

Transborder Links and Formal Education of Urban Youth on the Northern Border

Nexos transfronterizos y educación formal de la población joven urbana en la frontera norte

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ABSTRACT

This article uses the Population and Housing Census 2000 to analyze the association between the post-basic education of the urban youth population and two indicators of transborder links on Mexico's northern border: being born in the United States and having transmigrants at home. The multivariate statistical analysis shows that although being born in the United States is positively associated with attending and completing high school, living in households with transmigrants reduces the likelihood of continuing higher education. Despite the improved socio-economic status of transborder families, household members' transborder employment may be affecting young people's educational aspirations, since it proves that a higher relative income can be achieved without investing in higher education.

Keywords: 1. Education, 2. youth, 3. US-born, 4. transmigration, 5. border.

Resumen

Con base en el Censo de Población y Vivienda 2000, en este artículo se analiza el vínculo entre la educación pos-básica de la población joven urbana y dos indicadores de los nexos transfronterizos en la frontera norte de México: haber nacido en Estados Unidos y tener transmigrantes en el hogar. El análisis estadístico multivariado muestra que mientras el nacimiento en Estados Unidos se asocia positivamente a cursar y terminar la media superior, vivir en hogares con transmigrantes disminuye la posibilidad de continuar en estudios superiores. A pesar de la mejor situación socioeconómica de las familias transfronterizas, el empleo transfronterizo de los miembros del hogar podría estar afectando las aspiraciones educativas de los jóvenes, al demostrar que se pueden lograr mayores ingresos relativos, sin hacer inversiones en educación superior.

Palabras clave: 1. Educación, 2. jóvenes, 3. nacido en Estados Unidos, 4. trans migración 5. frontera.

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INTRODUCTION¹

The inhabitants of Mexico's northern border experience bi-national relations that involve crossing over into the south of the United States and engaging in social networks that go beyond the border. Although these relations do not extend throughout the population and have varying degrees of intensity along the border (Alegría, 1989), they are sufficiently common to be perceived at the population level. The Population and Housing Census reports certain characteristics linked to the population's transborder processes. This is the case of those who were born in the United States and have household members working in that country. Due to the proximity of the two countries and their long history of transnational social interactions, these demographic characteristics are more intense at the regional than the national level (Tuirán and Ávila, 2002) and therefore acquire a special connotation within this geographical zone.

The general objective of this study is to analyze the link between these two transborder factors and the transition to high school and higher education of urban youth on Mexico's northern border.² Little is known of the way transborder links are associated with young people's formal education (Ojeda, 1993; López, 1993). Since educational achievement is crucial to increasing regional productivity and the social development of border populations, continuity in high school and higher education among youth with transborder links would not only indicate the higher socio-economic position of these young people but also the fact that border populations are taking advantage of binational institutional opportunities and the social capital of transborder families.

The testimonials of the actors who experience these transborder links sparked our interest in this issue. Various news items document Mexican students' crossing over the southern border of the United States (See for example: Viren, 2007; Hernández, 2010; Núñez, 2010). Discussion on the

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²Border cities are used as a geographical context, since the population of the municipalities adjacent to the United States is largely urban. In 2000, 82 % of the young people aged 16 to 20 lived in localities with 100 000 inhabitants or more, compared with nearly 50 % nationwide (author's calculations based on Population and Housing Census 2000). The analysis presented here is therefore only statistically representative for urban areas on the border.

American side focuses on the economic burden they place on school districts, although it also acknowledges the fact that these students are the *raison d'être* of certain American schools. Conversely, the students' parents state that the time invested in crossing the border and traveling to school is worth it, since their children are learning English and will secure better jobs in the future. Indeed, some of them do not feel that they are abusing by using US educational services since they work and pay taxes in that country and their children have dual nationality.

More attention has been paid to workers living in Mexico who cross over to the United States to work every day, better known as transborder or transmigrant workers or commuters (Acuña, 1983). They have not only occupied a special place in the media, but also been the "object" of social research in recent decades (Acuña, 1983; Arámburo, 1987; Alegría, 1990; Estrella, 1994; Escala and Vega, 2005). Although these workers are regarded by certain sectors of US society as a threat to unqualified workers' jobs and a source of capital flight, commuters' perspective on their insertion in the US labor market is generally positive. For them, transborder employment is a life strategy that enables them to maximize the socio-economic resources available on the border. Transmigrants cross over into the United States to secure better paid jobs than they would have had in Mexico and continue living in Mexico to achieve lower living costs than in the United States and maintain their family³ and cultural links. The socio-economic benefits of transmigration offset the enormous investment of time involved in commuting.

Beyond studying transborder interactions, the purpose of this study is to analyze the consequences of these transborder phenomena on the formal education of urban youth. Transborder processes and their operating mechanisms have been theorized before (Alegría, 1989), while the characteristics of the families and social actors undergoing some of these processes have also been documented (Alegría, 1990; Ojeda, 1993; López, 1993; Escala and Vega, 2005; Corona, Piñeiro and García, 2008). Moreover, previous international migration studies have identified various economic, social and cultural mechanisms that explain the ways in which household members' migration to the United States can be linked to young people's education in their places of origin (Kandel and Kao, 2000; Kandel and Kao, 2001; Kandel and Massey,

³This is particularly true when one or more household members have not managed to legalize their residence in the United States.

