

Effects on the distribution of population and economic activities of Mexico, derived from the globalization of trade

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Introduction

In 1994, México, the USA and Canada signed the “North America Free Trade Agreement” (NAFTA), changing the way in which the industrial production and export – import activities take place. Mexican exports have increased six times since 1990 with these two countries, allowing Mexico to become the 3rd major exporter to the USA. In 1999 we signed a similar agreement with the European Community (ECTA), therefore, the import – export activities with the EC are forecasted to increase 10 times by 2010.

NAFTA is changing the spatial pattern of human settlements and industry allocation, because “location factors” privilege cities in the North – South corridor (NAFTA ROAD) between Mexico City, Guadalajara and the USA, as well as border towns in the north, also affecting many cities and regions that are far from this road.

NAFTA and ECTA will force Mexico to re-plan its communication infrastructure to allow a better communication and efficiency of cities, airports and ports in the Pacific and the Gulf of Mexico.

A much precise city and regional planning should be done, therefore, an analysis of the above events are presented in this paper with the main purpose of connecting spatial location of major Mexican cities with some economic and social indicators, which allowed us to make some conclusions in relation with this phenomena.

An analysis of Mexico’s international trade is presented, this, in order to understand its process and to relate it with the urban development of the country. Also, two experiments related to the per capita GIP change of major cities and the social conditions of the states where they are located are shown, this, in order to understand how economic and social variables are related with the spatial distribution of major cities.

Definitions

For this paper the following definitions are made:

- ? **NAFTA ROAD.** Three main highways make up this road, Mexico City – Laredo, Guadalajara – Queretaro and Guadalajara – San Luis. Along these highways Mexico City–Toluca, Queretaro, San Luis, Saltillo, Monterrey, Laredo, Guadalajara, Leon, Irapuato, Salamanca, Celaya and Aguascalientes are located.
- ? **USA BORDER STATE.** Seven Mexican states fall under this definition, Baja California, Baja California Sur, Sonora, Chihuahua, Coahuila, Nuevo Leon and Tamaulipas. Although, Baja California Sur does not physically border with the USA, it is considered as a Border State, because of its strong historical and economic relation with the USA.

International trade

Exports with NAFTA

NAFTA was signed in 1994, for this reason, imports and exports between the United States of America (USA), Canada and Mexico started rising dramatically.

Before NAFTA, the exports from Mexico to the USA and Canada registered the following figures: 1990 – 18,876 million dollars, 1991 – 35,037 million dollars, 1992 – 38,419 million dollars, 1993 – 44,609 million dollars, representing an annual increase from 1990 to 1993 of 33.16%. If we only consider the three years previous to NAFTA, this annual growth decreases to 12.88%. These exports represented 70.33%, 82.08%, 83.17% and 85.98% of the total exports of the country from 1990 to 1993 respectively.

In 1994 when the treaty began, exports with NAFTA increased to 53,324 million dollars representing 87% of the Mexican exports with our partners, these exports raised from this year to 2002 to 108,327 million dollars.

From 1994 to the present year, Mexican exports in absolute terms had risen much more than in the years previous to NAFTA.

The real annual growth of exportations between 1994 to 2002 was 10.65%, figure significantly lower from that of the four previous years before NAFTA, however, in absolute terms the exports doubled in this period, fact that put Mexico between the 10 more important exporters in the world.

Exports with ECTA

ECTA was signed in 1999, opening new free trade markets for Mexico. From 1990 to 1998, previous period of analysis of this treaty, exports from Mexico to the EC rose from 3,203 to 3,496 million dollars, however it is important to say that the percentage there represented decreased, since in 1990 exports to EC represented 11.93% from the total exports of Mexico, while in 1998 this figure declined to 2.98%.

In 1999 when this treaty began, exports with ECTA increased to 4,794 million dollars representing 3.51% of the Mexican exports, these exports practically stayed steady since 2002 the amount was 3,490 million dollars.

Total exports

Mexican exports had increased from 28,838 million dollars in 1990 to 119,469 million dollars in 2002, that is to say they grew more than four times, and represented an annual increase of 14.39%, although the maximum exports took place in 1999, year in which they amounted 136,703 million dollars. By the year 2002 the total Mexican exports were close to 20% of the Gross Internal Product (GIP).

Imports with NAFTA

From 1990 to 1994 imports from Canada and the USA grew from 20,949 million dollars to 58,513 million dollars, therefore, registering a 29% annual increase. From 1994 until 1999 a 13.10% increase was registered since by 1999 the total imports reached 108,305 million dollars.

Table 1

TOTAL EXPORTS BY MAIN COUNTRY
(Millions of dollars)

