheless have some source of income, be operating a microenterprise, or have the motivation to begin one. There is no explicit regulation concerning default but it is assumed that a client may only withdraw another loan if they have settled debt with the organization, a debt that includes penalty fees for delay. In other words, clients do not explicitly lose access to future loans by defaulting. This policy may vary amongst officers and offices.

II. Overview of Literature

Gender

Gender has been previously correlated with default, type of microenterprise, degree of familial involvement in the microenterprise, and entrepreneurial autonomy. This evidence has tended to argue that women are less likely to default (Khandker et. al., 1995; Reinke, 1998; Blumberg, 2001; Schreiner, 2004) though analyses in Bolivia and Bangladesh have questioned the strength of this correlation (Godquin, 2004; Schreiner, 2004).

Studies of microentrepreneurs in Ecuador and the Dominican Republic saw a concentration of women in the commerce sector. Within the production sector, the majority of female-led enterprises involved the production of clothing or food processing. In the services sector almost all beauty-related enterprises and more than half of food-serving enterprises were led by women (Blumberg, 2001). In a sample survey of 430 Ecuadorian microentrepreneurs, women also had a higher propensity to reinvest in their respective ventures than men, a characteristic that can be directly correlated with entrepreneurial success. For these reasons, gender was selected as a variable in this repayment analysis.

Marital Status & Dependents

Marital status was considered a valid variable for a range of reasons. When studying clients of a Bolivian MFI, Vogelgesang (2003) observed that being single as opposed to non-single increased the likelihood of default. Literature in Bangladesh has also linked repayment rates to marital status. It was found that male spouses had a strong influence on the management of loans given to their wives through microfinance institutions (Goetz, 1996).

Domestic violence is considered one of Latin America's most pressing social problems (Flake et. Al. 2006) and could intuitively affect repayment of microloans. It has been estimated that each year between 10-35% of Latin American women experience domestic abuse, 22.6% in the Dominican Republic (Flake et. al., 2006). In their 2006 study, Flake et al. found a positive correlation between cohabitation and domestic abuse when compared with marriage. Their study was based upon responses of 588 women to the National Demographic and Health Surveys conducted in 1999 among women aged 15-49. These figures indicate the strong influence of partners, but it is not clear whether that can be tied to repayment behavior. A comparative study of men and women's microenterprises among five different countries including the Dominican Republic (Blumberg, 2001) did not find any explicit evidence of male intervention and involvement their wives' ventures.

Results of the analysis should clarify to some extent the relationship between marital status, gender, and loan default. Because gender has been correlated with default, it is reasonable to question whether a partner or spouse of the opposite gender may influence repayment behavior. The number of dependents was of further interest as it may indicate a resource constraint.

Education & Age

Education has been negatively correlated with default and so was considered pertinent in this analysis. Though results were not significant, a study of a South African MFI suggested that clients with less formal education were more likely to repay (Reinke, 1998). Reinke reasoned that in this case, those individuals with less education had fewer financial alternatives and for that reason valued the loans more highly. Similar results were found in a study of two Georgian MFIs (Vigenina & Kritikos, 2004).

Age has also been specifically correlated with default and was therefore included. More particularly, being younger has been previously correlated with higher default rates (Reinke,1998; Vogelgesang, 2003; Shrine 2004).

Loan Size

Correlations between loan size and repayment are not consistent among the considered studies. Of loans under $1000 at a South African MFI, those that were larger in size defaulted less often (Reinke, 1998). In a study of Bolivian microfinance borrowers, Schreiner (2004) found a weaker relationship between loan size and default, but interestingly noted a slight rise in default with larger loans.[4] Alternatively, Vogelgesang (2003) found that within a data sample of Caja Los Andes, a Bolivian MFI, larger loans

[4] The average loan in the data sample was $680. Each $100 disbursed was found to raise risk by .02 percentage points.

among first loans were correlated with default. Similar results were obtained in a study of microfinance in Bangladesh (Godquin, 2004).

Type of Microenterprise

Schreiner's study of Bolivian microenterprises (2004) posited that loans invested in "trading" were less likely to default than those invested in "manufacturing." In his 2003 analysis, Vogelgesang found that commerce was least likely to default ($p<.01$), followed by production and services. Data collection was unfortunately limited to these basic and simplified divisions. More specifically, agricultural credit portfolios have been considered more risky (Besley, 1995; von Pischke, 1991). With this, it was predicted that production, especially agricultural production would exhibit higher rates of default.

Branch

It is reasonable to suspect that variation exists among branches and that repayment rates would be one of such varying factors. Regional economic, demographic, and environmental variation could all affect repayment rates. Schreiner (2004) found that regional offices varied significantly in terms of risk. Because managerial practices can be altered to improve performance and outreach, this information would be of particular interest to Esperanza.

