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Rush to the border? Market liberalization and urban- and rural-origin internal migration in Mexico

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ABSTRACT

In this study we examine the social and economic factors driving internal migration flows in Mexico. We pay particular attention to the effect that economic liberalization has had in encouraging migration to border cities. Our analysis of the origin and destination of migrants is carried out at a finer level of geographical detail than ever before. Microdata files from the 2000 population census allow us to distinguish urban- and rural-origin migrants to the largest 115 cities and metropolitan areas in the country. Our results indicate that economic liberalization, measured by the level of foreign investment and employment in the *maquiladora* export industry, strongly influences migrants' choice of destinations. However, economic liberalization fails to fully account for the attraction of the border, as do the higher emigration rates to the United States from border cities. Our analysis also reveals that migrants to the border region and to cities with high levels of foreign investment are younger, less educated and more likely to be men than migrants to other parts of Mexico. Rural migrants are significantly more likely to move to the border and to cities with high levels of foreign investment than urban migrants. The results of our study have important implication for other countries opening their economies to foreign investment and international trade.

1. Introduction

International migration from Mexico to the United States has been a topic of enormous interest in the social sciences. Over the past several decades researchers have examined the individual and community-level factors that generate emigration from Mexico, as well as the process of immigrant adaptation in the United States (e.g., Massey et al., 1994; Massey and Espinosa, 1997; Loaeza Tovar et al., 1998). Considerably less research has been carried out on internal migration in Mexico. Existing studies are either descriptive in nature (Partida Bush, 1993; Chávez, 1999) or examine internal migration only in the context of questions about international migration (Massey et al., 1987; Fussell, 2004). As a result, we know comparatively little about the kinds of social and economic factors that are driving internal migration flows. Yet more individuals migrate within Mexico on an annual basis than from Mexico to the United States. Internal migration has contributed to the rapid growth of Mexican urban centers, particularly given rapidly declining urban fertility rates, and substantially altered the age and gender composition of Mexican cities (National Research Council, 2003). Nowhere is this more evident than in the cities along the border with the United States, which in the past three decades have received a disproportionate share of internal migrants.

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During the mid-20th century internal migration in Mexico was dominated by a massive flow of rural residents to the three largest urban centers in the country: Mexico City, Guadalajara and Monterrey (Oliveira and Roberts, 1989; Partida Bush, 1993). Between 1965 and 1970, for example, the states containing these three cities received more than half of all inter-state migrants. However, the pattern of internal migration in Mexico has changed considerably over the past several decades. A larger proportion of migrants appears to be originating in urban rather than rural areas, and migrants are more often moving to midsized cities, particularly those along the border with the United States (Roberts, 1989; Escobar Latapí et al., 1998). Between 1995 and 2000, one third of all internal migrants in Mexico moved to a border state, compared to 15% who moved to the capital city, and 4% each to Guadalajara and Monterrey.

These changes in internal migration coincide with the opening of Mexico's economy to international trade and foreign investment (Portes and Roberts, 2005). Economic liberalization fostered the growth of new production centers along the northern border, including the proliferation of in-bond industries known as *maquiladoras,* which contributed to a decline of the manufacturing belt centered in Mexico City (Hanson, 1998a, 1998b).[1] The rapid industrialization of the border in turn appears to have encouraged an increase in migration towards that region, but no study has directly tested this hypothesis. In this article we examine the social and economic factors driving internal migration in Mexico. We pay particular attention first to the effect that economic liberalization has had in encouraging migration towards border cities by testing the effect of foreign ownership and *maquiladora* employment on internal migration patterns.

Second, because internal migration to the border may also be motivated by a desire to eventually move across the border to the United States, we consider the relation between internal migration and international out-migration to the United States. Mexican domestic migration and international emigration were separate flows for most of the twentieth century, one flow composed of temporary, agricultural labor movement to the United States and the other of permanent, non-agricultural labor movement to Mexican cities (Massey et al., 1987). Recently, scholars have speculated that domestic and US-bound Mexican migration have become increasingly interconnected (Fussell, 2004; Lozano-Ascencio et al., 1999). Our study examines this interconnection using nationally-representative data.

Finally, our analysis of internal migration flows in Mexico is carried out at a finer level of geographical detail than ever before. The primary data source used in this study, the 10-percent sample of the 2000 Mexican population census, distinguishes the movement of individuals at the municipality level nationwide.[2] This greater level of geographical detail allows us to overcome one of the most important limitations of previous studies, namely their inability to separate migrants according to the level of urbanization of the communities of origin and destination. Past research examining the origin and destination of internal migrants not only in Mexico but in other countries as well, has relied on information about individuals' movement across states or provinces (King, 1978; Greenwood and Ladman, 1978; Garrison, 1982; Liang and White, 1996, 1997; Dang et al., 1997; Herting et al., 1997; Aroca and Maloney, 2005; Rivero-Fuentes, 2005; Peeters, 2008). Yet states and provinces are units of aggregation that are typically too large to characterize as either urban or rural, as they encompass both urban and rural localities. An analysis of inter-state or inter-provincial migration patterns therefore obscures potential differences in rural-to-urban and urban-to-urban migration, a fact that has frequently been acknowledged in previous studies (King, 1978; Garrison, 1982; Lucas, 1997). Given their differences in education and skills, for example, we may expect rural and urban migrants to choose to migrate to cities with very different characteristics.

The article is organized as follows: In the next section we discuss the impact of market liberalization on internal migration in Mexico. We derive some specific hypotheses about the role of foreign investment and export production on migration to Mexican cities, about the relation between domestic and international migration, and about the differences in urban- and rural-origin migration. After describing the data and methods used, we test discrete choice models using inter-municipal migration data to compare the social and economic conditions driving rural and urban migrants to the largest 115 cities and metropolitan areas in the country. In the final section we discuss the implications of our findings for research on internal migration in developing countries in general, and for studies about the effects of market transitions in particular.

2. Market liberalization and internal migration

Research on China and other countries undergoing transitions from central planning to market-oriented economies has demonstrated the impact that economic reforms may have on internal migration flows (Liang and White, 1996, 1997; Dang et al., 1997; Liang, 2001). For example, Liang and White (1997) find that Chinese provinces that have benefitted from market reforms, most notably those with higher levels of foreign investment, have received a disproportionate share of migrants, and have lower rates of outmigration. Similarly, provinces with well-developed rural enterprises are more likely to retain peasants with higher levels of education. While economic liberalization in Mexico constitutes a less radical reorientation than the market transition in China, the policies initiated by the Mexican government since the 1980s nevertheless appear to have had a significant effect on internal migration.

[1] *Maquiladora* plants in Mexico assemble goods for export to foreign countries using materials that are imported temporarily for this purpose. Special legislation allows *maquiladoras* to import materials and machinery duty free so long as the assembled products are exported. *Maquiladoras* operate under similar conditions as firms in Export Processing Zones (EPZs) elsewhere in the world (INEGI, n.d.).

[2] Mexican municipalities are roughly equivalent to US counties, although they are somewhat smaller in size. In 2000 there were a total of 2443 municipalities nationwide with an average population of 39,903 residents.

From the Second World War until the 1970s the Mexican government followed an economic strategy known as Import Substitution Industrialization (ISI) that imposed high tariffs on imported goods and encouraged national investment in industries oriented towards the domestic market (Haggard, 1990; Hanson, 1998a, 1998b). ISI naturally favored the growth of manufacturing centers near the country's major urban areas, which had the best infrastructure and where the largest share of domestic consumers was located (Escobar Latapí et al., 1998; Portes and Roberts, 2005). A result of this concentration of economic activity was an increase in migration to major urban centers, and particularly to the country's three largest metropolitan areas (Oliveira and Roberts, 1989; Partida Bush, 1993).

