

# U.S. BEER FLOWS & THE IMPACT OF NAFTA

Professor PhD Richard A. MCGOWAN  
*Boston College*  
Professor PhD John F. MAHON  
*University of Maine*

## *Abstract:*

*After World War II and up until the 1980's, the liberalization of trade was realized on a multilateral basis. World trade grew at twice the pace of GDP growth (Krueger, 1999). However, starting in the mid 1980's, preferential trading arrangements (PTAs) increased in numbers. Perhaps the most influential PTA ever to be signed could be the North America Free Trade Agreement, or simply NAFTA, which came into effect January 1, 1994. The agreement established a free-trade area between its member countries- US, Canada and Mexico- in which all tariffs would be phased out between them, but each country would maintain its separate national barriers against the rest of the world. A lot of attention has been paid to the impact of NAFTA on the welfare of its member countries and on the rest of the world. This paper will focus on the impact of the agreement on the US's beer trade flows by analyzing annual import and export data using several methods. To our knowledge there is no precedent for such research. Section II provides a brief review of the conclusions and methodology of existing works on NAFTA trade issues, as well as some important aspects of the agreement. Section III provides an overview of the world beer industry, and the NAFTA member countries beer markets. Section IV provides in great detail the methodology that we will employ. The focus of Section V is to explain the results obtained. Section VI provides conclusions and implications for further research on this subject. References and other sources can be found in Section VII.*

*Keywords: beer trade on US market, NAFTA*

## **NAFTA and review of literature**

NAFTA was brought forward for consideration in the US congress in the fall of 1993. At the time the agreement sought to remove the trade barriers between its members and create a huge new market with a combined GDP of around \$7.9 trillion and population of 380 million people. The agreement came into effect on January 1, 1994. It superseded the Canada US Free Trade Agreement, or CUSFTA, which had been in existence since 1989. The agreement did not call for the immediate removal of all tariff and import duties, but a gradual phase out with an average duration between ten to fifteen years. It did immediately remove a substantial

amount of quantitative barriers to trade, and implemented even more favorable North American rules of origin clauses. Today NAFTA has become a huge economic arena with a combined GDP of around \$11.8 trillion and 420 million people.

NAFTA has been criticized (or acclaimed) by a wide variety of groups and for a number of reasons. This has given rise to a plethora of academic literature. Its impact has been intensely scrutinized on a broad number of subjects. We will briefly discuss some of the literature that focuses on the agreement's impact on trade; particularly on the issues of trade diversion/creation. Although the scope

of this paper is not directly tied to these issues, the methodology applied is very similar to the one that we have employed. The comments on the results will be limited to the changes in the bilateral trade between the US and its member partners. No great detail will be placed upon the impact of NAFTA on Canada – Mexico trade, or on whether the agreement was trade diverting or trade creating as a whole.

Before Gould (1998), all of the literature about NAFTA's impact on trade was forward looking. The work was done either before its implementation or shortly thereafter. Gould uses a gravity-model methodology to assess the impact of NAFTA on bilateral trade flows. He attempts to isolate the impact of the agreement by accounting for the "fundamental determinants of trade flows". The data employed was bilateral aggregate trade data on a quarterly basis, for 1980 through 1996. He arrived to the conclusion that after its first three years NAFTA may have had an impact on US aggregate exports to Mexico, but that it had no effect on Mexican exports to the US or on US bilateral trade with Canada.

Krueger (1999) uses trade data at the one and two digit SITC level commodity categories. She employs three different methodologies to address the issue of trade diversion/creation; decreasing absolute trade with the rest of the world, "shift and share" analysis, and gravity equations. She found that intra-NAFTA trade intensified during the 1990's, and that a shift share analysis shows an increase in Mexico's share of exports to the US. Her gravity equations approach found no evidence that trade patterns were significantly altered by PTAs, although she did find that NAFTA countries imported less than predicted from members outside of the agreement.

Fukao, Okubo and Stern (2002), use a partial equilibrium model of

differentiated product industries for different countries. They use a panel analysis of US import data for the period 1992-98 at the HS 2 digit level, and a higher disaggregate level of HS 4 digit. Their findings include that tariff rates were significant in 15 cases out of the 70 regressions that they ran. They primarily conclude that the increase in Mexican imports to the US came at the expense of lower cost providers primarily from East Asia. They highlight the importance of disaggregating commodities in analyzing the effects of NAFTA, and the need to study the impact of the interaction of FDI and outsourcing with tariff rates.

