International Import Competition and the Decision to Migrate: Evidence from Mexico

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Abstract

We analyze the effects of the increase in China's import competition on Mexican domestic and international migration. We exploit the variation in exposure to competition from China, following its accession to the WTO in 2001, across Mexican municipalities and estimate the effect of international competition on the individual decision to migrate. Controlling for individual and municipality features, we find that individuals living in municipalities more exposed to Chinese import competition are more likely to migrate to other municipalities within Mexico, while a negative effect is found on the decision to migrate to the US. In particular, we find that Chinese import competition reduces migrants' negative self-selection: the rising international competition lowers the likelihood of low-educated, low-income people to migrate to the US, by making them more financially constrained.

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1. Introduction

The rapid and substantial increase in China's exports, following its accession to the WTO in 2001, has been a prime example of trade shocks, affecting both developed and developing countries. The share of US spending on Chinese goods went from being 0.6% of total spending on imports in 1991 to 4.6% in 2007; this pattern became particularly accentuated after 2001, the year of its accession to the WTO (Autor et al. 2013).

In this paper we investigate the impact of the rising import competition from China on Mexican domestic and international migration. By exploiting heterogeneous exposure of Mexican municipalities to China's import competition, we examine its effects on the individual decision to migrate and on migrants' self-selection.

The case of the impact of China's accession on Mexico is relevant on various grounds, as it affected Mexico both directly, through an increase in imports from China, and indirectly, through a rise in competition in the US market. First, following its accession to the WTO, China rapidly increased its exports to Mexico. Although exports from China to Mexico started to increase a few years before China's accession to the WTO, it is only after the WTO membership that exports begin to increase at an accelerated rate. Second, Mexico has had a comparative advantage in the production of labor-intensive goods within NAFTA (Iacovone et al. 2013). Given the technological similarity between China and Mexico (di Giovanni et al. 2014), the increase in Chinese exports to the US had a significant negative effect on demand for manufacturing exports from Mexico (Lall and Weiss 2004; Shafaeddin 2004; Devlin et al. 2006; Gallagher and Porzecanski 2007; Feenstra and Kee, 2007; Gallagher et al. 2008; Hanson and Robertson 2008).

According to the Census Bureau's American Community Survey, it is estimated that about 33,500,000 Hispanics of Mexican origin lived in the United States in 2011, of which about 11,500,000 were born in Mexico. Also, about 1.1% of the Mexican population is estimated to have migrated internationally between 2005 and 2010, according to the 2010 Census of Population and Housing (Censo de Poblacion y Vivienda). Domestic migration seems to be even more relevant, as it is estimated that 6.6% of the Mexican population migrated within Mexico over the same time period. Given the extent of Mexican migration, both domestic and to the US, the aim of this paper is to investigate if and how increases in import competition, following China's accession to the WTO, affected Mexican migration.

In order to measure changes in exposure to Chinese competition in each Mexican municipality, we use data from the administrative records of the Mexican Social Security Institute (IMSS) to measure employment in different industries and construct an index of employment composition in each municipality in year 2000, before the China trade shock happens. Using that, along with data on changes in imports from China, we construct each municipality's exposure to Chinese competition. We measure the migration decision at individual level by using two rounds of the Mexican Family Life Survey (MxFLS), which provides an extensive source of information on migration to the US, migration within Mexico and pre-migration individual and household characteristics. Therefore, we are able to assess the consequences of a trade shock on the individual decision of migrating and on the type of self-selection.

We provide evidence that an increase in import competition from China increases domestic migration. China's accession to the WTO leads to more individuals being displaced from their communities and migrating to other municipalities in Mexico. A one standard deviation increase

in import competition is found to raise the probability of migrating to another municipality by 1.1 percentage points. Our estimates suggest that exposure to Chinese import competition explains around 10% of domestic migration within Mexico between 2002 and 2005.

Next, we analyze the impact of import competition on the probability of migrating internationally and find that import competition from China leads to a decrease in the probability of migrating to the US. We further explore the mechanisms at play and provide evidence that the trade shocks have differential impacts on men and women. While women seem unaffected in their decision to migrate to the US, men appear to be more responsive to environmental factors. We also show the effect of import competition on migrants' self-selection. Increases in exposure to China's competition affect the probability of non-college-educated individuals and people with no access to savings to migrate to the US more negatively than college-educated people and those who do have savings. This result is particularly relevant in the light of the existing debate on migrants' self-selection. China's import competition effectively reduces the negative self-selection of Mexican migrants to the US, as it decreases low-skilled and less affluent people's probability to migrate.

This paper mainly contributes to two strands of the literature. First, we add to the literature that investigates the impact of Chinese import competition on labor markets. Autor et al. (2013) provide evidence of an increase in unemployment and a decrease in labor market participation in the US following the surge in Chinese imports. Similarly, Pierce and Schott (2016) show a negative relationship between manufacturing employment in the US and the value of imports from China. Acemoglu et al. (2016) provide evidence of the role played by Chinese import competition in explaining the employment slump in the US in the 2000s. Using individual level data, Autor et al. (2014) investigate the impact of China's import competition on lowering

earnings of workers in the US, in particular for individuals with initial low wages and low initial tenure. Dix-Carneiro and Kovac (2015) study the effect of the trade liberalization in Brazil and find almost no effect on migration. Utar and Ruiz (2013) find a negative impact of China's import competition on employment and plant growth within Mexican Maquiladoras. Mendez (2015) analyzes the impact of Chinese import competition on local labor markets in Mexico and provides some evidence that the trade shocks lead to a decrease in the employment share in manufacturing and an increase in workers' mobility across local labor markets. He finds no effect on wages. We depart from Mendez (2015)'s work and explore the migration decision at the individual level, rather than at the local labor market level, and also consider the case of migrating internationally. We show that import competition could affect migration decisions for individuals living in a country that is directly and indirectly, i.e. through a third market, affected by a trade shock. Given the extent of Mexican migration to the US and the relevance of these migration flows for the US and the Mexican economies, this study contributes to our understanding of individual decisions to migrate.

By analyzing individual migrants' characteristics, we also contribute to the extensive literature on migrants' self-selection. In his seminal paper, Borjas (1987) argues that negative selection of migrants is more likely to emerge when the origin country shows higher returns to skill compared to the destination country. Using Mexican and US census data, Chiquiar and Hanson (2005) test Borjas' hypothesis and provide evidence of intermediate or positive selection of Mexican immigrants, with respect to education and wage distribution. Ibarraran and Lubotsky (2007) replicate the analysis of Chiquiar and Hanson (2005) taking into account potential over-reporting of education and find a negative selection of migrants with respect to education. Fernandez-Huertas Moraga (2011) provides evidence of a negative selection of Mexican

migrants, both in observables and unobservables, using the Mexican Labor Survey. McKenzie and Rapoport (2010) investigate the relationship between migration networks and self-selection of Mexican migrants to the US. They provide evidence of a positive-neutral self-selection for migrants with weaker migration networks in the US; however, self-selection is found to be negative for migrants with strong existing migration networks. Kaestner and Malamud (2014) analyze the characteristics of Mexican migrants to the US, using the Mexican Family Life Survey (MxFLS). The authors provide evidence that Mexican migrants to the US are more likely to be young, male, from rural areas, from the middle of the education distribution. They are also more likely to come from the bottom-half of the earning distribution. Our paper adds to the literature, by showing how import competition from China affects the extent of self-selection of Mexican migrants.

This paper is structured as follows. Section 2 presents the motivation and the empirical model. Section 3 describes the data, while Section 4 presents the results. Section 5 investigates the mechanism through which increases in import competition could affect migration decisions. Robustness of the findings is explored in Section 6. Section 7 concludes.

