Immigrants and Cross-Border Workers in the U.S.-Mexico Border Region

Inmigrantes y trabajadores transfronterizos en la región fronteriza Estados Unidos-México

Pedro Paulo ORRACA ROMANO
University of Sussex
p.orraca-romano@sussex.ac.uk

ABSTRACT

This article studies the differences between the Mexican-born population that resides and works in the U.S. border region and Mexican-born workers that live in Mexico but work in the United States. Immigrants and cross-border workers are compared in terms of their magnitude, socioeconomic characteristics, occupational structure and earnings. From 2000 to 2010, there was a significant increase in the number of immigrants in the U.S. border region and a substantial decline in the quantity of cross-border workers. Furthermore, immigrants are younger, more educated, more likely to be employed in high paying occupations, and have higher earnings than cross-border workers.

Keywords: 1. immigrants, 2. cross-border workers, 3. Oaxaca-Blinder decomposition, 4. United States, 5. Mexico.

RESUMEN

Este artículo estudia las diferencias entre los mexicanos que residen y trabajan en la zona fronteriza de Estados Unidos y los mexicanos que viven en México pero trabajan en Estados Unidos. Los inmigrantes y los trabajadores transfronterizos son comparados en términos de su magnitud, características socioeconómicas, estructura ocupacional e ingresos. De 2000 a 2010 se observa un aumento en el número de inmigrantes y una caída en la cantidad de trabajadores transfronterizos. Por otro lado, la población inmigrante tiende a ser más joven, tener mayores niveles de educación, estar empleada en mejores ocupaciones y percibir mayores ingresos que los trabajadores transfronterizos.

Palabras clave: 1. inmigrantes, 2. trabajadores transfronterizos, 3. descomposición Oaxaca-Blinder, 4. Estados Unidos, 5. México.

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INTRODUCTION

It is estimated that in 2010 approximately 11.2 million Mexican-born individuals were residing in the U.S., accounting for 14.2 percent of Mexico's working age population and 6.3 percent of the U.S. labor force[1]. As a result of its magnitude, the significant economic differences between the two countries, and the large array of social and economic effects that it generates on both sides of the border, the migration of Mexican-born workers to the U.S. has been widely studied (Durand, Massey and Zenteno, 2001; Hanson, 2006; Borjas and Katz, 2007). In addition, this literature has shown that the performance of Mexican-born immigrants in the U.S. has important implications for both countries, given that their degree of success in American territory will affect whether they choose to settle permanently in the U.S., or if they were initially target earners, the amount of time spent abroad. At the same time, this impacts the sum of remittances sent to family members left behind, which have been shown to affect a great deal of labor market outcomes in Mexico (Taylor *et al.*, 2005; Woodruff and Zenteno, 2007).

Within the Mexico-U.S. migration literature, a limited number of studies have focused on either Mexican-born workers who reside in the U.S. border region (Mora, Dávila and Mollick, 2007; Orrenius, Zavodny and Lukens, 2009) or on Mexican-born cross-border workers, defined in this article as the individuals that live in Mexico but cross the international border daily or several times per week in order to work in the U.S. (Estrella, 1993; Alegría, 2002; Escala and Vega, 2005)[2]. Unlike immigrants, cross-border workers do not change their country of residence. Instead, they abandon their native country for a short period of time in order to go to work in the U.S. and normally, after their workday ends, they commute back home to Mexico.

The present study attempts to combine the two branches of the Mexico-U.S. migration literature that focus on Mexican-born immigrants in the U.S. border region and on international cross-border workers. Using census and household survey data from both the U.S. and Mexico for the years 2000 and 2010, it is

[1] Author's calculation based on the 2010 Mexican Census (cited in Minnesota Population Center, 2011) and the 2010 American Community Survey (ACS) (cited in Ruggles *et al.*, 2010).

[2] While this study uses the term cross-border worker to define the population that resides in Mexico but works in the U.S., other studies sometimes refer to them as commuters or transmigrants. The present study views the terms cross-border workers, commuters and transmigrants as interchangeable.

possible to make a direct comparison of these two groups which are employed in the same geographical labor market, i.e. the U.S. border region, but live in two neighboring and substantially different countries. Specifically, immigrants and cross-border workers are compared in terms of their magnitude, socioeconomic characteristics, occupational structure and earnings.

The structure of the article is the following. Section two presents background information on immigrants and cross-border workers in the U.S.-Mexico border region. This includes an analysis of their magnitudes, geographical distribution, and importance to their local economies. Section three presents the literature review. Section four describes the data sources and presents a definition of the border region. Section five presents the results, where the socioeconomic characteristics of the populations of interest are discussed. This is followed by a calculation of the Duncan and Duncan (1955) index which is used to analyze differences in the occupational structures between the two groups. Subsequently, earnings regressions are estimated and a decomposition analysis is performed based on the Oaxaca (1973) and Blinder (1973) framework. Finally, section six concludes.

IMMIGRANTS AND CROSS-BORDER WORKERS IN THE U.S. BORDER REGION

Since the creation of the border separating the U.S. and Mexico in 1848 after the signing of the Treaty of Guadalupe-Hidalgo at the end of the Mexican-American War, the region surrounding the border has constituted a unique and dynamic locality where two very different cultures, languages and economies meet and blend (Anderson, 2003:535-536). Despite the fact that while cities in the U.S. border region, with the exception of San Diego, are among the least developed in the country and Mexican border towns have some of the country's highest growth rates and lowest poverty levels, existing differences between the U.S. and Mexico are largely driven by the fact that the disparity between the two economies is greater than for any other border in the world (Anderson, 2003; Mora, 2006).

Mexican immigrants have historically had an important presence in the U.S. border region. It is estimated that the Mexican-born population living in U.S. states adjacent to the border, i.e. Arizona, California, New Mexico and Texas, stood at 28 177 in 1860, subsequently increased to 210 491 by 1910, grew to 500 188 by 1960, and following the great Mexican migration that begun in the early 1960s

ascended to 7 630 348 in 2010[3]. Similarly, the presence of cross-border workers in the border region dates back to the later part of the 19th century, when cities such as El Paso then in the midst of rapid expansion began recruiting Mexican workers (Herzog, 1990). Early calculations by the now-defunct Immigration and Naturalization Service (INS) on the number commuters, i.e. cross-border workers who have a Green-Card and therefore are legally authorized to work in the U.S., estimate that in 1933 there were 52 551 intermittent commuters, that is individuals who crossed the border at the most three times per week, and 29 963 active commuters, i.e. individuals who crossed the border at least four times per week (Estrella, 1993:566). By the middle of the 20th century, U.S. border cities relied on Mexican cross-border workers to meet a significant fraction of their labor needs (Herzog, 1990). By 1969, the INS estimates that there were 49 770 cross-border workers with a valid Green-Card, while an additional 20 000 U.S. citizens lived in Mexico but worked in the U.S. (Ericson, 1970). Moreover, the number of commuters stood at 52 770 by 1980, while by 1990 it had increased to 87 345 (Estrella, 1993).

