

Dapena, Alberto Díaz; Vazquez, Esteban Fernandez; Garduño, Rafael;
Morollón, Fernando Rubiera

Conference Paper

Does trade imply convergence? Analyzing the effect of NAFTA & distance on the local convergence in Mexico

55th Congress of the European Regional Science Association: "World Renaissance: Changing roles for people and places", 25-28 August 2015, Lisbon, Portugal

Provided in Cooperation with:

European Regional Science Association (ERSA)

Suggested Citation: Dapena, Alberto Díaz; Vazquez, Esteban Fernandez; Garduño, Rafael; Morollón, Fernando Rubiera (2015) : Does trade imply convergence? Analyzing the effect of NAFTA & distance on the local convergence in Mexico, 55th Congress of the European Regional Science Association: "World Renaissance: Changing roles for people and places", 25-28 August 2015, Lisbon, Portugal, European Regional Science Association (ERSA), Louvain-la-Neuve

This Version is available at:

<http://hdl.handle.net/10419/124606>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Does trade imply convergence?

Analyzing the effect of NAFTA & Distance on the local convergence in Mexico

Abstract

Regional Economics and Economic Growth focus on the question of whether trade and physical proximity to the consumer market lead to a greater concentration of economic activity. Yet little empirical work has assessed the regional convergence impacts of these two factors. Therefore this paper studies the regional convergence from trade in Mexico after NAFTA and the effect that has the proximity to the main consumer market (the U.S.). Unlike previous papers, working with municipal-level data allows to observe more clearly the convergence patterns across space and identify the effects of NAFTA and distance. Result shows that before NAFTA, convergence in regions near the U.S. border grew faster than those further away. However, there is a significant reduction of the β coefficient after NAFTA indicating a slowdown in the convergence rate. There is also no difference, after NAFTA, on the convergence rate among regions near the U.S. border and those further away. As a result, an increment of trade generates an increment in the growth of the richer territories, those closer to the U.S. border. Additional, we find that those municipalities with high levels of education, specialization, and labor population present higher levels of productivity.

Introduction: trade, local inequalities and convergence

Economists generally agree that trade has a positive effect on overall economic growth in a country. However, it is not necessary that this positive effect happen in all the territory. Actually, some areas could obtain great benefits but others be even substantially damaged. So, it is possible to accept that trade generate growth and global international convergence but with higher internal divergences.

Mexico is probably the best case to study the trade effects over convergence. In 1994 this country enters in the North American Free Trade Agreement (NAFTA). Overall, Mexico has been expected to benefit from its lower labor costs (Musik, 2004). Also, the physical proximity of its border regions implies that northern Mexico has a geographic advantage in production for the U.S. market, and may benefit more than other countries from NAFTA. However, empirical studies regarding the internal spatial effects of NAFTA have had mixed results (see Aroca, et al., 2005; Krugman & Livas-Elizondo, 1996; Hanson, 2001; Sánchez-Reaza & Rodríguez-Pose, 2002; Smith, 1990; among others).

This paper evaluates the NAFTA & proximity to the U.S. market effects on regional convergence throughout Mexico at a local level of desegregation. There are many previous analysis of convergence for Mexico but many of them are limited, as they use state level data, which masks the spatial distribution of economic activity and severely restricts the number of their observations. This paper offers the following contributions:

- (i) We use municipal panel data to identify more clearly the relationship between trade and regional convergence. Using municipal data also provides new observations that could help improve the precision of the estimated impact, since as the sample size grows the estimators converge in probability to the quantity being estimated.
- (ii) We include the 2009 economic census to observe if, after fifteen years of NAFTA, the economy has decentralized away from Mexico City to the U.S. border regions.