Country	1990	1991 a/	1992	1993	1994	1995	1996	1997	1998	1999 P/	2001	2002 P/
Unated States of America	18,417.7	33,912.2	37,419.5	43,067.6	51,854.9	66,336.5	80,540.6	94,379.0	103,113.2	120,609.6	105,539.82	106,269.92
Canada	458.3	1,125.2	999.7	1,541.5	1,469.5	1,979.4	2,170.4	2,156.7	1,521.0	2,311.3	2,367.23	2,057.14
Subtotal NAFTA	18,876.0	35,037.4	38,419.2	44,609.1	53,324.4	68,315.9	82,711.0	96,535.7	104,634.2	122,920.9	107,907.0	108,327.1
% NAFTA	70.33%	82.08%	83.17%	85.98%	87.59%	85.89%	86.16%	87.42%	89.05%	89.92%	90.35%	90.68%
Spain	1,457.1	1,149.6	1,234.5	873.7	851.4	778.7	919.5	939.0	715.2	944.1	1,001.15	1,107.65
Germany (d)	452.9	529.4	490.8	427.5	392.7	515.5	640.9	718.8	1,152.5	2,073.2	1,160.41	880.18
Unated Kingdom	186.8	219.2	232.8	214.5	264.3	504.5	562.5	699.5	655.4	759.9	522.67	513.79
Holland	335.7	183.1	163.1	122.6	172.4	241.6	204.8	261.7	339.4	487.6	379.80	472.88
Belgium	219.5	321.4	283.1	281.5	261.6	419.6	393.5	372.7	230.8	240.7	246.27	259.39
France	551.5	599.8	566.5	428.9	490.5	475.9	425.8	430.0	403.3	289.0	282.31	256.20
Subtotal European Community Countries	3,203.1	3,002.5	2,970.8	2,348.7	2,432.9	2,935.8	3,147.0	3,421.7	3,496.6	4,794.5	3,592.6	3,490.1
% EC	11.93%	7.03%	6.43%	4.53%	4.00%	3.69%	3.28%	3.10%	2.98%	3.51%	3.01%	2.92%
Venezuela	136.7	126.6	199.3	227.4	173.6	379.7	423.6	675.0	546.1	436.3	503.23	502.27
Holland Antilles	76.5	69.0	38.5	28.5	6.1	41.3	501.2	337.3	248.5	530.9	704.48	448.51
Colombia	110.3	155.7	218.7	235.9	304.2	453.3	438.2	513.3	449.1	367.7	395.12	422.59
Guatemala	108.2	141.9	153.3	203.8	217.7	310.2	360.2	498.4	590.8	543.6	411.87	383.29
Brazil	168.5	187.4	408.1	290.8	376.0	800.3	878.5	703.0	535.7	399.7	471.42	371.51
Switzerland	206.5	120.8	130.0	141.3	157.0	608.1	360.4	343.9	259.1	445.4	373.27	338.48
Japan	1,505.9	1,240.9	793.5	700.4	988.3	928.1	1,363.2	1,156.4	855.6	777.0	456.21	327.23
Dominic Rjepublic	107.6	149.6	178.4	203.0	160.8	167.3	248.0	278.3	270.4	299.8	366.27	319.02
Popular China (Pekin)	ND	ND	ND	44.6	41.9	36.9	38.2	45.9	106.0	153.8	200.15	299.63
Costa Rica	64.4	79.8	107.0	99.3	94.6	137.3	188.1	221.4	282.0	250.5	247.46	253.00
Singapur	33.2	36.8	103.6	130.7	66.7	173.5	235.1	387.3	449.4	479.6	156.18	245.94
Panama	71.5	99.2	108.7	145.1	121.8	224.1	280.6	334.3	351.1	303.4	173.93	239.14
El Salvador	106.4	116.1	120.5	112.1	127.2	147.7	158.1	214.1	217.7	244.4	197.95	199.88
Chile	91.1	126.8	152.5	194.0	203.4	489.9	688.5	842.4	625.1	366.4	297.21	187.32
India	33.5	35.8	2.5	9.6	41.5	25.1	21.2	35.2	25.4	19.7	122.58	172.55
South Corea	103.5	34.7	41.4	25.7	38.3	88.5	197.7	68.4	73.5	126.3	168.57	161.06
Nacionalist China (Taiwán)	69.4	75.5	43.3	21.4	22.9	43.8	41.6	42.7	49.9	91.2	124.32	158.79
Puerto Rico	38.5	40.6	48.5	48.5	88.2	135.9	131.3	149.6	187.5	193.4	141.72	153.34
Honduras	53.4	55.3	78.6	37.9	69.8	68.6	96.9	116.0	134.6	156.0	134.47	148.96
Bermudas	1.4	38.7	124.3	140.0	31.0	47.5	61.0	84.5	38.2	108.4	135.79	147.62
Peru	65.8	77.6	62.7	94.0	110.2	178.9	211.3	238.4	195.7	178.1	134.75	145.63
Hong Kong	43.2	87.0	62.1	61.6	134.8	505.7	433.1	283.5	216.8	177.8	91.29	133.36
Others	1,563.8	1,551.8	1,630.1	1,734.5	1,548.9	2,298.2	2,785.7	2,904.7	2,661.3	2,338.6	1,920.82	1,888.73
Subtotal Rest	4,759.3	4,647.6	4,805.6	4,928.1	5,124.9	8,289.9	10,141.7	10,474.0	9,369.5	8,988.0	7,929.1	7,647.8
% Rest	17.73%	10.89%	10.40%	9.50%	8.42%	10.42%	10.56%	9.48%	7.97%	6.57%	6.64%	6.40%
Total Exportation	26,838.4	42,687.5	46,195.6	51,885.9	60,882.2	79,541.6	95,999.7	110,431.4	117,500.3	136,703.4	119,428.7	119,465.0

P/ Preliminar.
ND Non available.
NS Non significative.
a/ From this year is included the exportation bonden assembly plants.
d/ Because the German unification in 1991, the official denomination is Germany.

Source: <http://www.inegi.gob.mx/difusion/espanol/fsiec.html>

From 1999 to 2002 a yearly decrease of 9.71% took place because by this year the total imports from the USA and Canada accounted only for 82,062 million dollars.

The importance of the imports from Mexico's NAFTA partners is reflected in the numbers they represent from the total amount of imports from all over the world.