All of the literature seems to point out that the effect of NAFTA on trade flows seems to be underscored by certain exogenous events. These events make the creation of a proxy for a controlled experiment difficult. Krueger (1999) provides great insight into these events and their possible effects. (1) The signing of the Bush-Salinas agreement in June 1990. This led to the belief that such negotiations would ultimately result in the addition of Mexico into the free-trade area<sup>1</sup>. Therefore one cannot assume that the data before 1990 provides an accurate scenario of trade without NAFTA. Many economic decisions could have been taken into consideration prior to the agreement's signing, such as possible FDI opportunities. (2) The gradual phase out of tariffs during a ten-fifteen year period. Therefore one must take into account that trade flows after 1994 were not entirely free of imposed duties. (3) Trade liberalization, under the WTO and PTAs, in the world as a whole. Liberalization of trade must be taken into account as its effect on world trade patterns cannot be easily discerned. (4) Mexico's trade liberalization in the mid 1980's. The country had virtually removed all of its quantitative restrictions to imports, as

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<sup>1</sup> See Hufbauer and Schott (1992).

well as reduced its high average tariff rate by 1990. This led to a higher level of Mexican trade in the early 90's and could remove some importance on the effect of NAFTA on Mexican trade flows. (5) The real appreciation of the Mexican peso during 1987-1994 and the following depreciation as a result of the 1994 financial crisis. In 1987 the peso adopted a nominal anchor. Under this exchange rate regime, the peso was allowed to depreciate in a proportion less than the inflation differential between the US and Mexico. This led to a cumulative appreciation of the peso, which in turn was reflected in sharp changes in the percentage of Mexican trade. Exports as a percentage of GDP fell from 19.7% in 1987 to 12.7% in 1992. Imports rose from 13.4% of GDP in 1987 to 18.8% of GDP in 1994<sup>2</sup>. After the political turmoil in 1994 the currency depreciated by a factor of around 100%. These violent swings in the peso might underscore some of the impact that NAFTA might have had on Mexican trade patterns with the US. (6) The creation of CUSFTA. The fact that Canada and the US already had a free-trade area prior to 1994, might bias the impact of NAFTA on US-Canadian trade.

### **The Beer Industry**

World beer consumption reached an estimated 133 million kiloliters, around 35 billion gallons, in 1999<sup>3</sup>. The world beer industry is relatively fragmented compared to other beverage industries. In 1998 the top four players accounted for only 22% of global volume, compared to 78% in soft drinks and 44% in spirits<sup>4</sup>. The world beer market can be broken down into six major regional markets with different sizes and growth rates (See Figure 1). Within these regional markets there are

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<sup>2</sup> Source: IMF, *International Statistics Yearbook*, 1998.

<sup>3</sup> Source: Japan Brewers organization.

<sup>4</sup> Ivey(2000).

also major differences in consumption per capita in each of the countries (See Figure 2).

World beer trade is a relatively small fraction of the global beer industry. Although the beer industry has huge economies of scale and there is some convergence in local tastes due to the global media, there seem to be many factors that inhibit the exportation of beer. These factors are not related to any quantitative restrictions to trade imposed by the government such as tariffs or quotas. We will group these factors into a category called "non tariff barriers to trade". Varying local tastes and preferences, and the profound concentration of the industry in some countries are the two main non tariff barriers. The former has to do with the immense political clout that some beer companies have in their home markets. In some countries, as it is the case in Mexico, the beer industry is an oligopoly. The significant importance that these companies have in their home economies gives them the ability to influence their government's protectionist policies. This powerful influence- and the laxer legal systems- also allow beer companies to engage in competitive practices that would be illegal in the US. For example as a food manager at Mexico City's Tony Roma's restaurant says; "We used to carry 28 different kinds of beer, including American beers. But Modelo - the makers of *Corona*- gave us money to sell only its beers<sup>5</sup>." Varying tastes and preferences are a common determining factor in the trade of consumer goods. Heavy and rich ales, as it is the case of *Samuel Adams*, would not have much demand in hotter tropical climates. Yet, as opposed to the case of soft drinks, most beer drinkers in many countries also seem to exhibit a strong preference for drinking their own national brand. This sense of "national pride" can pose a huge non tariff trade barrier as

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<sup>5</sup> See, *Wall Street Journal*, Jan 17, 2003

consumers obtain a higher utility when consuming their own national beer brand. For example as a bartender in Mexico City's Outback says; "The Americans beat us at everything, even soccer. The one thing we do better is beer<sup>6</sup>." These non tariff trade barriers coupled with the strict protectionist policies that some countries impose on beer imports have resulted in a glut of "global beer brands".