New Economic Geography (NEG) theory argues that some of the most important determinants in the concentration of economic activity are market size, transportation cost, and economies of scale (Krugman & Livas-Elizondo, 1996). Krugman's (1991) model shows that the interaction between the economies of scale, transportation and congestion costs can explain the formation of cities. He develops a two-region economy where there is tension between agglomeration (or "centripetal" force) arising from economies of scale plus transport costs, while pressures for dispersion (or "centrifugal" force) arise from the transport costs to dispersed immobile farmers. He argues that manufacturing firms will try to locate themselves in or near a region with large demand for their products, but that cities' growth will be limited by congestion costs. In a later paper, Krugman and Livas-Elizondo (1996) consider the effect of trade on the location of economic activity, and replace the immobile, dispersed farmers with congestion costs as the cause of the centrifugal force. In this case, increased trade can lead to dispersion. The intuition is that as a new market arises from trade, the pull of the existent domestic market diminishes. The domestic center loses the consumers who can now consume from abroad. They apply this model to Mexico, and show that Mexico City has lost relevance as a determinant of regional economic growth over time. Thus, Krugman and Livas-Elizondo predict that the removal of trade barriers will have a larger effect for those regions close to the new market: in this case, those regions closer to the U.S. border. Second, they imply that trade will cause economic dispersion. In contrast, Paluzie (2001) and Monfort and Nicolini (2000) extend the original Krugman model assuming that labor is not internally mobile, and show that trade agreements can increase agglomeration within the country. Paluzie argues that while Krugman and Livas-Elizondo's model may describe economic distribution within a single country like Mexico, the model is more appropriate for the kind of regional inequalities that European integration might generate. Also, Paluzie's and Montfort and Nicolini's models remain closer to the basic Krugman Core-Periphery model and, therefore, their conclusions are more consistent with the general predictions of the literature of new economic geography (Paluzie, 2001).

Work with the local dimension in convergence analysis gives to our results an additional value. Agglomeration economies are positive externalities that evolve due to the spatial concentration of economic activity. Urban economic theory expects that firms obtain productive advantages from locating themselves in close

proximity to other firms, and that these benefits can explain the formation and growth of cities and industrial locations (Marshall, 1920). The main sources of agglomeration externalities arise from improved opportunities for labor market pooling, knowledge interactions, specialization, the sharing of inputs and outputs, and from the existence of public goods. As the scale and density of urban and industrial agglomerations grows, an increase in the external benefits available to firms is also expected (Graham, 2006).

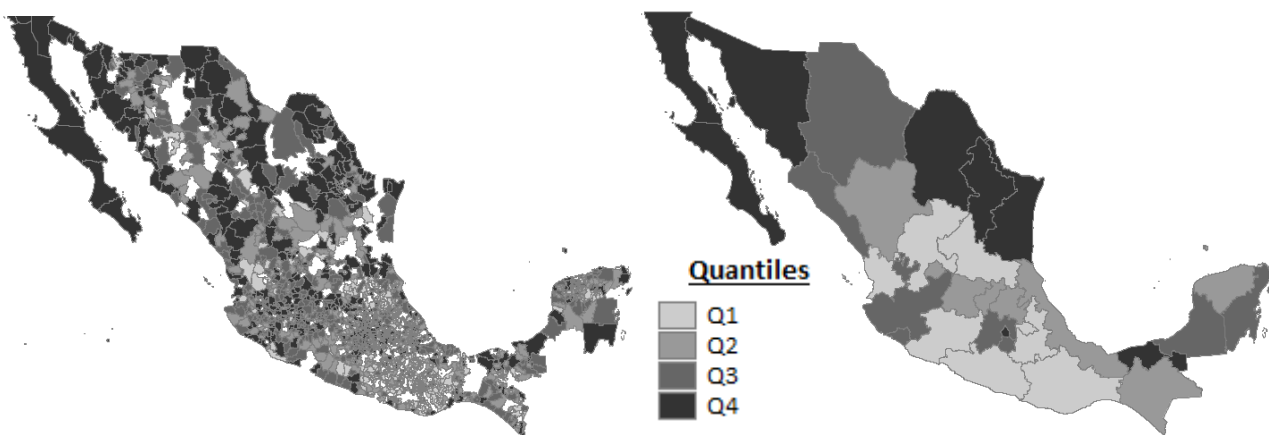
Two papers explicitly test for convergence in Mexico, but their empirical findings are mixed. Sánchez-Reaza & Rodríguez-Pose (2002) and Rodríguez-Pose & Sánchez-Reaza (2005) find that states with more trade with the US grew faster than others, and there was no significant change in this pattern after NAFTA. They do find evidence that the draw of Mexico City lessened after NAFTA, giving support to the Krugman and Livas-Elizondo hypothesis that trade has decreased agglomeration in Mexico. In contrast, Aroca et al. (2005) do not find that NAFTA substantially changed growth patterns in Mexico, and instead argue that agglomeration has emerged in the form of several income clusters.