In 1990 imports from the USA and Canada represented 63.87% the total. This figure steady increase until 1996, year in which imports from these two countries reached to 75.2% of those of the total which were 91,978 million dollars. From that year until 2002 a percentage annual increase is noticed, since by 2002 the imports from our NAFTA partners were just 66.17% from a total of 124,024 million dollars.

Imports with ECTA

From 1990 to 1998, imports from Mexico to the EC rose from 5,024 to 11,213 million dollars, however, the percentage their represented decreased, since in 1990 imports to EC

represented 15.32% from the total exports of Mexico, while in 1998 this figure declined to 8.69%.

In 1999 when this treaty began, imports with ECTA increased to 16,873 million dollars representing 11.54% of the Mexican imports, these imports decreased in 2002 to 11,556 million dollars, also decreasing their relative importance to 9.4%.

Table 2

TOTAL IMPORTS BY MAIN COUNTRY
(Millions of dollars)

Country	1990	1991 a/	1992	1993	1994	1995	1996	1997	1998	1999 P/	2001	2002 P
Unated States of America	20,491.3	36,814.3	44,216.2	46,464.7	56,913.2	53,805.6	67,436.6	82,001.2	93,225.1	105,356.5	86,284.9	78,896.0
Canada	458.4	670.1	1,051.7	1,163.3	1,600.2	1,374.3	1,743.6	1,968.0	2,292.1	2,948.9	3,100.3	3,166.2
Subtotal NAFTA	20,949.7	37,484.4	45,267.9	47,628.0	58,513.4	55,179.9	69,180.2	83,969.2	95,517.2	108,305.4	89,385.2	82,062.3
% NAFTA	63.87%	72.47%	70.50%	70.51%	71.37%	74.14%	75.21%	74.23%	74.00%	74.09%	71.40%	66.17%
Germany d/	1,840.2	2,328.2	2,477.4	2,831.8	3,088.2	2,687.1	3,173.7	3,902.3	4,558.0	5,032.1	4,603.0	4,561.9
Italy	457.1	622.7	983.7	818.3	1,008.4	771.5	999.1	1,326.0	1,581.1	5,083.1	1,550.8	1,606.6
Spain	520.5	574.6	875.3	1,151.6	1,333.5	694.1	629.5	977.7	1,257.0	1,321.8	1,293.5	1,592.4
France	711.7	967.0	1,304.6	1,077.1	1,493.1	979.2	1,019.0	1,182.4	1,429.9	1,393.7	1,161.9	1,308.6
Unated Kingdom	491.4	499.3	619.4	589.5	702.4	531.8	679.4	915.3	1,056.2	1,135.3	925.8	1,006.0
Ireland (Eirre)	213.2	70.3	179.3	146.7	129.0	181.1	239.1	265.9	308.5	1,649.4	408.7	458.0
Belgium	248.6	328.0	306.3	269.1	329.2	210.0	238.8	327.3	355.4	305.2	506.7	396.1
Holland	225.5	215.2	239.6	240.6	238.7	217.9	225.1	261.9	328.4	252.8	345.1	382.8
Sweden	316.3	356.1	332.6	260.9	274.0	200.7	228.8	354.3	339.2	699.6	649.9	343.5
Subtotal European Community Countries	5,024.5	5,961.4	7,318.2	7,385.6	8,596.5	6,473.4	7,432.5	9,513.1	11,213.7	16,873.0	11,445.3	11,656.0
% EC	15.32%	11.53%	11.40%	10.93%	10.49%	8.70%	8.08%	8.41%	8.69%	11.54%	9.14%	9.40%
Japan	1,470.5	1,783.4	3,040.6	3,368.9	3,811.5	3,608.0	3,900.8	4,333.6	4,553.4	1,022.6	5,709.6	7,098.9
Popular China (Peikin)	ND	ND	ND	353.3	428.6	520.6	759.7	1,247.4	1,616.5	1,921.1	2,647.9	4,245.1
Nacionalista China (Taiwán)	315.4	428.9	542.7	657.9	865.1	716.2	890.9	1,136.5	1,526.6	1,556.8	1,858.0	3,191.6
South Korea	232.9	84.3	617.2	661.9	733.7	974.2	1,177.4	1,831.0	1,951.3	2,964.0	2,574.7	2,908.2
Brazil	481.9	803.0	1,108.7	1,192.5	1,205.4	565.3	690.0	869.3	1,037.8	1,128.9	1,496.7	1,736.0
Malasya	40.8	54.1	166.6	205.7	318.2	436.9	535.0	738.8	848.9	325.6	1,311.7	1,506.0
Singapur	46.5	85.7	104.2	158.3	212.5	289.2	382.9	425.6	493.0	540.1	710.3	973.2
Chile	61.2	49.8	95.5	129.9	227.7	498.3	402.0	372.4	551.9	683.5	715.9	759.3
Philippines	6.7	19.4	29.5	47.7	71.3	66.6	137.8	279.0	325.5	378.0	548.3	747.7
Tailand	57.7	43.1	96.8	136.7	215.1	166.5	244.1	376.7	405.5	379.0	447.8	587.2
Switzerland	335.1	378.9	496.5	497.3	489.8	388.7	456.6	558.9	588.7	720.4	563.8	568.4
Argentina	401.6	364.8	240.8	250.1	329.8	190.7	299.6	236.2	263.6	211.7	254.6	480.8
Indonesia	36.3	66.4	105.8	196.0	246.6	167.5	250.0	299.0	329.0	329.7	319.9	382.3
Hong Kong	230.3	308.9	403.2	316.8	249.5	159.4	129.2	189.4	216.1	232.2	312.9	369.7
Venezuela	172.4	140.3	207.3	228.9	297.2	214.0	234.0	421.2	303.4	297.1	357.7	347.7
India	40.7	39.2	64.6	87.9	135.2	120.6	124.5	204.1	231.7	329.4	280.0	327.2
Australia	64.8	79.6	104.8	112.9	165.9	99.3	128.4	166.5	244.4	273.7	241.9	265.8
Colombia	34.5	49.7	72.3	83.4	121.0	97.5	97.0	124.2	151.3	220.4	226.2	260.2
Costa Rica	38.4	20.6	14.5	21.8	27.5	15.6	57.6	77.4	87.4	191.4	146.8	254.4
Others	2,760.8	3,478.6	4,115.6	3,827.7	4,724.2	3,477.2	4,468.4	5,750.7	6,615.3	7,289.0	3,628.5	3,296.4
Subtotal Rest	6,828.5	8,278.7	11,627.2	12,533.6	14,875.8	12,774.3	15,365.9	19,637.9	22,341.3	20,994.6	24,353.1	30,305.9
% Rest	20.82%	16.01%	18.11%	18.56%	18.14%	17.16%	16.71%	17.36%	17.31%	14.36%	19.45%	24.44%
Total Importation	32,802.7	51,724.5	64,213.3	67,547.2	81,985.7	74,427.8	91,978.6	113,120.2	128,072.2	146,173.0	125,183.5	124,024.2