III. Methods and Population Characteristics

This analysis considers data extracted from Esperanza's information management system, a system that was installed in 2006. It includes 15,104 loans completed between April 2005 and October 2007 through seven of Esperanza's offices. These loans were divided amongst 8,991 individuals.

Socioeconomic information was collected by loan officers upon each client's entry into the program. Within the education variable, Esperanza has included illiterate, elementary school, middle school, some high school, high school, some technical institute, technical institute, some university, university, and Dominican-Haitian as options. Due to the Creole-Spanish language barrier and other cultural divisions, Dominican-Haitians have been traditionally considered as distinctly separate from other Dominicans. As a result they occupy their own category. There were 43 Haitian-Dominican borrowers included in the analysis. The majority of overall borrowers was illiterate or had only attained an elementary or middle school level of education (Figure 2). The respective high school, technical school, and university categories were merged for the regression analysis.

Within the marital status variable, concubinage (cohabitation), married, single, divorced, and widowed were included as options. Client age was calculated according to the date of disbursal for each loan. Entries over 86 years and under 9 years were

discarded. Entries were similarly discarded from the number of dependents variable (dependents >15).

In simplifying types of microenterprise, the original entries were first divided into agricultural production, services, clothes/shoe sales, food preparation/sales, and other production/sales (Table 1). To be more closely considered against previous findings, they were also divided according to the more traditional categories of commerce, production, and services (Table 2).

Among borrowers, the mean age was 39.5 years with a standard deviation of 12 years. Of the clients, 86.6% were female and had a mean of 2.5 dependents. The average loan size was US$181 with a standard deviation of US$230.50.[5]