Until the early 1920s, the Mexican-born population residing in border localities could move freely into American territory to neighboring U.S. cities. Nonetheless, economic hardships generated by the lack of jobs drove the U.S. government to change its immigration policy (Estrella, 1993). As a result, the phenomenon of cross-border work or transmigration dates back to the requirement of an immigrant visa form 1-151, 551 or Green-Card established by the U.S. *Immigration Act* of 1924 (Estrella, 1993:566). The practice of cross-border work became institutionalized from 1942 to 1964 upon the implementation of the Bracero Program between the U.S. and Mexico, which helped mitigate labor shortages generated as a result of the U.S. war effort (Muria and Chávez, 2011). Subsequently, the region became a permanent place of residence for many return migrants who rather than returning to their homes in the western states of Mexico or settling in the U.S., established roots in Mexico's border region. As a result, the Bracero Program started a process that did not end with its termination in 1964, where people continued migrating north of the border given that U.S. employers provided them access to better paying jobs (Muria and Chávez, 2011:358).

On the other hand, with respect to their different legal categories, cross-border workers are a heterogeneous group. Legal cross-border workers are constituted by

[3] Author's calculation based on U.S. Census data from various years and the 2010 ACS.

U.S. citizens that are generally of Mexican ancestry, by Mexican-born workers who are Legal Permanent Residents in the U.S. and therefore have a Green-Card, and by individuals that are eligible for employment in the U.S. because they have a work visa. For individuals that do not have U.S. citizenship or a Green-Card, the possibility of working in the U.S. is subject to a strict set of criteria for eligibility, and a long, costly and uncertain procedure to have their job permits approved. Among cross-border workers that are not authorized to work but nonetheless do so, this group is mostly constituted by individuals who enter the U.S. legally but with documents that do not permit them to work such as a temporary visitor visa, i.e. B1/B2 visa, or a Border Crossing Card (BCC)[4]. While attempting to cross the border, these individuals must convince immigration officials that they are entering the U.S. for shopping and recreational purposes, and not for employment reasons (Muria and Chávez, 2011). On the other hand, attempting to cross the border daily while evading official ports of entry and without documentation is not feasible, given the substantial degree of risks and economic costs involved. Previous evidence suggests that nearly all cross-border workers enter the U.S. legally. Alegría (2002) reports that in 1998, 47 percent of Tijuana's cross-border workers had documents which allowed them to legally work in the U.S., while 90 percent of cross-border workers could enter the U.S. legally.

Table 1 presents figures on the total number of immigrants and cross-border workers in the U.S. border region[5]. It can be seen that while the number of immigrants in the border region ascended to 639 080 in the year 2000, the size of the cross-border worker group was considerably smaller, as it stood at 67 641. Furthermore, while the stock of immigrants increased from 2000 to 2010 by 45 percent, the number of cross-border workers decreased during the same time period by 25.5 percent.

[4] Specifically, a BCC entitles the bearer to enter the U.S. for a period of 72 hours within a 25 mile radius of the border, exclusively for tourism, shopping, and social visits. It does not allow the card-holder to engage in employment activities on either a temporary or long-term basis (Chávez, 2011:1321).

[5] The figures on cross-border workers presented in this study are limited to the Mexican-born population. This is done in order to try to minimize the degree of unobserved heterogeneity between the two populations of interest. Taking the U.S.-born population into account increases the number of cross-border workers by 16.5 percent in 2000 and by 30.3 percent in 2010.

TABLE 1. Immigrants and Cross-Border Workers Employed in the U.S. Border Region

Group	Year		Growth 2000-2010	
	2000	*2010*	*Absolute*	*Percentage*
Immigrants	639 080	926 471	287 391	44.97
Cross-border workers	67 641	50 380	-17 261	-25.52
Total	706 721	976 851	270 130	*38.22*

Source: Author's own elaboration based on the 2000 and 2010 Mexican Census (Minnesota Population Center, 2011), 2000 U.S. Census and 2010 ACS (Ruggles *et al.*, 2010). Data includes Mexican-born workers between the ages of 21 and 59 years. Figures on immigrants denote individuals residing and working in U.S. counties contiguous to the U.S.-Mexico border. Figures on cross-border workers denote individuals residing in Mexican municipalities adjacent to the U.S.-Mexico border and working in the United States.

Possible explanations behind the decline in the number of cross-border workers include the strengthening of U.S. border enforcement efforts after 9/11, which increased border crossing times and made it harder for Mexican-born individuals that are not legally authorized to work in the U.S. but do have a temporary visitor visa to reside in Mexico and commute to work in the United States[6]. In addition, the downturn of the U.S. economy and the subsequent increase in the unemployment rate observed from 2007 onwards may have resulted in previous cross-border workers losing their jobs in the U.S. and transiting into the Mexican labor market. Lastly, the increase in the levels of violence observed in many Mexican border towns between 2000 and 2010 may have propelled previous cross-border workers to change their country of residence and permanently settle in the United States.

Immigrants and cross-border workers tend to be located in transnational metropolitan areas in both the U.S. and Mexico. Moreover, the proximity of Mexican

[6] To alleviate some of the inconveniences associated with border crossing times, several technological developments have been implemented. These include the Security Electronic Network for Travelers Rapid Inspection (SENTRI) program and the posting of live-feed border crossing times by the U.S. Customs and Border Protection that can be accessed using mobile electronic devices (Mora and Dávila, 2009).

cities to dynamic labor markets in the U.S., such as the case of Tijuana and San Diego, facilitates the presence and growth of cross-border workers (Escala and Vega, 2005). Table 2 presents the evolution of immigrants and cross-border workers in 2000 and 2010 by locality of residence. Analyzing city by city patterns,

TABLE 2. Immigrants and Cross-Border Workers in the Border Region by City of Residence

City of residence	Year		Growth 2000-2010	
	2000	*2010*	*Absolute*	*Percentage*
San Diego	116 981	168 957	51 976	44.43
Tijuana	21 463	19 903	-1 560	-7.26
Calexico	15 800	22 066	6 266	39.65
Mexicali	15 040	9 349	-5 691	-37.83
San Luis (Arizona)	15 175	25 891	10 716	70.61
San Luis Río Colorado	5 969	3 253	-2 716	-45.5
Nogales (Arizona)	28 699	36 941	8 242	28.71
Nogales (Sonora)	858	643	-215	-25.05
El Paso	87 655	125 127	37 472	42.74
Ciudad Juárez	10 768	6 494	-4 274	-39.69
Del Río-Eagle Pass	21 798	25 259	3 461	15.87
Ciudad Acuña-Piedras Negras	1 035	954	-81	-7.82
Laredo	28 701	41 826	13 125	45.73
Nuevo Laredo	2 373	2 132	-241	-10.15
McAllen	78 687	127 044	48 357	61.45
Reynosa	2 749	1 826	-923	-33.57
Brownsville	35 522	48 037	12 515	35.23
Matamoros	2 686	2 049	-637	-23.71