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Total imports

Mexican imports had increased from 32,802 million dollars in 1990 to 124,024 million dollars in 2002, that is to say they tripled, and represented an annual increase of 12.71%, although the maximum exports took place in 1999, year in which they amounted 146,173 million dollars. By the year 2002 the total Mexican imports were also close to 20% of the Gross Internal Product (GIP).

Exports – imports balance
Balance with NAFTA

Before NAFTA, Mexico had a negative balance with its NAFTA partners, since the trade deficit with the USA and Canada in 1990 amounted to 2,074 million dollars, figure that by 1994, year of the NAFTA treaty, rose to a deficit of 5,189 million dollars. From 1995 to 2002 Mexico has had a trade surplus with its NAFTA partners with great advantages. By 1995 the Mexican surplus was 13,136 million dollars, that is to say we have a 300% increase in our commercial relations favoring us. This surplus dramatically increased by 2002 in which it accounted for more than 26,000 million dollars, twice as much as in 1995.

Balance with ECTA

Mexico has had a negative balance with its ECTA partners, since 1990, year in which a deficit of 530 million dollars took place. By 1999, year of the ECTA treaty, the deficit amounted 4,271 million dollars, increasing it in 2002 to 5,265 million dollars. This process shows an enormous advantage to the EC.

Total balance

In terms of the commercial trade balance with the whole international community, from 1990 to 2002 Mexico has had a negative balance. In 1990 Mexico had a total trade deficit of 5,964 million dollars, increasing this deficit for its maximum of this period by 1994 to 21,103 million dollars, from this year on and two years after NAFTA, the deficit disappeared, nevertheless, from 1997 to 2002 we had again a negative balance with 4,559 million dollars deficit in 2002.

Table 3

COMMERCIAL BALANCE BY MAIN COUNTRY, 1990-2002
(Millions of dollars) (EXPORTS MINUS IMPORTS)

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999 P/	2001	2002
United States of America	-2,073.6	-2,902.1	-6,796.7	-3,397.1	-5,058.3	12,530.9	13,104.0	12,377.8	9,888.1	15,253.1	19,255.0	27,373.9
Canada	-0.1	455.1	-52.0	378.2	-130.7	605.1	426.8	188.7	-771.1	-637.6	-733.1	-1,109.1
Subtotal NAFTA	-2,073.7	-2,447.0	-6,848.7	-3,018.9	-5,189.0	13,136.0	13,530.8	12,566.5	9,117.0	14,615.5	18,521.9	26,264.8
Holland	110.2	-32.1	-76.5	-118.0	-66.3	23.7	-20.3	-0.2	11.0	234.8	34.7	90.1
Belgium	-29.1	-6.6	-23.2	12.4	-67.6	209.6	154.7	45.4	-124.6	-64.5	-260.4	-136.7
Spain	936.6	575.0	359.2	-277.9	-482.1	84.6	290.0	-38.7	-541.8	-377.7	-292.3	-484.7
France	-160.2	-367.2	-738.1	-648.2	-1,002.6	-503.3	-593.2	-752.4	-1,026.6	-1,104.7	-879.6	-1,052.4
Germany	-1,387.7	-1,798.8	-1,986.6	-2,404.3	-2,695.5	-2,171.6	-2,532.8	-3,183.5	-3,405.5	-2,958.9	-3,442.6	-3,681.7
Subtotal European Community Countries	-530.2	-1,629.7	-2,465.2	-3,436.0	-4,314.1	-2,357.0	-2,701.6	-3,929.4	-5,087.5	-4,271.0	-4,840.1	-5,265.5
Colombia	75.8	106.0	146.4	152.5	183.2	355.8	341.2	389.1	297.8	147.3	168.9	162.4
Venezuela	-35.7	-13.7	-8.0	0.5	-123.6	165.7	189.6	253.8	242.7	139.2	145.6	154.5
Costa Rica	26.0	59.2	92.5	77.5	67.1	121.7	130.5	144.0	194.6	59.1	100.7	-1.4
India	-7.2	-3.4	-62.1	-78.3	-93.7	-95.5	-103.3	-168.9	-206.3	-309.7	-157.5	-154.6
Switzerland	-128.6	-258.1	-366.5	-356.0	-332.8	219.4	-96.2	-215.0	-329.6	-275.0	-190.5	-229.9
Hong Kong	-187.1	-221.9	-341.1	-255.2	-114.7	346.3	303.9	94.1	0.7	-54.4	-221.6	-236.3
Chile	29.9	77.0	57.0	64.1	-24.3	-8.4	286.5	470.0	73.2	-317.1	-418.7	-571.9
Singapur	-13.3	-48.9	-0.6	-27.6	-145.8	-115.7	-147.8	-38.3	-43.6	-60.5	-554.1	-727.2
Brazil	-313.4	-615.6	-700.6	-901.7	-829.4	235.0	188.5	-166.3	-502.1	-729.2	-1,025.3	-1,364.5
South Korea	-129.4	-49.6	-575.8	-636.2	-695.4	-885.7	-979.7	-1,762.6	-1,877.8	-2,837.7	-2,406.1	-2,747.1
National China (Taiwán)	-246.0	-353.4	-499.4	-636.5	-842.2	-672.4	-849.3	-1,093.8	-1,476.7	-1,465.6	-1,733.6	-3,032.8
Popular China (Pekin)				-308.7	-386.7	-483.7	-721.5	-1,201.5	-1,510.5	-1,767.3	-2,447.8	-3,945.4
Japan	35.4	-542.5	-2,247.1	-2,668.5	-2,823.2	-2,679.9	-2,537.6	-3,177.2	-3,697.8	-245.6	-5,253.4	-6,771.7
Others	-2,466.8	-3,095.4	-4,198.5	-3,632.3	-5,438.9	-2,167.6	-2,812.9	-4,853.3	-6,766.0	-12,097.6	-5,443.2	-6,092.5
Subtotal Rest	-3,360.4	-4,960.3	-8,703.8	-9,206.4	-11,600.4	-5,665.0	-6,808.1	-11,325.9	-15,601.4	-19,814.1	-19,436.6	-25,558.5
TOTAL	-5,964.3	-9,037.0	-18,017.7	-15,661.3	-21,103.5	5,114.0	4,021.1	-2,688.8	-11,571.9	-9,469.6	-5,754.8	-4,559.2