Using the output per worker—Gross Value Added (GVA) per employee—across regions of Mexico, this paper examines whether or not trade openness and distance to the U.S. border have an effect on the regional convergence and, if this effect exists, has it clustered or dispersed within the country.

2. β -convergence conditional model with position effects

Following Krugman’s (1991) ideas, urban modelization of the economic convergence should be able to identify the core and the periphery. Figure 1 represents the Gross Value Added (GVA) for the municipalities and States in 1980. It can be seen that the states, due to their huge area – in mean, 61,265 km² – creates an important homogeneity. In addition, analysis of the variance, shows that only 13.04% of the variability is associated with the State level.

Figure 1: GVA pc of the municipalities and States - 1980



With this information, aggregate unit seem too restrictive for an accurate evaluation of a geographical effect. The mean value of the variables of interest in the state could mask important inequalities. This homogeneity would summarize rural and urban areas as one observation – losing a key information for urban convergence analysis. So, an analysis in terms of local convergence is needed to include the possible movements seen in the NEG. Therefore, this article takes into account this necessity with a modelization and specification using local convergence.

The traditional β -convergence models contains the relationship between growth and past level development. It could be formulated in an unconditional way, with just this simple correlation, or, more frequently, with control variables and even fix effects –using panel data–. In this paper we focus our attention in measuring the north border distance relevance to Mexican localities convergence behavior, so we are interested in defining a β -convergence conditional model which includes the position effects. This consideration is introduced in the model following the specification of Gonzalez Rivas (2007). In this previous research, the model includes the effect of trade in the convergence equation for the states of Mexico.

With that objective in mind, we can departure from a typical Cobb-Douglas production function of per capita income in the period t and municipality i and take differences:

$$\Delta \ln y_{it} = \Delta \ln A_{it} + \alpha \Delta \ln k_{it} + \beta + \alpha - 1 \Delta \ln L_{it} + \Delta \ln \varepsilon_{it} \quad [3]$$

where, as is usual, y is the income per capita, A the level of technology whereas L and K summarize labor and capital in the economy. In this equation, the income growth is a function of four components: The increment of technology, the increment of capital per capita, the increment of the population and an increment of shocks.

The increment of the capital per capita is expressed in Equation [4]. It could be considered the base of our analysis. The effect of the geographic position of each place with regards to a specific relevant point, as could be the distance of each municipality to the U.S.-Mexico border, is introduced in this component with D_i . The coefficient of this variable is going to indicate the effect of the U.S. economy over the Mexican growth. The interaction of $\ln D_i$ with $\ln y_{it-1}$ represents the effect over the convergence of the territory.

Additionally we can incorporate other factors of economic growth such as the specialization in industrial activities by means of a location quotient:

$$\Delta \ln k_{it} = \rho \ln k_{it-1} + \beta \ln y_{it-1} + \rho \ln D_i + \vartheta \ln y_{it-1} \ln D_i + \rho \ln LQ_{it-1} \quad [4]$$

Equation [4] includes (i) the stock of capital in each territory which is represented by k_{it-1} ; (ii) the convergence effect described by Barro and Sala-I-Martin (1991), $\ln y_{it-1}$; (iii) the effect of position by means of the distance with respect to some specific point, $\rho \ln D_i$; (iv) the interaction of this distance with the convergence effect $\ln y_{it-1} \ln D_i$; and, finally, (v) a component which takes into account cumulative processes with an index of specialization in manufacturing industry $\ln LQ_{it-1}$, this variable take into account possible processes of agglomeration economies

highlighted in the models of urban economics (see as an example Fujita, Krugman and Venables, 1999).