Another consequence of ISI was the expansion of the informal sector. ISI strategists generally favored the growth of capital-intensive industries such as the steel and automotive industries because they were thought to promote further development by creating backward linkages to other industrial sectors. However, while such capital-intensive industries provided well-paying jobs for a segment of the working class, they generated lower labor demand than alternative economic strategies followed by East Asian countries which focused on labor-intensive export manufacturing (Haggard, 1990). ISI therefore contributed to the expansion of the informal sector as the new capital-intensive industries were unable to absorb the rapidly-growing, working-age population streaming into major cities. In fact, the informal sector became the primary destination for new rural migrants who often lacked the skills and education necessary to obtain jobs in the formal sector (Garrison, 1982; Cole and Sanders, 1983, 1985).

The Mexican government began shifting its economic strategy towards market liberalization in the aftermath of the debt crisis of the 1980s (Hanson, 1998b; Lustig, 1998; Robertson, 2004). Tariffs on imported goods were substantially reduced as Mexico joined the General Agreement on Tariffs and Trade (GATT) in 1986. Restrictions on foreign investment were also lifted by the 1990s, as policymakers encouraged export production epitomized by the growth of the *maquiladora* industry along the border with the United States (Sklair, 1993; MacLachlan and Aguilar, 1998). As Hanson (1998a) demonstrates, trade liberalization shifted the locus of production from large urban areas such as Mexico City to new industrial centers in northern Mexico. The proximity to the border with the largest export market in the world reduces transportation costs for both inputs and final products. As a result, the share of manufacturing employment in the Mexico City region declined from 47.4% to 28.7% between 1980 and 1993, while the border region's share increased from 21.0% to 29.8% (Hanson, 1998b, Table 3). Similarly, the total number of workers employed in the *maquiladora* industry grew more than threefold during the same time period. By 2000 the *maquiladora* sector employed almost a million workers in the border states alone (INEGI, 1996, 2007).

The northward shift in industrial activity appears to coincide with a similar change in the pattern of internal migration flows in Mexico (Escobar Latapí et al., 1998; Portes and Roberts, 2005). Inter-municipal migration rates are not available before the 2000 census. However, the percentage of migrants moving to the states containing the three largest metropolitan areas declined by more than half from 1970 to 2000, while the percentage of migrants moving to the six border states increased by one-third during the same period—excluding Monterrey, the percentage increased by 52%. Aggregate statistics such as these clearly point to a shift in internal migration flows towards the Mexican border over the past several decades. However, the precise set of factors that have contributed to a greater movement of migrants towards the border region, and in particular the effect of market liberalization, have never been properly tested. The only known nationally-representative study examining the effect of foreign investment and *maquiladora* production by Aroca and Maloney (2005) uses state-level information, which aggregates urban areas with rural areas where foreign investment is scarce and likely to play only a minor role. Moreover, because they lack information about *maquiladora* production in 12 of 32 states, their analytical sample is substantially reduced. Other studies suggest that the shift in internal migration may not be so closely tied to changes in the national economic strategy. Garza (2002, 2003) argues that the rapid growth of border cities such as Tijuana, Juárez, Reynosa and others began well before the boom in the *maquiladora* export industry. Similarly, Hanson (1998a) finds that the breakup of the manufacturing belt centered around Mexico City predates the trade liberalization process of the 1980s. Hence its decline as a pole of attraction for internal migrants may not be explained solely by the shift in economic strategies. In the analysis below we will systematically examine the impact of market liberalization, as measured by the level of foreign investment and employment in the *maquiladora* industry at the city level, on internal migration flows. We will also consider the effect that labor market conditions in general, and the size of the informal sector in particular, have on migrants' choice of destinations.

3. Internal and international migration

An explanation that has often been proposed for the high migration rates to Mexican cities along the border is that these cities serve as a staging ground for later migration to the United States (Rivera-Batiz, 1986; Lozano-Ascencio et al., 1999; Fussell, 2004). Moving to border cities may facilitate migration to the United States because migrants to these cities can obtain information and make contacts that make further migration across the border less costly (Fussell and Massey, 2004:154). This argument is analogous to the concept of step migration as a sociocultural process of movement up the urban hierarchy (Conway, 1980), except in this case the steps are not just up the urban hierarchy (from rural to town to city to international), but also directional (from south to north to international).

In Mexico through the 1970s, domestic migration flows were not characterized by a step-migration pattern because an unbalanced urban hierarchy lacked intermediate-sized cities as viable destinations (Lozano-Ascencio et al., 1999). However, scholars have speculated that a decentralizing urban system in Mexico, shifting domestic migration patterns northward, and

urban labor demand in the US have driven an increasing connection between domestic migration and international out-migration from Mexico (Lozano-Ascencio et al., 1999). One study to have tested this hypothesis found that internal migrants to the northern Mexican state of Baja California from other parts of Mexico are significantly more likely to make a trip to the United States (Fussell, 2004).

We test the step migration hypothesis by investigating whether domestic migrants in Mexico are drawn to cities with high international out-migration rates. If a process of step migration is occurring, then we would expect to see a positive association between urban international out-migration rates and domestic in-migration to cities. Moreover, because step migration is thought to occur specifically from northern Mexican cities that are closer to the US border, we specifically examine whether the association between domestic in-migration and international out-migration is stronger for cities near the border.[3]

4. Differences in rural-to-urban and urban-to-urban migration

One of the key contributions of our study is to distinguish the factors drawing rural and urban migrants to different destinations. This is an important distinction as internal migrants are increasingly originating in urban rather than rural communities. As in other developing countries, a key impediment to systematic research on the differences between rural-to-urban and urban-to-urban migration in Mexico has been the lack of suitable data. Until recently, the Mexican population census and most other nationally-representative data sources did not contain information regarding the community of origin of recent migrants in sufficient detail to distinguish urban and rural migrants. Before 2000 the population census only included questions about the state in which individuals were currently living and the state in which they previously resided. Researchers therefore limited their analysis of migrants' origin and destination to movement between Mexico's 31 states and the Federal District (King, 1978; Greenwood and Ladman, 1978; Garrison, 1982; Aroca and Maloney, 2005; Rivero-Fuentes, 2005; Peeters, 2008). Moreover, because microdata samples of the population censuses were not widely available, researchers relied on aggregate state-level origin–destination tables. These studies provided important insights about the kinds of states where Mexican migrants were moving. However, as already noted, a fundamental problem with state-level analysis of migration is that it obscures the differences between rural-to-urban and urban-to-urban migration because states include cities and towns of many different sizes (King, 1978; Garrison, 1982; Lucas, 1997). State-level analysis also obscures the exact destination of migrants since many states include more than one prominent city.

A second approach followed by researchers interested in internal migration in Mexico that overcomes some of the limitations of state-level information has been to examine migration to a particular destination city or a small set of cities using survey data from those locations (Balán et al., 1973; Fussell, 2004). Such surveys allow researchers to examine the sociodemographic characteristics of migrants and the communities from which they originate. However, by studying a single destination, or even a handful of destinations, researchers are unable to analyze why migrants choose that location over others. Information from migrants in a representative set of alternative destinations is required to properly test origin–destination models.

One of the few studies of internal migration in Mexico that was able to draw some comparisons between urban- and rural-origin migrants in Mexico was commissioned by the Mexican National Population Council in 1987 (CONAPO, 1987). The National Survey of Migration in Urban Areas (*Encuesta Nacional de Migración en Áreas Urbanas*, ENMAU) sampled residents in 16 Mexican cities, and asked them about their migration experience. The sampling strategy did not include sufficient representation of the communities of origin and destination to analyze the choices made by migrants using multivariate models. Nevertheless, because the ENMAU survey asked individuals about their specific locality of origin, not just the state, researchers were able to generate descriptive statistics that provide some useful information about the differences between urban and rural migrants to the 16 cities. Results from the ENMAU survey reveal that even in 1987 urban-origin migration was extremely high. Migrants from urban areas accounted for more than half of all migrants in seven of the sampled cities. Urban migrants were found to travel longer distances, and were slightly more likely to be women, compared to rural migrants. Interestingly, among the destination cities included in the ENMAU survey, the four border cities had some of the highest proportions of urban migrants (73.8% of migrants to Tijuana, 62.2% of migrants to Nuevo Laredo, 60.0% of migrants to Juárez, and 57.1% of migrants to Matamoros came from urban areas). By contrast, older destinations such as Mexico City had a much higher proportion of rural migrants.