Source: Tables 1 and 2

Results of experiments

Spatial relation of cities with economic and social indicators

In 1995 there were 67 cities with a population of more than 100,000, with a total of 50.1 million inhabitants. In this year, there were 6 cities with more than one million inhabitants, 17 urban areas with half a million to a million inhabitants and 44 towns with a population between 100,000 to half a million inhabitants.

By 2000 these cities increased to 73 representing 55.3% of the total population of the nation which reached 100 millions inhabitants. From these 73 cities, 9 of them had more than 1 million inhabitants, 17 accounted a population between half a million to a million and, 47 cities had a population from 100,000 to half a million.

From the 73 cities analysed in 2000, 28 are located in 12 states with a “very high” or “high” “Development Social Index”. From these 12 states, 7 of them border with the USA, 4 are located along of the “NAFTA ROAD”, which goes from Mexico City and Guadalajara to Nuevo Laredo, main gate to NAFTA trade. The other 45 cities are located in states with the “Development Social Index” that goes from medium to extremely low, and only two of these states located on the NAFTA ROAD (Queretaro and San Luis Potosi).

The “Development Social Index” was derived using “Principal Component Analysis” and is represented by the first component which accounted for 73% of the total variance of the X matrix. The variables for the construction of this index were the following: literate population; non indigenous population, population which speak Spanish; life expectancy; population with formal medical services and population over 15 years which complete junior high school.

Map 1



Map 2



Gross Internal Product (GIP) of major urban centers

The 73 urban areas with more than 100,000 inhabitants in Mexico in the year 2000 accounted 55.3 million inhabitants, from a total of 100 million inhabitants for the whole country. By 2025 the “National Population Council” forecasted a population of 74.3 million inhabitants for these 73 cities.

The Gross Internal Product (GIP) in million pesos for 66 of the 73 cities mentioned above in 1995 was estimated in 3,901,490 million pesos, this figure, for 2000 was calculated in 4,878,971 million pesos (more or less 500,000 million dollars). The percentage changes of a GIP of 66 cities from 1995 – 2000, is shown in Table 5.

From the 24 cities with high and very high percentage change of the GIP between 1995-2000, 14 cities are located in 5 of the 7 USA border states with very high or high “Development Social Index”, and two cities are located in the NAFTA ROAD. Nine cities have a medium high percentage change of the GIP between 1995-2000, of them three cities are located in USA border states, therefore, 22 cities of 33 urban centers with medium high, high or very high percentage change of the GIP between 1995-2000 (66%) are located in the USA border states or the NAFTA ROAD.

From 12 cities with medium low percentage change of the GIP 1995-2000, one is located in USA border state and seven on the NAFTA ROAD. This analysis demonstrates that NAFTA is benefiting bordering cities with the USA in the north of Mexico and in the axis of communication from Guadalajara and Mexico City to the USA.

In terms of the commercial activities with the EC and the NAFTA partners, three Gulf of Mexico’s Ports (Tampico, Coatzacoalcos and Veracruz) are ranked among cities with high or

very high percentage change of the GIP between 1995-2000, fact that demonstrates that this kind of treaties benefit cities located in "Import Export Roads", communicating Mexico City with these ports.

In relation to the population annual rate growth, figures show that cities benefiting more from NAFTA and ECTA (cities bordering the USA, on the NAFTA ROAD and Ports in the Gulf of Mexico), have less percentage annual growth than others in different spatial locations.