On the other hand, we explain the innovation as the sum of three components as represented in equation [5]:

$$\Delta \ln A_{it} = g \ln h_{it-1} + s \ln D_i + n \ln D_i \ln h_{it-1} + \delta \ln E_i + \sum_{t=1}^T \gamma_t T_t \quad [5]$$

Which are (i) human capital h_{it-1} is an important component of technological change in line with models of endogenous technological change as in Romer (1990); (ii) the effect of the position D_i , again; (iii) the interaction with human capital $\ln D_i \ln h_{it-1}$; (iv) an exogenous component is added to the equation as the influence of other unmeasurable variables E_i and, finally, (v) a sum of dummies T_t for each period is included to consider the homogeneous and neutral technological change from a point of view of Hicks, the first period is taken as a reference.

Combining [4] and [5] our final model to estimate is:

$$\begin{aligned} \Delta \ln y_{it} = & g \ln h_{it-1} + s \ln D_i + n \ln D_i \ln h_{it-1} + \delta \ln E_i + \sum_{t=1}^T \gamma_t T_t \\ & + \alpha \ln k_i + \rho \ln LQ_{it-1} + \beta \ln y_{it-1} + r \ln D_i \\ & + \vartheta \ln y_{it-1} \ln D_i + \beta + \alpha - 1 \Delta \ln L_{it} + \Delta \ln \varepsilon_{it} \end{aligned} \quad [6]$$

Which is similar to a traditional β -convergence conditional model but with distance to a specific relevant point.

The influence of the distance appears in two components due to the interaction term:

$$\frac{\partial \Delta \ln y_{it}}{\partial \ln y_{it-1}} = \alpha(\beta + \vartheta \ln D_i) \quad [7]$$

The convergence derivate has the usual β -coefficient and a possible effect of interaction with the proximity to the U.S. border. These components will be the key element in our research to evaluate the influence of the geographic position over the Mexican convergence and growth.

3. Database and estimation procedure

Data are obtained from the Mexico's Economic Census. The Mexican National Institute of Statistics (INEGI) elaborates this database for the municipalities every five years. It provides information about the geographic distribution of the economic activity and population. The information is available at the local level – 2,377 municipalities– for the period 1980-2010 with 5 year gaps.

GVA is reported in real terms of the different sectors, except for the primary sector. The omission of primary sector implies that the GVA could be negative in small and rural areas. In order to avoid this problem, municipalities with a negative

value in GVA in any year were eliminated and, therefore, the final number of municipalities in this research is 1,902.

With this information and the population, our dependent variable can be built. In our model, it is the growth of the GVA per capita (y) $\ln y_{it} - \ln y_{it-5}$ but with gaps of five years following the periodicity of the sample.

The link with the US economy is introduced through a variable of distance (D_i) in thousands of kilometers by road. This variable measures the propensity of a territory to be influenced by the geographical position in different aspects. In the first place, there is an important effect on the location of the industry due to the trade flow between the two countries. So, it is assumed that the nearest territories have an intrinsic advantage of position. Besides, there is also a bigger movement of migration with US and possible spillovers and cultural influence between the two countries. As a result, it is extremely difficult to measure all the effects that come with this proximity without missing part of the relevant information in the process. Therefore, we try to use the distance as a summary of the different effects of integration with the neighbor country.

The distance to the US border, (D_i), is a continuous variable that reflects the road distance (in thousands of kilometers) from municipality 'i' to the closest U.S. border crossing point¹. Distance represents a time-invariant effect, so it cannot be estimated with the standard approach of Fixed Effects model as in Gonzalez-Rivas (2007), Sanchez-Reaza (2002) or Cuadrado-Roura (2001). The intercepts would represent all the constant factors, making impossible to measure the effect of time-invariant variables. As in Gepper and Stephan (2008), the influence of this type of variables have to be evaluated with cross-sectional regressions.