Due to the difficulties involved in exporting beer and the stagnation of the larger mature beer markets, the world's biggest brewers have been forced to consolidate over the past two decades in order to achieve growth. Some of the world's major beer companies have bought existing brewers in other markets and now hold a huge portfolio of brands in many different countries (See Figure 3). During the past two decades there has been an increasing demand for the super premium, and premium beer brands in many of the developed countries as consumers have become more sophisticated. This is especially the case in the US and Japan.

NAFTA has given its members access to a beer market worth an estimated \$76.36 billion dollars in 2002. The North American beer market is the third largest regional beer market in the world after Western Europe with an estimated value of \$107.8 billion in 1999, and the Asian-Pacific region with an estimated value of \$89.3 billion in 1999<sup>7</sup>. During the period 1995-99 the North American beer market exhibited a positive compound annual growth rate (CAGR) of 3.5 %, compared to a negative -2.5% for the Western European region, and a negative -3.06% for the Asian-Pacific region. A comparison of the three countries that compose the North American market shows acute differences in overall market size, growth and composition

(See Figure 4). The US beer market is the largest market with an estimated value of \$55.9 billion for the year 2002, followed by the Mexican market whose value is estimated at \$ 12.8 billion, and in third place is the Canadian market with a value of \$7.5 billion. The US beer market has stagnated in growth exhibiting a CAGR of only 1% for the period 1997-2002, compared to Canada's 2.86% and Mexico's 10.5%. The Mexican beer industry is very concentrated. The top two players, Modelo and Femsa, accounted for a combined market share of 98%. In the US Anheuser Busch and SAB-Miller account for 67.8%, and in Canada Lebat's and Molson account for 67.6% of the market.

Some of the major players in the North American market are owned by larger breweries in other countries. Mexico's Femsa & Canada's Lebat's are both partially owned by InterBrew/Ambev. Miller was purchased from Phillip Morris by South African Breweries in 2002. Anheuser Busch bought an 18% stake in Mexico's Grupo Modelo in 1993, and gradually increased its holding to 50% in 1998.

According to the Beer Institute's *Beer serves America*; the U.S. brewing industry includes approximately 1,800 breweries and importers, 2,200 wholesalers, and 560,000 retailers. Approximately 42,500 Americans work for the nation's breweries alone, taking home \$2.6 billion a year in salaries and wages. The US ranks number one in worldwide domestic beer production, with an estimated 186.2 million barrels per year in 2002<sup>8</sup>. During the past ten years, imports have more than doubled their market share of the US market, accounting for 11% of retail beer sales in 2002<sup>9</sup>(See Figure 5). US brewers exported around 2.42% of their total

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<sup>6</sup> See, *Wall Street Journal*, Jan 17, 2003

<sup>7</sup> See, *Beverage industry*, June 2001

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<sup>8</sup> See, *Beverage industry*, May 2003

<sup>9</sup> See, *Beverage industry*, May 2003

production volume in 2002, slightly up from 2.3% in 2001<sup>10</sup>.

### Methodology

In order to assess the impact of NAFTA on US beer trade flows, we will analyze annual trade data for the period 1992-2001. The data was compiled by the Foreign Agricultural Service, with data from the department of Commerce and the US International Trade Commission. It is based on US import/export receipts and it reflects the dollar value of beer trade in thousands of dollars. We will provide separate analysis for the export data and the import data. The data will be submitted to three different methods of analysis; a) comparison of absolute level of trade between intra NAFTA countries and the rest of the world to the US, b) "shift and share" analysis, and c) gravity equations.