2002); situation that is similar to that of the youth population with transmigrant relatives.

The following section deals with the context of the formal education of young Mexicans living on Mexico's northern border. The theoretical background and working hypotheses are presented in the next two sections. The methodology is described in the fifth section, after which the results of the descriptive and multivariate statistical analysis are presented. The article ends with a discussion of the results, limitations and contributions of the study.

FORMAL EDUCATION OF BORDER YOUTH

Formal education on Mexico's northern border differs significantly from that of the Mexican population as a whole. Although the status of basic education would appear to be better than it is nationwide, despite the persistence of problems of equity and quality, the status of post-basic education on Mexico's northern border is less favorable (Reyes, 2005). The provision of educational services at the upper secondary, and tertiary levels is still insufficient, while drop-out rates are higher than at the national level (Reyes, 2005; Palmer, 2008). Consequently, municipalities on the northern border have a lower percentage of population with university studies (3.5 %) than the country as a whole (seven percent) (Anderson and Gerber, 2007), and school attainment on border cities is also lower than in other cities in the country (Coubès and González, 2011).

Differences between educational indicators on both sides of the border are even greater than those between the Mexican border and the country as a whole. Despite the fact that Mexico's northern border is more urban and less socio-economically marginalized than other parts of the country (Mojarro, 2002), the border "on the American side" has almost a century's advantage over high school and higher education (Anderson and Gerber, 2007). Whereas high school education became compulsory in the United States in the 1930s, it has yet to be incorporated into the basic education plan in Mexico. Thus, although in 2000, only 20 % of the Mexican border population had completed high school, by 1950, 40 % of the American border population had achieved this level of studies (Anderson and Gerber, 2007). The contrasts in higher education levels are also enormous. Approximately seven percent of the US border population had four years of undergraduate studies in 1950, whereas

in 2000, only 3.5 % of the Mexican border population had completed university studies.⁴

One of the structural factors associated with the levels of school attainment on Mexico's northern border is high internal migration. The immigration of workers and their families is the most important factor for the growth of the border population and the definition of its structure (Mojarro, 2002). Migration is therefore a source of tension for the school system because of its incidence on the growing demand for educational services. This is reflected in the high rates of growth of school enrollment at the basic level between 1990 and 2000, in comparison with the national levels, despite the lower growth in the number of teachers and schools (Reyes, 2005). In addition, given that young people participate more in work migration as they get older, one negative effect of migration on education indicators is the importance of young migrant workers in the denominator of educational statistics. In this respect, internal migrants report lower educational indicators than youth born on the Mexican northern border (Coubès and González, 2011; González, 2011).

Another structural factor linked to schooling on the northern border is a transborder labor market that offers a range of opportunities for the unskilled population, but very few opportunities for the skilled sector (Coubès and González, 2011). In this region, there are a variety of formal job opportunities for unskilled workers, particularly in the in-bond assembly industry and services oriented towards US consumers. Moreover, the jobs of Mexicans who cross over to work on the southern border of the United States are usually unskilled while the salary awards for their education levels are relatively lower than in Mexico.⁵

Lastly, outside the legal sphere, another way to earn money without having to work or spend time on education is to become involved in organized crime, which is higher on the border, according to the number of arrests of the teenage population.⁶ This factor, linked to high migration, a labor market open to the formal employment of the unskilled population and an insufficient

⁴North-south educational differences vary according to the adjacent US state. These differences are larger on the border with California and smaller on the border with Texas, where educational attainment is low in comparison with the US parameter (Anderson and Gerber, 2007).

⁵Alegría (1990) notes the exceptional case of Nuevo Laredo where, in the late 1980s, the salary award for education was greater for commuters than for workers on the Mexican side.

⁶Border States occupy the first eight places for numbers of minors under 18 arrested (SSP, 2004; cited by Palmer, 2008).

educational supply or low schooling quality could be linked to high drop-out rates at the post-basic level. Young people might not perceive the returns to education as being high enough or the educational supply as being attractive enough to compensate for the time and economic resources required to study. In addition, they might not have these resources or fail to take advantage of them because of lack of family support to continue at school.

*TRANSBORDER LINKS: BEING BORN
OR WORKING IN THE UNITED STATES*

Throughout the history of the northern border in Mexico, the population has experienced transborder relations linked to the everyday crossing of the southern US border to work, study, consume goods and services or visit friends and relatives. These transborder links can be explained by the profound economic and social differences between the two countries (Alegría, 1989) and are maintained, in many cases, as a result of social networks with friends and relatives in the United States (Ojeda, 1993; López, 1993).

An important conceptual clarification is that not all the processes involving economic and social interaction between Mexico and the United States on Mexico's northern border are transborder. The key factor in the definition of transborder processes is the border location of the origins and destinations of the crossings of people, capital, money and goods involved in these processes (Alegría, 1989); and this study focuses on the crossing of people. Conversely, transnational activities involving the movement of persons across borders and their links with places of origin through family and social networks do not depend on the border to develop; they may take place anywhere in Mexico (Ojeda, 2009). Moreover, although transborder interactions have been reinforced as a result of the Free Trade Agreement and the globalizing processes of the past two decades, the origins of these links are older, with some of them even dating back to the origin of the border (Acuña, 1983; Arámburo, 1987; Alegría, 1989).

