"The Determinants of Poverty in the Mexican States of the US-Mexico Border"

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1. Introduction

Poverty is widespread in Mexico, affecting more than 50 million people, almost half of the country´s population. Even though poverty is lower in the states bordering the United States than in the rest of the country, it can reach up to 45 percent of the population in some border states. It is therefore important to analyze the factors that are correlated with poverty in this region, in order to identify and propose appropriate public policies which could contribute to lower poverty levels in the area.

Until very recently, the lack of household income surveys statistically representative at the state level had made it impossible to analyze poverty at the state level in Mexico (except for a very few states for which there was a large enough sample). However, in 2008, the National Institute of Statistics and Geography (INEGI) and the National Council for the Evaluation of Social Development Policy (CONEVAL) conducted a new survey (ENIGH Socioeconomic Conditions Module, ENIGH-MCS by its acronym in Spanish), designed to be statistically representative at the state level and made the results available to the public at the end of 2009. In this paper we will take advantage of the new survey in order to analyze the determinants of poverty in the Mexican states which have a border with the United States. As far as the author knows, there is no research to date that has identified and estimated the determinants of poverty through a regression analysis in this region.

The rest of the paper is organized as follows: The second section offers a review of the literature about poverty in the Mexican border states. The third section explains the data

and poverty lines used in the study. Section 4 presents a poverty profile for the border states. The fifth section discusses the methodology used to analyze the determinants of poverty in the region and presents the results obtained from the multivariate regression analysis. Finally, the last section proposes some conclusions and policy implications that can be drawn from the study.

2. Literature Review

2.1. Incomes and Inequality in the Border States

The large economic differences prevailing between Mexico and the United States are reflected also in the border area. According to the World Bank (2011), in the year 2009 current per capita income in the US was $ 45,989, which was 5.6 times greater than the corresponding figure for Mexico ($8,143). Adjusted by purchasing power, the difference decreases but it is still large, since US income is 3.2 times larger than Mexican income. According to Anderson and Berger (2008), the difference is not as large between the border counties (US) and the border municipios (Mexico) since in 1999 per capita PPP GDP was only 2.1 greater in the border counties.

Other important feature noted by several authors ((Peach and Adkisson (2000); Anderson and Berger (2008); Pick, Viswanathan and Hettrick, (2001)) is that incomes and living standards decrease along the border as we move from west to east, both in the US side as in the Mexican side. Thus, according to Anderson and Berger (2008), Gross Regional Product per Person in 1999 was $29,618 in the California border counties and only $15,333 in the Texas border counties. In the Mexican side, the same authors estimate that Gross Regional Product per Person in 1999 was $11,575 in the border municipios of Baja California and only $9,357 in the Tamaulipas border municipios.

According to Peach and Molina (2002), median household income in the Mexican border states for the year 2000 was 75 percent higher than in the non-border states (excluding the Federal District) and about 13 percent higher than median household income in the Federal

District. Furthermore, while median household income for the whole country decreased by one percent between 1992 and 2000, it increased by 10 percent for the border states during the same period. The border state with the highest median household income is Baja California, followed by Nuevo León and Chihuahua, while the border state with the lowest median household income is Coahuila.

Peach and Molina (2002) note that income inequality is lower in the Mexican border states than in the country as a whole. Using the National Household Survey of Income and Expenditures (ENIGH, by its acronym in Spanish) for the year 2000, they estimated a Gini coefficient of 0.45 in the border states (taken as a whole region), compared to 0.53 nationally. The authors estimate that income inequality in the Mexican border states decreased during the nineties, since the Gini coefficient decreased from 0.53 in 1992 to 0.45 in 2000, while in the non-border states (excluding Mexico City) it remained the same, with a Gini coefficient of 0.54 in both years.

2.2. Poverty in the Border Region

Anderson (2003) estimates that poverty in the Mexican border states decreased from 1970 to 2000 in all states except Sonora. The states that experienced the highest decreases in their poverty rates were Coahuila (from 66.3 % in 1970 to 51.8 % in 2000); Baja California (from 55.3 % in 1970 to 41.7 % in 2000) and Chihuahua (from 62.1 % to 50.9%).