a) *Comparison of absolute level of trade:* The focus of this method is to find any evidence that would indicate a decrease in the level of trade, or no change at all, with third party countries versus an increase in the level of trade between intra-NAFTA countries. To the extent that the level of trade flows with the rest of the world suffered, and that trade with NAFTA partners flourished, one could assume that the agreement had a substantial effect on the composition of the level of beer trade in the US. Although as Krueger (1999) points out, one could expect that in a dynamic setting, such as the growing world economy, any shifts in supply and demand would result in a change in shares rather than an absolute level change. Nonetheless this method's results are worth taking into consideration.

b) *Shift and share analysis:* This method assesses the impact that NAFTA may have had on the percentage composition of trade between third party countries and

NAFTA members. The data are separated into two categories each in percentage terms of total trade. This method compares the shares of trade devoted to Mexico and Canada versus the rest of the world during each year. To the extent that the shares devoted to intra-NAFTA trade increased after 1994, at the expense of the rest of the world, one could assume that the agreement had a significant impact on the interaction between the US's supply and demand for beer.

c) *Gravity equations:* This method approaches the problem through the use of mathematical models very similar to those employed by Gould (1998). The models attempt to "control" for other determinants of trade, so that a *ceteris-paribus* effect of NAFTA on trade can be discerned. This approach better addresses some of the problems described in section II. Through this method one can attempt to control for problems 2, 5 and 6. The problem of the gradual phase out of tariffs, problem 2, will be addressed by including the phasing off in the effective tariff rates in NAFTA countries. The issue of severe exchange rate fluctuations, problem 5, will be addressed by including the exchange rate for each year and country. The problem of CUSFTA, problem 6, will be addressed by assigning the NAFTA dummy variable a value equal to one for Canada beginning at the first year of data available (1992). We will employ two separate models for exports and imports. The data will be analyzed in a panel form. The Exports model includes data from nineteen different countries over the observation period, and the Imports model includes data from twenty four different countries. The models are as follows;

*Exports:*

$$EXP = B_0 + B_1(DIST_{i,us}) + B_2(EXCH_{it}) + B_3(POP_{it}) + B_4(GDP_{it}) + B_5(TFF_{it}) + B_6(NAFTA) + B_7(CONT_{i,us})$$

<sup>10</sup> See, Standard & Poor's, September 2003.

Imports:

$$IMP = B0 + B1(DIST_{i,us}) + B2(EXCH_{it}) + B3(GDPUS_{it}) + B4(TFF_{ust}) + B5(NAFTA) + B6(CONT_{i,us})$$

The *DIST* variable is the distance between the US and its trading partner country (i). The data is in kilometers and was obtained from the CEPII geodesic distances data set. The *EXCH* is the average official exchange rate per US dollar during the year as accessed from the World Bank's WDI online. The *POP* variable is the total population in the importing country. The *GDP* variable is the gross domestic product per capita in purchasing power parity terms expressed in current dollars, as accessed from the WDI online. The *GDPUS* is the gross domestic product per capita in the US at time (t). This is also in purchasing power parity terms and in current dollars. The *TFF* is the effective tariff rate on beer imports expressed in percentage terms. In the case of exports from the US, all of the importing countries had a *value added tax (VAT)*. Some countries had VATs as high as 200%. In the case of imports; the US imposes a flat dollar rate on volume regardless of value. In order to calculate the effective tariff rate on US imports we divided the dollar value of imports by the volume of imports, using data from 1996 to 2001, and obtained the price per liter. Then we divided the dollar tariff rate by the price per liter to obtain the effective tariff rate. Most of the countries' dollar per liter remained constant with only minor fluctuations during the observation period, therefore the effective tariff rate was assumed constant in the period 1992 to 1995 unless there was some change in US government policies. It is worthy to note that the effective tariff rate on US imports is very low. The range was from 0% to 4%. The *NAFTA* variable is a dummy variable with a value of one for Canada starting in 1992, and a value of one for Mexico starting in 1994. The

*CONT* variable is a dummy variable that controls for countries with a common border. It is equal to one for Mexico and Canada during all years.

## Results

This section is divided into the corresponding results for imports and exports. Each of those two sections is subdivided into the three different methods of analysis. The results are as follows:

### **Exports originating from the US**

The first two methods of analysis are of graphical nature. All of the graphs referred to in this section can be found in Figure 6.