For the purposes of this research, I am particularly interested in two characteristics that give an idea of the transborder status of young people and their households: the fact of being born in the United States and having a family member, who is usually the head of household (Coubés, 2008) and male (Alegría, 2002) who has a job in the United States.

One of the most commonly studied transborder links is crossborder employment. Working in the United States and living on the border is a highly selective, advantageous process for economies in the north of Mexico. A border population with more than post-basic education,⁷ some notion of the English language, social networks in the United States, papers for legally crossing the border (a majority) and a car for traveling around has the greatest likelihood of being employed in the labor market in the south of the United States (Alegría, 1990; Alegría, 2002; Escala and Vega, 2005). Due to the structural differences in the local economies of each country, these workers obtain higher incomes than they would get in Mexico, although their jobs are not usually highly skilled (Alegría, 1990).⁸ During the period from 1998-2001, transmigration involved approximately eight percent of the economically active population (EAP) in Tijuana and four percent of the EAP in Ciudad Juárez (Alegría, 2002; Coubès, 2008). The benefits of transmigration for Mexican border economies are enormous. Based on various assumptions, Alegría (1990) estimated that transmigrants' salaries accounted for 10 to 15 % of the income of Tijuana, Ciudad Juárez and Nuevo Laredo in the late 1980s and 20 % of Tijuana's income in the late 1990s (Alegría, 2002).

As for having been born in the United States, although this characteristic does not in fact indicate frequently crossing the border, since it is a single event, it is associated with the existence of a social network in the United States and the practice of a transborder family strategy for reducing children's economic risks. According to the typification of transborder families undertaken by Ojeda (1993), the birth in the United States of one of the household members is a basic feature in the formation and reproduction of transborder households. On the one hand, having children with dual citizenship could be a consequence of return migration to the northern border and a determining factor in transmigration, due to the lack of relatives in the United States who can devote themselves to looking after children (Ojeda, 1993). On the other, giving birth in the United States is common practice among women who have

⁷In Baja California, although the proportion of commuters that have completed high school is higher than among workers employed on the Mexican side, the proportion with technical or professional studies is lower (Corona, Piñeiro and García, 2008).

⁸This is particularly true in Tijuana, where it was proved that the structural differences between Mexico and in the United States, measured through salary gaps, explained transmigration to San Diego (Alegría, 2002). In other border cities, it has not been possible to prove that this is a key factor that gives rise to transmigration.

social networks on the other side of the border⁹ or are able to afford costly American hospitals (López, 1993; Escala and Vega, 2005). Their US birth certificates enable the children of these women to insert themselves into the social structure of a population with greater socio-economic development. Dual citizenship may facilitate access to binational public resources and above all, legal entry into the US labor market.

Although progress has been made in the conceptualization of these transborder links and the typification of the actors that experience them, the consequences of these links for children's education have barely been explored. Given that the young people who belong to transborder families have economic advantages, transborder social capital and binational institutional opportunities, one could assume that these factors are associated with more educational opportunities. However, educational processes are far more complex. The decision to continue studying involves family, institutional, social and cultural influences, as well as young people's individual agency. Transborder links may provide the necessary resources for formal education while influencing young people's educational and work aspirations. The main hypotheses concerning the association of the education of young people living on Mexico's northern border with the transborder employment and the birth of children in the United States are described below.

TRANSBORDER LINKS AND THE EDUCATIONAL ATTAINMENT OF YOUTH

Although both having children in the United States and living in Mexico and working in the United States are decisions that are taken at home, usually to achieve the material reproduction of living conditions, each of them is different and could therefore have different consequences for children's education. Crossing the border to give birth in the United States is a medium-term family investment, whose financial advantages will only be seen after a generation has elapsed or not be seen at all if the child does not exercise the rights afforded

⁹López (1993) shows how transborder family networks, essentially comprising women, enabled border women to have their children in the United States. Friends or relatives on the American side helped them to familiarize themselves with the health systems and occasionally provided care and accommodation so that they could give birth in that country.

by dual citizenship and leads his life on the “Mexican side.” On the other hand, crossing over on a daily basis is a short-term investment and a means of earning a relatively higher income. These differences could be associated with divergent processes in children’s formal education.

Regarding being born in the United States, I suggest that this transborder characteristic may be associated with greater possibilities of studying at the post-basic level. One of the reasons would be the higher socio-economic level of young people with dual citizenship living on the border than the average for border youths, which is traditionally associated with higher school attainment. In addition, the decision to invest in the birth of children “on the other side” may have coincided with the decision to support their children’s post-basic education to give them a better future. The “having been born in the United States” indicator would therefore capture the desire for improvement or optimism of these families with binational opportunities.¹⁰

Another reason for thinking that dual citizenship encourages students to remain at school past junior high school is linked to binational social networks and the access they provide to public education services in the United States, which are more numerous and better than those on the Mexican side. According to US Federal law, it is forbidden to request information about the migratory status of students of basic education in the United States. Young people are, however, required to prove their identity and residence in the school district. The birth certificate is the most common proof of identity, and having it is linked to the existence of binational social networks, particularly of relatives, who can provide proof of residence, transport or accommodation (López, 1993). In the case of higher education, admission processes are far more selective than in the basic education system and involve having proof of citizenship to receive a government subsidy. Having American citizenship therefore considerably reduces the cost of college or university fees in the United States.¹¹ In short, for

¹⁰Pereira, Harris and Lee (2006) argue that this factor contributes to senior high school attainment of the first generation of US-born foreigners but that optimism is lost in other generations who have resided in the United States for a longer period. However, unlike Hispanic youth living in the United States, this characteristic of their parents did not disappear on the border, since obtaining dual citizenship would continue to be an achievement generation after generation.