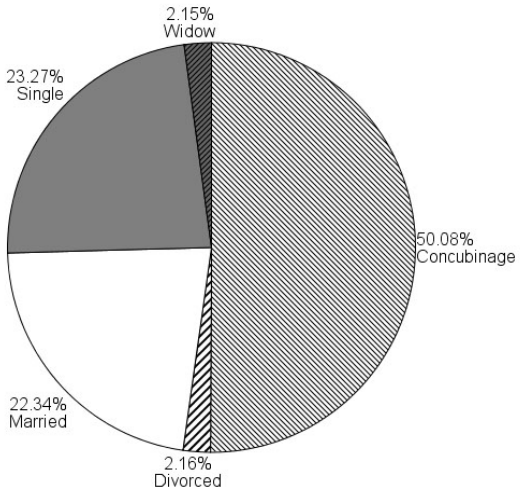

Figure 1. Marital status

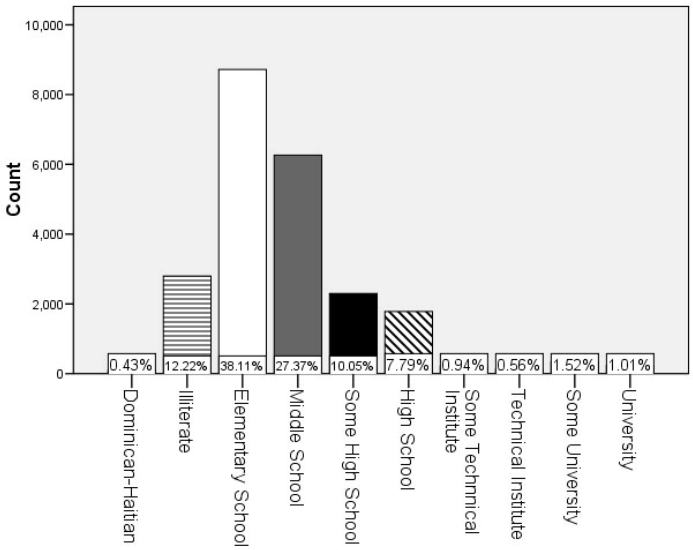

Figure 2. Level of education

[5] Currency converted from Dominican pesos where 1 USD = 34.2195 DOP, May 2008

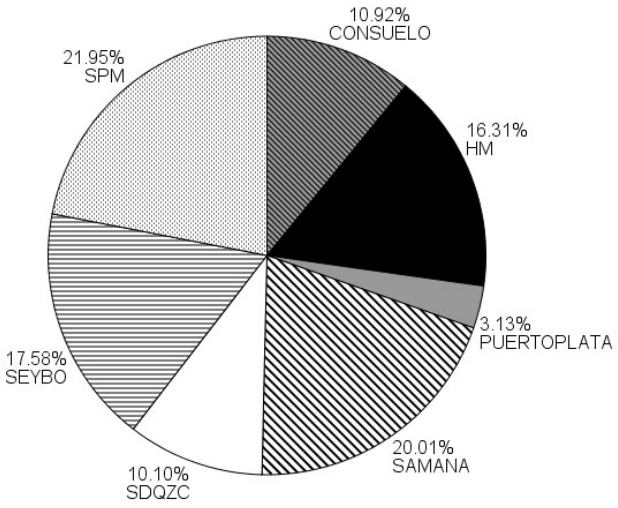

Figure 3. Distribution of clients among Esperanza's branch offices

Figure 4. Map of Esperanza's branch offices

Table 1. Listed microenterprise as included in Regression I

Category	**Agricultural Production**	**Services**	**Clothes/ Shoe Sales**	**Food Preparation/Sales**	**Other Production/Sales**
Listed Venture	Agricultural cultivation Breeding of animals Eggs production Fishing Raising chickens	Beauty salon Barbershop Cabinet making Dressmaker Elementary school Special services (Health etc.) Tailoring Taxi driver Mechanic workshop	Clothes sale by lots New clothes sales Shoe sales Underwear sales Used clothes sales	Bakery Breakfast sales Candy store Cookies, candies etc sales Elaboration of beverages Elaboration of candies Elaboration of casaba Elaboration of patties Extraction of coconut oil Fish Sales Food shop Fried food sales Fruits sales Ice cream sales Ice cream elaborations Kiosco Non-processed foods sales Pastry elaboration and sales Processed food sales Meat sales Shrimp sales	Chemical Products Commerce business Cosmetic sales Drugstore Hardware shop Jewelry store Jewels sales Natural Products sales Misc. Items sales Saddlery Shop Very Little Shop
% of Total	**2.1**	**8.2**	**27.0**	**35.1**	**27.6**

Table 2. Listed microenterprise as included in Regression II

Category	Commerce		Production	Services
Listed Venture	Clothes sale by lots	Fruits sales	Elaboration of beverages	Beauty salon
	New clothes sales	Ice cream sales	Elaboration of candies	Barbershop
	Shoe sales	Kiosco	Elaboration of casaba	Cabinet making
	Underwear sales	Non-processed foods sales	Elaboration of patties	Dressmaker
	Used clothes sales	Pastry elaboration and sale	Extraction of coconut oil	Elementary school
	Shop	Processed food sales	Ice cream elaborations	Special services (Health etc.)
	Very Little Shop	Meat sales	Saddlery	Tailoring
	Bakery	Shrimp sales	Agricultural cultivation	Taxi driver
	Breakfast sales	Commerce business	Breeding of animals	Mechanic workshop
	Candy store	Cosmetic sales	Eggs production	
	Cookies, Candies etc sales	Drugstore	Fishing	
	Fish Sales	Hardware shop	Raising chickens	
	Food shop	Jewelry (imitations) store		
	Fried food sales	Jewels (imitations) sales		
	Misc. Items sales	Natural Products sales		
% of Total	**86.2**		**2.0**	**3.0**

In analyzing the data, a linear probability model (LPM) was chosen. For an outcome Y and regressor vector x, $Y_i = a + b_1X_{i1} + b_2X_2 \ldots bpX_{ip} + e_i$. In modeling binary responses, LPM are criticized for non-conforming predicted probabilities and for heteroscedasticity of the variance. Nevertheless, LPM can be more easily interpreted and can provide reasonable prediction accuracy relative to discriminate analysis and logistic regression (Turvey & Brown, 1990; Powers and Xiu, 2000). The results of a logistic regression were compared against the LPM for the first regression.

As the dependent variable, default was represented as 1 if a write off amount was recorded and as 0 if no write off amount was recorded. The independent variables of gender, marital status, education, type of microenterprise, and regional branch were converted into dichotomous dummy variables. The remaining independent variables of age, loan size, and number of dependents were included as continuous variables. Other production and sales, male, single, illiterate, and San Pedro de Macoris were stood as the omitted variables. Services was excluded in the second regression.

A third regression was performed to consider loan default among Dominican-Haitians, where Dominican-Haitian = 1. Finally, a fourth regression considered default among individuals that were not recognized as Dominican-Haitian, where Dominican-Haitian = 0.

IV. Results

Regression I. *Five divisions of microenterprise*

Results of the first regression show that women default less often than men at a highly significant level ($p<.01$). Borrowers that were cohabitating defaulted least often ($p<.05$), followed by those that were widowed ($p<.05$), and those who were divorced ($p<.01$). Those that were illiterate defaulted least often, followed significantly by those who had attended elementary school ($p< .05$), middle school ($p<.01$), high school ($p<.01$), college ($p<.05$), and were identified as Haitian-Dominican ($p<.10$). Regional offices were all highly significant ($p<.01$), with borrowers from Hato Mayor (HM) defaulting least often and borrowers from Puerto Plata defaulting most often.

Interpretation of the standardized coefficients indicates that regional office variables have the greatest effect on repayment. This is followed by educational level, gender, and marital status.