Camberos and Bracamontes (1997) estimate that in 1990 poverty affected 51 percent of the population in the country while the corresponding figure for the border states was much

lower, 40 percent. Extreme poverty affected 26.8 percent of households in the country and 12.7 percent of households in the border states. Tamaulipas, Chihuahua and Coahuila had the highest moderate poverty rates with 22.6 %, 20.1% and 19 % of households, respectively, while Baja California and Nuevo León registered the lowest figures (12.1 % and 15.4%, respectively).

Using census data and a poverty line equal to two minimum wages, Fuentes and Martínez (2006) estimate that the poverty rate for 1990 in all border states was lower than the national poverty rate. Thus, while the national poverty rate was 0.64, it was much lower in Baja California (0.41) and Sonora (0.53) and slightly lower in Coahuila (0.62), Nuevo León (0.59) and Tamaulipas (0.62).

Using census data for 1990, Pick, Viswanathan and Hettrick, (2001) find that poverty in both sides of the border is much higher in the east than in the west. For the Mexican border states, they estimate high poverty levels in southern parts of Chihuahua, Coahuila, and Nuevo León, and in most of Tamaulipas. They also found that poverty is lower in the Major Metropolitan Areas in both sides of the border than in the non-metropolitan areas.

Using a poverty maps methodology, CONEVAL estimated an average poverty rate of 33 % in the year 2000 for the border states and practically the same figure for 2005, 32.9 %. Poverty decreased substantially in Baja California (from 23.7 % in 2000 to 9.2 % in 2005), remained about the same in Nuevo León and Sonora and increased in Coahuila, Chihuahua, Sonora and Tamaulipas.

Using the most recent income and expenditure survey (ENIGH-MCS 2008), CONEVAL (2010) estimated that the average poverty rate for the six border states (Tamaulipas, Nuevo León, Coahuila, Chihuahua and Baja California) was 36.1 percent, about 13 percentage points less than the poverty rate for the whole country. The border states with the lowest poverty rates are Nuevo León, Sonora and Baja California, with poverty rates equal to 0.29, 0.31 and 0.31, respectively, while the border states where poverty is higher are Coahuila, Tamaulipas and Chihuahua, with a poverty rate of 0.39, 0.42 and 0.45, respectively.

2.3. Studies about the Determinants of Poverty in Mexico

There are relatively few studies about the determinants of poverty in Mexico. Cortés (1997) and Garza Rodríguez (2000) estimated a logistic regression of the probability of being poor as a function of several economic, demographic and location variables. With data from 1992, Cortés found a direct relationship between poverty and the burden of dependency and between poverty and living in a rural area. He also found an inverse relationship between poverty and the number of years of education.

Garza Rodriguez (2000), based on 1996 data, found that the variables which were positively correlated with the probability of being poor were: size of the household, living in a rural area, working in a rural occupation and being a domestic worker. On the other hand, variables negatively correlated with the probability of being poor were: the education level of the household head, his/her age and whether he or she works in a professional or middle level occupation.

Székely (1998), through a different approach, and based on data for 1984, 1989 and 1992, found that a low level of education is a very important factor to explain the high poverty levels prevalent in the country. Other factors that he found were important in explaining poverty were a large household size, living in a rural area, and occupational disparities.

3. Data and Poverty Lines

3.1. Data

The Socioeconomic Conditions Module of the National Household Income and Expenditure Survey 2008 includes data on income, food, health, education, social security, quality of housing, utilities and social cohesion. It was collected from August to November of 2008 and provides results at the national, urban and rural level as well as at the state level. The total sample consists of 70,106 households.

The MCS 2008 was collected under a probabilistic and stratified two-stage cluster sampling design. The units of analysis in the survey are the household, the dwelling unit and the members of the household.

Current income is broken down into five categories: Labor income, rents, transfer payments, imputed rent of owner-occupied housing and other current incomes.