The estimation of human capital (h_{it}) is introduced by means of a proxy of education as in Mankiw, Romer and Weil (1992). This proxy is the percentage of population with undergraduate or graduate degree. The mean of this variable, 3.1% of population with a degree, points to a country with a low level of education.

Stock of capital could be difficult to measure, especially at a local level. This is a common problem with most of the developing countries. That is why we assume that it is homogeneous in each state. As a result, we introduce a dummy variable for each state to take into account this component of the steady state.

Specialization is considered through a location quotient² (LQ_{it}) of the industry sector of each territory. This coefficient compares the industrialization in a municipality with the rest of the country. Therefore, it is not surprising that the mean of this index is near to one, but it has an important variability, which indicates a possible polarization of the economy.

¹ To create this variable, we first obtain the name of the municipality capital (INEGI, 2008). Second, we calculate the road distance from each of the municipalities to the different U.S. border crossing points, by entering the destination and origin points in the webpage "Traza tu Ruta" provided by the Secretaría de Comunicaciones y Transportes (2008). Finally, we chose the shortest distance for each municipality from the different distances provided by each U.S. border crossing point.

² We use the standard formula $\frac{e_i^{ind}}{E^{ind}}$. This coefficient will be bigger than one if the percentage of employment in the industry is higher than in the rest of the country. It measures the relative concentration of industry in the region.

Finally, the increment of the labor force ($\Delta \ln L_{it}$) is introduced with the common measure of the population growth in that municipality.

The variables in levels, as the human capital and the specialization of each territory have been lagged following the model of the previous section.

Table 1: Summary of the main variables

Variable	Mean	Std. Dev.	Min	Max
y_{it}	6.704	41.641	0	2151.302
h_{it}	0.031	0.038	0	0.492
LQ_{it}	0.965	5.453	-507.411	267.277
$\Delta \ln L_{it}$	0.055	0.124	-1.288	2.089
D_i	1.066	0.443	0.001	2.387

4. Results

A basic equation of unconditional convergence is estimated in order to observe the general process, which allows obtaining a first impression of the process of convergence in Mexico. Heteroscedasticity was also tested in our model and it could not be rejected in our sample. Therefore, this problem is avoided using the estimation of Generalized Least Squares (GLS).

Table 2 summarizes the results and shows a significant process of convergence in the Mexican economy in both periods. In terms of speed of convergence we would obtain a speed of 5.8% for the first period and 3.66% for the second period. There is also a positive and significant convergence rate, however, the coefficient changes from -0.252 to -0.152. This reduction is significant if we take into account the standard deviations. So, this process seems to be slower during the last period. Although, it is not the same scale of analysis, this outcome goes in line with the significant reduction of the β -convergence found in Sanchez-Reaza & Rodríguez-Pose (2002) in the period 1995-2010.

Table 2: Unconditional β -convergence in Mexico
(1980-1995 and 1995-2010)

	1980-1995	1995-2010
$\ln y_{it-5}$	-0.252***	-0.152***
Constant	-0.05***	0.324***
λ	5.8%	3.66%
R^2	15.23%	11.68%

This analysis is only a first step in order to have a first impression of the movements of convergence in Mexico. It can be seen in the theoretical model applied that other variables can have an effect on the growth of GVA per capita. If we assume that they are not independent to the level of wealth, it can produce an important bias. However, this analysis allows seeing in general terms if the poor territories grow faster than the richer ones.

The empirical results of the complete equation [6] are reported in table 3. This equation includes the traditional factors available in our data as well as temporal and dummies for states (not included in the table).