In the analysis below we will systematically examine the characteristics that attract urban and rural migrants to different destinations, and to the border cities in particular. We expect many of the differences in the destinations chosen by urban and rural migrants to reflect the sociodemographic profiles of the urban and rural population in general. For example, the fact that urban migrants travel longer distances may be explained by their greater wealth and access to resources compared to rural migrants. Similarly, because urban migrants tend to have higher levels of education and more marketable skills, they are more likely to enter the formal market directly, and will therefore be less sensitive to informal market conditions in destination cities. The greater educational attainment level of urban migrants will also allow them to take advantage of the new

[3] As discussed in the measurements section below, our analysis of the step migration hypothesis is carried out at the aggregate city-level because the Mexican census does not contain longitudinal information for each individual migrant. On the other hand, surveys that contain such longitudinal information are not able to analyze what features of Mexican cities attract migrants to locations within Mexico because they include only a few destinations. Our study is the first to incorporate the effect of international emigration into an analysis of origin-destinations flows with a nationally representative dataset.

opportunities created by foreign investment and export production since multinational firms tend to hire workers with more education (Feenstra and Hanson, 1997; Markusen and Zahniser, 1999).

5. Data and measurements

The primary data source for the statistical analysis below is the 10-percent sample of the 2000 Mexican population census. The sample was obtained directly from the Mexican National Institute of Statistics, Geography and Informatics (INEGI), which is responsible for carrying out the population censuses. The census contains detailed information about all household residents including their age, gender, educational attainment, employment status and income.[4] The most important feature of the 2000 Mexican census for the purposes of this study is that it includes information regarding the former and current places of residence of all individuals specified down to the municipal level (2443 municipalities). This allows us to test origin–destination models at a finer level of detail than previous studies. In particular, the municipal-level information allows us to disaggregate migrants according to the level of urbanization of their communities of origin.

Migrants are defined based on their municipality of residence 5 years before the date of the census, that is, in 1995. An inter-municipal migrant is any person who was living in a different municipality, city or metropolitan area 5 years before.[5] Individuals who moved between municipalities contained within the same metropolitan area are not considered as migrants (see below for a description of how municipalities are aggregated into metropolitan areas). While any person above the age of 5 could technically be at risk of migrating during the previous 5-year period, our analysis is limited to individuals who are at least 15 years of age at the beginning of the time period under consideration. Younger children typically migrate along with their parents or other adult family members who are included in the sample. And it is these adults that make migration decisions. Beyond this age limit, we will also consider whether individuals of different age groups are drawn to destinations based on different social and economic factors.

5.1. Definition of cities and metropolitan areas

Because we are interested in understanding the social and demographic factors driving migration to Mexican urban areas, we limit our analysis to individuals migrating to the 115 urban centers containing a core city of 50,000 residents or more. This includes the 55 metropolitan areas defined by the Mexican National Institute of Statistics, Geography and Informatics in conjunction with other government agencies (Sedesol et al., 2004). Metropolitan areas are formed by groups of contiguous municipalities that share strong social and economic ties. Each metropolitan area includes at least one municipality containing a city of 50,000 residents or more as well as other municipalities that surround it (Sedesol et al., 2004: 17–27). In addition to the 55 metropolitan areas, we also include as possible destinations all other stand-alone municipalities containing a city of 50,000 residents or more in 2000. There are 61 municipalities that meet this criterion.

Because some of the predictors used in the regression models below are drawn from earlier censuses (including the 1990 population census, the 1995 population count and the 1994 economic censuses), we made adjustments for changes in municipal boundaries that took place during this time period. Specifically, we merged together all municipalities that subdivided between 1990 and 2000 in order to maintain comparable areal units. This resulted in the merging of two metropolitan areas. We also merged municipalities belonging to the state of Oaxaca into 30 districts that are commonly used for statistical purposes (INEGI, 2008). The remaining 1494 municipalities that do not form part of the largest 115 cities and metropolitan areas vary considerably in their level of urbanization, and so a further distinction is made between municipalities that are considered as rural and those that are not (we refer to this second category as semi-urban). Following Villarreal (2002) we define rural municipalities as those in which more than 75% of residents live in towns of less than 2500 residents.[6]

5.2. Exclusion of rural destinations

While our analysis includes migrants originating in both urban and rural areas, we do not consider migration to rural destinations. Our decision to limit our analysis to migrants whose destination is one of the country's largest 115 cities and metropolitan areas is based on both substantive and practical reasons. Substantively, we are interested in understanding the migration process to Mexican urban areas and particularly the role of market liberalization as measured by the level of foreign investment and *maquiladora* production. These kinds of factors are likely to play a very small role in migration to rural areas since there is relatively little foreign investment and *maquiladora* production there. Similarly, including rural-to-rural migration would require us to consider additional predictors relevant to rural destinations but not relevant to

[4] Data from the 2000 population census are based on the long-form questionnaire administered to a stratified sample of the Mexican population. Sampling weights are therefore provided by INEGI and used in the analysis below.

[5] Individuals who were living outside the country 5 years earlier are dropped from the sample since they are not at risk of internal migration. International return migrants constituted 0.59% of all individuals in the required age group in 2000. Similarly, our sample necessarily excludes all those cases of individuals who may have migrated in the previous 5 years but died before the time of the census.

[6] There are 634 municipalities that meet these criteria. The cutoff point of 2500 residents is commonly used to distinguish rural localities (United Nations 2000). Among other things, it has often been used by both the US Census Bureau and INEGI. However, because towns of many different sizes may be located within a single municipality it is necessary to define rural municipalities based on the proportion of the population living in towns of less than 2500 residents. In alternative models not presented below we used a more restrictive definition in which rural municipalities were defined as those in which 100% of residents lived in towns of less than 2500 residents. The results were consistent with those presented in Table 4.

urban areas, such as the conditions in the agricultural sector. From a practical standpoint, including rural destinations in the choice set would be computationally prohibitive since it would greatly expand the number of alternative destinations that would need to be considered (see Section 6 below for details). Nevertheless, in order to examine the sensitivity of our results to the inclusion of destinations of all levels of urbanization in the choice set, we tested the same discrete choice models presented below including rural and semi-urban municipalities as possible destinations. We created a stratified sample of destinations by selecting into the choice set a number of cases from each of the three levels of urbanization (rural municipalities, semi-urban municipalities, and the 115 largest cities and metropolitan areas) proportional to the total population living in each of those three types of settings. The total number of possible destinations remained the same (115 destinations). The results were consistent with those presented below, particularly the effects of foreign investment, *maquiladora* production and the border region.

5.3. Predictors of migrant destinations

5.3.1. Population size

The log of the total population size of alternative destinations for internal migrants is used as a predictor in all the conditional logit models below. The population size is obtained from the 1995 inter-decennial population count, which coincides with the beginning of the 5-year period under consideration (1995–2000). In the standard gravity-type model of migration, individuals are assumed to be more attracted to cities with a larger population size (Greenwood, 1997). We therefore expect a positive effect of population size on the probability of migrating to one of the 115 cities and metropolitan areas.

5.3.2. Distance to destination

The distance between the municipality of origin and each alternative urban destination is entered as a predictor of migrants' choice of destinations in all our models below. Again, following standard findings from gravity-type models, a longer distance between origin and destination is expected to serve as a disincentive for migration (Greenwood, 1997; Peeters, 2008). Moreover, because urban residents will generally have more resources than rural residents, we expect the negative effect of the distance to destination to be smaller for urban-to-urban migrants than for rural-to-urban migrants. All distances were computed in hundreds of kilometers between the centroid of each municipality of origin and the centroid of each potential city of destination using GIS software.