Graph I shows the indexed value of US exports to the top five country destinations. The data is indexed so that 1992 trade volume is given a value of 100 for all countries. As the graph clearly shows, Japan's indexed value of trade decreased from a peak of 100 in 1992, to end with a value of 30.4 in the year 2001. During this period Japan passed from being the largest importer of US beer in 1992 to become the third largest in 2000. Both NAFTA trading partners experienced an increase in their indexed level of trade with the US. Canada maintained its number two spot, and ended up with an indexed value of 166.8 in 2001. Mexico became the most important importer of US beer, up from third position in 1992. Mexico's indexed value peaked in 2001, to reach a level of 457.4.

*a) Comparison of absolute level of trade:* Graph II shows the indexed level value of NAFTA trade compared to that of US beer exports as a whole (including Mex & Can). US beer exports began declining after peaking at 160.7 in 1997, and ended the observation period at an indexed value of 98.8. Both NAFTA countries ended the observation period higher as mentioned in graph I.

Graph III plots the percentage change over a year earlier for NAFTA partners, exports, and the rest of the world (ROW). The latter value is the

total volume of trade minus that of NAFTA partners. As the table explains Canada has had somewhat of a continuous upwards trend since 1993. Mexico had some decrease in its US imports after 1994, possibly due to the peso crisis, but had a steady upwards trend after 1997. As one can clearly see the continuous decline of exports to the ROW countries, was much larger than the decline of exports as a whole. In fact exports as a whole reported a gain of 13.1% in 2001, compared to a decline of (3.1%) in exports to ROW countries. This is primarily due to the weight of Mexico's 94.7 % increase for that year.

After this first line of analysis one can conclude the following; the total level of US exports exhibited a period of growth until 1997, and then began its continuous decline to end the observation period at a lower level than it began. The decline in total exports after 1997 is much smaller than the decline of total ROW exports. This is primarily due to the fact that both Canada and Mexico exhibited tremendous growth in its US imports, and adding their relative importance in

overall trade slowed the decline of total exports.

It is hard to determine whether or not NAFTA had any role in the increase of US exports to Mexico, since exports already exhibited a continuous upwards trend previous to 1994. That growth rate turned into a decline of US exports to Mexico after 1994, possible due to the peso crisis. It is impossible to analyze for sure if this growth rate would've continued had there not been such a huge depreciation of the peso, or whether the anticipation of NAFTA had anything to do with this early trend. One thing is for certain, both the level and percentage increases after 1997 were much higher than the previous growth trend. This could lead to the conclusion that the peso crisis might have underscored the effect of NAFTA in its first two years.

US exports to Canada exhibited a constant growth rate after 1994, except for one year. Although exports to Canada exhibited an impressive 53.4 % increase in 1994, this result might be misleading due to the decline of 41.8% the year before (Table 1).

**Table 1**

	<b>Exp. with time dummies</b>	<b>Exp. without time dummies</b>
<b>(Constant)</b>	<b>409.572</b> (.07)	<b>2734.76</b> (.598)
<b>DIST</b>	<b>.488</b> (1.2)	<b>.565</b> (1.423)
<b>EXCH</b>	<b>14.986</b> (1.119)	<b>12.771</b> (.974)
<b>POP</b>	<b>5.23E-06</b> (.982)	<b>4.55E-06</b> (.870)
<b>GDP</b>	<b>.544</b> (2.245)	<b>.470</b> (2.028)
<b>TFF</b>	<b>-174.234</b> (-2.331)	<b>-188.209</b> (-2.582)
<b>NAFTA</b>	<b>4306.402</b> (.322)	<b>6260.462</b> (.484)
<b>CONT</b>	<b>11134.501</b> (.873)	<b>9485.377</b> (.767)
<b>df</b>	<b>189</b>	<b>189</b>
<b>R<sup>2</sup></b>	<b>.262</b>	<b>.242</b>
<b>Adj. R<sup>2</sup></b>	<b>.193</b>	<b>.213</b>
<b>F</b>	<b>3.829</b>	<b>8.31</b>