The variables considered in the poverty profile and in the multivariate regression model are gender, age, education and occupation of the household head, and size and location (rural or urban) of the household.

3.2. Poverty Lines

The poverty lines used in this study are the official poverty lines for urban and rural areas estimated by CONEVAL (2010). The poverty line we used was the “welfare line”,

described as CONEVAL (2010) as “the monetary value of a food and non-food basket of basic consumption”. This poverty line was equal to $1,921.74 pesos per capita per month for urban areas and $1,202.8 pesos per capita per month for rural areas.

4. A Poverty Profile for the Border States

4.1. Poverty Profiles

One of the first steps in poverty analysis is to construct a poverty profile, defined as a " special case of a poverty comparison, showing how poverty varies across sub-groups of society, such as region of residence or sector of employment. A poverty profile can be extremely useful in assessing how the sectoral or regional pattern of economic change is likely to affect aggregate poverty" (Ravallion,1993). Typical classifications included in a poverty profile include region of residence, rural or urban location, family size and characteristics of the household head, such as age, education, sector of occupation, etc. A poverty profile can be used to identify who are the poor, the degree of poverty of each group as well as how far from the poverty line each poor group is. All these issues are very important for policy purposes, in order to design proper policies to attack poverty.

Table 1 shows the poverty profile estimated for the region conformed by the six Mexican border states: Tamaulipas, Nuevo Léon, Coahuila, Chihuahua, Sonora and Baja California.

Table 1: Poverty Profile for the Mexican Border States

Variable	Poverty Incidence
Total population	**0.319**
Household size	
1-2 persons	0.2332
3-4 persons	0.3031
5-more persons	0.4139
Location	
Urban	0.2955
Rural	0.453
Gender of Head	
Male	0.319
Female	0.3187
Age of Head	
Less than 25	0.3243
26-45	0.3372
46-65	0.2709
65 and more	0.3854
Education of Head	
No Instruction	0.5647
Preschool	0.1703
Elementary School	0.4136
Junior High School	0.3649
High School	0.2347
Normal School	0.08678
Technical School	0.224
College	0.09234
Master	0.01155
Doctoral	0.072
Occupation of Head	
Professionals	0.04499
Technical workers	0.1671
Educators	0.05462
Occupations in the arts, performances and sports	0.2629
Administrators and directors in both public and private sector	0.03896
Agriculture, husbandry, forestry/fisheries workers	0.5302
Manufacturing /repair supervisors	0.1337
Manufacturing /repair skilled workers	0.3492
Manufacturing/repair heavy equipment operators	0.3039
Manufacturing/repair unskilled workers	0.4594
Transportation workers	0.3004
Service and administration supervisors	0.07266
Administrative and support workers	0.2195
Sales workers	0.2859
Ambulatory workers	0.5272
Personal services workers in establishments	0.3351
Domestic services workers	0.3184
Protection services workers	0.2758
Worker out of the country	0.1376

Source: Own estimates based on ENIGH-MCS 2008.

4.2. Poverty and Household Size

Large households tend to be associated with higher poverty (Lanjouw and Ravallion, 1995). Poor people will tend to have more children as an insurance mechanism for lack of income at old age. At the same time, high infant mortality rates among the poor will induce higher fertility rates, which will increase household size (Schultz, 1981).

As expected, we found a direct relationship between household size and poverty in the border states. Table 1 indicates that the higher the household size, the higher the poverty rate. Thus, a family with five or more members has almost twice the poverty rate of a family formed by one or two members. However, it has to be noted that since we did not use equivalent scales to account for possible differences between the consumption of children and the consumption of adults, the estimated poverty rates could be overestimating poverty. The same could be true if, as it is to be expected, there are economies of scale in consumption.