5.3.3. Labor market conditions

Measures of the labor market conditions in alternative destination cities were obtained from the preceding census.[7] First, the open unemployment rate was computed as the percentage of the economically active population that was not employed in the week prior to the census. Standard economic theories of migration predict a lower incidence of migration to geographical units with higher unemployment rates since one of the primary motivations for migration is the search for jobs. However, the findings from studies examining the relation between unemployment and in-migration have been surprisingly mixed (Greenwood, 1997; Lucas, 1997; Aroca and Maloney, 2005). Some studies find a negative association between unemployment and in-migration, while others find no association at all or even a positive association. Various explanations have been proposed for this incongruity. Among other things, the use of very large geographical units of analysis such as entire states may hide the true employment opportunities in particular cities where migrants are moving.

Second, we also enter the log average wages in the city or metropolitan area as a predictor of migrants' choice of destinations. We expect migrants to prefer destinations with higher income levels. The average wages are computed from the microdata sample of the 1990 census. Finally, the proportion of workers employed in the manufacturing sector in each alternative destination is also used as a predictor of migrants' choice of destination in the conditional logit models below. The objective is to test whether the concentration of manufacturing firms along the northern border explains migrants' decisions to migrate to cities in that region.

5.3.4. The informal market

Like other countries in Latin America, Mexico has a very large informal sector. Portes and Roberts (2005) estimate that 35% of Mexican urban workers were employed in the informal market in 2000. Such workers typically lack access to the nation's social security system and many of the protections afforded by the country's labor laws. They include everyone from street vendors and domestic workers to unremunerated family workers. Because of their relative lack of marketable skills and formal education, recent migrants from rural areas have little alternative but to seek employment in the informal economy, which has few if any human capital requirements for employment. For this reason we expect cities with large informal sectors to draw significantly more rural migrants.[8] The effect of the size of the informal sector should be considerably smaller

[7] The 1995 population count cannot be used for these purposes because it does not contain questions regarding individuals' employment or wages. The 1990 census is the only available source of information about labor market conditions for all municipalities nationwide during this time period.

[8] A significant debate emerged in the 1970s and 1980s in the economics literature regarding the role of informal market employment in internal migration in developing countries. Todaro's (1969) influential model assumed that rural migrants saw informal jobs in urban areas as temporary positions that allowed them to search for more attractive opportunities in the formal sector (see also Fields, 1975). Cole and Sanders (1985) on the other hand, argue that rural migrants to Mexico City lack the skills necessary to transfer to the formal sector. Garrison (1982) argues that Todaro's model can be improved by directly introducing measures of the informal economy. For a review of this debate see Lucas (1997: 732–738) and White and Lindstrom (2005: 324–325).

for migrants originating in urban areas who have higher levels of education and training, and may be migrating to advance their careers. We measure the size of the informal sector as the proportion of workers who are self-employed and working outside the agricultural industry according to the preceding census.

5.3.5. Foreign investment and employment in maquiladoras

One of the key objectives of this study is to examine the effect of market liberalization on internal migration in Mexico. In particular, we are interested in testing whether the high level of foreign investment and the strong presence of the *maquiladora* industry in northern Mexico explain the high migration rate to that region. Because we hypothesize that foreign investment will attract migrants by creating a greater demand for labor, we measure foreign investment as the proportion of manufacturing workers employed in foreign-owned firms according to the 1994 economic censuses. We define foreign-owned firms as those with 50% or more foreign capital. Similarly, we measure employment in the *maquiladora* industry as the number of workers employed in *maquiladora* establishments in 1994 divided by the total population.[9]

5.3.6. International emigration

A proper test of the step migration hypothesis, as described above, would require information for each migrant over time (either retrospective information regarding past migration experience, or prospective information about individuals' intentions to migrate to the United States in the future). Unfortunately, the census does not contain such longitudinal information. Nevertheless, we are able to account for the effect of step migration at the aggregate level by including the international emigration rate from Mexican cities as a predictor of migrants' choice of domestic destinations in the discrete choice models below. If migration to Mexican cities along the border is indeed being driven by step migration to the United States, we should expect a positive coefficient for our measure of international emigration as well as a reduction in the difference between the migration to the border region and the rest of the country once the international emigration rate is included in the conditional logit models. Moreover, because step migration is thought to occur as individuals first move from other parts of the country to a city along the northern Mexican border and from there to the United States, we further test whether the effect of international emigration is stronger in cities in the Mexican border region using an interaction term between the border region and the international emigration rate.

The international emigration rate for each city and metropolitan area is computed from the 2000 census. The long form of the census asks whether any household residents or former residents migrated to the United States during the previous 5 years (1995–2000). We sum all these migrants for each city and metropolitan area and then divide the sum by the population size in 1995 obtained from the 1995 mid-census population count (in thousands) to obtain the international emigration rate for each location.

The Mexican census is the only available source with which to compute international emigration rates for all Mexican cities. Data from the census have therefore been used by researchers in the past (e.g., Aroca and Maloney, 2005; Ibarraran and Lubotsky, 2007). However, like estimates of international migration from Mexico obtained from most other sources, estimates obtained from the census are limited in one respect, namely they do not include individuals in households that migrated in their entirety during the period under consideration (Ibarraran and Lubotsky, 2007; Mckenzie and Rapoport, 2007). This problem arises because emigration to the US is reported by other members of the household who stay behind. But when entire households move together nobody is left behind to report them. Our measure of international emigration may therefore slightly under-estimate the true migration rate. However, ancillary tests conducted using data from a unique survey that captures migrant households indicated that the undercounting of migrants that move with their entire households is not sufficient to alter the findings reported below.[10]

5.3.7. Migrant networks

An influential strand of research on migration emphasizes the importance of social ties between communities of origin and destination formed by past migration experience (Massey, 1990; Palloni et al., 2001; Davis et al., 2002). Earlier migrants reduce the cost and uncertainty associated with migration for later migrants by providing them with information about where to live and how to find a job in the new destination. While the role of social networks has been more frequently discussed in connection with international migration where the costs of migrating are usually higher, studies of internal

[9] These data on the percentage of foreign-owned manufacturing firms and *maquiladoras* operating in each municipality were obtained by special request from the INEGI.

[10] In order to assess the extent to which international migration rates obtained from the 2000 census underestimate the true migration rate because they do not include households that migrate in their entirety we used data from the Mexican Family Life Survey (MxFLS). The MxFLS is the first survey that successfully tracks a nationally representative sample of Mexicans even if they migrated to the United States between successive waves (Rubalcava and Teruel, 2006a, 2006b). The first wave of the MxFLS was conducted in 2002 and included approximately 35,000 individuals in 8440 households; the second wave interviewed the same individuals in 2005 with a follow-up rate of 91%. Matching the MxFLS' 2005 US migration file with the 2002 individual files we found that 0.37% of Mexican households migrated in their entirety in this period, accounting for 0.30% of all individuals and 14.5% of all migrants. To estimate the effect that the undercounting of these individuals may have on the results of our statistical models below we used the MxFLS to compute the proportion of migrants from each geographical region that moved with their entire households. We then used these proportions to adjust our measure of international migration from each city according to the region in which it is located, and included this adjusted measure of international migration as a predictor in alternative regression models. The results were consistent in every way with those presented in Table 2. In particular, the coefficients for international migration and the border region remained statistically significant in the same direction. A similar adjustment was made based on the level of urbanization leading again to consistent results.

migration have also considered the importance of social ties. For example, Davis et al. (2002) find that social networks play an important role in Mexican migrants' decision to migrate within the country. Because the costs associated with migration are proportionately higher for migrants leaving rural areas than those leaving urban areas, we expect a stronger effect of social networks among rural-to-urban migrants than among urban-to-urban migrants. We measure migrant networks using the proportion of residents in a municipality or city that migrated to a particular state or city of destination over a 5-year period according to the 1995 population count.[11]

5.3.8. Regions

One of the primary objectives of our analysis of internal migration in Mexico is to understand the social and economic factors that are driving migrants to Mexico's border region. We therefore introduce a dummy variable for the six states bordering the United States in our conditional logit models below. If our social and economic predictors account for migrants' choice of a border city as a destination we should observe a decrease in the coefficient for the border dummy variable once these predictors are included in the models. We also test models including dummy variables for the three largest metropolitan areas in the country, as well as regional dummy variables for five regions defined by the Mexican National Institute of Statistics, Geography and Informatics (INEGI, 2009).