2. Motivation and Empirical model

China's accession to the WTO had a considerable effect on Mexico, as import competition affected Mexico both directly and indirectly, i.e. through its effect in the US market. Exports from China to Mexico increased rapidly after its accession to the WTO and showed great resilience even during the recent economic crisis.[1] As for the indirect channel, a few empirical studies have provided evidence that the increase in Chinese exports to the US led to a significant

[1] See Figure A1 in the Appendix.

decrease in demand for Mexican products (Lall and Weiss 2004; Shafaeddin 2004; Devlin et al. 2006; Gallagher and Porzecanski 2007; Gallagher et al. 2008; Hanson and Robertson 2008).

We treat China's accession to the WTO as a trade shock that led to a shift in the labor demand in Mexico. Theory predicts that, following a sector-specific labor demand shock, workers respond by relocating to other employers, other sectors, or by geographically relocating (Topel, 1986). Bound and Holzer (2000) and Notowidigdo (2013) provide evidence that lower educated workers usually show lower migration rates in response to labor demand shocks in the United States. We estimate the effect of import competition on the individual decision to migrate within Mexico and to the US as a mechanism of adjustment, and on the resulting migrants' self-selection.

The increase in Chinese exports, following its accession to the WTO, did not happen uniformly across industries; consequently, Mexican municipalities experienced differential trade shocks, depending on their initial sector specialization. We exploit the variation in exposure to competition from China, after China joined the WTO in 2001, across Mexican municipalities, and estimate the effect of international competition on the decision to migrate. China's accession to the WTO provides a unique set-up to analyze how labor demand shocks affect the individual decision to migrate and the extent of migrants' self-selection.

Empirically, we measure the municipality-specific trade shocks by constructing an index that measures changes in exposure to Chinese competition at the municipality level, as follows:

$$E_{ms} = \sum_{k=1}^{K} \gamma_{k,ms} \eta_k^{MEX} \tag{1}$$

where E_{ms} is the change in China's import competition between 2000 and 2005 for Mexican municipality *m* in state *s*. K is the number of 4-digit industries within the manufacturing sector,

$\gamma_{k,ms}$ is the fraction of total employed labor in municipality *m* in state *s* in year 2000 who work in industry *k*. Finally, η_k^{MEX} is the change in the share of imports from China to Mexico in industry *k* between 2000-2005.[2]

A potential caveat of index (1) could be that increases in the share of imports from China to Mexico do not necessarily represent negative shocks to all industries, depending on whether they compete with the imported goods or use them as intermediate inputs. One can imagine that larger, mostly export-oriented, Mexican firms importing intermediate products may have benefited from cheaper imports from China.[3] Due to data availability, we can only measure the overall municipality exposure to Chinese competition, without disentangling the potentially ambiguous export competition effect from the negative import competition one. As a result, one should interpret our results as the net effect of rising imports from China.

Having said that, one should keep in mind that changes in the share of imports from China to Mexico and US were highly correlated during the time period of this study. More specifically, across 4-digit manufacturing industries, the correlation in the share of imports from China to Mexico and US between 2000 and 2005 was 0.48. This means that, at the level of aggregation in this paper (4-digits), to a large extent a negative shock to the domestic market for Mexican firms also meant a negative shock in the almost exclusive export market, the United States. Therefore, although this index probably captures the aggregate effect of surges in exports from China in both domestic and export market for Mexican industries, Mexican exporters simultaneously faced a much fiercer competition in their main export market.

[2] Iacovone et al. (2013) and Majlesi (2016) use similar measures.
[3] Iacovone et al. (2013) show a heterogeneous effect of import competition on Mexican firms. Smaller plants were negatively affected by the increase in imports from China, while larger plants benefited from the availability of cheaper intermediate products.

If increases in imports from China to Mexico are the results of demand shocks in these countries, a rise in our measure of exposure could be correlated with other local changes that could ultimately affect migration decisions. To get around this potential endogeneity issue we follow the existing literature (Iacovone et al. 2013; Utar and Torres Ruiz, 2013; Autor et al. 2013) and build an instrument for our measure of import exposure by substituting the change in the import share of China in Mexico in an industry between 2000-2005 with the change in the import share of China in the rest of the world (i.e. excluding Mexico, US and EU) in that industry during the same period. In other words, we use:

$$EW_{ms} = \sum_{k=1}^{K} \gamma_{k,ms} \eta_k^{WLD} \tag{2}$$

where we replace the change in the share of imports from China to Mexico in equation (1) with the change in the share of import from China to the rest of the world, for industry k between 2000-2005, η_k^{WLD}.

Our baseline specification is as follows:

$$migrant_{ims} = \beta_0 + \beta_1 E_{ms} + \mathbf{X}'_{ims}\boldsymbol{\gamma} + \mathbf{Z}'_{ms}\boldsymbol{\theta} + \delta_s + \varepsilon_{ims} \tag{3}$$

where $migrant_{ims}$ is an indicator variable that takes the value 1 if individual i living in municipality m in state s in Mexico has migrated between 2002 and 2005.[4] We create three measures of the migrant indicator. First, we consider a general migrant binary variable, mig_{ims}, which takes the value 1 if individual i living in municipality m in state s in 2002 migrated between 2002 and 2005, irrespective of the destination. Second, we consider the domestic migration decision, by considering an indicator variable *migrant Mex*$_{ims}$ that takes the value 1 if

[4] China joined the WTO on December 21st 2001, therefore we consider year 2002 as the base year for measuring migration afterwards. We will discuss this issue in more details in the next section.

individual *i* moved from municipality *m* in state *s* to another municipality in Mexico. Finally, we consider the indicator variable *migrant* US_{ims} which takes the value 1 if individual *i* migrated from municipality *m* in state *s* to the US between 2002 and 2005. E_{ms} is the import competition measure for municipality *m* in state *s,* as defined in equation (1). The coefficient β_1 captures the impact of China's import competition at municipality level on the individual decision to migrate, either domestically or internationally. $\mathbf{X}_{ims}$ represents a vector of controls at the individual level, such as age, gender, education, marital status, having a relative in the US, work status in 2002, savings, previous migration experience, and asset ownership in 2002.[5] $\mathbf{Z}_{ms}$ is the set of controls at the municipality level, capturing a rural/urban location, the share of manufacturing in a municipality's composition of employment in year 2002 and the share of households in the municipality with access to electricity in year 2002. Finally, δ_s represents state fixed effects.[6] We cluster standard errors at municipality level.[7]

3. Data

The import competition measure is based on two sources of data. Information on the fraction of labor working in industry *k* in municipality *m* comes from the Mexican Social Security Institute (IMSS). The IMSS provides data on each employee's age, gender, and salary as well as industry of activity (up to 4-digit), and the state and municipality for all formal

[5] The income variable is only available for a smaller number of observations, therefore we exclude it from the regressors. However, the results including the income variable are consistent with our findings and are available upon request.
[6] We also use the period 2002-2005 to estimate changes in exposure to import from China, so that it corresponds to the migration period. The results of our analysis are consistent when using either measure.
[7] The sample covers 109 municipalities.

private-sector establishments.[8] The universal coverage of this dataset originates from the fact that all employees must register with IMSS since it provides health insurance and pension coverage.[9] The information on the import share of China in Mexico (and the rest of the world) comes from COMTRADE database and it is at 4-digit level of the ISIC-rev. 3 classification.

The migration information is taken from the first two rounds of the Mexican Family Life Survey (MxFLS). The first round was completed between April and July 2002: over 35,000 individuals from 8,400 households were interviewed, covering 150 municipalities in 16 out of 32 Mexican states. The second round of the survey was conducted between mid-2005 and 2006. Given the timing of China's WTO accession, which took place on December 21st 2001, the 2002 survey is considered to represent the *status quo* at the time of China's accession. Indeed, we would expect the effect of China's WTO accession not to have an instantaneous effect on the decision to migrate.