4.3. Rural and Urban Poverty

Although the incidence of poverty in rural areas is higher than for urban areas, we found that the rural to urban poverty incidence ratio (RUPIR) is much lower in the border states than the RUPIR estimated for the whole country by Garza Rodriguez (2000), Levy (1994), Székely (1998) and McKinley and Alarcón (1995). For example, Garza Rodriguez (2000) estimated a RUPIR of 2.8 for the nation while the RUPIR for the border region is 1.5.

4.4. Poverty and Gender

Many studies have documented the existence of the phenomenon of the "feminization of poverty", which is said to exist if poverty affects women more than men. In particular, it has been shown in many countries that poverty is higher for female headed households than for households headed by men. Recent examples of these findings are Gang *et al.* (2008) for the case of India; Anyanwu (2005) for Nigeria and Serumaga-Zake and Naudé (2002) for South Africa. All of these authors found that poverty is higher for female headed households.

However, we found no evidence of the feminization of poverty in the border region. The estimate for the incidence of poverty in households headed by men was found to be equal than the poverty rate for household headed by women.

4.5. Poverty and Age

We can see in Table 1 that poverty incidence is higher for households headed by older persons. Thus, while 39 percent of the families headed by a person 65 years and older is poor, the poverty rate for households whose head is between 45 and 65 years old is twelve percentage points lower (0.27). This result contrasts with the results of the poverty profile obtained by Garza Rodriguez (2000) for Mexico with 1996 data, who found that the poverty rate is about the same for households headed by persons of all ages except households whose head is younger than 25 years old, who suffer a higher poverty rate.

4.6. Poverty and Education

Looking at the results of the poverty profile for the border region shown in Table 1, it can be seen that there is a strong inverse relationship between the level of education and poverty incidence. Thus, while the poverty rate for households where the head has no instruction is 56 per cent, the corresponding figure for households headed by someone with a master's degree is just one percent.

4.7. Poverty and Occupation

The poverty profile in Table 1 shows that poverty is higher for households whose head is an agricultural worker, an ambulatory worker or an unskilled manufacturing worker, while it is lower for households whose head works as a director in the public or private sector, or who is a professional or educator.

5. Determinants of Poverty

5.1. The Logistic Regression Model

We will use a logistic regression model to analyze the determinants or correlates of poverty in the Mexican border states. The dependent variable of this model is a dichotomous variable that takes the value 1 if the family is poor and zero if it is not. The explanatory variables are a set of economic and demographic variables relating to the household or to the household head: household size, place of residence (rural or urban), and household head's gender, level of education and occupation.

Following the logistic regression model, the probability of a family being poor is a function of a set of variables X so that:

$$\text{Prob}(Y = 1) = F(\beta' x) \quad (1)$$

$$\text{Prob}(Y = 0) = 1 - F(\beta' x) \quad (2)$$

Using the logistic distribution we have:

$$\text{Prob}(Y = 1) = \frac{e^{\beta' x}}{1 + e^{\beta' x}}$$

$$= \Lambda(\beta' x), \quad (3)$$

Where Λ represents the logistic cumulative distribution function. Then the probability model is the regression:

$$E[y \mid x] = 0[1 - F(\beta' x)] + 1[F(\beta' x)]$$

$$= F(\beta' x) \qquad (4)$$

5.2. Empirical Results

The estimated logistic regression is shown in Table 2. Among the most important results we can highlight the existence of an inverse relationship between the level of education and the probability of being poor. Besides education, the only other variable negatively correlated with poverty was the age of the household head.

Among the variables positively correlated with poverty stand out: household size, the household head being an agricultural or an ambulatory worker, a manufacturing / repair worker, sales worker, personal services worker or a domestic service worker.

Among the most important variables that did not have a statistically significant relationship with poverty are the location (rural or urban) of the household and the gender of the household head.