6. Methods

In the statistical analysis below we use conditional logit models to examine migrants' choice of urban destinations. These models allow us to identify the social and economic characteristics that encourage urban and rural migrants to choose certain cities and metropolitan areas over others, and why they are choosing to migrate to cities in the northern border region in particular.[12] Conditional logit models are ideally suited for this task because they treat individuals' choice as a function of the characteristics of the various alternatives available to them, as opposed to more commonly used multinomial logit models in which individuals' choice is treated as a function of the characteristics of the individuals themselves (Hoffman and Duncan, 1988; Liang and White, 1997; White and Liang, 1998; Greene, 2003: 719–735).

Let P_{ij} be the probability that individual i will choose to migrate to destination j among J alternative destinations. Conditional logit models assume that:

$$P_{ij} = \exp(\boldsymbol{X}_{ij}\boldsymbol{\beta}) / \sum_{k=1}^{J} \exp(\boldsymbol{X}_{ik}\beta)$$

where $\boldsymbol{X}_{ij}$ and $\boldsymbol{X}_{ik}$ are the characteristics of the *jth* and *kth* alternative destinations for individual i respectively, and $\boldsymbol{\beta}$ is a vector of parameters to be estimated. Hoffman and Duncan (1988) present a "mixed model" in which individuals' characteristics also serve as predictors of their choice but only appear in the equation as interaction terms with the characteristics of the various alternative choices (see Liang and White (1997) and White and Liang (1998) for applications of such models to the analysis of migrant destinations). We use such models below to examine the age, gender and education of migrants that are more attracted to cities with different characteristics, such as those located in the border region and those with greater levels of foreign investment.

Because conditional logit models compare the characteristics of the destination actually chosen by an individual to the characteristics of alternative destinations not chosen, we had to expand the dataset by including a separate case for each alternative destination not chosen by each individual. Each case with an alternative destination not chosen has a value of zero in the dependent variable. Given the large number of migrants in the 10% sample of the Mexican population census, expanding the dataset by including 115 alternative destinations for each migrant is clearly impractical from a computational standpoint. Following White and Liang (1998) we therefore reduced the sample size by including only 15% of alternative des-

[11] Other studies of interstate migration in Mexico have used a similar measure of social networks, except that they have used the place of birth instead of the place of residence five years prior to the preceding census (e.g., Aroca and Maloney, 2005). Our measure captures more recent migration experience, and should therefore serve as a better proxy for the strength of social ties between sending and receiving communities than migration that occurred over a longer period of time. Because the incidence of migration during a previous time period may be a function of unmeasured characteristics of destination cities that may also influence more recent migration, introducing our measure of migration prevalence from the 1995 population count may lead to a bias in our estimates of the coefficients due to endogeneity. In order to assess the severity of this bias, we estimated all the models presented in Table 2 excluding inter-municipal migration networks as a predictor. The results were not only consistent with those discussed below, but the change in the magnitude of the remaining coefficients was very small suggesting that the bias in our estimates is indeed quite small. However, a proper treatment of migration networks as an endogenous predictor is beyond the scope of this study and would require a different data source.

[12] Our analysis of the destinations chosen by Mexican migrants is limited to domestic destinations because we are interested in understanding the socioeconomic factors driving internal migration patterns. However, the omission of the United States as an alternative destination may bias our estimates of the conditional logit models below. Fortunately, the sample of the 2000 census includes information about the number of migrants from each Mexican state that migrated to the United States during the 1995–2000 period. To assess the bias introduced by eliminating the US from the choice set we tested conditional logit models for inter-state migration where the United States is included as the 33rd Mexican state. We used the total Mexican–American population as a proxy for the population of this new destination. Similarly, we used the unemployment rate of the Hispanic population, their mean wage and percent employed in manufacturing as values for the corresponding variables for this destination. The distance between the centroid of each Mexican state and the border was used as the distance to the United States. A Hausman test for the assumption of Independence of Irrelevant Alternatives (IIAs) could not be performed because the data do not meet the asymptotic assumptions of the test. Nevertheless, the results of the models were consistent with those from models excluding the United States from the choice set (all the signs of the coefficients were the same and statistically significant including the coefficient for the border region).

Table 1
Descriptive statistics for inter-municipal migrants to largest 115 cities and metropolitan areas in Mexico, 1995–2000.

		Migrants by size of origin			
	Non-migrants	All[a]	Rural	Semi-urban	Urban[a]
Gender					
% women	52.8	51.8	53.5	53.1	51.0
Age					
Mean age	40.0	33.6	33.4	33.0	33.9
% 20–29	31.6	49.3	54.8	53.7	46.6
% 30–39	25.4	26.3	20.8	23.2	28.4
% 40–64	33.7	20.5	19.1	18.9	21.4
% 65 and over	9.3	3.9	5.3	4.2	3.6
Education					
Mean years of education	7.4	9.3	6.8	8.1	10.1
Median years of education	6.0	9.0	6.0	9.0	9.0
% Sending Region					
Northwest		12.5	16.2	9.7	13.1
Northeast		11.9	10.4	10.9	12.6
Center		26.4	21.5	18.8	30.4
Center west		18.8	14.9	22.1	18.0
South		30.4	37.0	38.5	25.9
% Receiving region					
Northwest		15.0	18.0	12.9	15.5
Northeast		20.8	20.4	22.0	20.4
Center		27.8	35.1	26.1	27.4
Center west		17.2	10.9	17.3	18.1
South		19.2	15.5	21.8	18.7
% Moving to:					
Border state		32.3	34.0	30.9	32.7
Mexico City		14.9	23.1	16.9	12.9
Guadalajara		3.9	2.0	4.4	3.9
Monterrey		4.2	5.2	4.0	4.2
Distance traveled by migrants					
Mean distance (km)		519	382	407	586

[a] All differences in the gender composition, age and educational level between migrants and non-migrants, and between urban- and rural-origin migrants are statistically significant at the .05 level or higher.

tinations not chosen by a migrant. The alternative destinations included for each migrant were chosen at random from the entire choice set.[13] Finally, because the migration decisions of members of a single household are not independent, we use the Huber/White estimation technique with clustering around households to compute standard errors for the coefficients in the conditional logit models. This technique produces correct standard errors even when cases included within clusters (in this case, households) are not independent, so long as they are independent across clusters (StataCorp, 2005:275–280).

7. Results

Before examining the characteristics of the destinations chosen by internal migrants using conditional logit models we begin by describing the sociodemographic profile of urban- and rural-origin migrants and the geographical patterns of their movements. Table 1 provides information about the gender, age and educational attainment of migrants to the largest 115 cities and metropolitan areas according to the level of urbanization of their municipalities of origin. Three levels of urbanization are distinguished: rural municipalities where more than 75% of residents live in towns of less than 2500 residents (rural), non-rural municipalities that do not form part of the 115 largest cities and metropolitan areas (semi-urban), and the 115 largest cities and metropolitan areas (urban). First, while women are slightly less likely to be migrants overall, the gender compositions of urban- and rural-origin migrants are somewhat different. The proportion of female migrants is significantly higher among rural migrants than urban migrants. Second, migrants are over 6 years younger on average than non-migrants, with urban migrants being only slightly older than rural migrants. Third, consistent with our expectations based on the differences in education between urban and rural residents in general, urban migrants have over three additional years of schooling compared to rural migrants. However, both urban and rural migrants are nevertheless positively selected by education, since they have higher educational attainment levels than their non-migrant counterparts in urban and rural areas respectively (not shown in Table 1).