In considering regional office more carefully, Puerto Plata and Santo Domingo (SDQZC) were selected for their relative propensity to default. For those levels of education that were most significantly correlated with increased default, clients in Puerto Plata did not vary from mean values. Clients in the Santo Domingo office cohabitated less often though, 33.98%, and were also single more often, 37.52%. The percentage that was divorced, widowed, single, female or male also matched overall means. As those least likely to default, the clients of Hato Mayor do not vary

considerably from the means for educational attainment. With regards to marital status, relatively more than average cohabitated, 56.46%, while fewer were single, 17.9%. There are also proportionally more women than average, 89.60%.

In testing further for endogeneity, marital status and gender were considered. More women cohabitated, 51.43% compared to a mean of 41.32%, while more men were single, 34.71% compared to a mean of 21.51%. Percentage values for the three remaining categories were evenly distributed. The level of education did not vary from mean values by gender.

Signs of the unstandardized coefficients of significant independent variables ($p<.01$) are consistent with those of a logistic regression analysis. A chi-squared statistic using a likelihood ratio test with 24 degrees of freedom rejects the null. The odds ratios rank regional office as having the greatest effect on repayment ($p<.01$), followed by the level of education ($p<.01$), marital status ($p<.05$), and gender ($p<.01$) variables.

Table 3. Linear regression with five microenterprise divisions

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.069	.015		4.642	.000
	Loan_Size	.000	.005	-.001	-.079	.937
	Age_at_Loan	-5.7E-012	.000	-.011	-1.272	.204
	dependants	.001	.001	.007	.871	.384
	Agricultural_Production	-.009	.011	-.007	-.826	.409
	Food_Prep_Sales	-.005	.004	-.012	-1.222	.222
	Services	-.005	.006	-.007	-.844	.399
	Clothes_Shoe_Sales	.007	.004	.015	1.598	.110
	Female	-.019	.005	-.031	-3.879	.000
	Married	-.005	.005	-.011	-1.087	.277
	Divorced	.032	.011	.023	2.831	.005
	Widow	.028	.011	.020	2.442	.015
	Cohabitation	-.008	.004	-.020	-2.013	.044
	Dominican_Haitian	.053	.030	.014	1.773	.076
	Elementary_School	.011	.005	.027	2.251	.024
	Middle_School	.018	.005	.040	3.421	.001
	High_School	.034	.006	.063	5.630	.000
	Technical_Institute	.002	.015	.001	.118	.906
	University	.045	.016	.023	2.807	.005
	CONSUELO	-.026	.006	-.041	-4.351	.000
	HM	-.057	.005	-.102	-10.424	.000
	PUERTOPLATA	.151	.011	.109	13.356	.000
	SAMANA	-.050	.005	-.101	-9.760	.000
	SDQZC	.116	.006	.176	18.954	.000
	SEYBO	-.040	.005	-.078	-7.677	.000

a. Dependent Variable: Loan_Default

$R^2 = .088$

Regression II. *Three divisions of microenterprise*

The division of microenterprise into commerce, production, and sales categories was not seen with an increase in significance. Relative to one another, microenterprises that centered on service defaulted least often, followed by production and commerce. According to the standardized coefficients, the division of enterprises in this fashion reduced their relative weight, though not rank, against the other included variables.

In considering endogeneity, gender and marital status were more closely examined. Relatively more women were involved in commerce, 87.3% compared with 76.1% of women, but fewer women were involved in services, 6.96% compared with

15.61% of men. Involvement in services increased positively with level of education, with 3.29% of illiterate borrowers, 5.86% of those with elementary school, 9.25% of those with middle school, 14.29% of those with high school, 11.39% of those with university, and 15.43% of those with technical institute included in the sector.

Table 2. Linear regression with three simplified microenterprise divisions

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.065	.015		4.211	.000
	Loan_Size	-.001	.005	-.001	-.160	.873
	Age_at_Loan	-7.2E-012	.000	-.014	-1.610	.107
	dependants	.001	.001	.006	.716	.474
	Commerce	.006	.005	.011	1.185	.236
	Production	.002	.008	.003	.270	.787
	Female	-.017	.005	-.029	-3.592	.000
	Married	-.005	.005	-.011	-1.084	.278
	Divorced	.032	.011	.023	2.847	.004
	Widow	.028	.011	.020	2.469	.014
	Cohabitation	-.009	.004	-.021	-2.095	.036
	Dominican_Haitian	.055	.030	.014	1.835	.067
	Elementary_School	.012	.005	.028	2.313	.021
	Middle_School	.019	.005	.042	3.548	.000
	High_School	.036	.006	.066	5.886	.000
	Technical_Institute	.003	.015	.002	.210	.834
	University	.047	.016	.023	2.898	.004
	CONSUELO	-.026	.006	-.041	-4.366	.000
	HM	-.057	.005	-.103	-10.465	.000
	PUERTOPLATA	.153	.011	.111	13.591	.000
	SAMANA	-.050	.005	-.102	-9.803	.000
	SDQZC	.116	.006	.175	18.922	.000
	SEYBO	-.041	.005	-.079	-7.762	.000

a. Dependent Variable: Loan_Default

$R^2 = .088$

Regression III. *Dominican-Haitians*

Dominican-Haitians defaulted least often when widowed ($p<.05$), followed by those that were married ($p<.05$). Risk of default increased with dependents ($p<.10$). Dominican-Haitians also defaulted significantly more often when borrowing from the Santo Domingo loan office ($p<.05$).