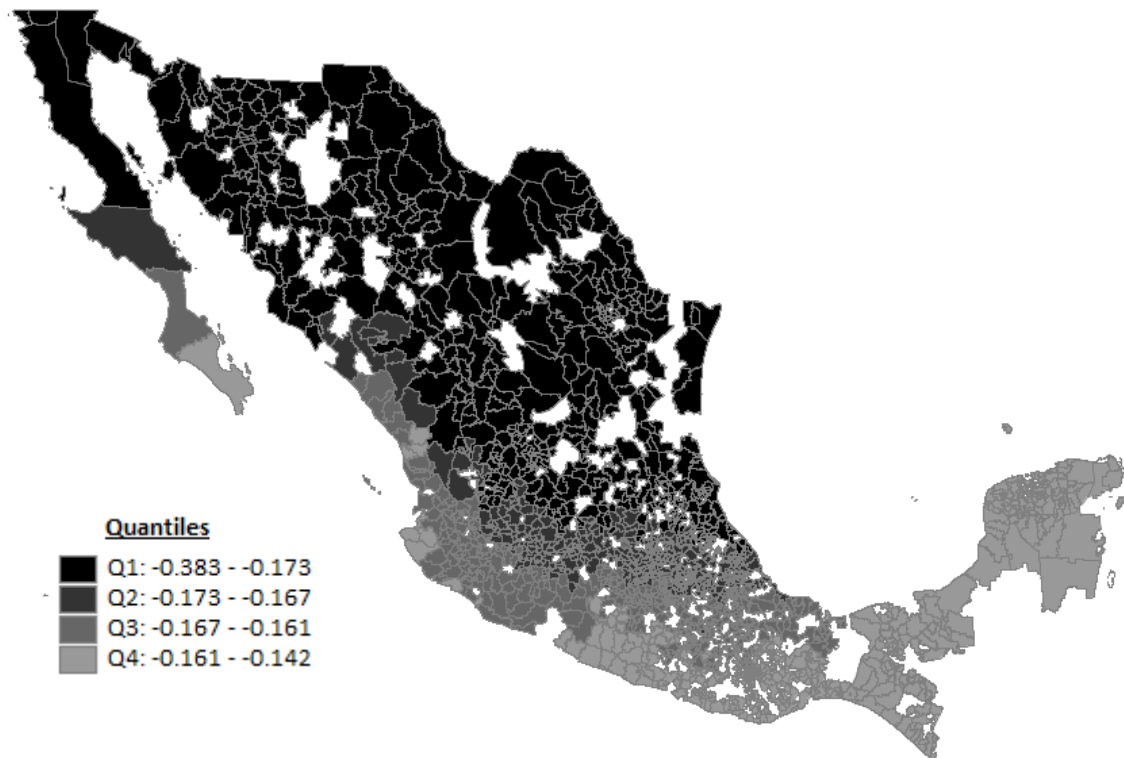
Table 3: Conditional β -convergence in Mexico
(1980-1995 and 1995-2010)

	1980-1995	1995-2010
$\ln y_{it-5}$	-0.381***	-0.230***
$\Delta \ln L_{it}$	0.158***	-0.207***
$\ln D_i \ln h_{it-5}$	-0.053***	-0.035***
$\ln h_{it-5}$	0.398***	0.204***
$\ln L Q_{it-5}$	0.110***	0.090***
$\ln D_i$	-0.271***	-0.105**
$\ln y_{it-5} \ln D_i$	0.031***	-0.001
Temporal dummies		
1990	-0.671***	
1995	-0.276***	
2005		-0.024***
2010		-0.233***
Constant	2.116***	1.390***

As in the unconditional convergence results, there is a significant reduction of the β coefficient in the second period: in this analysis, it falls from -0.381 to -0.230. The conclusion does not change with the inclusion of the standard determinants of the steady state. This confirms that there is a significant reduction in the process of convergence in the last period that is not caused by the determinants of the steady state.

The results presented in Table 3 show that the interaction term of distance and per capita income is not always the same, contrary to what is expected. In the first period, 1980-1995, the municipalities far from the border tend to converge slower with a positive and significant coefficient of the interaction term. So, it can be seen that the convergence effect decreases with the distance. It can be seen in Figure 2 the representation of the marginal effect of the variable $\ln y_{it-5}$ depending on the distance to the US border. However, in the period 1995-2010 the interaction term is not significant.