[13] We also tested models in which we kept all 115 possible destinations in the choice set but reduced the number of migrants by selecting only 5% of all migrants in the census sample. The results were consistent with those presented below.

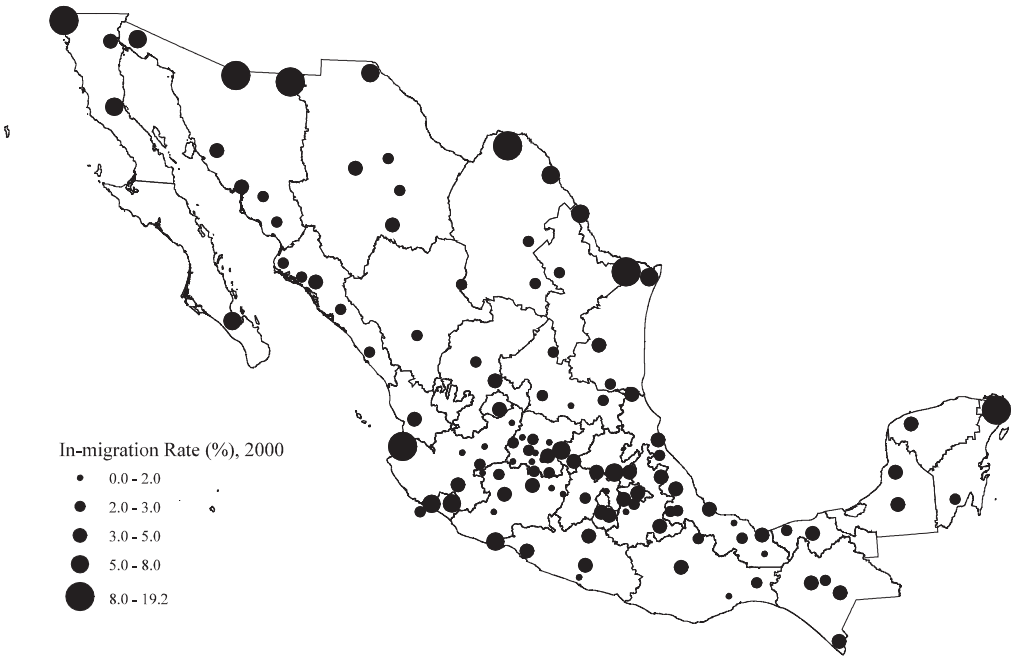

Fig. 1. In-migration rate for the 115 cities and metropolitan areas in sample.

In terms of the regional patterns observed in Table 1, a majority of both urban and rural migrants come from central and southern Mexico, which is in part due to the larger population size of these regions. Consistent with our expectations, urban-origin migrants are less likely to migrate to the Mexico City metropolitan area. The differences in the percentage of urban and rural migrants moving to Mexico City is indeed dramatic: whereas 23.1% of migrants from rural areas moved to Mexico City between 1995 and 2000, only 12.9% of urban migrants did so. Interestingly, a slightly larger percentage of rural migrants appear to be choosing a city in the border region as their destination compared to migrants from urban areas. Also, as expected, urban migrants travel much longer distances than rural migrants, which may again be explained by the greater resources at their disposal.

Finally, the map shown in Fig. 1 indicates the location of the 115 cities and metropolitan areas included in our sample of migrant destinations. The size of each circle representing a city or metropolitan area in the map is proportional to the percentage of its population that migrated there between 1995 and 2000, which allows us to assess the impact that recent migration has had on the growth of Mexican cities. This information is somewhat different from that available in Table 1, where migration to a select number of cities and the border region is given as a percentage of the total migrant population. A clear regional pattern is evident: cities located along the northern border have some of the highest in-migration rates.

7.1. Origin–destination analysis of migration to Mexican cities

Table 2 shows the results of the conditional logit models for inter-municipal migration to the largest 115 cities and metropolitan areas. The different regional dummy variables are tested in separate models to simplify the interpretation of the regression coefficients.[14] Thus, Models 1 and 2 include dummy variables for each of the three largest urban centers in the country, while Models 3 and 4 include dummy variables for the four geographical regions (using the southern region as the baseline category), and the remaining models include a dummy variable for the border region. In all the models presented in Table 2 the coefficients for the log population size of alternative destinations is positive and statistically significant indicating that migrants generally prefer to move to larger cities. However, the effect of population size appears to taper off for the largest metropolitan areas. The negative coefficients for Mexico City, Guadalajara and Monterrey indicate that these cities receive a smaller proportion of migrants than would otherwise be expected based on their population size.

As expected, Model 3 indicates that cities and metropolitan areas in the northern regions, and particularly in the northwestern region of the country, receive a disproportionate amount of migrants. However, migrants' choice of northern destinations is largely explained by the higher income level in northern Mexico. Once the log average wages of all destinations is included as a predictor in Model 4, the coefficients for the northwestern and northeastern regions are close to zero. Much

[14] Although the northwestern and northeastern regions are not coterminous with the border region they overlap substantially. Similarly, the metropolitan area of Monterrey forms part of the border region as it is located in a border state. Including all these variables together would therefore complicate the interpretation of the regression coefficients.

Table 2
Results of the conditional logit models predicting migrants' choice of city and metropolitan area destinations, 2000.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Log. population of destination	0.972**	0.791**	0.790**	0.597**	0.816**	0.640**	0.717**	0.716**	0.589**
	(0.007)	(0.007)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)
Distance to destination	−0.147**	−0.183**	−0.175**	−0.198**	−0.179**	−0.203**	−0.206**	−0.212**	−0.203**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Inter-mun. mig. networks	0.004**	0.004**	0.004**	0.004**	0.004**	0.004**	0.004**	0.004**	0.004**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Unemployment rate	−0.348**	−0.191**	−0.404**	−0.303**	−0.581**	−0.345**	−0.347**	−0.380**	−0.373**
	(0.008)	(0.008)	(0.011)	(0.010)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)
Prop. manufacturing sector	0.721**	0.436**	1.980**	1.398**	−0.782**	−0.462**	−1.572**	−2.298**	−0.253**
	(0.065)	(0.061)	(0.080)	(0.069)	(0.067)	(0.062)	(0.077)	(0.069)	(0.061)
Prop. informal market	−4.616**	−4.282**	1.675**	0.304	2.284**	0.073	−0.606**	−1.657**	2.081**
	(0.192)	(0.230)	(0.215)	(0.237)	(0.212)	(0.228)	(0.227)	(0.239)	(0.249)
Log mean wages		3.690**		3.320**		2.988**	2.761**	2.646**	2.881**
		(0.038)		(0.039)		(0.040)	(0.038)	(0.040)	(0.039)
Prop. workers in maquiladoras							0.081**		
							(0.002)		
Prop. workers in foreign firms								1.962**	
								(0.032)	
Prop. international out-migration									−0.294**
									(0.009)
Prop. int. out-migration * Border									0.419**
									(0.016)
Largest metropolitan areas									
Mexico City	−0.941**	−0.957**							
	(0.029)	(0.031)							
Guadalajara	−0.881**	−0.876**							
	(0.028)	(0.028)							
Monterrey	−0.532**	−0.821**							
	(0.028)	(0.028)							
Regions									
Northwest			0.807**	0.080**					
			(0.019)	(0.021)					
Northeast			0.391**	0.068**					
			(0.020)	(0.021)					
Center			−0.490**	−0.496**					
			(0.018)	(0.019)					
Centerwest			−0.752**	−0.884**					
			(0.019)	(0.018)					
Border									
Border state					1.342**	0.885**	0.687**	0.460**	0.478**
					(0.015)	(0.016)	(0.017)	(0.018)	(0.020)
Pseudo *R*-squared	0.2727	0.3157	0.2953	0.3252	0.2973	0.3215	0.327	0.3332	0.3258
Migrants	134,538	134,538	134,538	134,538	134,538	134,538	134,538	134,538	134,538
n	2,421,684	2,421,684	2,421,684	2,421,684	2,421,684	2,421,684	2,421,684	2,421,684	2,421,684

Note: Standard errors adjusted for clustering of multiple migrants within household units using Huber/White estimation technique.
* $p < .05$ (two-tailed tests).
** $p < .01$ (two-tailed tests).

more difficult to explain is the greater attraction of the border region. The results of Models 5 through 9 indicate that inter-municipal migrants are significantly more likely to choose to migrate to a city in the border region than to cities or metropolitan areas located elsewhere in the country even when a host of other social and economic characteristics of receiving cities are taken into account.