¹¹Author’s calculations, based on the Social Geography of Tijuana survey (xvi Ayuntamiento de Tijuana, 2000), confirm that being US-born is positively associated with crossing the border to study in the United States. Twenty-four per cent of students born in that country who lived in Tijuana crossed over to study versus just one percent of the other students in that city.

both socio-economic and family and institutional reasons, I assume that having been born in the United States could encourage urban border youth to continue studying at the post-basic level.

The second point to evaluate is whether transmigration, usually by heads of household, translates into an educational advantage for young people. As in the case of the link between international migration and education, there are three economic, familial and socio-cultural mechanisms whereby work in the United States can influence the education of young people that remain in Mexico. The first is the financial advantage of employment in the United States. Transborder workers' salaries, which are higher than those on the Mexican side (Alegría, 1990; Escala and Vega, 2005; Corona, Piñero and García, 2008), could contribute to the economic stability of their families, which in turn could benefit their children's school enrollment, as has been documented in the case of international remittances (Taylor, 1987; López, 2004).

However, transmigration could also have a negative effect on young people's post-basic education. Crossing the border frequently to work involves a considerable investment of time in long work days and commuting itself. For this reason, commuters' children could be at a disadvantage in aspects such as supervision and parental support, which are part of the familial social capital that facilitates continuity and success at school (Coleman, 1988).¹²

Another factor that could be to the detriment of the post-basic education of young people on Mexico's northern border is the "demonstration" effect of transborder employment as an alternative means of earning one's living to professionalization. The working career, culture and levels of consumption of transborder workers could influence the desire of young people, immersed in these social networks, to venture into the US labor market, rather than continuing with their advanced studies, as happens in areas with high levels of international migration in Mexico (Giorguli and Serratos, 2009; Giorguli *et al.*, 2010).¹³ In short, although the hypothetical economic benefits of transborder employment are significant,

¹²This idea is also based on the hypothesis that family disruption caused by the absence of migrant fathers negatively affect their children's school performance (Kandel and Kao, 2001). In the case of commuters, the extent of this effect should be much less since they are not absent from the household for such long periods.

¹³In these places, young people regard labor migration as a strategy for socio-economic mobility that is the opposite of educational training, both because of the socio-economic demonstration of the economic advantages of migration and because of the cultural value communities place on working in the United States (Kandel and Massey, 2002).

I hypothesize that young people from homes with transmigrants could report lower enrollment in post-basic education than other youths with a similar socioeconomic status.

The following section describes the sources, construction of variables and methods used to explore these hypotheses on transborder links and young people's formal education.

METHODOLOGY

Data source and variables

The data source used was the 10.6 % sample of the 2000 Population and Housing Census (INEGI, 2001). In order to compare the status of the formal education of the youth on the northern border versus the national population, a sub-sample of young people living in urban localities (see footnote 2) who had information on the variables under study was used.¹⁴ However, analysis of the link between formal education and transborder links was restricted to border youth who were children of the head of household since the theoretical framework corresponds to this specific population.¹⁵ Sample sizes are specified in each table, since they vary according to the dependent variable under study.

In order to analyze young people's continuity in post-basic education, two dichotomous dependent variables were constructed: school enrollment of youths aged 16 to 17 who have completed junior high school and the school enrollment of youths aged 19 to 20 who have completed senior high school. Likewise, since those who attend schools at these levels must have completed the previous level, another two dependent variables were included: completion of junior high school education by youths aged 16 to 17, conditional on elementary school completion, and graduation from senior high school by youths aged 19 to 20 who have completed junior high school. The combination of these four variables enabled us to describe the demographic and socio-

¹⁴On the border, these young people belonged to the municipalities of: Mexicali and Tijuana, in the state of Baja California; Nogales and San Luis Rio Colorado in Sonora; Acuña and Piedras Negras in Coahuila; Juárez in Chihuahua; and Matamoros, Nuevo Laredo and Reynosa in Tamaulipas. Sixty per cent of the young people in the sample lived in Baja California or Chihuahua.

¹⁵As one can see from the variation in sample size from Tables 1 to 3, this filter reduced the sample of the population aged 16 to 17 by 23 % and that of the population aged 19 to 20 by 40 %.

economic factors associated with attaining basic education and continuing to study.¹⁶

As mentioned earlier, two characteristics of young people's transborder links were used: having household members working in the United States and having been born in that country.¹⁷ Although it is impossible to know exactly where these young people were born or where their relatives work, I assumed that in general these were transborder characteristics, since having children in the United States has been common practice on the border (Ojeda, 1993; López, 1993), while daily crossings to work in this country are more common than more sporadic crossings (Alegria, 1990).