We aggregate four types of migration for individuals surveyed in 2002: 1) Individual migrants who moved out of their municipality of origin between the first and the second round of the survey and do not live with their households anymore; 2) return migrants who moved out of their municipality of origin for less than 12 months between the two surveys; 3) return migrants who moved out of their municipality of origin for more than 12 months between the two surveys; and 4) households that migrated as a whole to a different municipality/country between the two surveys. We define a change in location as a migration episode if a person moves to a different municipality within Mexico or to a different country. One should note that these categories are

[8] The aggregations from the firm to industry-municipality level were carried out at the central office of IMSS in Mexico City where the data is held. The employment data are classified according to a system of classification similar to the ISIC-rev 3. The authors created a concordance table between the system of classification adopted by IMSS and the 4-digit ISIC-rev 3 classification.

[9] Official data on the extent of the informal sector are not available at the municipality level. As long as the extent of the informal sector is not a function of having a certain manufacturing industry then this lack of information should not lead to a particular bias in our analysis.

not exclusive and an individual could belong to more than one category. Also, a migrant could have had more than one episode of migration between the two surveys. The MxFLS provides information about migration between the two rounds of the survey and tracks migrants, even those who migrated to the US. The re-contact rate of the MxFLS is very high; around 90% of the respondents in 2002 were interviewed in the second round. However, for those who reside in the US in the second round, we only know their country of residence (US), but not if they have had any other type of migration between the two rounds.

Table 1 provides the summary statistics separately for men and women in our sample of analysis extracted from the MxFLS.[10] About 93% of men had a job in 2002, while 37% of women worked in 2002. The average number of years of schooling is similar between men and women, around 7. About 8 percent of men and 7 percent of women in our sample migrated between 2002 and 2005, while about 5 percent of men and women migrated within Mexico. These numbers were respectively 3 and 2 percent for migrating to the US. The MxFLS also contains information about the existing network in the US; over one third of men and women had a relative who lived in the US. Regarding previous migration, about 9% of men and 6% of women had a pre-2002 migration experience, either domestic or international. Annual earnings for men were greater than earnings for women (over 22,000 pesos versus 18,000 pesos), while the level of assets was around 207,000 and 180,000 pesos respectively.[11] About 15% of the households saved in 2002. Finally, approximately a fifth of the sample lived in rural areas, and the vast majority of households had access to electricity.

[Table 1 here]

[10] We restrict our sample to individuals over the age of 20 and under the age of 65 in year 2002.
[11] In January 1, 2002, the exchange rate between USD and Mexican Peso was about 9.2.

Table 2 reports the summary statistics for exposure to China's import competition, on the basis of the indices described in equation (1) and (2) for the period 2000-2005. On average, exposure to import competition from China went up by 0.026 across Mexican municipalities between 2000-2005 (standard deviation is 0.053).

[Table 2 here]

4. Estimation results

Did China's WTO accession play a role in Mexicans' migration decision? Column 1 of Table 3 shows the impact of import competition on the individual decision to migrate, using a linear probability model. In the first three columns we consider the general dependent variable, $Migrant_{ims}$, which takes the value 1 if individual *i* migrated from municipality *m* in state *s* between 2002 and 2005, irrespective of the migration's destination. We find no impact of import competition on the decision to migrate. The estimated coefficient is only marginally statistically significant when we control for individual and household characteristics (column 2), but not statistically significant when we add municipality specific characteristics (column 3). Next, we consider the dependent variable $Migrant\ Mex_{ims}$, which takes the value 1 if individual *i* migrated from municipality *m* in state *s* to another municipality in Mexico between the two surveys. We find that import competition has a positive and statistically significant impact on the decision to migrate to another municipality. This is evidence of the push factor associated to China's accession to the WTO. As import competition from China increases, more individuals are displaced from their communities and migrate to other municipalities. Similar results hold when we control for individual and household characteristics (column 5). Younger and less-educated

individuals are more likely to migrate domestically, while women are as likely as men to move within Mexico. Previous migratory experience is positively associated with migrating again between 2002 and 2005. Having savings and being employed in 2002 do not seem to affect the likelihood of moving within Mexico. Individuals in the bottom tercile of the asset distribution are more likely to move to another municipality. Adding municipality controls, i.e. access to electricity, location and the share of manufacturing, does not alter the results. The coefficient estimates in column 6 suggest that a change from zero to full exposure to competition from China raises the probability of migrating to another municipality by 20 percentage points. Alternatively, one standard deviation increase in exposure to imports from China results in 1 percentage point higher probability of migration to a different municipality. Given that the unconditional probability of migrating to a different municipality within Mexico was around 5 percent and the average increase in exposure to the import competition across municipalities (0.026), the estimates here suggest that increases in exposure to trade with China can explain around 10 percent[12] of migration within Mexico occurring between 2002 and 2005.

Next, we analyze the impact of import competition on the likelihood of migrating to the US. Column 7 presents the results of the basic specification. Import competition from China decreases the individual probability of migrating to the US. The effect is statistically significant at the 5% level. A similar result holds when we control for individual characteristics. Older individuals and women are found to be less likely to move internationally. Migration networks play a positive role in affecting the probability to move to the US, indeed having a relative in the US increases the probability of migrating by 1.9 percentage points. Past migration has a positive impact on the probability of moving again. Column 9 presents the results of the specification that also includes municipality-level controls, i.e. electricity, share of manufacturing and rural

[12] (0.026*0.196/0.05).

location. Once we add municipality controls, we find that import competition still has a negative and statistically significant impact on the probability of migrating to the US. Overall, we can conclude that on average, after controlling for individual and municipality characteristics, import competition from China has a sizeable effect on the probability of migrating to the US. We provide some intuition on why this might be the case in the following sections.[13]

[Table 3 here]

4.1. Instrumental Variable analysis

If increases in imports from China to Mexico and its major export market, the United States, are the results of demand shocks in these countries, increases in our measure of exposure could be correlated with other local changes that could affect migration decisions. To get around this potential endogeneity issue we follow the existing literature (Iacovone et al. 2013; Utar and Torres Ruiz, 2013; Autor et al. 2013) and build an instrument for our measure of exposure by substituting the change in the import share of China in Mexico in an industry between 2000-2005 with the change in the import share of China in the whole world (excluding the US and the EU) in that industry during the same period, as shown in equation 2.

Table 4 presents the results of the instrumental variable estimation.[14] The first three columns indicate no statistically significant effect of changes in exposure to competition from China, when the aggregate measure of migration is used as the dependent variable. The coefficient estimates reported in columns 4 to 6, on the other hand, show that increases in exposure to the Chinese competition had a positive and statistically significant effect on the

[13] Results hold when we consider the alternative 2002-2005 measure.
[14] Table A1 reports the first stage analysis.

individual decisions for moving to another municipality in Mexico. More specifically, controlling for individual and municipality characteristics (column 6), the coefficient estimate suggests that a one standard deviation increase in exposure to competition from China, instrumented by increases in Chinese imports in the rest of the world, raises the probability of migrating to another municipality by almost 0.7 percentage points. Although it is smaller than the OLS estimate, the effect is still sizeable.

[Table 4 here]

The estimates in the last three columns of Table 4 confirm the earlier results by showing that increases in being exposed to the Chinese competition negatively affect the probability of migrating to the US. The effect of import competition is less precisely estimated when municipality features are included (column 9).