Table 3. Default among Dominican-Haitians

Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.109	.626		.174	.863
	Loan_Size	.029	.233	.019	.125	.901
	Age_at_Loan	-2.5E-011	.000	-.026	-.169	.867
	dependants	.048	.027	.370	1.795	.084
	Food_Prep_Sales	-.202	.133	-.290	-1.524	.139
	Services	-.437	.232	-.347	-1.884	.070
	Clothes_Shoe_Sales	-.092	.120	-.139	-.769	.448
	Female	-.053	.117	-.070	-.454	.653
	Married	-.524	.171	-.603	-3.068	.005
	Widow	-.828	.305	-.389	-2.713	.011
	Cohabitation	-.206	.163	-.314	-1.262	.217
	CONSUELO	-.029	.134	-.037	-.220	.827
	HM	-.175	.288	-.082	-.608	.548
	SDQZC	.736	.144	1.001	5.102	.000
	SEYBO	.224	.172	.224	1.298	.205

a. Dependent Variable: Loan_Default

b. Selecting only cases for which Dominican_Haitian = 1.00

$R^2 = .635$

Regression IV. *Dominicans*

Among individuals that were not considered Dominican-Haitian, results did not show considerable variation from regressions I and II.

Table 4. Default among Dominicans

Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.095	.014		6.776	.000
	Loan_Size	.001	.005	.002	.209	.834
	Age_at_Loan	-1.3E-011	.000	-.024	-2.945	.003
	dependants	.000	.001	.002	.197	.844
	Agricultural_Production	-.010	.011	-.007	-.881	.378
	Food_Prep_Sales	-.006	.004	-.014	-1.454	.146
	Services	-.002	.006	-.003	-.370	.711
	Clothes_Shoe_Sales	.008	.004	.018	1.964	.050
	Female	-.019	.005	-.033	-4.032	.000
	Married	-.003	.005	-.006	-.596	.551
	Divorced	.033	.011	.024	2.954	.003
	Widow	.029	.011	.021	2.520	.012
	Cohabitation	-.009	.004	-.023	-2.266	.023
	CONSUELO	-.028	.006	-.045	-4.764	.000
	HM	-.060	.005	-.108	-11.096	.000
	PUERTOPLATA	.147	.011	.107	13.105	.000
	SAMANA	-.052	.005	-.104	-10.151	.000
	SDQZC	.113	.006	.171	18.441	.000
	SEYBO	-.045	.005	-.088	-8.786	.000

a. Dependent Variable: Loan_Default

b. Selecting only cases for which Dominican_Haitian = .00

$R^2 = .085$

V. Conclusions

Regional office emerged as the most significant variable in this analysis. Borrowers from the Puerto Plata, Santo Domingo, and San Pedro de Macoris offices were relatively more likely to default. Because the client base of these offices was not skewed relative to overall distributions, it is assumed that other variables not included in this analysis contributed to the disparities in repayment.

Among factors, area characteristics such as electrification, road width, and educational infrastructure have been previously correlated with lower levels of default (Khandker et. al, 1995). A 2005 randomized study of Esperanza borrowers in fact found that those based out of Hato Mayor (HM) and El Seibo (SEYBO) had access to electricity

more often than borrowers among the other offices – 26-29% compared to an average of 13% (Findley). The study also found that the highest incidences of no schooling among the children of borrowers occurred in Santo Domingo and San Pedro de Macoris, offices with the highest rates of default. These figures suggest links but further investigation is necessary.

Environmental or socioeconomic variation may also affect repayment rates. Puerto Plata, for example is on the northern coast of the island. This geographic distinction may affect crops grown, services demanded, or other potentially significant characteristics. Moreover, Puerto Plata is the most removed from the main conglomeration of offices, a feature that may or may not affect repayment. Finally, according to a socioeconomic survey conducted by the Dominican Republic's National Planning Office (ONAPLAN, 2005) Puerto Plata province and Santo Domingo's federal district have higher average standards of living and lower percentages of households living in extreme poverty than the provinces with the best performing branches – Hato Mayor, Samana, and El Seibo. Further investigation into the nature of this apparent relationship is required.

Regional disparities may also stem from managerial variation (Ledgerwood & White, 2006; von Pischke, 1991), for which it is relevant to note the findings of a recent risk survey, *Banana Skins 2008*. The study keyed in on MFIs that hold more than US$5 million in assets and gathered survey responses from roughly 300 practitioners, investors, analysts, regulators, aid officials, academics, accountants, lawyers, or consultants worldwide. Among 29 listed options, participants selected poor management quality as the greatest threat to the development of MFIs. As MFIs rapidly grow, management has arguably lacked necessary breadth and depth. To better understand the effect of management quality on credit risk among Esperanza's offices, further study is required.