Source: Author's own elaboration based on the 2000 and 2010 Mexican Census (Minnesota Population Center, 2011), 2000 U.S. Census and 2010 ACS (Ruggles *et al.*, 2010). Data includes Mexican-born workers between the ages of 21 and 59 years. Figures on immigrants denote individuals residing and working in U.S. counties contiguous to the U.S.-Mexico border. Figures on cross-border workers denote individuals residing in Mexican municipalities adjacent to the U.S.-Mexico border and working in the United States.

among U.S. border towns it can be seen that San Diego had the largest increase in the immigration population, where between 2000 and 2010 the number of Mexican-born immigrants increased by 51 976, going from 116 981 to 168 957. Moreover, the city with the largest immigrant growth rate was San Luis, where the stock of immigrants increased by 70.6 percent during the same time period. At the other end of the spectrum, the cities with the smallest increase in their immigration population in both absolute and percentage terms were Del Río-Eagle Pass, where the number of immigrants increased by 3 461 individuals, which corresponded to a 15.9 percent growth rate.

TABLE 3. Immigrants and Cross-border Workers as Percentage of Employed Population by City of Residence

Immigrants			**Cross-border workers**		
City of residence	*2000*	*2010*	*City of residence*	*2000*	*2010*
San Diego	11.15	14.84	Tijuana	5.66	3.63
Calexico	41.04	44.97	Mexicali	6.19	2.84
San Luis (Arizona)	9.24	14.66	San Luis Río Colorado	13.94	6.11
Nogales (Arizona)	12.96	14.49	Nogales (Sonora)	1.72	0.83
El Paso	26.52	29.7	Ciudad Juárez	2.62	1.47
Del Río-Eagle Pass	26.01	26.02	Ciudad Acuña-Piedras Negras	1.39	0.98
Laredo	32.16	33.26	Nuevo Laredo	2.69	1.79
McAllen	25.53	31.65	Reynosa	2.09	0.87
Brownsville	24.61	27.19	Matamoros	2.08	1.34

Source: Author's own elaboration based on the 2000 and 2010 Mexican Census (Minnesota Population Center, 2011), 2000 U.S. Census and 2010 ACS (Ruggles *et al.*, 2010). Data includes Mexican-born workers between the ages of 21 and 59 years. Figures on immigrants denote individuals residing and working in U.S. counties contiguous to the U.S.-Mexico border. Figures on cross-border workers denote individuals residing in Mexican municipalities adjacent to the U.S.-Mexico border and working in the United States.

On the other hand, it can be seen that in all the Mexican cities studied there was a decrease in the number of cross-border workers. Among these, the biggest reduction in absolute terms was observed for Mexicali, where the number of cross-border workers dropped from 15 040 in the year 2000 to 9 349 in 2010.

Moreover, San Luis Río Colorado had the biggest reduction in percentage terms, where this group contracted by 45.5 percent. The smallest reduction in absolute terms was observed for Ciudad Acuña-Piedras Negras, where the total number of cross-border workers declined by 81 individuals. Moreover, Tijuana had the smallest reduction in percentage terms with a 7.3 percent decrease.

Another issue of interest is the importance of immigrants and cross-border workers to their labor markets of residence. Table 3 shows that the relative importance of immigrants is considerably larger than that of cross-border workers. Not surprisingly, in some cities the presence of immigrants is considerable. Moreover, the significance of immigrants in U.S. border localities increased between 2000 and 2010, where immigrants went from representing 16.2 to 20.5 percent of the region's total labor force.

With respect to cross-border workers the opposite picture is observed, where their absolute and relative importance to their local labor markets declined significantly between 2000 and 2010. This was especially true for the case of San Luis Río Colorado, where in 2000 approximately 13.9 percent of its labor force was employed in the U.S., a figure that dropped to 6.1 percent by 2010. Nonetheless, while cross-border workers constitute a small percentage of the labor force, their importance to their local economies is magnified given that their high earnings, relative to non-cross-border workers, make them a privileged group with high levels of consumption, who, given their demand for goods and services and ownership of real estate, pay an array of local taxes in Mexico, and whose economic activities generate multiplier effects in their communities (Alegría, 2002; Escala and Vega, 2005)[7].

LITERATURE REVIEW

The literature on Mexican-born immigrants and cross-border workers in the U.S. border region constitutes a small segment within the broad Mexico-U.S. migration

[7] The decline in the number of cross-border workers observed between 2000 and 2010 appears to be part of a more general trend observed in recent decades. Alegría (2000) estimates that in Tijuana, the proportion of cross-border workers as a percentage of the labor force decreased from 16.3 percent in 1970 to 7.5 percent in 1996. During the same time period, in Ciudad Juárez this dropped from 12.8 percent to 4.6 percent, while in Nuevo Laredo this declined from 8.2 percent in 1970 to 4.6 percent in 1996.

topic[8]. Among the studies that have focused on Mexican workers in the U.S. border region, Orrenius, Zavodny and Lukens (2009) analyze if migrants residing near the border with Mexico differ from those who settle in other parts of the country. Based on data from the Mexican Migration Project (MMP) from 1980 to 2005, the authors observe that migrants in the border region have more years of schooling, are more likely to be female and from a northern state, and are less likely of having entered the U.S. illegally[9]. This last result arises because individuals living in northern Mexico are more likely to have a BCC or another type of visa and thus do not have to resort to illegal means in order to enter the United States. Moreover, the authors observe that border migrants earn between 16 and 20 percent less than interior migrants.

In another study, Mora, Dávila and Mollick (2007) investigate the existence of an earnings penalty for workers that live near the U.S.-Mexico border. Based on data from the 2000 U.S. Census and the 2005 ACS, the scholars find that Mexican-born immigrants, U.S.-born Mexican-Americans and non-Hispanics earn significantly less than their counterparts who reside in other parts of the country. This border earnings penalty is observed despite the fact that border residents have higher education levels than the rest of the country's population. In a similar investigation, Dávila and Mora (2008) analyze whether the earnings gap between Mexican-born immigrants and the U.S.-born population differs between cities located along the border and cities located in the interior of the country. Using U.S. Census data from 1990 and 2000, the authors estimate earnings functions and employ the Juhn-Murphy-Pierce wage decomposition technique. Their results show that between 1990 and 2000, the earnings of Mexican workers living along the border improved relative to those obtained by Mexicans and U.S.-born Mexican-Americans living in the U.S. interior. Nevertheless, earnings differentials between Mexicans and U.S.-born non-Hispanics remained stable.

With respect to cross-border workers, early studies that focused on this group include Ericson (1970), where the author presents a summary of the cross-border worker phenomenon in the late 1960s, including how they were perceived north of the border. On one side, cross-borders were viewed as contributing to labor

[8] A limited number of studies have also focused on U.S.-born cross-border workers that live in the U.S. but work in Mexico (e.g. Mora and Dávila, 2009). It is estimated that in 2005, this group ascended to approximately 10 500 workers (Mora and Dávila, 2009).