Table 2: Logistic Estimates of Poverty Determinants:

Number of obs	=8385
LR chi2(32)	=1446.06
Prob > chi2	= 0.0000
Log likelihood	= -4290.9689
Pseudo R2	= 0.1442

Explanatory Variable	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Age of head	-0.0918189	0.0126733	-7.3	0	-0.1166582	-0.06698
Age of head squared	0.0007473	0.0001365	5.48	0	0.0004798	0.0010148
Household size	0.2699654	0.0160908	16.8	0	0.238428	0.3015029
Female head	0.0461475	0.083632	0.55	0.581	-0.1177681	0.2100632
Technical workers	0.5442469	0.3370035	1.61	0.106	-0.1162679	1.204762
Educators	-0.2369584	0.4452613	-0.5	0.595	-1.109655	0.6357377
Occupations in the arts, performances and sports	0.9776403	0.4184944	2.34	0.019	0.1574065	1.797874
Administrators and directors in both public and private sector	-0.7202753	0.4297759	-1.7	0.094	-1.562621	0.1220699
Agriculture, husbandry, forestry/fisheries workers	1.61916	0.3251121	4.98	0	0.9819518	2.256368
Manufacturing /repair supervisors	0.0959391	0.3525264	0.27	0.786	-0.595	0.7868782
Manufacturing /repair skilled workers	1.04941	0.3163385	3.32	0.001	0.4293978	1.669422
Manufacturing/repair heavy equipment operators	0.8077178	0.3298166	2.45	0.014	0.1612893	1.454146
Manufacturing/repair unskilled workers	1.364842	0.3275942	4.17	0	0.722769	2.006915
Transportation workers	0.8379367	0.3246368	2.58	0.01	0.2016602	1.474213
Service and administration supervisors	-0.3775799	0.3954059	-1	0.34	-1.152561	0.3974014
Administrative and support workers	0.7256883	0.331499	2.19	0.029	0.0759621	1.375415
Sales workers	1.073432	0.3181262	3.37	0.001	0.4499158	1.696948
Ambulatory workers	1.745363	0.3477852	5.02	0	1.063717	2.42701
Personal services workers in establishments	1.015118	0.3247105	3.13	0.002	0.3786969	1.651539
Domestic services workers	1.092503	0.3523507	3.1	0.002	0.4019088	1.783098
Protection services workers	0.7200228	0.3370687	2.14	0.033	0.0593802	1.380665
Worker out of the country	0.3664063	0.8473825	0.43	0.665	-1.294433	2.027245
Preschool	-1.14538	0.698548	-1.6	0.101	-2.514508	0.2237493
Elementary School	-0.5915869	0.1452487	-4.1	0	-0.8762692	-0.306905
Junior High School	-0.7894686	0.152089	-5.2	0	-1.087557	-0.49138
High School	-1.255248	0.163558	-7.7	0	-1.575815	-0.93468
Normal School	-1.102484	0.4822997	-2.3	0.022	-2.047774	-0.157194
Technical School	-1.293329	0.1874076	-6.9	0	-1.660641	-0.926017
College	-2.021235	0.1907221	-11	0	-2.395044	-1.647427
Master´s	-3.882906	1.025279	-3.8	0	-5.892416	-1.873397
Doctoral	-1.613656	1.063798	-1.5	0.129	-3.698661	0.471349
rural15000	0.0367514	0.0725609	0.51	0.613	-0.1054654	0.1789681
_cons	0.4493757	0.4383029	1.03	0.305	-0.4096821	1.308433

Source: Own estimates based on ENIGH-MCS 2008.

5.3. Odd Ratios

Another way to interpret the results of the logistic model is through the use of the odds ratio, which in this case is defined as the ratio of the probability of being poor divided by the probability of not being poor. Table 3 shows the estimates of the odd ratios for each independent variable in the logistic regression model as well as their standard errors and corresponding confidence intervals.

Those variables whose odds ratios are greater than one are positively correlated with the probability of being poor, while those variables which have odd ratios lower than one are inversely correlated with the probability of being poor. If the confidence interval for the estimate of an odd ratio includes the number one then that variable has no statistically significant effect on the probability of a household being poor.