As a function of managerial variation, loan officer success in selecting and maintaining participants is also likely linked to delinquency. Esperanza as a larger organization mandates products to the regional offices, but loan officers have a degree of freedom in catering to individual needs and perceived capabilities. It has been reasoned that long-term problems with repayment are not the result of unstable agricultural returns, inadequate technology, erratic rainfall, natural disasters, or poverty for instance, but instead reflect a failure of management and/or loan structuring (Schreiner, 2004; von Pischke, 1991; Vogelgesang, 2003). Thus, it would be valuable to more closely consider differences in loan structuring and among loan officers between the seven included offices.

Banana Skins has also more specifically extracted the views of Latin American participants. Against the global averages, these responses ranked competition as most threatening, a variable that has been often correlated with default (Armendariz de

Aghion & Morduch, 2000). As a result, regional variation in the presence of competing financial intermediaries in the Dominican Republic must be further studied.

As the second strongest variable, education's negative correlation with default may reiterate Muhammad Yunus' conclusion that low resource individuals are more trustworthy (Turvey & Kong, 2006). For example, because transactions are made orally with a loan officer, Esperanza uniquely caters to illiterate individuals. It could be therefore assumed that illiterate individuals value their loans more highly than non-illiterate individuals.

Level of education attained may also be reasonably linked to the size of parental/familial resource bases, as parents with fewer resources may opt out of schooling their children. Level of education also independently contributes to an adult's level of social and economic integration, which among other characteristics can be related to capacity to earn higher levels of income. Upon their entry into Esperanza's program, relatively more surveyed clients reported no regular income in Hato Mayor and Seibo (Findley, 2005). Seeing as these offices were least correlated with default, this may have been a contributing trait. The development of a familial resource variable and the inclusion of an income variable would determine this correlation, and shed further light on the contextual importance of education.

Higher incidence of default among Dominican-Haitians also poses various questions. Regarding the trustworthiness hypothesis, Dominican-Haitians are considered the most resource poor cohort in the country, and so it is curious that within this sample they exhibit the highest rates of default. This correlation may be possibly offset by the relatively severe stigma attached to Haitians. Prejudice against Haitians and Dominicans of Haitian descent has risen from historical rivalry, language, religious, and other cultural attributes. Cultural and other differences may affect repayment rates independently but Howard (2008) emphasizes that social tension and discriminatory practices have limited opportunities for Dominican-Haitians, and might therefore affect entrepreneurial or other successes. Howard describes that this bias has commonly manifested itself as arbitrary physical and political violations. For a more complete understanding of repayment among Dominican-Haitians, further analyses would be necessary.

Results of the third regression may be reflective of cultural differences. Differences in repayment among the branches perhaps be explained by relative levels of discrimination, or by the presence of a larger Haitian-Dominican community. These possibilities call for further consideration.

Marital status stood as the third strongest variable in determining repayment, where clients that cohabitated defaulted least often. Cohabitation in Latin America encompasses a spectrum of relationships. Some may be short-term strategies in confronting hardship, may precede a marriage that has been delayed for economic or legal reasons, or may be long-lasting surrogate marriages (Castro Martin, 2002). On a

larger scale, cohabitation rates have been arguably increasing in every Latin American country (Castro Martin, 2002), an observation that to some degree may indicate prospects for microfinance.

Findings for gender corroborate those of previous studies. In considering this negative correlation with default, women's motivation to repay may be linked to the comparative weight of their responsibilities. For instance, in Ecuador mothers were more concerned with their children's wellbeing than fathers (Blumberg, 2001). Further study could include a more comprehensive exploration of spending and motivating responsibilities among female and male borrowers. Surveys of Dominican microenterprises have also found that the large majority of women operate out of their own homes (Cely, 1993; Blumberg, 2001). It has been reasoned that this is to accommodate childcare and other domestic obligations (Blumberg, 2001), but such an arrangement may hold other benefits. This too could be studied in more depth.

The tendency of women to group together in ventures may also conceivably affect repayment. Blumberg found that employees of microenterprises tend to divide according to gender. In a 1993 national survey by Fondo Micro, 67% of economically active women in the Dominican Republic worked for women (Cely). Blumberg's study also showed that women more often utilize their children's labor (2001). More extensive analysis could question the source and composition of labor and compare this against default.

Results for microenterprise in the first regression are not conclusive but may show prospects for agricultural production. The promotion of productivity growth in the agricultural sector, especially among small-scale growers, is considered a critical component of an effective economic development strategy (Bravo-Ureta & Pinheiro, 1997). Further study into the nature of agricultural production may therefore be of value to Esperanza as they aim to further alleviate poverty and stimulate economic growth.