Figure 2: β -convergence in the period 1980-1995



Depending on the moment of time, the influence of a rich country can be significant or not in the process of convergence. It should be noted that this variability in the influence of the neighbor country on the convergence could indicate that it may be affected.

The distance variable on the other hand, has a negative coefficient and significant in both periods. This indicates that municipalities closer to the US border are more dynamic than the rest of the country and they tend to grow faster. Based on previous literature, this coefficient has the expected sign if we think that the proximity to a rich country increments trade, spillovers and migration links (Baylis et al., 2012). According to Gonzalez-Rivas (2007) and increment of trade generates an increment in the growth of the richer territories. This type of result also goes in line with the literature of the New Economic Geography. According to the core-periphery model of Fujita, Krugman and Venables (2001), when two economies have less barriers, one of them tend to concentrate all the industry due to backward and forward links.

In the control variables, the coefficient of the human capital has a positive coefficient in both periods. This coefficient is coherent with the literature that explains increment of productivity with the human capital as Mankiw Romer and Weil (1992). This variable tries to measure that the productivity of the labor is not homogeneous. So, according to this theory, workers with a higher level of education tend to generate a higher value added. In macroeconomic terms, a population with a higher level of education increments the productivity of the municipality.

The interaction term of this variable with the distance would indicate the increment on the influence of the human capital created by the influence of the US economy. This variable has a negative and significant coefficient in both periods. This result is expected and consistent with the idea of spillovers. Regions near to the US border have a better benefit from human capital. So, it seems that they tend to have an economy where human capital is more suitable than regions in the south.

The coefficient of the specialization also has the expected sign, positive. This coefficient could indicate the process of Location Economies (see Rosenthal and Strange 2001, Beardsell and Henderson 1999, Porter 1990). However, it could also be seen as a variable of division of labor with the advantages in terms of productivity pointed by the classical economics since Adam Smith.

The increment of the population has the expected sign in the period 1980-1995 with a negative a higher than -1 coefficient. However, in the second period this coefficient is positive. This result is contrary to the classical hypothesis of a steady state as in the Mankiw Romer and Weil, where the population growth has a negative effect. This result could indicate that the population growth could also have a positive effect through the other components of equation [6].

Overall, it seems that those municipalities near the border have advantages compared with the rest of the countries. Territories near the border may obtain benefits from been near to a rich country. Oppositely, the effect over the convergence is not constant as expected from the literature. This variability could indicate that it can be altered with different economic policies (e.g. the NAFTA).

5. Conclusions and policy implications

This paper studies the regional convergence from trade and proximity to the main consumer market in Mexico after NAFTA. The analysis demonstrates that Mexico's trade liberalization, via NAFTA, has caused important changes in regional disparities, exacerbating those disparities which have existed in Mexico since industrialization began in the 1930s.

From the outset, we asked whether NAFTA increased the concentration of economic activity in Mexico, especially along the U.S. border, benefiting those regions more than their neighbors. Our results show that NAFTA has indeed led to concentrations of economic growth in these border regions. One important finding we prove in the method is that the convergence process is lost at the aggregate level (State level). Therefore, the use of information available at the municipal level is imperative.

Trade liberalization has not reduced territorial disparities domestically, but rather has led to a greater polarization within Mexico. This paper confirms the idea that Mexican municipalities close to the U.S. market have profited from integration by increasing their β convergence, production and incomes. Regions further away from the U.S., such as the South, have not become as integrated into world markets,

even losing from NAFTA. Thus, the introduction of liberalization policies has not been able to reduce this converging gap.

Even though centrifugal forces are starting to function, there is a significant reduction of the β coefficient after NAFTA. We also notice that factors such as industrial specialization, level of education and size of the labor market play an important role in the increase of regional productivity, which, in the long run, will intensify the convergence of the regions. These indicate that better policies will be needed to control the increase of regional disparities. Industrial, educational, and regional development policies must be quickly developed to set up the foundations for growth in all regions. Further research is necessary to determine what other factors influence regional convergence in Mexico. Factors that were previously considered fundamental in growth theory are quickly giving way to different and less known factors that are likely to shape the next phase of Mexico's regional development.