[9] The MMP is a collaborative research project based at Princeton University and the Universidad de Guadalajara. See <http://mmp.opr.princeton.edu>.

surpluses observed in the U.S. border region, which negatively affected wages and trade union organizing campaigns. On the other hand, they were favorably viewed by certain sectors of the population given that retail and wholesale trade in towns on the U.S. side of the border were highly dependent of the purchases made by Mexican residents employed in the United States.

Subsequent investigations that have focused on cross-border workers include Arámburo (1987), where the author analyzes this cohort in terms of their earnings, schooling levels, consumption patterns and English language proficiency. Based on 666 questionnaires, it is observed that while they perform low remunerated, low status and difficult to execute jobs in the U.S., cross-border workers occupy a privileged position in Mexico. This is a result of their higher earnings levels and additional years of schooling. The author argues that for Mexican border towns, the presence of cross-border workers helps compensate for labor demand shortages in the region. Focusing on legal cross-border workers in the Tijuana-San Diego and Mexicali-Calexico corridors, Acuña (1988) presents information pertaining to their occupation of employment and socioeconomic characteristics. Based on 309 questionnaires applied to cross-border workers in 1983, the author shows that during this time period more than 80 percent of cross-border workers were male, with an average age of 35 years, where they were largely employed in the personal services sectors, the manufacturing industry and in agricultural related activities.

In another study, Alegría (1990) outlines the most important characteristics of cross-borders work along the U.S.-Mexico border. The scholar notes that cross-border work is an inter-urban phenomenon, given that both residential and work zones tend to be located within urban centers. The author estimates that in 1990, there were approximately 87 345 cross-border workers in Mexico's border region, which accounted for eight percent of the area's working population and between 14 and 20 percent of its total wage and salary income. On the other hand, Estrella (1993) focuses on whether the implementation of the *Immigration Reform and Control Act* (IRCA) in 1986 led to an expansion of the total number of legal cross-border workers. Using information based on demographic surveys applied in 1986 and 1990, through the estimation of logistic regressions the author observes that upon the enactment of IRCA, there was a widening in the social spectrum of individuals who engaged in this type of activity as well as a geographical redistribution among cross-border workers. The characteristics of the new groups that engaged in cross-border work suggest that this was a result of a reproduction strategy that allowed for upward mobility.

Recent studies on cross-border workers include Escala and Vega (2005), where the scholars evaluate the characteristics and dynamics of cross-border workers in the Tijuana-San Diego corridor. In the analysis the authors employ data from the 2000 Mexican Census (Inegi, 2000), where they present an overview of the socio-demographic characteristics of this group, and conduct in-depth interviews with cross-border workers in order to better understand their daily routines and strategies. It is estimated that approximately six percent of Tijuana's working population is employed as a cross-border worker. Furthermore, as a direct result of their higher earnings, 76.1 percent of cross-border workers own a home compared to 67.6 percent among non-cross-border workers. Additionally, it is reported that cross-border workers tend to be clustered in low-skilled occupational categories. These include gardening, housekeeping, construction, cleaning services and retail, which employ 25.4 percent of all cross-border workers.

On the other hand, Chávez (2011) analyzes the strategies that cross-border workers use in order to gain entry to the U.S., including those used by individuals who evade inspection at U.S. ports of entry and those used by workers who enter the U.S. using a BCC and subsequently seek out unauthorized employment. The study is based on 91 interviews of cross-border workers conducted between 2004 and 2006, and concludes that prior to increased border enforcement efforts by the U.S. government, starting with the implementation of Operation Gatekeeper in 1994, cross-border workers commonly entered the U.S. informally and without proper documentation. It is stated that in some instances undocumented migrants crossed the border alone and relied on smugglers to avoid detection. In other cases, undocumented migrants would gain entry by declaring their relationships with U.S. employers. This is no longer the case, given that undocumented crossings through Tijuana are practically non-existent. Instead, individuals that seek unauthorized employment in the U.S. must at least acquire a BCC[10].

[10] Not just focusing on cross-border workers, Vargas-Valle (2012) analyzes how having a cross-border worker at home and being born in the U.S. are related with the post-basic education of the urban youth population in Mexico. Using the 2000 Mexican Census (INEGI, 2000) and performing a multivariate statistical analysis, the author observes that living in a household with a cross-border worker reduces the probability of continuing higher education studies. It is hypothesized that the improved socioeconomic status of transborder families maybe affecting the educational aspirations of the younger population, given that they can have access to higher levels of income without having to invest in additional years of schooling.

Finally, Alegría (2002) focuses on the structural determinants of the cross-border labor markets of Tijuana and Ciudad Juárez. Based on data from the 1998 "Encuesta retrospectiva sobre migración y empleo en Estados Unidos" (ERMEU) (INEGI, 1998), the author first studies the relationship between cross-border worker growth and the demand for labor in the U.S. border region. Additionally, the scholar seeks to specify the demographic determinants of cross-border labor supply. Subsequently, a model where the magnitude of the cross-border worker cohort is analyzed as a function of wage differentials between the U.S. and Mexico is introduced. The results show that transmigration is not part of a single cross-border labor market, but instead cross-border workers participate in two labor markets in both the U.S. and Mexico. Furthermore, it is observed that cross-border work is mainly driven by wage differentials between the two countries, where changes in labor supply and demand in the region have little explanatory power. Not being able to legally work in the U.S. does not seem to be a restriction for incurring in cross-border work.

DATA AND DEFINITION OF THE BORDER REGION

Data Sets

The data used in this study comes from both U.S. and Mexican sources. Information on Mexican-born immigrants residing and working in the U.S. is obtained from a five percent sample of the 2000 U.S. Census and the 2010 ACS, which is a one percent sample of the U.S. population. The data is collected by the U.S. Census Bureau and is provided by Ruggles *et al.* (2010). Information on cross-border workers living in Mexico and working in the U.S. is derived from a 10.6 and 10 percent sample of the 2000 and 2010 Mexican censuses, respectively. The data is collected by the Instituto Nacional de Estadística y Geografía (Inegi) and provided by Minnesota Population Center (2011). The study is limited to Mexican-born workers between 21 and 59 years old that reside in the U.S. border region, work in the U.S., and report non-zero earnings and a positive number of hours worked.

Nonetheless, there are some limitations involved with the use of these data sets. These restrictions include the fact that it is not possible to observe the locality of work of cross-border workers. While previous evidence suggests that the majority of cross-border workers are employed in U.S. counties adjacent

to the border (Alegría, 1990, 2002), it is not possible to verify if this is also the case for the respondents questioned in the 2000 and 2010 Mexican censuses. In addition, it is not possible to distinguish between the different legal categories of immigrants and cross-border workers. This limits our understanding of their differences and underlying characteristics which are likely to be related with various observed and unobserved factors including their socioeconomic characteristics, occupations and earnings, among others.