MAP 3



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Table 4

POPULATION AND GIP OF CITIES WITH MORE THAN 100,000 INHABITANTS IN 2000

Number	City	State	Population 1995 (1)	Population 2000 (2)	Projected Population 2025 (3)	Annual Percentage Population Increase 1995 - 2000	Annual Percentage Population Increase 2000 - 2025	GIP 1995 percapita	GIP 2000 percapita	Annual Percentage Increase GIP 1995 - 2000
1	ZM Ciudad de México	MEX-HGO	17 034 527	18 240 080	22 968 682	1.38%	0.93%	98,962	109,332	2.01%
2	ZM Guadalajara	JAL	3 486 160	3 836 922	5 097 239	1.94%	1.14%	65,969	74,057	2.34%
3	ZM Monterrey	NL	2 996 686	3 277 140	4 361 209	1.81%	1.15%	108,119	126,806	3.24%
4	ZM Puebla	PUE-TLAX	2 046 836	2 283 393	3 050 977	2.21%	1.17%	40,242	48,984	4.01%
5	ZM León	GTO	1 155 644	1 314 583	1 928 311	2.61%	1.54%	47,441	51,901	1.81%
6	ZM Tijuana	BC	1 027 286	1 192 518	1 912 905	3.03%	1.91%	78,859	100,711	5.01%
7	Juárez	CHIH	994 444	1 141 421	1 708 418	2.80%	1.63%	88,925	109,224	4.20%
8	ZM Toluca	MEX	991 707	1 129 802	1 628 185	2.64%	1.47%	29,274	32,775	2.29%
9	ZM Torreón	COAH-DGO	973 397	1 051 038	1 232 523	1.55%	0.64%	73,622	96,861	5.64%
10	ZM San Luis Potosí	SLP	789 214	912 831	1 323 684	2.95%	1.50%	53,102	56,209	1.14%
11	ZM Mérida	YUC	771 565	854 135	1 213 656	2.05%	1.42%	49,563	53,712	1.62%
12	ZM Querétaro	QTO	680 693	787 409	1 252 249	2.96%	1.87%	74,223	100,940	6.34%
13	ZM Aguascalientes	AGS	636 957	743 833	1 206 051	3.15%	1.95%	70,339	89,172	4.86%
14	ZM Cuernavaca	MOR	642 347	731 781	1 152 129	2.64%	1.83%	32,630	28,216	-2.87%
15	ZM Chihuahua	CHIH	630 563	725 174	1 093 511	2.84%	1.66%	97,762	119,935	4.17%
16	ZM Saltillo	COAH	592 839	689 212	972 284	3.06%	1.39%	78,077	101,008	5.29%
17	ZM Coahuila de Zaragoza	VER	632 383	671 422	743 831	1.21%	0.41%	24,085	29,978	4.54%
18	Acapulco	GRO	597 191	669 616	900 357	2.32%	1.19%	66,423	58,477	-2.52%
19	ZM Tampico	TAMS-VER	612 333	653 090	810 245	1.30%	0.87%	72,051	92,672	5.16%
20	Morelia	MICH	519 013	603 751	898 770	3.07%	1.60%	59,207	62,827	1.19%
21	ZM Veracruz	VER	564 963	592 445	650 461	0.95%	0.37%	50,662	61,884	4.08%
22	Hermosillo	SON	503 096	579 835	871 638	2.88%	1.64%	96,335	109,281	2.55%
23	Mexicali	BC	499 712	553 726	764 469	2.07%	1.30%	119,727	150,956	4.74%
24	Culiacán Rosales	SIN	506 037	550 240	630 608	1.69%	0.55%	77,269	78,466	0.31%
25	ZM Xalapa	VER	444 608	505 670	628 154	2.61%	0.87%	56,146	64,669	2.87%
26	Tuxtla Gutiérrez	CHIS	389 231	475 036	792 264	4.06%	2.07%	65,139	85,481	0.10%
27	ZM Oaxaca	OAX	380 972	446 723	642 866	3.24%	1.47%	36,829	35,975	-0.47%
28	Durango	DGO	402 936	442 252	533 523	1.88%	0.75%	71,178	88,076	4.35%
29	Cancún	QR	293 349	385 751	812 782	5.63%	3.03%	150,500	135,253	-2.11%
30	Reynosa	TAMS	320 479	370 314	563 504	2.93%	1.69%	71,137	87,150	4.14%
31	Matamoros	TAMS	323 814	365 133	514 998	2.43%	1.39%	79,580	100,728	4.83%
32	Irapuato	GTO	303 875	345 210	504 284	2.58%	1.53%	68,627	76,102	2.09%
33	Villahermosa	TAB	303 783	344 323	493 534	2.54%	1.45%	104,380	113,646	1.72%