Migrants are drawn to urban areas with a greater presence of *maquiladoras* and foreign-owned firms suggesting that economic liberalization has had an important effect on internal migration patterns in Mexico. Moreover, the coefficient for the border region is substantially reduced when these two variables are included in the models, suggesting that migrants are drawn to the border by the greater opportunities created by foreign and export-oriented firms. However, neither of these two factors fully explains migrants' choice of cities in the border as destinations according to the results of Models 7 and 8.[15]

[15] The effects of foreign investment and *maquiladora* production are tested in separate models in Table 2 (Models 7 and 8) in order to avoid problems associated with multicollinearity. Cities and metropolitan areas with high levels of foreign investment also tend to have a greater proportion of workers employed in the *maquiladora* industry, such that one measure is a good predictor of the other. The effect of international outmigration is tested in a separate model (Model 9) for similar reasons. To test for multicollinearity we computed the Variance Inflation Factors (VIFs) of the city-level predictors before expanding the dataset (to create a stricter test). The values of the VIFs never exceeded 4.0 in any of the models presented.

Table 3
Results of the Conditional Logit Models Predicting Migrants' Choice of City and Metropolitan Area Destinations with Individual-level Interactions.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Log. population of destination	0.642**	0.640**	0.643**	0.717**	0.716**	0.717**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
Distance to destination	−0.203**	−0.203**	−0.203**	−0.212**	−0.212**	−0.212**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Inter-municipal migration networks	0.004**	0.004**	0.004**	0.004**	0.004**	0.004**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Unemployment rate	−0.346**	−0.345**	−0.346**	−0.379**	−0.380**	−0.379**
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Prop. manufacturing sector	−0.471**	−0.464**	−0.487**	−2.300**	−2.299**	−2.301**
	(0.062)	(0.062)	(0.062)	(0.069)	(0.069)	(0.070)
Prop. informal market	0.032	0.070	−0.058	−1.695**	−1.658**	−1.757**
	(0.228)	(0.228)	(0.230)	(0.239)	(0.239)	(0.241)
Log mean wages	2.989**	2.988**	2.978**	2.651**	2.646**	2.643**
	(0.040)	(0.040)	(0.040)	(0.040)	(0.040)	(0.040)
Prop. workers in foreign firms				1.534**	2.084**	1.668**
				(0.040)	(0.036)	(0.037)
Border state * young	0.376**					
	(0.020)					
Border state * female		−0.150**				
		(0.014)				
Border state * low education			0.378**			
			(0.022)			
P. wrkrs in foreign firms * young				0.773**		
				(0.039)		
P. wrkrs in foreign firms * female					−0.243**	
					(0.028)	
P. wrkrs in foreign firms * low education						0.693**
						(0.041)
Border state	0.683**	0.962**	0.727**	0.459**	0.460**	0.453**
	(0.019)	(0.017)	(0.018)	(0.018)	(0.018)	(0.018)
Pseudo *R*-squared	0.3224	0.3216	0.3217	0.3343	0.3334	0.3332
Migrants	133,982	134,538	130,632	133,982	134,538	130,632
n	2,411,676	2,421,684	2,351,376	2,411,676	2,421,684	2,351,376

Note: Standard errors adjusted for clustering of multiple migrants within household units using Huber/White estimation technique.
* $p < .05$ (two-tailed tests).
** $p < .01$ (two-tailed tests).

The proportion of a city's population migrating to the United States also fails to explain why migrants choose to move to cities near the northern border according to the results of Model 9. While not conclusive, the results of this model suggest that migrants from other parts of Mexico are not moving to the border cities primarily in anticipation of migrating to the United States at a later point in time. Interestingly, inter-municipal migrants are significantly *less* likely to migrate to urban areas in the interior of Mexico with a high incidence of international out-migration, but are slightly *more* likely to migrate to cities in the border region with similarly high rates of international out-migration. The negative association between domestic in-migration and international out-migration to the United States from cities in central and southern Mexico may be explained by the fact that international out-migration will tend to be higher and internal in-migration will be lower in urban areas that offer less economic opportunities or are otherwise unattractive to actual and potential residents.[16] However, consistent with the hypothesis of step migration, cities along the border may be more attractive to migrants from other parts of Mexico in part because they serve as a springboard for further migration to the United States.

Finally, migrants to Mexico's urban areas are responding as expected to the employment opportunities in the alternative destinations. They are systematically choosing cities and metropolitan areas with lower unemployment rates and with higher income levels. The mean income level is a particularly important predictor of migrants' choice of destinations as it seems to account for regional differences in their choice of destinations. Migrants also appear to be drawn to cities with a large manufacturing sector, but this may be explained by the disproportionate presence of manufacturing firms in the border region. Once the dummy variable for the border region is included in the models, the coefficient for the proportion of workers employed in the manufacturing sector actually becomes negative and statistically significant. The size of the informal sector appears to have an inconsistent effect on migrants' choice of destinations. As we will see below, the inclusion of both rural- and urban-origin migrants in the regression models in Table 2 obscures the effect that informal employment has on mi-

[16] While our models control for some characteristics that may be associated with both internal in-migration and international out-migration such as the unemployment rate, there may be other unmodeled characteristics that also affect both variables. This raises the possibility of endogeneity bias in our analysis. The difference in the estimates of the coefficients of the models when international out-migration is introduced as a predictor and when it is not leads us to suspect that this bias is not large. However, a proper analysis of this endogenous relation is beyond the scope of this study.

Table 4
Results of the conditional logit models predicting migrants' choice of destinations by level of urbanization, 2000.

	Model 1
Log. population of destination	0.715**
	(0.016)
*semi-urban	−0.073**
	(0.019)
*urban	0.008
	(0.017)
Distance to destination	−0.343**
	(0.012)
*semi-urban	0.023
	(0.013)
*urban	0.178**
	(0.012)
Inter-municipal migration networks	0.003**
	(0.000)
*semi-urban	0.000
	(0.000)
*urban	0.011**
	(0.001)
Unemployment rate	−0.688**
	(0.044)
*semi-urban	0.109*
	(0.049)
*urban	0.405**
	(0.045)
Prop. manufacturing sector	−3.185**
	(0.261)
*semi-urban	0.527
	(0.293)
*urban	1.337**
	(0.273)
Prop. informal market	6.657**
	(0.868)
*semi-urban	−9.160**
	(0.983)
*urban	−8.777**
	(0.909)
Log mean wages	3.229**
	(0.148)
*semi-urban	−0.223
	(0.166)
*urban	−0.755**
	(0.155)
Prop. workers in foreign firms	2.115**
	(0.112)
*semi-urban	0.230
	(0.127)
*urban	−0.315**
	(0.118)
Border state	1.293**
	(0.063)
*semi-urban	−0.314**
	(0.073)
*urban	−1.068**
	(0.066)
Pseudo *R*-squared	0.3433
Migrants	134,538
n	2,421,684

Note: Standard errors adjusted for clustering of multiple migrants within household.
* $p < .05$ (two-tailed tests).
** $p < .01$ (two-tailed tests).

grants' choice of destinations. Differences in the effect of the informal sector become apparent once we distinguish migrants according to the level of urbanization of their communities of origin.