Definition of the border region

As previously argued by Mora and Dávila (2009), there is no consensus on how to define the U.S.-Mexico border region. In light of this, researchers have employed a variety of definitions to demarcate the region, generally based on the states or counties and municipalities adjacent to the border. In this article, the border region is defined as the area constituted by all the public-use microdata areas (PUMAs) located exactly at the American side of the U.S.-Mexico border, and all the Mexican *municipios*, i.e. municipalities, contiguous to the United States.

The study is constrained to PUMAs instead of U.S. counties because, when employing data from public-use microdata sample (PUMS) files, it is not possible to uniquely identify all of the individual counties adjacent to the international border with Mexico (Mora and Dávila, 2009:206). Instead, the geographic coding combines less populated counties into PUMAs, which are constructed to contain at least 100 000 residents. Given the construction of the PUMAs, our definition of the border region contains some counties which are not necessarily located at the border with Mexico. Nonetheless, their small population size suggests that their inclusion does not significantly alter the results. The full list of the counties and *municipios* included in the study are presented in Table 4.

As with any definition of the border region, this particular demarcation presents some limitations. As previously argued by Alegría (2002), focusing on cross-border workers that reside in the municipalities adjacent to the U.S. leads to an exclusion of a number workers who reside in nearby municipalities not contiguous to the border. For example, individuals residing in localities such as Ensenada or Rosarito who commute to their jobs in the U.S. are not included. Nevertheless, this definition of the border region is used in order to exclude those individuals that, given their longer commutes, have a higher probability of residing at least part-time in the U.S., as well as seasonal migrants who are likely to report that they live in Mexico when in reality they maintain residence in both countries.

TABLE 4. Counties and Municipios Included in the Study*

U.S. counties		**Mexican *municipios***	
San Diego, CA	Loving, TX	Tijuana, B. C.	Manuel Benavides, Chih.
Imperial, CA	Brewster, TX	Tecate, B. C.	Ocampo, Coah.
Yuma, AZ	Pecos, TX	Mexicali, B. C.	Acuña, Coah.
Pima, AZ	Ward, TX	San Luis Río Colorado, Son.	Jiménez, Coah.
Maricopa, AZ	Winkler, TX	Puerto Peñasco, Son.	Piedras Negras, Coah.
Pinal, AZ	Andrews, TX	Gral. Plutarco Elías Calles, Son.	Nava, Coah.
Gila, AZ	Gaines, TX	Caborca, Son.	Guerrero, Coah.
Santa Cruz, AZ	Crane, TX	Altar, Son.	Hidalgo, Coah.
Cochise, AZ	Terrell, TX	Sáric, Son.	Anáhuac, N. L.
Graham, AZ	Val Verde, TX	Nogales, Son.	Nuevo Laredo, Tamps.
Greenlee, AZ	Kinney, TX	Santa Cruz, Son.	Guerrero, Tamps.
Hidalgo, NM	Edwards, TX	Cananea, Son.	Mier, Tamps.
Grant, NM	Maverick, TX	Naco, Son.	Miguel Alemán, Tamps.
Catron, NM	Webb, TX	Agua Prieta, Son.	Camargo, Tamps.
Luna, NM	Dimmit, TX	Janos, Chih.	Gustavo Díaz Ordaz, Tamps.
Sierra, NM	Zavala, TX	Ascensión, Chih.	Reynosa, Tamps.
Socorro, NM	Uvalde, TX	Juárez, Chih.	Río Bravo, Tamps.
Doña Ana, NM	Real, TX	Guadalupe, Chih.	Valle Hermoso, Tamps.
Torrance, NM	La Salle, TX	Praxedis G. Guerrero, Chih.	Matamoros, Tamps.
Otero, NM	Zapata, TX	Ojinaga, Chih.	
Chaves, NM	Starr, TX		
Eddy, NM	Brooks, TX		
Lea, NM	Hidalgo, TX		
El Paso, TX	Kleberg, TX		
Hudspeth, TX	Willacy, TX		
Culberson, TX	Kenedy, TX		
Jeff Davis, TX	Nueces, TX		
Presidio, TX	Cameron, TX		
Reeves, TX			

*Counties and *municipios* included in the table are defined as constituting the U.S.-Mexico border region.

Source: Author's own elaboration.

DIFFERENCES BETWEEN IMMIGRANTS AND CROSS-BORDER WORKERS

Socioeconomic Characteristics

To analyze how immigrants and cross-border workers differ, they are first compared in terms of their socioeconomic characteristics. Table 5 presents descriptive statistics of selected variables[11]. It can be seen that immigrants are younger, more educated, have fewer children, have higher earnings, and work less hours per week than cross-border workers. On the other hand, immigrants are less likely to be self-employed, male, married and own a house. The home ownership variable captures one of the advantages of residing in Mexico where, due to the significant differences in housing prices between the U.S. and Mexico, cross-border workers are much more likely to be home-owners relative to immigrants despite the formers lower earnings. For cross-border workers, their access to higher earnings relative to non-cross-border workers makes it more feasible for them to purchase a house in Mexico, thus reinforcing their strategy of working in the U.S. but living south of the border (Escala and Vega, 2005:156). The fact that cross-border workers have on average more children than immigrants may be a result of the former choosing to reside in Mexico in order to compensate for the additional expenses incurred by having a larger household. In addition, it is observed that almost all of the cross-border workers included in the sample reside in urban areas. Given their significantly higher earnings and shorter work-weeks, immigrants appear to constitute the more privileged cohort.

Focusing on changes over time, it can be seen that relative to the year 2000, in 2010 both immigrants and cross-border workers were on average older, less likely to be male, less likely to be married, more educated, and had higher hourly earnings, shorter work-weeks and fewer children. While these variables changed in the same direction for immigrants and cross-border workers, there have also been some divergences between both groups[12]. Among these, while the monthly

[11] The calculations presented in this study were obtained using sampling weights constructed by the U.S. Census Bureau and Inegi.

[12] It is possible that the expansion in the levels of violence observed in northern Mexico is associated not only with an increase in the number of immigrants and a decrease in the number of cross-border workers, but also with the significant increment in the average years of schooling among immigrants. While from 2000 to 2010 the average years of schooling among immigrants increased 2.56 years, for cross-border workers it increased by 1.74 years. It may be that workers with high levels of education were more likely to immigrate to the U.S., which in turn led to an increment in the difference in average years of schooling among the two groups.

earnings of cross-border workers slightly decreased between 2000 and 2010, the monthly earnings of immigrants increased by 17.5 percent during the same time period. Furthermore, while the proportion of cross-border workers that are self-employed increased from 7.4 to 9.3 percent from 2000 to 2010, the fraction of immigrants that are self-employed dropped from 3.1 to 2.5 percent during the same time frame.