The multivariate statistical analysis of the association between transborder links and the transition to post-basic education included a series of demographic variables. First of all, one dichotomous variable for age and another for sex were used in the regressions. It was assumed that the older the youths, the less likely they would be to go to school and the more likely they would be to have graduated from the previous, age-appropriate level of education. It was also assumed that women would have higher educational indicators at the post-basic level, as happens in other contexts with advanced industrialization (Buchmann and Di-Prete, 2006). Another demographic factor considered in the analysis was internal migration, which has been negatively associated with the education indicators for youth in this zone (Coubès and González, 2011; González, 2011). Whether the individual had been born in another state or had emigrated from another municipality in the period from 1995 to 2000 was also taken into account.

In addition to the demographic control variables, three variables regarding the household's socio-economic status were taken into account: its structure, the head of household's school attainment and the number of assets. Regarding household structure, it was assumed that teenagers living with both parents rather than in single-parent households, would have greater social and emotional support at home to remain at school (Amato, 2000; Zoller Booth, 1995). In addition, border youths living in extended or composite households would have fewer educational opportunities than young people in nuclear households, since the presence of

¹⁶The need to distinguish between senior high school and college was determined since whereas the post-basic level begins with the former in Mexico, it begins with college or university in the United States.

¹⁷These variables were assessed independently, since only 11 % of youths aged 16 to 17 and 15 % of those aged 19 to 20 with transmigrants at home were US-born. In the regression analyses, the interaction between birth in the United States and transborder employment at home was not statistically significant.

other relatives or non-relatives at home could reduce the social and economic resources available for children's education.¹⁸

The head of household's years of schooling were used as a proxy for parents' education. This is associated both with the family's socioeconomic status and the child raising habits and styles that determine children's cognitive skills from an early age (Farkas, 1996). I therefore assumed that heads of household with greater human and cultural capital could provide greater support for young people's education.

Lastly, a household's index of assets is used as an indicator of the household's economic status. This was constructed on the basis of the sum of the following assets: radio, television, video, blender, refrigerator, washing machine, telephone, water heater and computer. I assumed that the greater the number of assets, the easier it would be to make a greater investment in post-basic education.

STATISTICAL ANALYSIS

This study used both descriptive statistics and multivariate regression methods. First of all, I compared the educational indicators of urban youth on the northern border with those of urban youth in Mexico as a whole. Immediately afterwards, weighted proportions and means were calculated to describe the dependent, explanatory and control variables and to identify trends in the educational variables according to transborder links.

The multivariate analysis of the relationship between transborder links and young people's formal education was based on logistic regression models.¹⁹ A

¹⁸Unlike other contexts of Mexico, where co-residence with the extended family, particularly of the grandparents, may be a source of support for children's education (Giorguli, 2002); on the northern border, co-residence with the grandparents is less frequent and the horizontal component of households more frequent than at the national level; that is, the presence of the head of household's siblings, brothers- and sisters-in-law, cousins or nieces and nephews (author's calculations based on the Population Census, 2000).

¹⁹The usefulness of probit selection models was also tested (Heckman). Multivariate models of this nature were estimated separately for senior high-school and university enrollment, which took students' selection into account according to their likelihood of graduating from the educational level required for admission. In both cases, there was insufficient evidence to argue that there was a selection bias. The Rho statistic, used in this type of models to measure the correlations between the errors of the models was not significantly different from 0, either for the group of young people aged 16 to 17 or 19 to 20. It was therefore decided to use separate logistic regression models.

regression model was created for each of the education indicators described in the previous section: junior high school graduation, senior high school enrollment, senior high school graduation and university enrollment. The chi2 global tests of the models were statistically significant ($p < .001$). For the inclusion of each variable, gains in goodness of fit were tested based on log-likelihood estimates. For comparative purposes, the independent variables that proved to be statistically significant at least once in the models were included in the final models. In addition, statistical tests were carried out on the appropriateness of including the interaction of variables concerning transborder links with the young persons' sex. However, these interactions were not statistically significant (models available upon request).²⁰ The odds ratios are given to facilitate the interpretation of the models.

RESULTS

Educational Indicators of young people aged 16 to 20

The young urban population has lower educational indicators on Mexico's northern border than in the country as a whole, at both the high school and more advanced education levels (Table 1).²¹ In 2000, whereas 77 % of urban youths aged 16 to 17 graduated from junior high school, only 72.2 % did so on the northern border. The differences in relative terms extended to senior high school. Only 65.7 % of those that graduated from junior high school in this same age group attended senior high school, compared with 73.3 % at the national level. Thus, only 45 % of young people aged 19 to 20 who had completed junior high school managed to graduate from senior high school, as opposed to 50 % in the rest of Mexico. The differences in university enrollment were even more pronounced: only 57.6 % of those that graduated from senior high school attended university on the northern border, as opposed to 67.4 % nationwide.

²⁰Models were also estimated for males and females to observe possible differences by sex in the odds ratios of transborder links. However, the odds ratios of the explanatory variables were very similar by sex yet less statistically important, as shown by the loss of statistical significance in the majority of them, with no clear trends emerging by sex.

²¹Multivariate models of the educational indicators studied here for urban zones were carried out, using living on the northern border (or not living) as an independent variable. The models corroborated the results of the descriptive statistical analysis in Table 1, since the differences were statistically significant.