Table 3:Odd Ratio Estimates of Poverty Determinants

Number of obs	=8385
LR chi2(32)	=1446.06
Prob > chi2	= 0.0000
Log likelihood	= -4290.9689
Pseudo R2	= 0.1442

Explanatory Variable	Odds Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
Age of head	0.9122703	0.0115615	-7.25	0	0.8898893	0.9352143
Age of head squared	1.000748	0.0001366	5.48	0	1.00048	1.001015
Household size	1.309919	0.0210777	16.78	0	1.269252	1.351889
Female head	1.047229	0.0875818	0.55	0.581	0.8889022	1.233756
Technical workers	1.72331	0.5807616	1.61	0.106	0.8902367	3.335964
Educators	0.7890241	0.3513219	-0.53	0.595	0.3296728	1.888415
Occupations in the arts, performances and sports	2.658176	1.112432	2.34	0.019	1.170471	6.036801
Administrators and directors in both public and private sector	0.4866183	0.2091368	-1.68	0.094	0.2095861	1.129833
Agriculture, husbandry, forestry/fisheries workers	5.048846	1.641441	4.98	0	2.669662	9.548344
Manufacturing /repair supervisors	1.100692	0.388023	0.27	0.786	0.5515626	2.196529
Manufacturing /repair skilled workers	2.855965	0.9034516	3.32	0.001	1.536332	5.309097
Manufacturing/repair heavy equipment operators	2.242784	0.7397072	2.45	0.014	1.175025	4.280828
Manufacturing/repair unskilled workers	3.915104	1.282566	4.17	0	2.06013	7.440327
Transportation workers	2.311593	0.750428	2.58	0.01	1.223432	4.367598
Service and administration supervisors	0.6855185	0.271058	-0.95	0.34	0.3158269	1.487953
Administrative and support workers	2.066153	0.6849277	2.19	0.029	1.078922	3.956716
Sales workers	2.925401	0.9306469	3.37	0.001	1.56818	5.457264
Ambulatory workers	5.727982	1.992108	5.02	0	2.897119	11.32497
Personal services workers in establishments	2.759688	0.8960997	3.13	0.002	1.46038	5.214997
Domestic services workers	2.981729	1.050614	3.1	0.002	1.494675	5.948256
Protection services workers	2.05448	0.692501	2.14	0.033	1.061179	3.977547
Worker out of the country	1.442541	1.222384	0.43	0.665	0.2740533	7.593142
Preschool	0.3181031	0.2222103	-1.64	0.101	0.0809027	1.250757
Elementary School	0.5534483	0.0803877	-4.07	0	0.4163333	0.7357208
Junior High School	0.454086	0.0690615	-5.19	0	0.3370387	0.6117817
High School	0.2850053	0.0466149	-7.67	0	0.2068388	0.3927116
Normal School	0.3320453	0.1601454	-2.29	0.022	0.1290218	0.8545384
Technical School	0.2743559	0.0514164	-6.9	0	0.1900171	0.3961284
College	0.1324917	0.0252691	-10.6	0	0.0911687	0.1925447
Master´s	0.0205909	0.0211114	-3.79	0	0.0027603	0.153601
Doctoral	0.1991582	0.211864	-1.52	0.129	0.0247567	1.602154
rural15000	1.037435	0.0752772	0.51	0.613	0.8999056	1.195983

Source: Own estimates based on ENIGH-MCS 2008.

5.4. Poverty and Household Size

In line with the results obtained in the poverty profile, the positive sign of the logistic regression parameter for household size indicates the existence of a direct relationship between poverty and household size. Also, we can observe in Table 3 above that an increase of one member in the size of the household increases the odds of being poor by 31 percent.

This positive effect of household size upon poverty coincides with the findings obtained for the case of Mexico by Cortés (1997), Székely (1998) and Garza Rodriguez (2000). Other authors found that the same type of relation holds for the cases of China (Gustafsson, 2009), India (Gang *et al*., 2008); Pakistan (Sabir *et al.*,2006;), Nigeria (Anyanwu, 2005) and South Africa (Serumaga-Zake and Naudé, 2002).