5. Who migrates?

In a series of regressions, with results presented in Tables 5 to 7, we explore the features of the groups of people who are more likely to be affected by the changes in exposure to the Chinese competition. In doing so, we investigate the mechanisms through which increases in import competition could affect migration decisions. In Table 5, we explore whether the increases in import competition had a differential impact on men and women. Kaestner and Malamud (2014) show that Mexican migrants to the US are more likely to be male. Similarly, we show that in our sample men are, on average, more likely to migrate to the US compared to women. We add the interaction between a dummy representing female respondent and the

change in exposure to trade as a control variable. The results suggest that more exposure to import competition has a more negative effect on males' probability of migrating to the US. In other words, exposure to Chinese competition does not affect the probability of women migrating to the US, while it negatively affects that of men. Consequently, it could be the case that men are more responsive to environmental factors when it comes to migrating to the US.

[Table 5 here]

Table 6 repeats a similar exercise by interacting a dummy for college education with changes in exposure to import competition.[15] In columns 1 and 2 the dependent variable is migration within Mexico. The marginal effects, reported at the bottom of Table 6, show that import competition has no statistically significant effect on college-educated people's migration On the contrary; import competition has a positive and statistically significant effect on low-skilled workers. This supports the hypothesis that trade competition mostly results in labor market shocks to those employed in manufacturing industries or with ties to the manufacturing sector, who are predominantly low-skilled workers. This is also consistent with the results in Autor et al. (2014) who find that labor adjustment costs following import shocks are unevenly distributed across workers according to their skill levels. They find that in response to trade shocks earnings losses are larger for individuals with low wages who are in some way connected to the manufacturing sector and that high-wage workers are less likely to leave their firm during a mass layoff, and are more likely to move out of manufacturing conditional on leaving their initial firm.

[Table 6 here]

[15] For ease of interpretation, we use a dummy variable which takes the value 1 for individuals with a college degree and 0 otherwise.

The results in columns 3 and 4, in which the dependent variable is migration to the US, show that although, controlling for everything else, college-educated people are less likely to migrate to the US, increases in exposure to trade affects lower educated people's likelihood to migrate to the US. These results support the hypothesis previously mentioned: that exposure to trade shocks limits low skilled, less-affluent individuals' ability to migrate to the US by making it more difficult to finance the move.

The results so far indicate that China's import competition has affected the type of self-selection of migrants to the US. The trade shock effectively reduced migration of low-skilled migrants, hence reducing the negative self-selection that has been documented in other studies. The next step is to try to understand who are the people who move to the US in response to a trade shock. Table 7 explores the role of savings in decision to move to another municipality or to migrate to the US.

[Table 7 here]

We interact the dummy capturing whether the household had any savings in 2002 with the import competition measure. While we do not find any statistically significant impact on the decision to migrate domestically, columns 3 and 4 of Table 7 do highlight that import competition negatively affects the probability of migrating of those who have not accumulated savings before the trade shock. This result further reinforces the previous findings that China's

import competition has reduced migrants' negative self-selection, i.e. migration of those from lower socio-economic background to the US.[16]

6. Robustness Checks

6.1. Earnings, Employment and Sector change

Labor demand shocks could result in outcomes other than migration.[17] Indeed, import competition might affect the level of earnings at municipality level, the likelihood of being employed and the change in sector of employment for those who remain. Table 8 reports the results of this exercise, where we replicate the specification of equation (3) and analyze the effect of import competition on each of the three dependent variables, namely (log of) earnings, the likelihood of being employed, and the change in the sector of employment. We find no effect of the increased import competition on wages in 2005 (column 2) among stayers.[18] Similarly, we find no effect of import competition on the probability of being employed in 2005 (columns 3 and 4) among stayers. Finally, column 3 of Table 8 explores the effect of import competition on the probability of changing sector of employment for those who remain in the same municipality. The dependent variable takes the value 1 if the individual has moved manufacturing sector of employment between 2002 and 2005, within the same municipality.[19] Combined with what we have found so far, it looks like Mexicans responded mainly to these shocks by either migrating to

[16] There is no correlation between having a relative abroad, which could be a proxy for receiving remittances, and having savings.
[17] Dauth et al. (2014) and Costa et al. (2016) investigate the effect of positive demand shocks from China in Germany and Brazil respectively. The share of Mexican exports to China increased from 0.4% of total exports to 0.5% between 2002 and 2005, while larger increases took place starting from 2009.
[18] One should keep in mind that, since we are selecting the sample on a potential outcome here this type of analysis is speculative and the results should be interpreted cautiously.
[19] Manufacturing sectors are defined at 4-digit level, as described in Section 3.

other municipalities or switching employment sector, if they remained in the same municipality. Labor mobility, either across municipalities or across sectors within the same municipality, acts as an adjusting mechanism in response to the shock in import competition.

[Table 8 here]

6.2. Spatial Effects

Throughout the analysis so far, we have implicitly assumed that municipalities and local labor markets overlap. However, it is possible that people commute to neighboring municipalities to work and shocks to those municipalities affect people's decision to migrate. To address this we take an average of changes in exposure to imports from China for neighboring municipality and control for that in our regressions to see if and how it affects our estimates. The results are presented in the Appendix Table A2. While the effect of increases in import competition in the neighboring municipalities on migration within Mexico is positive and significant, controlling for it in the regressions does not lower the impact of increases in import competition in the municipality of residence. The point estimates for migration to the US is still negative, although it is no longer statistically significant.

6.3. Correlated Shocks in Mexico and the U.S.

As discussed before, China's import share surged after 2001 in both Mexico and the US and it happened in very similar manufacturing sectors. Because of this, one might think that people who would have migrated to the US to work in manufacturing sectors, that were subsequently affected by the import shocks, migrated within Mexico instead and that is why we observe an increase in migration within Mexico and a decrease in migration to the US as a result

of trade shocks in Mexico. In other words, the total number of migrations would be the same even in the absence of trade shocks.

One way to check this possibility is to look at what Mexican migrants do in the US and if they work in the sectors that are hit by Chinese import competition. The Mexican Migration Project lists the last occupation in the United States if the year of migration is between 1990 and 2005. We have looked at the distribution of Mexican migrants across 3-digit industrial sectors in the US and the results suggest that a very small percentage of Mexican migrants work in the manufacturing sector in general and in the sectors that were negatively affected by imports from China, in particular. Table A3 in the Appendix reports the occupation distribution of Mexican migrants in the US. Over 21% of Mexican migrants report working in the agricultural sector, followed by 8.6% in the construction sector. About 7% work in the hospitality sector and 8% are employed in security and cleaning sectors. This evidence does not support the hypothesis that Mexican migrants substituted migrating to the US by moving within Mexico. It is also worth noting that demand in many of these sectors was actually increasing before the financial crisis (see for example Charles et al. 2016). Therefore, even if people with connection to the manufacturing industry who migrate to the US do not go to work in the same sectors, it does not seem like a negative shock to the manufacturing sector in Mexico should have meant lower demand in the US for Mexican workers during that period.

6.4 Direct and indirect impact of import competition

The analysis so far has focused on the direct effect of Chinese import competition on Mexican municipalities. However, Chinese import competition has had also an indirect effect on Mexican municipalities, via a reduction of exports to the US. As discussed in the introduction.