TABLE 1. *Educational variables of urban population aged 16-20 by place of residence. Mexico, 2000*

Educational variables	Urban Northern Border (%)	n	Urban Mexico (%)	n	
Junior high school completion (Population 16-17 with elementary school)	72.2	8 654	77.8	111 025	***
Senior high school enrollment (Population 16-17 with junior high school)	65.7	6 302	73.3	86 661	***
Senior high school completion (Population 19-20 with junior high school)	45	7 083	49.6	92 145	***
University enrollment (Population 19-20 with senior high school)	57.6	3 176	67.4	45 999	***

*** Percentages significantly different, chi2: $p < .001$

Source: Author's estimations based on *Censo General de Población y Vivienda, 2000* (INEGI, 2001).

The educational indicators of children of the Mexican border according to the variables of transborder links are shown in Table 2. First of all, this table exhibits that US-born children have an educational advantage at all levels of education. Among 16 and 17-year-olds, 83.3 % of those born in the US graduated from junior high-school, compared with 76 % of those born in Mexico. Of these graduates, 85.6 % of those born in the US and only 72 % of those born in Mexico continued to study at the senior high school level. The gaps in graduation from senior high school and university enrollment were even greater. Among 19 and 20-year-olds, 65.2 % of those born in the US graduated from senior high school, of which 77.8 % enrolled at university, versus only 53.4 % and 68 % of those born in Mexico, respectively.

As for the educational differences of young people with transmigrants at home (Table 2), they also displayed higher indicators, but only up to high school enrollment. Whereas 81 % of young people aged 16 to 17 in households with transmigrants completed junior high school and 76.5 % of the latter attended senior high school, only 76 % and 72 % of young people in homes without transmigrants did so. However, there were no differences in senior high school graduation according to this indicator. Moreover, the educational advantage of young people in households with transmigrant workers was reversed at the higher education level. This corresponds to the hypothesis of a negative association between household members' transborder employment and youth's continuity in post-

basic education. University enrollment among young people in households with commuters was lower than among the rest of the youth population, 63 % *versus* 69 % correspondingly.

TABLE 2. *Educational variables of urban youth aged 16 to 20* by indicators of transborder links. Northern Border, Mexico, 2000*

Educational variable	Born in US (%)			Household with transmigrant workers (%)		
	Yes	No		Yes	No	
Junior high school completion (Population 16-17 with elementary school)	83.3 (159)	76.2 (6 473)	***	81.2 (481)	76.0 (6 151)	***
Senior high school enrollment (Population 16-17 with junior high school)	85.6 (135)	72.1 (4 971)	***	76.5 (397)	72.1 (4 709)	***
Senior high school completion (Population 19-20 with junior high school)	65.2 (123)	53.4 (4 109)	***	54.7 (339)	53.6 (3 893)	
University enrollment (Population 19-20 with senior high school)	77.8 (85)	68.2 (2 281)	***	63.2 (208)	69.1 (2 158)	***

Notes: *Only children of the head of household; *n* in parenthesis; *** Percentages significantly different, $p < .001$

Source: Author's estimations based on *Censo General de Población y Vivienda, 2000* (INEGI, 2001).

Although there are pronounced differences between young people with and without transborder links, these differences may be due to these groups' socio-economic profiles rather than to social capital and the binational institutional opportunities of transborder families, as has been argued in previous sections. Therefore, it is essential to analyze these links on the basis of multivariate regression models. A description of the explanatory and control variables used in the multivariate analysis is given below.

DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS OF YOUNG PEOPLE AGED 16 TO 20

As for transborder links, Table 3 shows that the percentages of US-born youths and those in households with transborder workers are low and vary very little in

each sub-set of young people. Approximately three percent of the youths in any age-education group were US-born. Transmigration in the household was present in seven percent of young persons ages 16 to 17 who had at least completed elementary school, eight percent of youths in the same group who had completed junior high school and nine percent of young people aged 19 to 20.

TABLE 3. *Demographic and socioeconomic characteristics of subsamples* used in the multivariate analysis (Means). Northern Border, Mexico, 2000*

Independent variables	16-17 with elementary school	16-17 with junior high school	19-20 with junior high school	19-20 with senior high school
Born in the United States	2.6 %	2.8 %	2.8 %	3.5 %
Household member working in the US	7.4 %	7.9 %	9.1 %	9.4 %
Age	16.49	16.51	19.48	19.50
Male	53.3 %	51.6 %	52.7 %	50 %
Recent inter-municipal migrant	9.9 %	8.3 %	8 %	6.6 %
Inter-state migrant	26.5 %	24.2 %	27 %	22.6 %
<i>Head of household's years of schooling</i>				
0-5	25.1 %	20.2 %	24.2 %	16.4 %
6-8	31.6 %	29.5 %	29.7 %	25.1 %
9-11	20.8 %	22.7 %	20.4 %	22.2 %
12 or more	22.5 %	27.7 %	25.7 %	36.3 %
<i>Household structure</i>				
Nuclear	62 %	65.4 %	56.7 %	63.6 %
Single-parent	12.6 %	12 %	13.4 %	12.4 %
Extended or composite	25.4 %	22.6 %	29.9 %	24 %
Household assets	7.3	7.67	7.8	8.39
n	6 632	5 106	4 232	2 366

Notes: *Only children of the head of household.