5.5. Rural and Urban Poverty

Many studies have shown that poverty in developing countries is more prevalent in rural areas than in urban areas . For the case of Mexico, Garza Rodriguez (2000), found a direct relationship between poverty and living in a rural area. Other authors, such as Levy (1994), Székely (1998) and Cortés (1997) also found a positive effect of rurality upon poverty for Mexico.

However, as can be seen in Table 2, we did not find evidence of this rurality effect in the logistic regression results, as the coefficient for this variable in the regression model was not statistically significant.

5.6. Poverty and Gender

In line with the results obtained by Garza Rodriguez (2000) and Székely (1998), we found no evidence that female-headed households are more likely to be poor than male-headed households. Thus, even though the coefficient for the gender of the head variable is negative, it is not significantly different from zero.

5.7. Poverty and Age

According with the life cycle theory of income, we would expect that poverty will be higher for households headed by young and by old people and it will be lower for households headed by middle age persons. This is because productivity (and therefore income) is low at a relatively young age, increases at middle age and then decreases again at old age. If, as it is the case in developing countries, savings are low, then poverty will increase at old age as the individual has few savings to compensate for low incomes.

In line with this reasoning and coinciding with the results obtained for Garza Rodriguez (2000) for the whole country, for the border states case we found that there is a strong and statistically significant inverse relationship between poverty and age of the head. Thus,

looking at Table 3, we can see that an increase of one year in the age of the head decreases the odds of being poor by almost nine percent.

5.8. Poverty and Education

Given that the main asset of the poor is their labor, and since the returns to labor are highly correlated with education, we would expect to find an inverse relationship between education and poverty. The results obtained for this variable in the multivariate analysis confirm the findings encountered in the poverty profile of an inverse relationship between level of education and poverty.

The probability of being poor decreases with the level of education of the household head. This result is in line with the general consensus in the literature about poverty and particularly with the results obtained for the case of Mexico by Cortés (1997), Székely (1998) and Garza Rodriguez (2000).

It can be seen in Table 3 that the odds of being poor for a household whose head has completed Junior High School education are 55 percent lower than those of a household whose head has no instruction.

5.9. Poverty and Occupation

In line with human capital theory, we would expect that occupations that require a high amount of capital will have higher salaries than those which do not. Then, in turn, occupations which pay higher salaries will tend to be associated with lower poverty levels.

Confirming this line of reasoning, as well as the results obtained in the poverty profile, Table 2 shows that the probability of being poor is higher for households whose head works in occupations which require a low stock of human capital such as agricultural worker, ambulatory worker or unskilled manufacturing worker. Likewise, the odd ratio results shown in Table 3 indicate that the odds of being poor for a family whose head is an agricultural worker are five times the odds of a household headed by a person with a professional occupation (the base category for household occupation in the logistic regression).

6. Conclusions

This purpose of this article was to identify the determinants of poverty in the Mexican states which have a border with the United States. Using a recently released survey (ENIGH-MCS 2008), we constructed a poverty profile for the region in order to get a first approximation to the problem of finding which variables explain or are correlated with poverty. The poverty profile constructed for the region indicated that poverty is higher for rural households and for large households and for households whose head has low education, is an ambulatory worker or works in an agricultural occupation.

Confirming the results obtained in the poverty profile, the multivariate analysis developed in this study showed that the main variables that are positively correlated with the probability of being poor are: size of the household, being an ambulatory worker or working in an agricultural occupation, and being a manufacturing, transportation, sales, domestic service or support worker.

The variables that are negatively correlated with the probability of being poor are the education level of the household head and his/her age. We did not find evidence in this study to support the hypothesis of the feminization of poverty, since the parameter estimate for this variable in the logistic regression was not statistically different from zero.

All the education variables included in the multivariate analysis were highly significant, indicating the importance of education in the reduction of poverty. Family size was also identified as an important factor to explain poverty in the region. From these results, it

should be clear that policies aimed at the reduction of poverty in the border region should concentrate on increasing the education level of the population, increasing the productivity of workers and designing appropriate economic and demographic policies to discourage large family size.

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