b) *Shift and share analysis:* Graph IV plots the export shares devoted to NAFTA partners and to ROW countries. All three shares add up to 100%. As one can clearly see the share of exports devoted to ROW countries began to decline after 1996. We can appreciate that after 1996 both the share of exports devoted to Canada and Mexico began to rise, at the expense of ROW countries. One can again see a decline in US exports to Mexico, this time as a share of total exports, from 1993 to 1996. This again raises the question whether the peso crisis might have taken away importance as to the impact of NAFTA on US exports to Mexico

c) *Gravity equations:*

The first model attempted to control for distance, exchange rates, population, GDP per capita, tariff rates and included time dummies that captured any other time specific events. The time dummy for the year 1992 was excluded due to perfect collinearity. As the table clearly shows; distance between the importing country and the US, the importing country's exchange rate versus the dollar, and the importing country's populations do not appear to have any statistically significant effect on US exports to those countries in both of the models. GDP per capita and tariff rates were the only two statistically significant factors in predicting US beer exports. As expected tariff rates had a negative impact on exports and GDP per capita had a positive impact on exports. A one dollar rise in per capita GDP would increase the dollar value of exports by \$ 54 dollars, holding everything else constant. A one percentage increase in the tariff rate would lower the dollar value of exports by \$174,000 dollars, holding everything else constant. The NAFTA variable did not have a statistically significant result, once you controlled for the fact that the US has common borders with Canada and Mexico. This result might be misleading due to the .94 Pearson

correlation index between the NAFTA variable and the CONT variable.

***Imports into the US***

The first two methods of analysis are of graphical nature. All of the graphs referred to in this section can be found in Figure 7.

Graph V plots the indexed level of imports into the US from the top five import destinations. As the graph clearly shows, all five countries exhibited growth in their level of imports during the observation period. Mexico exhibited the largest level gain out of all the countries, ending the observation period with an index of 595. Mexico surpassed the Netherlands in 1999 to become the largest exporter of beer to the US. Canada maintained its position as the US's third largest source of beer imports. In 2001, Mexico and the Netherlands accounted for a combined share of 71% of US beer imports. This number is up from the 55% share that both countries enjoyed in 1992.

a) *Comparison of absolute level of trade:*

Graph VI shows the indexed level value of NAFTA trade compared to that of US beer imports as a whole (including Mexico & Canada). Imports as a whole exhibited constant indexed level growth, resulting in a peak level index of 273 in the year 2001. It is worthy to note, that Canada's indexed level growth was much lower than the overall indexed level growth of beer imports. This is contrary as to what happened on the exports side. As already mentioned, Mexico's indexed level growth was double that of the indexed level growth of beer imports as a whole. This trend is similar to the behavior of US beer exports to Mexico.

Graph VII plots the percentage change over a year earlier for NAFTA partners, imports as a whole, and the rest of the world (ROW). As the table shows, the only negative level percentage changes are for Canadian

beer imports. NAFTA might have actually hurt Canadian imports in its earlier years. The Mexican data show the opposite result. Mexican exports to the US rose at a higher level and percentage for the period comprised between 1995 and 1998, than for both the preceding and following periods. This again raises the question as to the amount of influence that the 1994 peso crisis might have had on US-Mexico beer trade. Another parallel can be drawn with the exports data. If one looks at the table, Imports constantly exhibited a larger year over year percentage gain than ROW imports. This is again primarily due to Mexico's relative importance in the composition of beer trade and its constant level growth.

*b) Shift and Share analysis:*

Graph VIII shows the relative share changes in the composition of US beer imports as a percentage value for Mexico, Canada and ROW. As the table indicates; Canadian beer imports seem to have suffered a substantial decrease in their relative share of total imports since the implementation of NAFTA. This decline is even more evident in the earlier years of the agreement (1995-97). On the other hand, Mexico seems to have profited constantly throughout the observation period. Its share of total imports more than doubled during the whole period. The relative gain is more severe in the earlier years of the agreement (1995-98), a period in which Mexico's relative share of total imports exhibited a 56.6% gain. It seems that NAFTA may have had a positive effect on Mexico's relative share importance in the composition of US beer imports, at the expense of ROW countries and Canada.