TABLE 5. Socioeconomic Characteristics, Means and Standard Errors

Variable	Immigrants		Cross-border workers	
	2000	*2010*	*2000*	*2010*
Age	36.83	39.04	37.74	40.07
	(9.72)[a]	(10.02)[a]	(9.49)[a]	(10.28)[a]
Number of children	1.60	1.39	1.84	1.50
	(1.51)[a]	(1.35)[a]	(1.48)[a]	(1.31)[a]
Years of education	9.60	12.16	8.77	10.51
	(4.36)[a]	(3.95)[a]	(3.85)[a]	(3.72)[a]
Monthly earnings[b]	2 003.01	2 354.24	1 298.13	1 291.61
	(1 534.52)[a]	(1 870.20)[a]	(988.73)[a]	(991.64)[a]
Hourly earnings[b]	11.14	13.03	7.17	7.36
	(8.20)[a]	(9.30)[a]	(5.36)[a]	(5.47)[a]
Number of hours worked	40.57	39.35	42.27	41.11
	(10.55)[a]	(10.12)[a]	(12.26)[a]	(13.54)[a]
Full-time workers[c]	87.23	81.59	84.75	80.89
Self-employed[c]	3.05	2.51	7.44	9.33
Male[c]	63.29	57.17	79.22	73.46
Married[c]	68.14	62.44	78.51	75.06
Home ownership[c]	54.97	56.37	76.06	77.67
Urban[c]	–	–	95.09	93.57
Observations	27 464	3 779	3 441	1 629

[a]Standard errors.
[b]Monthly and hourly earnings are in real 2010 U.S. dollars.
[c]Percentage.
Source: Author's own elaboration based on the 2000 and 2010 Mexican Census (Minnesota Population Center, 2011), 2000 U.S. Census and 2010 ACS (Ruggles *et al.*, 2010).

Occupational Structures

To analyze the differences in the occupational distributions between immigrants and cross-border workers, a one-digit occupation classification scheme is utilized where workers are classified into ten different categories as defined in Minnesota Population Center (2011)[13]. It can be seen in Table 6 that there are significant differences in the occupational structures of immigrants and cross-border workers. Regarding both men and women, immigrants are much more likely to be employed in the highest paying occupations, i.e. the professionals and legislators, senior officials and managers categories, while cross-border workers are more likely to be employed at the bottom of the occupational distribution, i.e. the skilled agricultural and fishery workers category, which constitutes the lowest paying occupation. This suggest that a possible reason why cross-border workers choose to live south of the border is because, since they are employed in low-paying occupations, this allows them to compensate for their lower earnings given the lower living costs that prevail in Mexico.

Furthermore, in order to obtain a more objective measure of the occupational differences between the two populations of interest, the Duncan and Duncan (1955) index of dissimilarity is calculated. The index is defined in the following manner:

$$D^{K}_{i\text{-}j} = \left(\tfrac{1}{2}\right)\sum_{k=1}^{K} | X^{k}_{i} - X^{k}_{j} | \qquad (1)$$

where i denotes immigrants and j represents cross-border workers, X^{k}_{i} and X^{k}_{j} are the percent distribution of groups i and j in occupation k, and K is the total number of occupations. The value of the index indicates the percentage of workers in group i that would have to change occupations in order to obtain an occupational distribution identical to that of workers in group j. When the index equals zero, the distributions of workers in i and j are identical. When the index equals 100, workers in groups i and j are never in the same occupations. The index is not weighted by type of occupation and does not allow judgments of the quality of the distributions.

[13] At the time of this study, a consistent occupational classification scheme that allows for a direct comparison between workers residing in the U.S. or Mexico was only available for the year 2000. Therefore, the results in this subsection are limited to data from the year 2000 and do not include information from 2010.

TABLE 6. Occupational Structure of Immigrants and Cross-border Workers

Occupation*	Men		Women	
	Immigrants	*Cross-border workers*	*Immigrants*	*Cross-border workers*
Professionals	2.72	2.5	7.76	3.89
Legislators, senior officials and managers	5.39	1.51	4.74	1.72
Technicians and associate professionals	2.42	2.31	5.58	6.08
Crafts and related trades workers	23.56	33.35	3.35	7.06
Clerks	5.63	5.02	20.38	11.4
Plant and machine operators and assemblers	19.46	13.46	16.47	6.83
Service workers and shop and market sales	16.24	8.55	27.69	20.95
Elementary occupations	18.56	8.99	13.64	31.72
Skilled agricultural and fishery workers	5.95	22.7	0.39	8.21
Other/not reported	0.07	1.61	0	2.14

*Occupations are presented in descending order from the highest paying occupation to the lowest paying one.

Source: Author's own elaboration based on the 2000 Mexican Census (Minnesota Population Center, 2011) and 2000 U.S. Census (Ruggles *et al.*, 2010).

Estimations of the Duncan index are presented in Table 7. Among men, it can be seen that 28.4 percent of cross-border workers would have to shift occupations in order to obtain the same occupational distribution as immigrants. A similar result arises for women, where this figure rises to 28.6 percent. Focusing on different subpopulation groups, it is observed that among low educated individuals the degree of occupational dissimilarity is larger compared to more educated workers. On the other hand, the degree of dissimilarity increases with age, where this stands at 23.9 and 19.1 for men and women, respectively, in the 21 to 33 age

group; and rises to 37 and 40.1 for men and women, respectively, in the 47 to 59 age cohort. The positive relationship between age and the degree of occupational dissimilarity may arise because the majority of young workers are likely to be employed in low level occupations. Nonetheless, as workers grow older and obtain more experience, they are more likely to advance in the occupational ladder. It may be that while immigrants obtain better positions as they grow older, cross-border workers do not.

TABLE 7. Duncan Dissimilarity Indices between Immigrants and Cross-border Workers

	Men	**Women**
Years of education		
1-11	34.1	30.4
12-15	18.8	18.7
16+	17.4	19.6
Demographic (age)		
21-33	23.9	19.1
34-46	30.3	30.2
47-59	37	40.1
Region		
Tijuana-San Diego	17.7	24.3
Ciudad Juárez-El Paso	26	21
Total	*28.4*	*28.6*

Source: Author's own elaboration based on the 2000 Mexican Census (Minnesota Population Center, 2011) and 2000 U.S. Census (Ruggles *et al.*, 2010). Calculations elaborated based on occupational categories presented in Table 6.

When comparing workers within the two largest international metropolitan areas, it can be seen that the degree of occupational dissimilarity in the Tijuana-San Diego and Ciudad Juárez-El Paso areas is smaller compared to other regions of the border. Since occupations are only divided into ten broadly defined categories, the results suggest that there are significant differences between the occupational structures of immigrants and cross-border workers.