The results of the second microenterprise regression were also insignificant but may suggest further study, especially into endeavors categorized as commerce. Regarding gender, the concentration of women in commerce was consistent with Cely's 1993 findings. Gender could be more closely considered in future studies of microenterprise and repayment.

Other variables not considered in this study that may affect default include the date of disbursement, prior late payments, length of loan (Vogelgesang, 2003; Schreiner, 2004), and accumulation of savings. The potential for future savings and lending opportunities is in itself is also a strong incentive for repayment (Mosley, 1996; Aremendariz de Aghion & Morduch, 2000; Vogelgesang, 2003; Stiglitz & Weiss, 1983; Simanowitz & Walker, 2002). A more detailed understanding of Esperanza's default policies would therefore be valuable in determining the most effective policy.

Finally, the consideration of group against individual loans with Esperanza would be warranted. Esperanza's shift in focus to group loans was based upon the

empirical success of the Grameen model, but studies have questioned this correlation (Vigenina & Kritikos, 2004). Heterogeneity among group members has been noted as significant (Zeller, 1998) along with variation in group structuring. A study of solidarity groups, for example, found that exogenously formed groups were less likely to strategically default (Besley, 1995).

In the Dominican Republic the significance of microenterprises has been coupled with the success of MFIs like Esperanza International. As repayment and impact is more carefully understood, means of alleviating poverty and extreme poverty will become more apparent. Studies such as this will hopefully contribute to such development.

References

Armendariz de Aghion, B., Morduch, J. (2000). Microfinance beyond group lending. *Economics of Transition*, 8, 410-420.

Bravo-Ureta, B.E., & Pinheiro, A.E. (1997). Technical, economic, and allocative efficiency in peasant farming: Evidence from the Dominican Republic. *The Developing Economies,* 35(1), 48-67.

Blumberg, R.L. (2001). We are family: Gender, microenterprise, family work, and well-being in Ecuador and the Dominican Republic – with comparative data from Guatemala, Swaziland, and Guinea-Bissau. *History of the Family*, 6, 271-299.

Cely, M. (1993). *Microempresas y pequenas empresas de mujeres en la Republic Dominicana: Resultados de una encuesta nacional*. Santo Domingo: Fondo para el Financiamiento de la Microempresa, Inc.

Castro Martin, T. (2002). Consensual Unions in Latin America: Persistence of a dual nuptiality system. *Journal of Comparative Family Studies*, 33(1), 35-55.

Center for the Study of Financial Innovation (2008). Microfinance banana skins, 2008: Risk in a booming industry. New York: CSFI. Retrieved April 20, 2008 from http://www.cgap.org/portal/binary/com.epicentric.contentmanagement.servlet.ContentDeliveryServlet/Documents/MF_BananaSkins2008.pdf

Centro de Informacion Gubernatal. "El Presidente Fernandez entrega cheque por RD$500 milliones par alas Microempresas." Available online at, http://www.cig.gov.do/noticias/noviembre-2007/27-11-07/presidenteentrega-cheques.html

Daley-Harris, S. (Ed.), *Pathways out of poverty: Innovations in microfinance for the poorest families.* Bloomfield, Connecticut: Kumarian Press.

Findley, A. Socio-economic characteristics of microfinance clients in the Dominican Republic. Prepared for Professor Vidyashankar, ILRST 511, Cornell University, December 2005.

Findley, A. (2002). Grameen Foundation USA: Market survey of microfinance for Grameen Replication in the Dominican Republic. Retrieved April 20, 2008 from http://www.gdrc.org/icm/country/dominican/do-GFUSA-Microfinance.pdf

Flake, D.F., & Forste, R. (2006). Fighting families: Family characteristics associated with domestic violence in five Latin American countries. *Journal of Family Violence*, 21(1), 19-29.

Gibbons, D.S., & Meehan, J.W. (2002). Financing microfinance for poverty reduction. In Daley-Harris, S. (Ed.), *Pathways out of poverty: Innovations in microfinance for the poorest families.* Bloomfield, Connecticut: Kumarian Press.

Godquin, M. (2004). Microfinance repayment performance in Bangladesh: How to improve the allocation of loans by MFIs. *World Development*, 32(11), 1909-1926.

Grasmuck, S., & Espinal, R. (2000). Market success or female autonomy? Income, ideology, and empowerment among microentrepreneurs in the Dominican Republic. *Gender & Society*, 14, 231-255.

Khandker, S.R., Khahily, B., & Khan, K. (1995). Grameen Bank: performance and sustainability. World Bank Discussion Paper, 306. The World Bank, Washington DC.

"Map of regional offices" Esperanza International. Available online at, http://esperanza.org/us/index.php?option=com_content&task=view&id=20&Itemid=23

Ledgerwood, J., & White, V. (2006). *Transforming microfinance institutions: Providing full financial services to the poor*. Washington DC: The World Bank.