*c) Gravity equations:*

The first model attempted to control for distance, exchange rates, US GDP per capita, tariff rates and included time dummies that captured any other time specific events. The time dummy for the year 1992 was excluded due to

perfect colinearity. As the table clearly shows distance does not appear to have a statistically significant effect on US imports. This is not surprising given the relative importance of some Western European countries especially the Netherlands, Germany and the UK. The level of US GDP per capita, exchange rates, and tariff rates do have a statistically significant impact on imports. The negative effect of the exchange rates is due to the fact that the dependent variable is in dollar value; therefore there is both a value and substitution effect. In other words, a depreciation of foreign currencies results in a lower dollar value of imports since now it takes a smaller amount of dollars to buy foreign beer. A one unit depreciation in foreign currency leads to a decrease of \$896,000 in US beer imports, holding everything else constant. The level of US GDP per capita had a positive effect on the dollar value of US beer imports. A one dollar increase in US GDP per capita leads to an increase of \$6,241 in the dollar value of imports. The US tariff rates on beer have a negative impact on US beer imports. According to this model a one percentage point increase in the US tariff rate decreases the dollar value of US beer imports by \$76,136,820. As mentioned before the US imposes the same dollar level on all beers regardless of their value. This tariff policy favors premium beers as it results in a lower effective tariff rate given their higher price per liter. The US' tariff policy and the relative importance of premium beers in the composition of imports tend to overestimate the actual impact of tariff rates in the model. This is due to the fact that lower cost producers, who in turn tend to have a lower individual share of imports, face slightly higher effective tariff rates. Given this, the model will tend to equate low volume with high tariff rates, and high volume with low tariff rates. Hence, the numerical impact of US tariff rates may be overstated in the model. As in

the case of exports the NAFTA variable did not have a statistically significant result, once you controlled for the fact that the US has common borders with Canada and Mexico. Again, this result

might be misleading due to the .94 Pearson correlation index between the NAFTA variable and the CONT variable (Table 2).

**Table 2**

	Imp. with time dummies	Imp. without time dummies
(Constant)	185002.7 (4.154)	22523.4 (.261)
DIS T	-2.619 (-1.114)	-2.637 (-1.141)
EX CH	-896.44 (-2.602)	-892.2 (-2.634)
GDP US	- -	6.241 (2.402)
TFF	-76136.82 (-4.563)	-76304 (-4.653)
NAFTA	70029.49 (.748)	64088.399 (.703)
CONT	108874.58 (1.233)	114010.53 (1.324)
df	239	239
R <sup>2</sup>	.355	.354
Adj. R <sup>2</sup>	.315	.338
F	8.855	21.316

**Conclusions and implications for further research**

Both Mexico and Canada were already important sources in the US beer trade, prior to NAFTA's inception. During the observation period, Canada maintained its ranking as the second most important buyer of US exports, and as the third most important source of US beer imports. On the other hand Mexico's relative importance in the US beer trade grew, placing it at the top spot for both the import and export sides. All NAFTA beer trade became free of duties in 2001.

US exports as a whole exhibited a negative CAGR of -.1266% during the observation period, compared to Canada's 5.85% and Mexico's 18.4%. Exports peaked in 1995 and then continued to decline thereafter. US beer exports to other countries face higher

value added tariffs than imports into the US. In the case of Mexico, the country imposed a 20% VAT on all beer imports prior to 1994. Before NAFTA, US exports to Mexico already exhibited a steady constant growth and then suffered a steep decline during the first two years of the agreement. This again raises the question about how much of an impact the 1994 Mexican peso crisis had on Mexican beer trade. Even though Mexico accounted for 26% of all US beer exports in 2001, beer imports as a whole account for a fraction smaller than 2% of the Mexican market. On the other hand Canada exhibited constant growth throughout the observation period, increasing both its level and share of US beer exports.

Overall the quantitative effects that NAFTA had on US beer exports still remain in question. Both Mexico and

Canada already exhibited growth in their US exports before the agreement. It is hard to determine whether this growth rate would have continued or at what pace, had the agreement not been signed. In the case of Mexico NAFTA had an unarguable effect in reducing non tariff barriers to trade for US beer exports. This is especially the case for Anheuser Busch due to their acquisition of Grupo Modelo. With this acquisition Anheuser Busch ensured not only that Grupo Modelo would distribute their brands in Mexico, but that Mexico's biggest brewer would not use its political clout to prevent US beer exports from entering the Mexican market. Other US companies like SABMiller still face these political hurdles when trying to export beer into Mexico. This company has accused Femsa and Modelo on numerous occasions for being responsible to the long delays that their trucks suffer at the US-Mexico border. One SABMiller employee was quoted as saying "Exporting beer is fun. Mexico is a fun country. Exporting beer into Mexico is not fun."<sup>11</sup>