34	Mazatlán	SIN	303 120	324 428	361 810	1.37%	0.44%	68,804	70,774	0.57%
35	ZM Monclova	COAH	300 363	314 457	343 760	0.92%	0.36%	48,708	65,268	6.03%
36	ZM Orizaba	VER	295 407	307 536	329 345	0.81%	0.27%	24,058	27,857	2.98%
37	Nuevo Laredo	TAMS	273 815	304 804	413 060	2.17%	1.22%	69,470	86,849	4.57%
38	Tepic	NAY	256 233	299 904	437 435	3.20%	1.52%	51,680	45,211	-2.64%
39	ZM Pachuca	HGO	252 067	292 032	425 599	2.99%	1.52%	54,652	55,237	0.21%
40	Celaya	GTO	255 312	290 997	429 406	2.65%	1.57%	70,392	77,221	1.87%
41	ZM Zacatecas	ZAC	229 341	271 865	420 611	3.46%	1.76%	31,050	30,486	-0.37%
42	Ciudad Victoria	TAMS	230 319	262 946	385 429	2.69%	1.54%	87,001	108,528	4.52%
43	Ciudad Obregón	SON	243 585	256 453	293 617	1.03%	0.54%	107,084	127,337	3.53%
44	Uruapan	MICH	218 327	250 628	359 775	2.80%	1.46%	47,149	50,210	1.27%
45	ZM Cuautla	MOR	220 368	249 450	372 340	2.51%	1.62%			
46	ZM Zamora	MICH	217 809	242 305	319 461	2.15%	1.11%	29,347	31,085	1.16%
47	ZM Córdoba	VER	213 551	234 034	271 525	1.85%	0.60%	44,860	52,185	3.07%
48	Ensenada	BC	190 528	220 682	350 643	2.98%	1.87%	134,300	168,498	4.64%
49	ZM Poza Rica	VER	210 994	214 759	219 530	0.35%	0.09%			
50	Tehuacán	PUE	175 323	211 295	345 333	3.80%	1.98%	61,669	71,511	3.01%
51	ZM Colima	COL	186 283	207 756	308 707	2.21%	1.60%	40,342	40,755	0.20%
52	ZM Tlaxcala	TLAX	176 577	202 882	313 626	2.82%	1.76%	18,043	20,938	3.02%
53	Los Mochis	SIN	188 542	199 274	217 468	1.11%	0.35%	88,601	90,739	0.48%
54	Campeche	CAMP	177 768	193 431	247 919	1.70%	1.00%	111,089	134,999	3.98%
55	ZM Guaymas	SON	182 900	183 967	183 610	0.12%	-0.01%	53,439	65,468	4.14%
56	Tapachula	CHIS	168 069	179 809	210 485	1.36%	0.63%	61,879	66,209	1.36%
57	La Paz	BCS	153 865	163 654	184 971	1.24%	0.49%	109,876	130,397	3.48%
58	Puerto Vallarta	JAL	122 701	151 781	261 294	4.35%	2.20%	83,447	91,250	1.80%
59	Heroica Nogales	SON	131 339	150 235	220 762	2.72%	1.55%	94,199	113,096	3.72%
60	Salamanca	GTO	137 811	150 048	192 405	1.72%	1.00%	65,561	73,323	2.26%
61	Chilpancingo	GRO	124 446	147 839	233 633	3.51%	1.85%	71,300	66,072	-1.51%
62	Ciudad del Carmen	CAMP	114 108	136 042	232 353	3.58%	2.16%			
63	Piedras Negras	COAH	116 249	129 774	165 516	2.23%	0.98%	102,590	136,838	5.93%
64	San Luis Río	SON	115 387	129 098	177 483	2.27%	1.28%			
65	San Cristóbal	CHIS	102 182	120 576	183 685	3.37%	1.70%			
66	Chetumal	QR	113 666	116 233	109 782	0.45%	-0.23%	105,687	107,964	0.43%
67	Ciudad Valles	SLP	103 174	112 763	140 709	1.79%	0.89%	70,764	74,430	1.02%
68	Iguala	GRO	99 049	110 014	144 059	2.12%	1.08%	59,506	54,420	-1.77%
69	Hidalgo del Parral	CHIH	96 139	102 736	123 202	1.34%	0.73%	79,614	102,914	5.27%
70	Fresnillo	ZAC	90 553	101 327	132 406	2.27%	1.08%			
71	Tulancingo	HGO	88 523	101 156	141 484	2.70%	1.35%	57,352	57,357	0.00%
72	Navojoa	SON	94 665	100 158	116 388	1.13%	0.60%	93,435	114,519	4.15%
73	Apatzingán	MICH	91 035	100 051	127 465	1.91%	0.97%			
TOTAL			50 110 133	55 304 948	74 306 392	1.99%	1.19%	70,505	80,627	2.72%