Source: Author's estimations based on *Censo General de Población y Vivienda, 2000* (INEGI, 2001).

Demographic characteristic display the expected tendencies. Approximately half were women, except among the less educated population. Besides, migration indicators were negatively associated with continuity at school, since the percentages of migrants were lower among more educated youths.

With respect to socioeconomic characteristics, there was a positive relationship between higher school attainment and more socio-economic resources

(Table 3). Among both 16 to 17-year-olds and those aged 19 to 20, having higher school attainment was linked to having parents with more years of schooling, living in a two-parent nuclear household and having more household assets on average. Differences in the composition of young people's households were also reported. There was a higher proportion of 19 to 20-year-olds living in extended or composite households than of 16 to 17-year-olds.

STATISTICAL ASSOCIATION BETWEEN POST-BASIC EDUCATION AND TRANSBORDER LINKS

This section presents the results of the multivariate logistic regressions for the four educational indicators described earlier (Table 4). The purpose of these regressions is to determine whether the transborder link variables are associated with educational indicators, even when young people's demographic and socio-economic characteristics are taken into account and to what extent.

Model A in Table 4 shows the results regarding graduation from junior high school, the last level of basic education in Mexico. Although the descriptive analysis contains differences in this indicator according to the transborder link variables, these gaps were not observed in the multivariate analysis. Demographic and socio-economic characteristics explained the educational advantage of young people with transborder links at this educational level. Independent control variables followed the expected tendency. Higher odds of senior high school completion were associated with being older, being a woman, not having recently immigrated, having a more educated head of household, living in nuclear households with both parents and possessing more household assets. The only exception was inter-state immigration, which was not associated with completing basic education.

TABLE 4. *Logistic regression models for educational indicators of urban youth.^a*
Northern border, Mexico, 2000

Independent variables	Model A		Model B		Model C		Model D	
	Junior high school completion		Senior high school enrollment		Senior high school completion		University enrollment	
	OR	p> z	OR	p> z	OR	p> z	OR	p> z
Born in the United States (No)	1.2		1.83	*	1.97	*	1.36	
Household member working in the US (No)	1.07		0.92		0.84		0.68	**
Age	1.43	***	0.76	***	1.2	**	0.72	***
Male (Female)	0.7	***	0.94		0.71	***	0.82	*
Recent inter-municipal migrant (No)	0.8	*	0.63	***	0.74	*	0.78	+
Inter-state migrant (No)	0.91		0.99		0.64	***	0.94	
<i>Head of household's years of schooling (0-5)</i>								
6-8	1.35	***	1.32	**	1.23	*	0.95	
9-11	2.31	***	1.87	***	1.92	***	1.2	
12 or more	5.42	***	4.72	***	3.33	***	2.83	***
<i>Household structure (Nuclear)</i>								
Single-parent	0.79	*	0.97	0.86	*	1.06		
Extended or composite	0.65	***	0.66	***	0.61	***	0.59	***
Household assets	1.27	***	1.33	***	1.33	***	1.27	***
Log-likelihood	-3135.4		-2565		-2403		-1214.2	
n	6 632		5 106		4 232		2 366	

Notes: OR: Odds Ratios; *** p<.001; ** p<.01; * p<.05; + p<.1; Reference category in parenthesis; ^a Only children of the head of household.

Source: Author's estimations based on *Censo General de Población y Vivienda, 2000* (INEGI, 2001)

The odds ratios of senior high school enrollment are given in Model B of Table 4. In contrast with the previous model, educational differences by place of birth were significant, after controlling for young people's socio-economic composition. The odds of attending senior high school were 83 % higher for students born in US than for those born in Mexico. In addition, whereas inter-state immigration, the head of household's years of schooling and the index of assets behaved the same as in the previous model, differences were observed in other co-variables. These variables were: age, sex and household structure. As

was expected, younger respondents were more likely to be studying at senior high school. Moreover, no significant differences in school enrollment at this level were found by sex, nor was there a gap between young people from single- and two-parent nuclear families who had advantages regarding enrollment compared with young people from extended or composite households.

Model C includes the odds ratios of graduating from senior high school (Table 4). It shows that US-born youths were 97 % more likely to complete senior high school than those born in Mexico. Thus, the advantage of US-born youths as regards graduating from senior high school was even greater than that recorded for school enrollment at this level. In this model, all the control variables behaved as expected, with the exception of household composition. Age was directly associated with a higher odds of completing this level. Those without migratory experience, with more educated parents or a higher socioeconomic level also followed this trend. With respect to sex, women were more likely to graduate from this level than men. Lastly, the household structure variable showed that young people living in single-parent nuclear households were at a disadvantage compared with those from two-parent nuclear households, yet less disadvantaged than young people living in extended households.

The last column in Table 4 contains the odds ratios of university enrollment (Model D). Young people in households with transborder workers were 32 % less likely to continue their vocational or university studies than the rest of border youths.²² Thus, under equal socio-economic conditions, young people in households with transborder workers²³ were at a disadvantage regarding higher education, in comparison with other youths. Conversely, at this level of education, the advantage of US-born over Mexican youths was not statistically significant.