6. References

- Aroca, P., Bosch, M., Malo, W.F. (2005, December). Spatial dimensions of trade liberalization and economic convergence: Mexico 1985-2002. *The World Bank Economic Review*.
- Barro, R.J., Sala i Martin, X. et al (1991) Convergence across states and regions. *Brookings Papers on Economic Activity*, 1, 107-182.
- Baylis, K., Garduño-Rivera, R., & Piras, G. (2012, January). The distributional effects of NAFTA in Mexico: Evidence from a panel of municipalities. *Regional Science and Urban Economics*, 42(1-2), 286-302.
- Graham, D.J., (2006) Wider economic benefits of transport improvements: link between agglomeration and productivity. Imperial College London, Centre for Transport Studies. London: Imperial College London.
- Hanson, G.H., (2001, September) US-Mexico Integration and Regional Economies: Evidence from Border-City Pairs. *Journal of Urban Economics*, 50(2), 259-287.
- INEGI. (2006) Principales resultados por localidad 2005 (ITER) from II Conteo de Población y Vivienda 2005. Retrieved June 1, 2008, from Instituto Nacional de Estadística y Geografía (INEGI): <http://www.inegi.gob.mx/est/contenidos/espanol/sistemas/conteo2005/localidad/iter/default.asp>
- INEGI. (2008, April 18). Catálogo de Entidades, municipios y localidades. Retrieved May 14, 2008, from Instituto Nacional de Estadística y Geografía: <http://mapserver.inegi.gob.mx/mgn2k/?s=geo&c=1223>
- Krugman, P., (1991, Jun.) Increasing Returns and Economic Geography. *The Journal of Political Economy*, 99(3), 483-499
- Krugman, P., Livas-Elizondo, R., (1996, April) Trade policy and the Third World metropolis. *Journal of Development Economics*, 49(1), 137-150.

- Marshall, A., (1920) *Principles of Economics*. London: Macmillan.
- Monfort, P., Nicolini, R., (2000) Regional convergence and international integration. *Journal of Urban Economics*, 48(2), 286–306.
- Musik, G.A., (2004) Trade and innovation performance of Mexico after NAFTA. Center for Policy Research on Science and Technology (CRPROST). Simon Fraser University. Burnaby, B.C., Canada. Working Paper 2004-0. <http://www.sfu.ca/cprost/publications.htm>
- Paluzie, E., (2001) Trade policies and regional inequalities. *Papers in Regional Science*, 80, 67-85.
- Sánchez-Reaza, J., Rodríguez-Pose, A., (2002) The impact of trade liberalization on regional disparities in Mexico. *Growth and change*, 33(1), 72-90.
- Secretaría de Comunicaciones y Transportes. (2008). Traza tu Ruta. Retrieved May 23, 2008, from Secretaría de Comunicaciones y Transportes: http://aplicaciones4.sct.gob.mx/sibuac_internet/ControllerUI?action=cmdEsco geRuta
- Rey, S., Mountouri, B.D., (1999) US Regional income Convergence: A Spatial Econometrics perspective. *Regional studies*, 33(2), 143-156.
- Rivas, M.G., (2007) The effects of trade openness on regional inequality in Mexico. *The Annals of Regional Science*, 41(3), 545-561.
- Rodríguez-Pose, A., Sánchez-Reaza, J., (2005) Economic Polarization through Trade: Trade Liberalization and Regional Growth in Mexico. In R. Kanbur, & A. J. Venables, *Spatial Inequality and Development*. Oxford: Oxford University Press.
- Smith, P., (1990). Mexico since 1946. In L. Bethel, *The Cambridge History of Latin America* (Vols. 7; Latin America Since 1930: Mexico, Central America and the Caribbean). Cambridge: Cambridge University Press.