Mexico has had a comparative advantage in the production of labor-intensive goods within NAFTA (Iacovone et al. 2013). The increase in Chinese exports to the US has had a significant negative effect on demand for manufacturing exports from Mexico (Lall and Weiss 2004; Shafaeddin 2004; Devlin et al. 2006; Gallagher and Porzecanski 2007; Gallagher et al. 2008; Hanson and Robertson 2008), due to the technological similarities between China and Mexico (di Giovanni et al. 2014). In order to measure the indirect effect on Chinese import competition on a third market, we construct a new measure capturing the heterogeneous impact of a reduction in exports to the US at municipality level. Empirically, we measure the municipality-specific "indirect" trade shocks by constructing an index that measures changes in exposure to indirect international competition at the municipality level, as follows:

$$I_{ms} = \sum_{k=1}^{K} \gamma_{k,ms} \varphi_k^{US} \tag{3}$$

where I_{ms} is the change in international competition in the US between 2000 and 2005 for Mexican municipality *m* in state *s*. K is the number of 4-digit industries within the manufacturing sector, $\gamma_{k,ms}$ is the fraction of total employed labor in municipality *m* in state *s* in year 2000 who work in industry *k*. Finally, φ_k^{US} is the change in the share of *exports* from Mexico to the US in industry k between 2000-2005. This index would capture municipalities' heterogeneous exposure to changes to exports to the US, due to increased international competition with China. We include this index in the basic specification, to test the effect of "indirect" Chinese competition on the individuals' migration decision. Table 9 presents the results of this specification. The effect of Chinese import competition on the migration decision is unaffected by the introduction of the index measuring indirect competition. The coefficient of the new index is negative and statistically significant, thus showing that an increase in indirect international

competition (i.e. a reduction of the index) leads to an increase in domestic migration. Individuals living in municipalities affected by a greater decrease in exports to the US, following a greater increase of Chinese competition in the US market, are more likely to migrate domestically. The effect of this measure is less robust when we analyze international migration to the US. Overall, the decision to migrate to the US does not seem to be related to the index of international competition.

[Table 9 here]

7. Conclusion

This paper analyzes the effects of increases in import competition in Mexico, following China's WTO accession in 2001, on individuals' decisions to migrate, both within Mexico and to the US. The increase in Chinese exports had differential effects across industries that held different levels of importance in various municipalities' composition of employment. Consequently, municipalities experienced differential exposure to competition from China. We exploit the variation in exposure to competition from China across Mexican municipalities to estimate the effect of international competition on the decision to migrate.

To the best of our knowledge, this is the first paper that uses a panel of individuals to look into how an exogenous external trade shock affects migration in a middle-income country. Controlling for individual and municipality features, we find that individuals living in more trace-exposed municipalities are more likely to migrate to other municipalities within Mexico. To get around the potential endogeneity of the decision to migrate to imports from China in

different industries, we use an instrumental variable strategy to proxy for increases in Chinese imports in Mexico with increases in Chinese imports globally in the same period.

We also find that, on average, import competition reduces the likelihood of migrating to the US. However this effect is heterogeneous. As it has been shown before in the literature, most of the migrants to the US are from rural areas in which manufacturing sector is not considered a major employer and, therefore people are not directly prone to the shocks in that sector. It has also been shown that it is mostly lower income people who migrate to the US. We find that increases in import competition lowers the chance of lower-educated people or those with limited access to savings to migrate to the US. This could be the result of a much higher cost of migrating to the US (compared to migrating within Mexico) and the fact that shocks to the manufacturing sector mostly affects low-skilled workers and makes them more financially constrained.

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Table 1: Summary statistics

	Men			Women		
	Mean	S.D.	Obs.	Mean	S.D.	Obs.
Age	39.31	12.16	4592	38.62	11.72	5941
Married	0.78	0.41	4592	0.74	0.44	5941
Years of schooling	7.34	4.31	4592	6.71	4.05	5941
College degree	0.12	0.32	4592	0.07	0.26	5941
Migrant	0.08	0.28	4592	0.07	0.25	5941
Migrant – US	0.03	0.17	4592	0.02	0.12	5941
Migrant - MEX	0.05	0.23	4592	0.05	0.21	5941
Relative in the U.S.	0.35	0.48	4592	0.37	0.48	5941
Work in 2002*	0.93	0.26	4592	0.37	0.48	5941
Savings 2002**	0.15	0.36	4592	0.15	0.36	5941
Migration prior 2002	0.09	0.28	4592	0.06	0.24	5941
Household Assets 2002***	207,127	398,294	4592	180,886	349,543	5941
Earnings 2002***	22,906	39,950	3893	18,100	34,904	2020
Share of manufacturing 2002****	0.30	0.20	4592	0.30	0.20	5941
Electricity 2002****	0.94	0.12	4592	0.94	0.12	5941
Rural****	0.23	0.42	4592	0.23	0.42	5941

* Dummy equal to 1 if an individual works in year 2002
** Dummy equal to 1 if an individual has access to saving at the household level in year 2002
*** Monetary values in Mexican Pesos
**** Variables presented for the municipality of residence

Table 2: Summary statistics – Import competition across municipalities

	ΔImport Competition MEX 05-00	ΔImport Competition WLD 05-00
Mean	0.026	0.022
Standard Deviation	0.053	0.045
90^{th} percentile	0.08836	0.0781087
75^{th} percentile	0.02367	0.0197418
50^{th} percentile	0.00132	0.0014614
25^{th} percentile	0.00014	0.0001429
10^{th} percentile	0.00004	0.000000549

Table 3: Baseline analysis

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Migration			*Migration within Mexico*			*Migration to the US*	
ΔImport competition	0.120	0.124*	0.115	0.236***	0.218***	0.196**	-0.116**	-0.094**	-0.081*
	[0.076]	[0.073]	[0.082]	[0.071]	[0.070]	[0.076]	[0.045]	[0.044]	[0.048]
Age		-0.002***	-0.002***		-0.002***	-0.002***		-0.001***	-0.001***
		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]
Female		-0.018***	-0.018***		-0.001	-0.001		-0.017***	-0.017***
		[0.006]	[0.006]		[0.005]	[0.005]		[0.004]	[0.004]
Married		-0.017**	-0.017**		-0.002	-0.002		-0.015***	-0.015***
		[0.007]	[0.007]		[0.006]	[0.006]		[0.004]	[0.004]
Years of Education		-0.003	-0.003		-0.004**	-0.004**		0.002	0.002
		[0.002]	[0.002]		[0.002]	[0.002]		[0.001]	[0.001]
Years of Education-squared		0.000*	0.000*		0.000***	0.000***		-0.000**	-0.000**
		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]
Relative in US		0.024***	0.024***		0.004	0.005		0.019***	0.019***
		[0.006]	[0.006]		[0.005]	[0.005]		[0.003]	[0.003]
Migration pre-2002		0.117***	0.117***		0.085***	0.085***		0.032***	0.032***
		[0.015]	[0.015]		[0.013]	[0.013]		[0.009]	[0.009]
Work in 2002		0.004	0.004		0.006	0.006		-0.001	-0.001
		[0.006]	[0.006]		[0.005]	[0.005]		[0.003]	[0.003]
Assets - bottom tercile		0.018**	0.018**		0.026***	0.026***		-0.008**	-0.008**
		[0.007]	[0.007]		[0.007]	[0.007]		[0.004]	[0.004]
Savings dummy		-0.004	-0.005		0.003	0.003		-0.008*	-0.007*
		[0.008]	[0.008]		[0.007]	[0.007]		[0.004]	[0.004]
Share of manufacturing			0.004			-0.002			0.006
			[0.022]			[0.017]			[0.014]
Electricity			-0.033			-0.015			-0.019
			[0.021]			[0.021]			[0.015]
Rural			-0.006			-0.008			0.002
			[0.009]			[0.008]			[0.005]
Observations	10532	10532	10532	10532	10532	10532	10532	10532	10532
Adjusted R-squared	0.004	0.039	0.039	0.006	0.032	0.032	0.011	0.027	0.027

Notes: All regressions include state fixed effects. Migration pre-2002 is a dummy equal to 1 if a person has migrated before. Assets (Earnings)-bottom tercile is a dummy equal to 1 for those in the bottom third of asset (earnings) distribution. Standard errors are clustered at municipality level. * Significant at 10%. ** Significant at 5%. *** Significant at 1%.