Source: (1) Censo General de Población 1995. INEGI
(2) Censo General de Población y Vivienda 2000 INEGI
(3) Consejo Nacional de Población 2000.

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Table 5

RELATION OF LOCATION OF MAJOR URBAN CENTERS WITH ECONOMIC AND SOCIAL FACTORS					
Number	City	Yearly Percapita Percentage GIP Increase	GIP Percapita Change Index (1)	Development Index of the State where the city is located (1)	City located in: USA BORDER STATE, NAFTA ROAD, PORTS AND OTHER
1	ZM Querétaro	6.34%	1 (very high)	3 (medium high)	NAFTA ROAD
2	ZM Monclova	6.03%	1 (very high)	2 (high)	USA BORDER STATE
3	Piedras Negras	5.93%	1 (very high)	2 (high)	USA BORDER STATE
4	ZM Torreón	5.64%	1 (very high)	2 (high)	USA BORDER STATE
5	ZM Saltillo	5.29%	1 (very high)	2 (high)	USA BORDER STATE
6	Hidalgo del Parral	5.27%	1 (very high)	2 (high)	USA BORDER STATE
7	ZM Tampico	5.16%	1 (very high)	2 (high)	USA BORDER STATE AND PORT ON GULF OF MEXICO
8	ZM Tijuana	5.01%	1 (very high)	1 (very high)	USA BORDER STATE
9	ZM Aguascalientes	4.86%	1 (very high)	2 (high)	NAFTA ROAD
10	Heroica Matamoros	4.83%	1 (very high)	2 (high)	USA BORDER STATE
11	Mexicali	4.74%	2 (high)	1 (very high)	USA BORDER STATE
12	Ensenada	4.64%	2 (high)	1 (very high)	USA BORDER STATE
13	Nuevo Laredo	4.57%	2 (high)	2 (high)	USA BORDER STATE
14	Ciudad Victoria	4.52%	2 (high)	2 (high)	USA BORDER STATE
15	ZM Coahuila	4.47%	2 (high)	5 (low)	PORT ON GULF OF MEXICO
16	Victoria de Durango	4.35%	2 (high)	3 (medium high)	OTHER
17	Juárez	4.20%	2 (high)	2 (high)	USA BORDER STATE
18	ZM Chihuahua	4.17%	2 (high)	2 (high)	USA BORDER STATE
19	Navojua	4.15%	2 (high)	2 (high)	USA BORDER STATE
20	ZM Guaymas	4.14%	2 (high)	3 (medium high)	PORT IN THE PACIFIC
21	Reynosa	4.14%	2 (high)	3 (medium high)	USA BORDER STATE
22	ZM Veracruz	4.08%	2 (high)	5 (low)	PORT ON GULF OF MEXICO
23	ZM Puebla	4.01%	2 (high)	5 (low)	OTHER
24	Campeche	3.98%	2 (high)	4 (medium low)	OTHER
25	Heroica Nogales	3.72%	3 (medium high)	2 (high)	USA BORDER STATE
26	Ciudad Obregón	3.53%	3 (medium high)	2 (high)	USA BORDER STATE
27	La Paz	3.48%	3 (medium high)	1 (very high)	USA BORDER STATE
28	ZM Monterrey	3.24%	3 (medium high)	1 (very high)	USA BORDER STATE
29	ZM Córdoba	3.07%	3 (medium high)	5 (low)	OTHER
30	ZM Tlaxcala	3.02%	3 (medium high)	3 (medium high)	OTHER
31	Tehuacán	3.01%	3 (medium high)	5 (low)	OTHER
32	ZM Orizaba	2.98%	3 (medium high)	5 (low)	OTHER
33	ZM Xalapa	2.87%	3 (medium high)	5 (low)	OTHER
34	Hermosillo	2.55%	4 (medium low)	2 (high)	USA BORDER STATE
35	ZM Guadalajara	2.34%	4 (medium low)	2 (high)	NAFTA ROAD
36	ZM Toluca	2.29%	4 (medium low)	2 (high)	NAFTA ROAD
37	Salamanca	2.26%	4 (medium low)	4 (medium low)	NAFTA ROAD
38	Irapuato	2.09%	4 (medium low)	4 (medium low)	NAFTA ROAD
39	ZM Ciudad de México	2.01%	4 (medium low)	1 (very high)	NAFTA ROAD
40	Celaya	1.87%	4 (medium low)	4 (medium low)	NAFTA ROAD
41	ZM León	1.81%	4 (medium low)	4 (medium low)	NAFTA ROAD
42	Puerto Vallarta	1.80%	4 (medium low)	2 (high)	OTHER
43	Villahermosa	1.72%	4 (medium low)	4 (medium low)	OTHER
44	ZM Mérida	1.62%	4 (medium low)	6 (very low)	OTHER
45	Tapachula	1.36%	4 (medium low)	7 (extremely low)	OTHER
46	Uruapan	1.27%	5 (low)	5 (low)	OTHER
47	Morelia	1.19%	5 (low)	5 (low)	OTHER
48	ZM Zamora	1.16%	5 (low)	5 (low)	OTHER
49	ZM San Luis Potosí	1.14%	5 (low)	5 (low)	NAFTA ROAD
50	Ciudad Valles	1.02%	5 (low)	2 (high)	USA BORDER STATE
51	Mazatlán	0.57%	5 (low)	3 (medium high)	PORT IN THE PACIFIC
52	Los Mochis	0.48%	5 (low)	3 (medium high)	OTHER
53	Chetumal	0.43%	5 (low)	3 (medium high)	OTHER
54	Culiacán Rosales	0.31%	5 (low)	3 (medium high)	OTHER
55	ZM Pachuca	0.21%	5 (low)	6 (very low)	OTHER
56	ZM Colima	0.20%	5 (low)	2 (high)	OTHER
57	Tuxtla Gutiérrez	0.10%	6 (very low)	7 (extremely low)	OTHER
58	Tulancingo	0.00%	6 (very low)	6 (very low)	OTHER
59	ZM Zacatecas	-0.37%	6 (very low)	4 (medium low)	OTHER
60	ZM Oaxaca	-0.47%	6 (very low)	7 (extremely low)	OTHER
61	Chilpancingo de los Bravo	-1.51%	6 (very low)	6 (very low)	OTHER
62	Iguala de la Independencia	-1.77%	6 (very low)	6 (very low)	OTHER
63	Cancún	-2.11%	6 (very low)	3 (medium high)	OTHER
64	Acapulco de Juárez	-2.52%	6 (very low)	6 (very low)	PORT IN THE PACIFIC
65	Tepic	-2.64%	6 (very low)	3 (medium high)	OTHER
66	ZM Cuernavaca	-2.87%	6 (very low)	3 (medium high)	OTHER
TOTAL		2.72%			

Seven cities are not included because no data was available for them

(1) 1) more than +1.5 St. Dv.; 2) from +1 St. Dv. to +1.5 St. Dv.; 3) from +5 St. Dv. to +1 St. Dv.; 4) from average to +.5 St. Dv.; 5) from average to -.5 St. Dv.; 6) from -.5 St. Dv. to -1 St. Dv.; 7) from -1 St. Dv. to -1.5 St. Dv. And, 8) less than -1.5 St. Dv.