The associations between control variables and university enrollment were similar to the links between these variables and senior high school enrollment,

²²In 2000, 76 % of transborder workers were men (own calculations based on the Population and Housing Census, 2000). These results therefore apply mainly to youths in households where male relatives cross over to work in the United States. Results may differ for youths whose mothers cross over to work in that country. A qualitative approach could shed light on these gender variations and implications for children's education.

²³It should be pointed out that only 1.7 % of offspring aged 19 to 20 who had completed high school had a transborder job, although most of these youths had other household members who also transmigrated. I tested what happened in the models if I only included in the numerator youths with other household members who transmigrated and the reasons for the likelihood of attending university were very similar (models available upon request).

with the exception of females' advantage over males. It is interesting to note, however, regarding the parents' years of schooling, that for young persons in order to be more likely to attend university, parents would have to have completed high school at least. In other words, having a head of household with completed primary or junior high school did not have a positive effect on children's university enrollment, as it did in the case of senior high school enrollment.

CONCLUSIONS

On the basis of the Population and Housing Census 2000, this article analyzed the link between the formal education of border youth and two indicators of trans-border links: being US-born and having household members working in that country. To this end, it used previous evidence and the conceptualization of transborder processes and the link between international migration and education.

The descriptive statistical analysis showed that completion of junior and senior high school, and senior high school and university enrollment rates were lower in urban areas on Mexico's northern border than at the national level. This type of analysis showed that in the urban areas on Mexico's northern border, educational indicators of US-born youths and young people with transmigrant household members were higher than those of their counterparts without transborder links, with the exception of the university enrollment of youths with transmigrant household members.

The multivariate statistical analysis corroborated some of these trends. US-born youths were more likely to attend senior high school and graduate from this level, which confirms our hypothesis regarding the complementary nature of this transborder characteristic and the greater likelihood of studying at the post-basic level. The reasons I proposed were: the desire for improvement of the parents of these young people, their improved socio-economic situation, the binational social networks of transborder families and lastly, greater access to educational institutions on either side of the border. However, our hypothesis was only proved at the senior high school level. At the higher-education level, the association between going to university and being US-born was positive but not statistically significant. Although there could be several explanations for this lack of significance, one could be that the sample used is not designed to study the population with

transborder links. An ad hoc sample design could yield more information on these phenomena.

Another finding in this study was the existence of a negative relationship between having household members working in the United States and university enrollment. I hypothesized that having household members working in the United States would negatively affect education at the post-basic level, because although youths in these households might have a better economic situation, transborder work would also serve as a model to follow. Since this type of work does not usually require being highly skilled, it could affect young people's educational aspirations. The negative association found between transmigration in the household and post-basic education questions the idea of transmigration as a strategy for socio-economic mobility. Although transmigration is linked to an increased purchasing power of those that experience it, lower rates of enrollment at higher education schools by youths that benefit financially from this process could restrict their opportunities and personal development.

One of the limitations of this study is that it deals with the urban areas on the northern border as a homogenous whole. Although I am aware of the existence of local differences in the dynamics of labor markets, this aspect was not taken into account in the study and should be explored in subsequent studies. Another limitation of the article was the failure to distinguish which youths went to school in the United States. This distinction would have helped us to know to what extent binational institutional access may explain the educational advantage of US-born students at the senior high school level.

Another limitation of the study was that the analysis was not presented by sex. The interactions between the indicators for transborder links and the youths' sex were not statistically significant. However, this interaction should continue to be investigated on the basis of other methodological approaches or statistical information sources with a larger sample size for the population with transborder links. One hypothesis to explore would be whether having a transborder worker in the household has a greater influence on the drop-out rates of sons rather than daughters, following the evidence found in Mexico on the more negative impact of the culture of migration on young males' school enrollment (Giorguli and Serratos, 2009).

The results of this research suggest a need for further analysis of the association between transborder links and education in light of more recent sources of

information.²⁴ The author's calculations, based on the Mexican census of 2010 (INEGI, 2011), indicate that over the past decade, although significant progress has been made in the border population's schooling, particularly at the basic level, the educational disadvantages of this region continued. In addition, there was a decrease in transborder employment and an increase in the number of US-born youths, of approximately three percent in each case; which were registered in the current context of the economic crisis and anti-immigrant policies and the consequent increase in international return migration. It would therefore be crucial to determine how these conjunctural factors of the relations between Mexico and the United States might be affecting the decisions and resources of transborder youths to continue with their post-basic studies.

The contribution of this article lies in showing that transborder links, such as being US-born and having household members working in the United States, are related in opposite ways to the post-basic education of the youth population on Mexico's northern border. Whereas being US-born was positively associated with completing high school, having household members with transborder jobs reduced the likelihood of pursuing higher education. Thus, within the educational sphere, the border region may be taking limited advantage of economic benefits, binational institutional opportunities and the social capital of transborder families. Although transborder employment supports certain families and provides substantial economic benefits for the zone, by negatively influencing young people's aspirations, it could also be contributing to the perpetuation of border cities' low educational levels. Therefore, it might also be part of a broader process of reproduction of socio-economic inequalities between Mexico and the United States.

²⁴Census micro-data for 2010 were available at the end of this research project.

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