Table 4: Instrumental variable analysis

VARIABLES	(1)	(2) *Migration*	(3)	(4)	(5) *Migration within Mexico*	(6)	(7)	(8) *Migration to the US*	(9)
ΔImport competition	0.063 [0.071]	0.066 [0.068]	0.048 [0.080]	0.187*** [0.068]	0.167** [0.067]	0.135* [0.076]	-0.123** [0.051]	-0.100** [0.050]	-0.087 [0.059]
Age		-0.002*** [0.000]	-0.002*** [0.000]		-0.002*** [0.000]	-0.002*** [0.000]		-0.001*** [0.000]	-0.001*** [0.000]
Female		-0.018*** [0.006]	-0.018*** [0.006]		-0.001 [0.005]	-0.001 [0.005]		-0.017*** [0.004]	-0.017*** [0.004]
Married		-0.017** [0.007]	-0.017** [0.007]		-0.002 [0.006]	-0.002 [0.006]		-0.015*** [0.004]	-0.015*** [0.004]
Years of Education		-0.003 [0.002]	-0.003 [0.002]		-0.004** [0.002]	-0.004** [0.002]		0.002 [0.001]	0.002 [0.001]
Years of Education-squared		0.000* [0.000]	0.000* [0.000]		0.000*** [0.000]	0.000*** [0.000]		-0.000** [0.000]	-0.000** [0.000]
Relative in US		0.023*** [0.006]	0.024*** [0.006]		0.004 [0.005]	0.004 [0.005]		0.019*** [0.003]	0.019*** [0.003]
Migration pre-2002		0.117*** [0.015]	0.117*** [0.015]		0.085*** [0.013]	0.085*** [0.012]		0.032*** [0.009]	0.032*** [0.009]
Work in 2002		0.005 [0.006]	0.005 [0.006]		0.006 [0.005]	0.006 [0.005]		-0.001 [0.003]	-0.001 [0.003]
Assets - bottom tercile		0.017** [0.007]	0.018** [0.007]		0.025*** [0.007]	0.026*** [0.007]		-0.008** [0.004]	-0.008** [0.004]
Savings dummy		-0.004 [0.008]	-0.004 [0.008]		0.004 [0.007]	0.003 [0.007]		-0.007** [0.004]	-0.007* [0.004]
Share of manufacturing			0.005 [0.022]			-0.001 [0.017]			0.006 [0.014]
Electricity			-0.030 [0.021]			-0.011 [0.021]			-0.018 [0.015]
Rural			-0.009 [0.009]			-0.011 [0.008]			0.002 [0.005]
Observations	10532	10532	10532	10532	10532	10532	10532	10532	10532
Adjusted R-squared	0.004	0.039	0.039	0.006	0.032	0.032	0.011	0.027	0.027

All regressions include state fixed effects. Migration pre-2002 is a dummy equal to 1 if a person has migrated before. Assets-bottom tercile is a dummy equal to 1 for those in the bottom third of asset distribution. Standard errors are clustered at municipality level. Instrumented variable: ΔImport Competition. The instrument for ΔImport Competition is the change in the Chinese share of imports into the rest of the world (i.e. excluding Mexico, US and EU) interacted with the fraction of Mexican labor in municipality *m* in year 2000. * Significant at 10%. ** Significant at 5%. *** Significant at 1%.

Table 5: Gender and Import competition

VARIABLES	(1) *Migration within Mexico*	(2) *Migration within Mexico*	(3) *Migration to the US*	(4) *Migration to the US*
ΔImport Competition	0.197**	0.130	-0.184***	-0.195***
	[0.084]	[0.086]	[0.057]	[0.066]
Female*ΔImport Competition	-0.003	0.009	0.182***	0.189***
	[0.070]	[0.064]	[0.039]	[0.040]
Age	-0.002***	-0.002***	-0.001***	-0.001***
	[0.000]	[0.000]	[0.000]	[0.000]
Female	-0.001	-0.001	-0.024***	-0.024***
	[0.006]	[0.006]	[0.005]	[0.005]
Married	-0.002	-0.002	-0.015***	-0.015***
	[0.006]	[0.006]	[0.004]	[0.004]
Years of Education	-0.004**	-0.004**	0.002	0.002
	[0.002]	[0.002]	[0.001]	[0.001]
Years of Education-squared	0.000***	0.000***	-0.000**	-0.000**
	[0.000]	[0.000]	[0.000]	[0.000]
Relative in US	0.005	0.004	0.019***	0.019***
	[0.005]	[0.005]	[0.003]	[0.003]
Migration pre-2002	0.085***	0.085***	0.032***	0.032***
	[0.013]	[0.012]	[0.009]	[0.009]
Work in 2002	0.006	0.006	-0.002	-0.002
	[0.005]	[0.005]	[0.003]	[0.003]
Assets - bottom tercile	0.026***	0.026***	-0.008*	-0.008**
	[0.007]	[0.007]	[0.004]	[0.004]
Savings dummy	0.003	0.003	-0.007*	-0.007*
	[0.007]	[0.007]	[0.004]	[0.004]
Share of manufacturing	-0.002	-0.001	0.006	0.006
	[0.017]	[0.017]	[0.014]	[0.014]
Electricity	-0.015	-0.011	-0.018	-0.018
	[0.021]	[0.021]	[0.015]	[0.015]
Rural	-0.008	-0.011	0.002	0.002
	[0.008]	[0.008]	[0.005]	[0.005]
Test ΔImport Competition+Female*ΔImport Competition=0				
P-value	0.0212	0.0804	0.9547	0.9179
Estimation method	LPM	IV	LPM	IV
Observations	10532	10532	10532	10532
Adjusted R-squared	0.032	0.032	0.028	0.028

All regressions include state fixed effects. Migration pre-2002 is a dummy equal to 1 if a person has migrated before. Assets-bottom tercile is a dummy equal to 1 for those in the bottom third of asset distribution. Standard errors are clustered at municipality level. Instrumented variable (columns 2 and 4): ΔImport Competition. The instrument for ΔImport Competition is the change in the Chinese share of imports into the rest of the world (i.e. excluding Mexico, US and EU) interacted with the fraction of Mexican labor in municipality *m* in year 2000. * Significant at 10%. ** Significant at 5%. *** Significant at 1%.