McDonald, B., Ledgerwood, J., (1999). Case studies in microfinance: The Dominican Republic, Ademi. The World Bank Group. Retrieved April 20, 2008 from http://www/gdrc.org/icm/country/dominican /do-microfinance.pdf

Morduch, J. (1999). The microfinance promise. *Journal of Economic Literature,* 37(4), 1569-1614.

Mosley, Paul, 1996. Indonesia: BKK, KURK, and the BRI Unit Desa Institutions. In Hulme, David, Mosley, Paul (Eds.), Finance Against Poverty. Routledge, London, pp. 32– 93.

Powers, D., Xie, Y. (2000). *Statistical methods for categorical data analysis.* San Diego: Academic Press.

Oficina Nacional de Planificacion. Atlas de la pobreza en la Republica Dominicana, 2005. Secretariado Tecnico de la Presidencia. Retrieved April 20, 2008 from www.onaplan.gov.do

Ortiz, M. & Foye, J. (2000). Microempresas, globalizacion y servicios financieros en la Republica Dominicana, 1998-1999: Parts I & II. Fondo para el Financiamiento de la Microempresa, Inc. Retrieved April 20, 2008 from http://www.fondomicro.org/publicaciones/articulos.aspx

Reinke, J. (1998). How to lend like mad and make a profit: a micro-credit paradigm versus the start-up find in South Africa. *Journal of Development Studies*, 34(3), 44-61.

Sharma, M., & Zeller, M. (1997). Repayment performance in group-based credit programs in Bangladesh: An empirical analysis. *World Development*, 25(10), 1731-1742.

Simanowitz, A., & Walker, A. (2002). Ensuring impact: Reaching the poorest while building financially self-sufficient institutions, and showing improvement in the lives of the poorest women and their families. In Daley-Harris, S. (Ed.), *Pathways out of poverty: Innovations in microfinance for the poorest families.* Bloomfield, Connecticut: Kumarian Press.

Schreiner, M. (2004). Scoring Arrears at a Microlender in Bolivia. *Journal of Microfinance.* 6(2), 65-88.

Stiglitz, J.E., & Weiss, A. (1983). Incentive effects of terminations: applications to the credit and labor markets. American Economic Review. 73, 912-927.

Tedeschi, G.A. (2006). Here today gone tomorrow: Can dynamic incentives make microfinance more flexible? *Journal of Development Economics*, 80, 84-105.

Turvey, C.G. & Brown, R. (1990). Credit scoring for a federal lending institution: the case of Canada's farm credit corporation. Agricultural Finance Review, 50, 47-57.

Turvey, C.G. & Kong, R. (2006). "Muhammed Yunus: A biography. *Agricultural Finance Review*, 66(2), 195-214.

United Nations Development Programme (2008). Human Development Reports: Dominican Republic. Retrieved April 20, 2008 from http://hdrstats.undp.org/countries/country_fact_sheets/cty_fs_DOM.html

United Nations Development Programme (2008). 2007/2008 Report: Dominican Republic. Retrieved April 20, 2008 from http://hdrstats.undp.org/countries/data_sheets/cty_ds_DOM.html.

United Nations, Department of Economic and Social Affairs, Population Division (2007). World Population Prospects: The 2006 Revision, Highlights, Working Paper No. ESA/P/WP.202.

United States Agency for International Development (2006). A handbook for developing credit scoring systems in a microfinance context. microREPORT #66. Prepared by DAI Washington. Retrieved April 20, 2008 from www.microlinks.org.

Findley, Andrea. Socio-economic characteristics of microfinance clients in the Dominican Republic. Prepared for Professor Vidyashankar, ILRST 511, Cornell University, December 2005.

Vigenina, D., & Kritokos, A.S. (2004). The individual micro-lending contract: is it a better design than joint liability? Evidence from Georgia. *Economic Systems*, 28,155-176.

Vogelgesang, U. (2003). Microfinance in times of crisis: the Effects of Competition, Rising Indebtedness, and Economic Crisis on Repayment Behavior. Great Britain: Elsevier Ltd., 31(12) 2085-2114.

von Pischke, J.D. (1991). Finance at the frontier: Debt capacity and the role of credit in the private economy. EDI Development Studies. The World Bank, Washington DC. Available online at,

The World Bank (2008). *Doing Business: Dominican Republic.* Retrieved April 20, 2008 from http://www.doingbusiness.org/ExploreEconomies/ExploreEconomies.aspx?economyid=59

Zeller, M. (1998). Determinants of repayment performance in credit groups: The role of program design, intragroup risk pooling, and social cohesion. *Economic Development and Cultural Change*, 46(3), 599-621.

The Rating Fund. Rating Reports: Dominican Republic. Retrieved April 20, 2008 from http://www.ratingfund.org/ratings_completed.aspx