7.2. Individual-level interactions

In order to examine the sociodemographic characteristics of migrants that are attracted to urban areas in the northern border we tested a series of mixed models in which the age, gender and educational attainment of migrants are interacted with the dummy variable for the border region. We also created interaction terms between the proportion of workers employed in foreign firms and the sociodemographic characteristics of migrants to test whether greater levels of foreign investment are more likely to attract different kinds of migrants. The results presented in Table 3 indicate that migrants who are younger (between the ages of 15 and 25), male, and with low educational attainment (less than 9 years of schooling), are more likely to migrate to a city near the border. The same is true of cities with greater levels of foreign investment.

7.3. Differences in the destinations chosen by urban and rural migrants

In the final set of models presented in Table 4 we examine differences in the characteristics of Mexican cities and metropolitan areas attracting urban and rural migrants. We include interaction terms between each of the city-level predictors and a categorical variable for the level of urbanization of the municipalities of origin (the baseline category consists of rural municipalities). As in the previous sections of the article we distinguish three levels of urbanization: rural municipalities; semi-urban municipalities, which are not rural and do not form part of the 115 largest cities and metropolitan areas; and the 115 largest cities and metropolitan areas.

The differences between the destinations chosen by urban and rural migrants are indeed dramatic and underscore the importance of disaggregating migrants according to the level of urbanization of the communities of origin. First, urban migrants travel significantly longer distances even once all other city-level characteristics are taken into account, as indicated by the positive coefficient for the interaction term between distance to destination and urban origin. Second, while both urban and rural migrants in general choose to move to cities with lower unemployment rates, urban migrants are less sensitive to the level of unemployment, as indicated by the positive coefficient for the corresponding interaction term. The overall effect of the unemployment rate in destination cities for urban migrants is less than a third of that in the models for rural migrants. One possible explanation for this dramatic difference is that the more educated urban migrants are employed in higher status occupations that form a relatively smaller portion of the labor force and therefore have little effect on the overall unemployment rate in Mexican cities.

As expected, rural migrants are much more likely to migrate to cities with a large informal sector, while urban migrants are not. Given their lower education levels and relative lack of skills, rural migrants have less access to jobs in the formal sector. As described earlier, the negative effect of employment in manufacturing for migrants from all levels of urbanization is explained by the inclusion of the border region where a disproportionate share of manufacturing firms are located, as well as the inclusion of the proportion of proportion of workers employed in foreign-owned and export-oriented manufacturing firms. When these variables are not included as predictors we found that rural migrants are less drawn to cities with a large manufacturing base (results not shown).

Finally, and most importantly, while migrants from municipalities of all levels of urbanization are drawn to the border region, rural migrants are significantly more likely to migrate to the border than urban migrants. They are also more drawn to cities with high levels of foreign investment. This last finding is somewhat surprising given that foreign-owned firms tend to provide more employment opportunities for workers with higher levels of education and more advanced skills, which are more common among urban migrants (Feenstra and Hanson, 1997; Markusen and Vanables, 1997; Markusen and Zahniser, 1999). However, it is important to keep in mind that our finding only captures the association between aggregate employment levels in foreign-owned firms in Mexican urban areas and individuals' decisions of where to migrate. It does not mean that recent migrants are in fact being employed in foreign firms. The presence of foreign firms may have a multiplier effect on the rest of the economy increasing employment in other sectors where rural migrants may be more likely to be employed.

8. Conclusions

Our analysis has yielded several important insights about the pattern of internal migration flows in Mexico. First, our results confirm the importance of the border region as a destination for migrants. The attraction of cities and metropolitan areas near the US border could not be explained by the labor market conditions in those places as measured by the unemployment rate, average wages, the size of the informal sector or employment in manufacturing firms. Although economic liberalization, measured by the level of foreign investment and employment in the *maquiladora* export sector, was found to encourage migrants to relocate to northern Mexico, it fails to fully account for the attraction of the border. Cities in the border region have developed an attraction for residents from other parts of Mexico beyond what could be expected by economic conditions.

Second, we found a positive association between international out-migration rates and domestic in-migration to Mexican cities located in the border states. This finding is consistent with the step-migration hypothesis according to which migrants

are moving to border cities prior to migrating abroad. However, international emigration also failed to fully account for the attraction of the border region as a destination for domestic migrants. Recent work by Hernández-León (2008) documents how the city of Monterrey, located in the border state of Nuevo León and formerly a major destination for domestic in-migrants, has become a staging ground for international migration. In that city, structural transformation in the neoliberal era displaced formerly blue-collar workers, creating a pool of urban emigrants. Our results support and extend the conclusion drawn by Hernández-León.

Third, our interactions between the socioeconomic characteristics of receiving cities and the demographic profile of intermunicipal migrants indicated that individuals that are younger, less educated and male are more likely to migrate to the border and to cities with high levels of foreign investment. The movement of less educated migrants to areas with more foreign investment is surprising given the fact that multinational companies are generally thought to provide more opportunities for individuals with higher levels of education and skills in host countries (Feenstra and Hanson, 1997; Markusen and Vanables, 1997; Markusen and Zahniser, 1999). However, we must bear in mind that our findings only reflect an association between the overall level of foreign investment in Mexican cities and migrants' choice of destinations. This does not mean that migrants are in fact being employed in foreign firms. Foreign investment may have broader consequences on the local economy, perhaps generating employment in other sectors that employ less educated workers.

Finally, our analysis of the types of destinations chosen by rural- and urban-origin migrants revealed some significant differences. Rural-origin migrants are more attracted to cities with a large informal labor market. As noted in prior studies, rural migrants who have recently arrived to urban centers often lack the necessary education, skills and prior work experience that can enable them to enter the formal labor force directly (Todaro, 1969; Fields, 1975; Cole and Sanders, 1985). They will therefore seek to migrate to cities with a large supply of informal sector jobs. Rural migrants were also found to travel shorter distances, which may be explained by their lack of resources for long-distance travel. More surprisingly, migrants from rural areas are more likely to migrate to the northern border region and to cities with high levels of foreign investment than urban migrants. Once again, these findings do not necessarily imply that rural migrants are in fact obtaining jobs in multinational firms, only that rural migrants are choosing to migrate to cities with a large presence of foreign and export-oriented firms.

At a more general level, our study has demonstrated that the change in economic strategy towards market liberalization need not be as dramatic as that experienced by countries such as China to have an important effect on internal migration flows. Previous research has shown the effects that a transition from central planning to a market-based economy has had on internal migration patterns in China (Liang and White, 1997; Liang, 2001). Because Mexico is more similar to a large number of developing countries that are not undergoing full-blown market transitions but are nevertheless opening their economies to foreign investment and trade, the Mexican case may be a more useful comparison.

Economic liberalization in developing countries such as Mexico has the potential to draw large numbers of migrants to new destinations where foreign investment and export production are concentrated. This influx of migrants could potentially overwhelm the existing urban infrastructure. Moreover, the types of migrants being drawn to cities with high levels of foreign investment and export production tend to have a different sociodemographic profile than those moving to urban centers in other parts of the country: they come from rural areas and are less educated, among other things. These developments pose new challenges to urban planners and policymakers.

Finally, this study has also demonstrated the importance of disaggregating migrants according to the level of urbanization of their communities of origin. By grouping together all individuals migrating from an entire state or province researchers risk obscuring important differences between the kinds of factors driving urban and rural migrants to different destinations. When considered separately, urban and rural migrants were found to choose destinations with very different characteristics. Research on internal migration in developing countries has focused almost exclusively on rural-to-urban migration. This emphasis may have been justified by the high rates of rural-origin migration in many developing countries throughout much of the twentieth century. However, as the population in developing countries living in urban settings rises and even surpasses the rural population, we may expect urban-origin migration to also increase substantially in the years to come. To understand what is driving these new urban-to-urban migration flows researchers must carry out their analyses at a sufficiently fine level of geographical detail.

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