Table 6: Education and Import Competition

VARIABLES	(1)	(2)	(3)	(4)
	Migration within Mexico		*Migration to the US*	
ΔImport Competition	0.247***	0.175**	-0.105**	-0.114*
	[0.081]	[0.078]	[0.050]	[0.058]
College*ΔImport Competition	-0.284*	-0.215	0.140*	0.147*
	[0.145]	[0.138]	[0.078]	[0.078]
College	0.060***	0.057***	-0.025***	-0.026***
	[0.012]	[0.012]	[0.007]	[0.007]
Age	-0.002***	-0.002***	-0.001***	-0.001***
	[0.000]	[0.000]	[0.000]	[0.000]
Female	-0.000	-0.000	-0.017***	-0.017***
	[0.005]	[0.005]	[0.004]	[0.004]
Married	-0.001	-0.001	-0.015***	-0.015***
	[0.006]	[0.006]	[0.004]	[0.004]
Relative in US	0.004	0.004	0.020***	0.020***
	[0.005]	[0.005]	[0.003]	[0.003]
Migration pre-02	0.085***	0.085***	0.032***	0.032***
	[0.013]	[0.013]	[0.009]	[0.009]
Assets - bottom tercile	0.026***	0.026***	-0.008**	-0.008**
	[0.007]	[0.007]	[0.004]	[0.004]
Savings - dummy	0.003	0.003	-0.007*	-0.007*
	[0.007]	[0.007]	[0.004]	[0.004]
Work in 2002	0.007	0.007	-0.002	-0.001
	[0.005]	[0.005]	[0.003]	[0.003]
Share of manufacturing	-0.004	-0.003	0.007	0.007
	[0.017]	[0.017]	[0.014]	[0.014]
Electricity	-0.014	-0.011	-0.019	-0.018
	[0.021]	[0.021]	[0.015]	[0.015]
Rural	-0.007	-0.010	0.001	0.001
	[0.008]	[0.008]	[0.005]	[0.005]
Test ΔImport Competition+College*ΔImport Competition=0				
P-value	0.7564	0.7501	0.6411	0.6908
Estimation method	LPM	2SLS	LPM	2SLS
Observations	10532	10532	10532	10532
Adjusted R-squared	0.033	0.033	0.027	0.027

All regressions include state fixed effects. Migration pre-2002 is a dummy equal to 1 if a person has migrated before. Assets-bottom tercile is a dummy equal to 1 for those in the bottom third of asset distribution. Standard errors are clustered at municipality level. Instrumented variable (columns 2 and 4): ΔImport Competition. The instrument for ΔImport Competition is the change in the Chinese share of imports into the rest of the world (i.e. excluding Mexico, US and EU) interacted with the fraction of Mexican labor in municipality *m* in year 2000. * Significant at 10%. ** Significant at 5%. *** Significant at 1%.

Table 7: Savings and Import Competition

VARIABLES	(1)	(2)	(3)	(4)
	Migration within Mexico		*Migration to the US*	
ΔImport Competition	0.172**	0.108	-0.123**	-0.127**
	[0.073]	[0.073]	[0.052]	[0.062]
Savings*ΔImport Competition	0.099	0.110	0.180***	0.166**
	[0.130]	[0.145]	[0.069]	[0.079]
Savings - dummy	-0.002	-0.002	-0.016***	-0.015***
	[0.009]	[0.009]	[0.005]	[0.005]
Age	-0.002***	-0.002***	-0.001***	-0.001***
	[0.000]	[0.000]	[0.000]	[0.000]
Female	-0.001	-0.001	-0.017***	-0.017***
	[0.005]	[0.005]	[0.004]	[0.004]
Married	-0.002	-0.002	-0.015***	-0.015***
	[0.006]	[0.006]	[0.004]	[0.004]
Years of Education	-0.004**	-0.004**	0.002	0.002
	[0.002]	[0.002]	[0.001]	[0.001]
Years of Education - squared	0.000***	0.000***	-0.000**	-0.000***
	[0.000]	[0.000]	[0.000]	[0.000]
Relative in US	0.005	0.004	0.019***	0.019***
	[0.005]	[0.005]	[0.003]	[0.003]
Migration pre-02	0.085***	0.085***	0.032***	0.032***
	[0.013]	[0.012]	[0.009]	[0.009]
Work in 2002	0.006	0.006	-0.001	-0.001
	[0.005]	[0.005]	[0.003]	[0.003]
Assets - bottom tercile	0.026***	0.025***	-0.008**	-0.008**
	[0.007]	[0.007]	[0.004]	[0.004]
Share of manufacturing	-0.002	-0.001	0.006	0.007
	[0.017]	[0.017]	[0.014]	[0.014]
Electricity	-0.015	-0.012	-0.019	-0.019
	[0.022]	[0.021]	[0.015]	[0.015]
Rural	-0.009	-0.012	0.001	0.001
	[0.008]	[0.008]	[0.005]	[0.005]
Test ΔImport Competition+College*ΔImport Competition=0				
P-value	0.0585	0.1517	0.4299	0.6454
Estimation method	LPM	2SLS	LPM	2SLS
Observations	10532	10532	10532	10532
Adjusted R-squared	0.032	0.032	0.027	0.027

All regressions include state fixed effects. Migration pre-2002 is a dummy equal to 1 if a person has migrated before. Assets-bottom tercile is a dummy equal to 1 for those in the bottom third of assets distribution. Standard errors are clustered at municipality level. Instrumented variable (columns 2 and 4): ΔImport Competition. The instrument for ΔImport Competition is the change in the Chinese share of imports into the rest of the world (i.e. excluding Mexico, US and EU) interacted with the fraction of Mexican labor in municipality m in year 2000. * Significant at 10%. ** Significant at 5%. *** Significant at 1%.

Table 8: Earnings, Employment and Sector change

VARIABLES	(1) *Ln(Earnings)*	(2) *Ln(Earnings)*	(3) *Employment*	(4) *Employment*	(5) *Sector change*	(6) *Sector change*
ΔImport Competition	2.071*	1.682	0.187	0.172	0.833***	0.914***
	[1.132]	[1.235]	[0.132]	[0.145]	[0.234]	[0.253]
Age	-0.047***	-0.047***	-0.002***	-0.002***	-0.002*	-0.002*
	[0.006]	[0.006]	[0.001]	[0.001]	[0.001]	[0.001]
Female	-0.122	-0.121	-0.032**	-0.032**	0.047**	0.046**
	[0.115]	[0.114]	[0.014]	[0.014]	[0.023]	[0.023]
Married	-0.157	-0.157	0.002	0.002	0.018	0.018
	[0.125]	[0.124]	[0.017]	[0.017]	[0.018]	[0.018]
Years of Education	0.005	0.006	0.007	0.007	0.043***	0.043***
	[0.045]	[0.045]	[0.005]	[0.005]	[0.007]	[0.007]
Years of Education - squared	0.006**	0.006**	-0.000	-0.000	-0.002***	-0.002***
	[0.003]	[0.003]	[0.000]	[0.000]	[0.000]	[0.000]
Relative in US	-0.078	-0.079	0.002	0.001	-0.014	-0.013
	[0.138]	[0.136]	[0.016]	[0.016]	[0.017]	[0.017]
Migration pre-02	0.467**	0.465**	0.028	0.028	0.006	0.007
	[0.204]	[0.202]	[0.023]	[0.022]	[0.032]	[0.032]
Work in 2002	1.313***	1.313***	0.159***	0.159***	-0.133***	-0.133***
	[0.169]	[0.168]	[0.023]	[0.023]	[0.040]	[0.040]
Assets - bottom tercile	0.045	0.044	0.044***	0.044***	0.000	0.001
	[0.115]	[0.114]	[0.014]	[0.014]	[0.018]	[0.018]
Savings - dummy	0.286*	0.289*	0.020	0.020	-0.025	-0.026
	[0.154]	[0.153]	[0.017]	[0.017]	[0.024]	[0.024]
Share of manufacturing	-0.596	-0.594	-0.006	-0.006	0.090	0.089
	[0.567]	[0.564]	[0.049]	[0.049]	[0.072]	[0.071]
Electricity	-0.201	-0.179	-0.027	-0.027	-0.173**	-0.177**
	[0.391]	[0.391]	[0.040]	[0.040]	[0.070]	[0.070]
Rural	-0.343	-0.360	-0.043*	-0.043*	-0.049	-0.046
	[0.223]	[0.229]	[0.025]	[0.025]	[0.033]	[0.033]
Observations	4038	4038	4030	4030	4047	4047
Adjusted R-squared	0.115	0.115	0.053	0.053	0.038	0.038

All regressions include state fixed effects. Migration pre-2002 is a dummy equal to 1 if a person has migrated before. Assets - bottom tercile is a dummy equal to 1 for those in the bottom third of asset distribution. Standard errors are clustered at municipality level. * Significant at 10%. ** Significant at 5%. *** Significant at 1%.