Earnings

In this section, the earnings of immigrants and cross-border workers are compared, where special focus is given to the factors determining the earnings differentials between both groups. In a first stage, earnings equations are estimated separately for immigrants and cross-border workers using ordinary least squares (OLS). The estimated regressions are defined in the following manner:

$$Y_{it} = \alpha_{it} + X_{it}\beta_{it} + \varepsilon_{it} \tag{2}$$

where Y_{it} represents the natural logarithm of hourly earnings; X_{it} is a vector of exogenous variables containing potential work experience, potential work experience squared, years of education and geographic dummies at the state and county or municipality level; α_{it} and β_{it} are the earnings equations coefficients, and ε_{it} is an unexplained error term[14]. Subscript i distinguishes between immigrants (I) and cross-border workers (C), and subscript t indicates the time period, where earnings equations are calculated for 2000 and 2010.

Table 8 presents OLS hourly earnings regressions results for immigrants and cross-border workers, estimated separately by year and gender. Among men, the returns to potential work experience, i.e. age minus years of education minus six, are much larger among immigrants than cross-border workers. This suggests that, *ceteris paribus*, as workers gain experience and advance along the labor life cycle the earnings profiles between both groups diverge, where the earnings of cross-border workers fall behind those of immigrants, and earnings differentials become larger. A similar relationship arises with respect to the returns to education, where an additional year of schooling is more highly rewarded among immigrants than cross-border workers. Shifting our attention to women, the results show that immigrants have higher economic returns to potential experience and education than cross-border workers. For female cross-border workers a u-shaped relationship between experience and hourly earnings is observed, where the returns to potential experience are negative for individuals that have been in the labor market for a limited number of years and are positive for more experienced workers. Given the cross-sectional nature of the data, it is not possible to investigate to what degree this result is a product of a slow or decreasing career earnings growth path

[14] The inclusion of geographic dummy variables helps control for unobserved heterogeneity, such as regional differences in labor market characteristics and living costs, among others.

TABLE 8. OLS Log Hourly Earnings[a] Regressions

Coefficient/Statistic	Immigrants		Cross-border workers	
	2000	*2010*	*2000*	*2010*
		Men		
Intercept	1.239***	1.474***	1.240***	1.068***
	(0.005)[b]	(0.006)[b]	(0.023)[b]	(0.022)[b]
Experience/100	3.941***	2.730***	0.567***	1.153***
	(0.038)[b]	(0.043)[b]	(0.131)[b]	(0.131)[b]
Experience^2/100	-0.052***	-0.033***	-0.005**	-0.015***
	(0.001)[b]	(0.001)[b]	(0.002)[b]	(0.002)[b]
Education/100	5.636***	4.718***	4.309***	3.930***
	(0.029)[b]	(0.036)[b]	(0.113)[b]	(0.116)[b]
Regional dummy variables	Yes	Yes	Yes	Yes
R-squared	0.122	0.105	0.052	0.159
Observations	17 522	2 127	2 678	1 203
		Women		
Intercept	1.004***	1.005***	0.929***	0.923***
	(0.008)[b]	(0.008)[b]	(0.050)[b]	(0.046)[b]
Experience/100	2.005***	1.771***	-0.211	-0.916***
	(0.052)[b]	(0.049)[b]	(0.239)[b]	(0.195)[b]
Experience^2/100	-0.015***	-0.080***	0.020***	0.010**
	(0.001)[b]	(0.001)[b]	(0.004)[b]	(0.004)[b]
Education/100	6.899***	7.331***	5.471***	5.440***
	(0.046)[b]	(0.049)[b]	(0.240)[b]	(0.235)[b]
Regional dummy variables	Yes	Yes	Yes	Yes
R-squared	0.119	0.140	0.098	0.177
Observations	9 925	1 650	682	398

***p < 0.01, **p < 0.05, *p < 0.10.

[a]Monthly and hourly earnings are in real 2010 U.S. dollars.

[b]Standard errors.

Source: Author's own elaboration based on the 2000 and 2010 Mexican Census (Minnesota Population Center, 2011), 2000 U.S. Census and 2010 ACS (Ruggles *et al.*, 2010).

for cross-border workers, as opposed to being a product of changes in earnings profiles which favor younger cohorts of cross-border workers. Nonetheless, analyzing summary statistics, it is observed that more experienced female cross-border workers tend to be concentrated in low paying occupations, whereas younger cohorts of female cross-border workers are generally employed in better remunerated positions. This suggests that the negative returns to potential work experience are driven in part by generational effects and not just labor life cycle effects.

Focusing on changes between the years 2000 and 2010, among men, it is observed that while the returns to potential experience decreased for immigrants, they increased for cross-border workers. Moreover, while the returns to education decreased for both groups, the reduction was larger for immigrants than for cross-border workers. This implies that during the period of study there was a convergence in the returns to the observed characteristics of the two groups. Among women, the opposite relationship is observed, where the differences in the returns to potential experience and education among immigrants and cross-border workers increased from 2000 to 2010, signaling a divergence in the earnings levels between both groups.

In order to better understand the sources behind the earnings differentials between immigrants and cross-border workers, a decomposition analysis based on the methodology put forward by Oaxaca (1973) and Blinder (1973) is performed. Once Eq. (2) is estimated for immigrants and cross-border workers, the traditional Oaxaca-Blinder (OB) decomposition can be computed:

$$\overline{Y}_{It} - \overline{Y}_{Ct} = (\hat{\alpha}_{It} - \hat{\alpha}_{Ct}) + (\overline{X}_{It} - \overline{X}_{Ct})\hat{\beta}_{It} + \overline{X}_{Ct}(\hat{\beta}_{It} - \hat{\beta}_{Ct}) \quad (3)$$

where $\overline{Y}_{it}$ is the mean of the natural logarithm of hourly earnings, $\overline{X}_{it}$ is the vector of the mean values of the exogenous variables, and $\hat{\alpha}_{it}$ and $\hat{\beta}_{it}$ represent the estimated earnings equations coefficients. In the OB decomposition, the second term on the right hand side constitutes the "explained" component or endowment effect, which captures group differences in productivity enhancing characteristics; whereas the first and third terms on the right hand side constitute the "unexplained" component or coefficient effect, which is a residual that cannot be accounted for by differences in the earnings determinants, and is commonly used in the literature as a measure of discrimination[15].

[15] Since differences in the earnings equations' coefficients are likely to capture variations in unobservable characteristics that also affect earnings, these terms are generally interpreted as an upper-bound of the possible discrimination that prevails in the labor market.