Table 9: Direct and indirect impact of import competition

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Migration within Mexico			*Migration to the US*		
ΔImport Competition	0.226***	0.208***	0.181**	-0.127**	-0.104**	-0.093*
	[0.072]	[0.071]	[0.077]	[0.049]	[0.047]	[0.053]
ΔInternational Competition	-0.056**	-0.059**	-0.065**	-0.063*	-0.057*	-0.055
	[0.027]	[0.026]	[0.027]	[0.037]	[0.033]	[0.034]
Age		-0.002***	-0.002***		-0.001***	-0.001***
		[0.000]	[0.000]		[0.000]	[0.000]
Female		-0.001	-0.001		-0.017***	-0.017***
		[0.005]	[0.005]		[0.004]	[0.004]
Married		-0.002	-0.002		-0.015***	-0.015***
		[0.006]	[0.006]		[0.004]	[0.004]
Years of Education		-0.005**	-0.005**		0.002	0.002
		[0.002]	[0.002]		[0.001]	[0.001]
Years of Education - squared		0.000***	0.000***		-0.000**	-0.000**
		[0.000]	[0.000]		[0.000]	[0.000]
Relative in the US		0.004	0.004		0.019***	0.019***
		[0.005]	[0.005]		[0.003]	[0.003]
Migration pre-02		0.085***	0.085***		0.032***	0.032***
		[0.013]	[0.013]		[0.009]	[0.009]
Work in 2002		0.006	0.006		-0.001	-0.001
		[0.005]	[0.005]		[0.003]	[0.003]
Assets - bottom tercile		0.026***	0.026***		-0.008**	-0.008**
		[0.007]	[0.007]		[0.004]	[0.004]
Savings in 2002		0.004	0.003		-0.007*	-0.007*
		[0.007]	[0.007]		[0.004]	[0.004]
Share of manufacturing			-0.004			0.005
			[0.017]			[0.014]
Electricity			-0.014			-0.018
			[0.021]			[0.015]
Rural			-0.009			0.001
			[0.008]			[0.005]
Estimation method	LPM	LPM	LPM	LPM	LPM	LPM
Observations	10532	10532	10532	10532	10532	10532
Adjusted R-squared	0.006	0.032	0.032	0.011	0.027	0.027

Appendix

Table A1: First stage

VARIABLES	(1)	(2)	(3)
		ΔImport competition	
ΔImport competition - World	1.150***	1.145***	1.134***
	[0.050]	[0.049]	[0.052]
Individual controls	No	Yes	Yes
Municipality controls	No	No	Yes
Observations	10532	10532	10532
Adjusted R-squared	0.921	0.922	0.923

All regressions include state fixed effects. Standard errors are clustered at municipality level. * Significant at 10%. ** Significant at 5%. *** Significant at 1%.

Table A2: The Role of Import Exposure in the Neighboring Municipalities

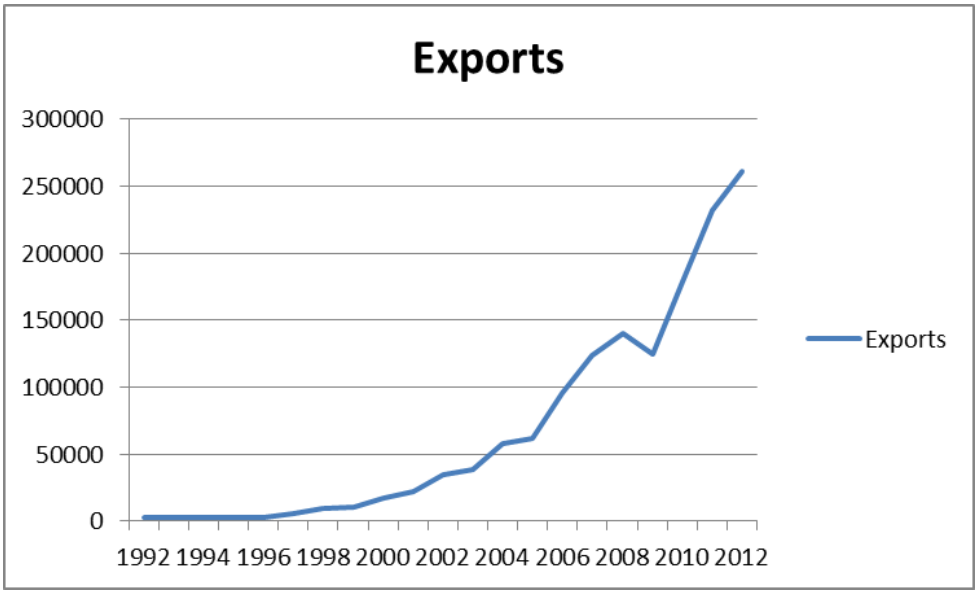
VARIABLES	(1)	(2)	(3)	(4)
	Migration within Mexico		*Migration to the US*	
ΔImport Competition	0.293***	0.230**	-0.081	-0.097
	[0.091]	[0.094]	[0.065]	[0.083]
ΔImport competition - Neighbouring municipalities	0.117***	0.122***	-0.008	-0.015
	[0.041]	[0.041]	[0.021]	[0.025]
Estimation method	LPM	2SLS	LPM	2SLS
Observations	3963	3963	3963	3963
Adjusted R-squared	0.031	0.031	0.028	0.028

All regressions include state fixed effects, individual and municipalities controls. The usual controls are included. Standard errors are clustered at municipality level. Instrumented variable (columns 2 and 4): ΔImport Competition. The instrument for ΔImport Competition is the change in the Chinese share of imports into the rest of the world (i.e. excluding Mexico, US and EU) interacted with the fraction of Mexican labor in municipality *m* in year 2000. * Significant at 10%. ** Significant at 5%. *** Significant at 1%.

Table A3: Occupations in the U.S.

Occupation code	Occupation	%
10	Unemployed	1.97
60	Other, unspecified (disabled, incarcerated, tourist and other)	2.32
410	Agricultural workers	21.14
419	Other agriculture, husbandry, forestry, fishery workers	1.05
520	Food, beverage and tobacco production workers, including cooks in establishments	2.80
523	Wood and paper production or printing workers. (Examples: carpenter, cabinetmaker, lynotypist, film developer, other skilled carpentry work)	1.09
524	Metal production and treatment workers; vehicle, machinery and equipment repair. (Examples: casters, lathe operators, boilermakers, welders, jewelers, goldsmiths, locksmiths, metal polishers, tool sharpeners, blacksmiths, metal forgers, refrigerator repair people, musical instrument repair people)	2.58
526	Construction, installation, maintenance and finishing workers. (Examples: bricklayers, house painters, plasterers, roofers, floor polishers, plumbers, parts installers)	8.61
529	Other craftsmen or manufacturing workers, including those in unspecified industry	5.50
539	Other operators of heavy machinery and equipment, including those in unspecified industry	1.14
540	Food, beverage and tobacco production unskilled workers	1.97
546	Construction unskilled workers	3.84
549	Other unskilled workers including those in unspecified industry (includes unspecified helpers or trainees)	12.32
711	Workers in retail establishments. (Examples: clerks, dispatchers)	2.01
810	Innkeepers; bartenders; waiters; flight attendants.	7.43
812	Doormen; concierges; elevator operators; bellboys; cleaning workers; gardeners; movers; dishwashers	8.08
9999	Other unspecified occupation; unknown	1.57

Figure A1: Exports from China to Mexico



Exports from China to Mexico, in 2000 US$ ('000s). Source: WITS and World Development Indicators.