TABLE 9. Decomposition of Log Hourly Earnings Differences between Immigrants and Cross-Border Workers

	Men		Women	
	2000	*2010*	*2000*	*2010*
Total log hourly earnings differential	0.507***	0.620***	0.389***	0.608***
	(0.003)[a]	(0.004)[a]	(0.007)[a]	(0.007)[a]
	OB decomposition: Immigrants' coefficients[b]			
Explained: Differences in average characteristics	-0.035***	-0.021***	0.044***	0.103***
	(0.002)[a]	(0.002)[a]	(0.002)[a]	(0.003)[a]
Unexplained: Differences in coefficients	0.543***	0.641***	0.344***	505***
	(0.004)[a]	(0.004)[a]	(0.007)[a]	(0.007)[a]
	OB decomposition: Cross-border workers' coefficients[c]			
Explained: Differences in average characteristics	-0.030***	-0.099***	-0.018*	0.008
	(0.004)[a]	(0.004)[a]	(0.009)[a]	(0.008)[a]
Unexplained: Differences in coefficients	0.538***	0.720***	0.407***	0.600***
	(0.005)[a]	(0.005)[a]	(0.011)[a]	(0.010)[a]
	Oaxaca and Ransom (1994) decomposition			
Explained: Differences in average characteristics	-0.024***	-0.038***	0.040***	0.097***
	(0.001)[a]	(0.002)[a]	(0.002)[a]	(0.002)[a]
Unexplained: Differences in coefficients	0.532***	0.658***	0.348***	0.511***
	(0.003)[a]	(0.004)[a]	(0.007)[a]	(0.006)[a]

***p < 0.01, **p < 0.05, *p < 0.10.
[a]Standard errors.
[b]Immigrants' coefficients assumed as the non-discriminatory vector.
[c]Cross-border workers' coefficients assumed as the non-discriminatory vector.
Source: Author's elaboration based on the results presented in Table 8.

Nonetheless, the OB methodology is subject to the well-known index number problem, which refers to fact that the decomposition's results are dependent on which group is assumed to reflect the labor market's true wage structure. Given that there is no reason to believe that either the immigrant or the cross-border worker wage structure represent the true or non-discriminatory standard, results are pre-

sented under both scenarios. Furthermore, calculations based on the Oaxaca and Ransom (1994) extension to the OB methodology are also presented, where the authors propose employing a weighting matrix to uncover the non-discriminatory vector, a method that is equivalent to using the coefficients from a pooled model over both immigrants and cross-border workers.

Table 9 presents the decomposition of log hourly earnings differences between immigrants and cross-border workers, where it can be seen that the total earnings gap between both groups is substantial. Among men, hourly earnings differentials between immigrants and cross-border workers stood at 0.507 log points in the year 2000 and had risen to 0.620 log points in 2010. A similar relationship is observed for the case of women, where the earnings gap between immigrants and cross-border workers increased from 0.389 log points in 2000 to 0.608 log points in 2010.

Focusing on the factors driving this earnings gap, among men, the decomposition results show that earnings differentials between immigrants and cross-border workers cannot be attributed to the explained component or to differences in average characteristics. Moreover, the negative effect of the explained component under both the OB and Oaxaca and Ransom (1994) methodologies imply that based on their observed average characteristics, the earnings of cross-border workers should actually be larger than the earnings of immigrants. With respect to women, it is again observed that almost all of the earnings gap between the two groups can be attributed to the unexplained component, which captures differences in the economic returns to observed characteristics. As previously discussed, it can be seen that the results of the OB decomposition are sensitive to the election of the reference group assumed to represent the non-discriminatory standard.

In a somewhat surprising result, almost all of the earnings differentials between immigrants and cross-border workers can be attributed to the unexplained component. While it is possible that cross-border workers are subject to some type of discrimination, it is not clear why this may arise[16]. Consequently, it is hypothesized that the unexplained earnings differentials are primarily a result of the different measurements of the earnings variables contained in U.S. and Mexican data

[16] It is also possible that cross-border workers decide to live in Mexico in part because, relative to immigrants, they receive lower returns to their observable characteristics and have lower levels of human capital. Residing in Mexico allows cross-border workers to compensate for their lower returns and lower levels of human capital as they are exposed to cheaper living costs and have a higher purchasing power south of the border.

sources. Specifically, while the 2000 U.S. Census and the 2010 ACS ask respondents about their pre-tax wage and salary income, the 2000 and 2010 Mexican censuses only ask respondents how much income they obtained or received from their work and do not distinguish between pre-tax or post-tax wage and salary income. This almost certainly biases downwards the earnings reported by cross-border workers, as many of them are likely to report their post-tax wage and salary income, thus increasing the magnitude of the unexplained component and the earnings gap between the two groups. This suggests that when comparing the earnings or wages of Mexican-born workers residing in Mexico with those of their counterparts in the U.S. (e.g. Clemens, Montenegro and Pritchett, 2008; Aguayo-Téllez and Rivera-Mendoza, 2011), is it necessary to take into account the different measurement of the earnings variables used in U.S. and Mexican data sources. In addition, it may be that the unexplained component is also capturing different compositions of legal-illegal workers among cross-border workers and immigrants. Given that the literature has widely studied the earnings penalty that illegal workers are exposed to compared to legal workers (e.g. Kossoudji and Cobb-Clark, 2002), a different composition of authorized-unauthorized workers among the two groups is likely to affect the earnings gap.

CONCLUSIONS

This article has studied the differences between Mexican-born immigrants that live in the U.S. border region and Mexican-born cross-border workers that reside in Mexico but work in the United States. The two groups were compared in terms of their magnitude, socioeconomic characteristics, occupational structure and earnings.

While there has been a continued increase in the number of immigrants residing in the U.S. border region, the number of cross-border workers has decreased. The study showed that immigrants tend to be in a more privileged position than cross-border workers since they are on average younger, more educated, and have higher earnings. In addition, the occupational structures of the two groups differ considerably, as immigrants are generally employed in better remunerated positions than cross-border workers. Furthermore, the wages and salary income of immigrants surpass those of cross-border workers by up to 85.9 percent among men and 83.7 percent among women. A decomposition analysis showed that almost all of these earnings differentials can be attributed to differences in the economic

returns to observed characteristics, whereas differences in average characteristics only play a minor role in accounting for the total wage gap between the two groups. It is hypothesized that this is primarily a product of the different measurement of the earnings variable used by U.S. and Mexican data sources, which suggests that a high degree of caution must be taken when interpreting these results. The use of a single data set, such as U.S. firm level data, which contains information on both immigrants and cross-border workers, would allow for a more robust and in-depth comparison of the two groups. On the other hand, while the study did not distinguish between the legal categories of authorized and unauthorized workers, alternative data sources that contain information on the legal status of cross-border workers and immigrants such as the ERMEU or the MMP, respectively, are also subject to shortcomings since they are not representative of either population and are only available for a limited number of years.

Finally, the decline in the number of cross-border workers observed from 2000 to 2010 is noteworthy, and a study of the underling factors behind this occurrence provides a fruitful avenue for further research. While Alegría (2002) observed that the cross-border labor market is largely driven by wage differentials between U.S and Mexican border cities, given the rapidly changing nature of the border region, an analysis of additional factors potentially related with the recent decline in the number of cross-border workers merits attention. These include increased border enforcement efforts by the U.S. government after 9/11, the downturn of the U.S. economy and the subsequent increase in the unemployment rate observed from 2007 onwards, and the significant increase in the levels of violence observed in Mexican border towns which may have propelled previous cross-border workers to change their country of residence and permanently settle in the United States.

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