US beer imports as a whole exhibited a positive CAGR of 11.7% during the observation period, compared to Canada's 5.46% and Mexico's 21.9%. As mentioned before US beer imports have more than doubled their share since the early nineties, accounting for 11% of all beer sales in 2001. The US tariff policies help reinforce the rise in demand for premium beers given that their higher price per liter reduces their effective tariff rate. The US also has one of the lowest effective tariff rates on beer outside of free trade areas. Mexican imports into the US were already rising prior to NAFTA, yet their growth rate was more accentuated during the first years of the agreement. This also raises the question of the magnitude of the

effect that the Mexican peso crisis had on this country's bilateral trade. The OLS models both predict that exchange rates have a statistically significant effect on US beer exports, contrary to the case of US exports. In the case of Canada the agreement seems to have had an adverse effect especially in its earlier years.

Again, the quantitative effects that NAFTA might have had on US beer imports still remain in question. The agreement had a subdued negative effect on Canadian imports and seems to have accentuated the previous growth of Mexican imports. Although NAFTA did not substantially reduce non tariff barriers to trade in the US, other than improve the logistics involved in trading beer, it did have one important unquantifiable effect on imports, which is Anheuser Busch's acquisition of Modelo. With the pending threat of NAFTA in 1993, Modelo decided to sell part of their business to Anheuser Busch. The impact that this alliance had on *Corona's* sales into the US remains without question. The brand grew from an 11% share of imports in 1990 to roughly accounting for one third of total US beer imports in 2001. It was in the year 1997 that *Corona* surpassed *Heineken* as the leading US imported beer brand.

This paper demonstrates the importance of disaggregating beer trade into brands rather than grouping beer trade by countries. This is especially the case for Mexico given the huge success of *Corona*. It is not intuitive to say that Mexican imports grew without knowing that most of the growth was experienced by one brand only. This work also sheds light into the importance of analyzing the possible impacts that foreign direct investment and strategic alliances between brewers might have on beer trade. These alliances not only result in the sharing of capital, knowledge and distribution resources, but as a way of reducing non tariff barriers to trade in some countries.

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<sup>11</sup> See, *Wall Street Journal*, Jan 17, 2003

This work also raises the public policy issue as to why the US is the only country that charges a flat dollar rate on volume, regardless of value. Given the relatively low bilateral tariffs between NAFTA countries and their prior

importance in US beer trade flows, the conclusion that arises is that any substantial effect that the agreement might have had would surely be of an unquantifiable nature.

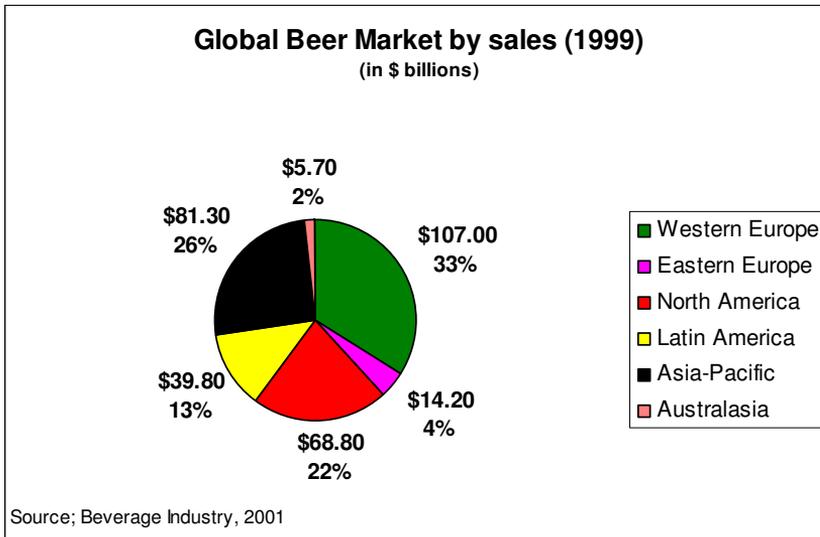


Figure 1

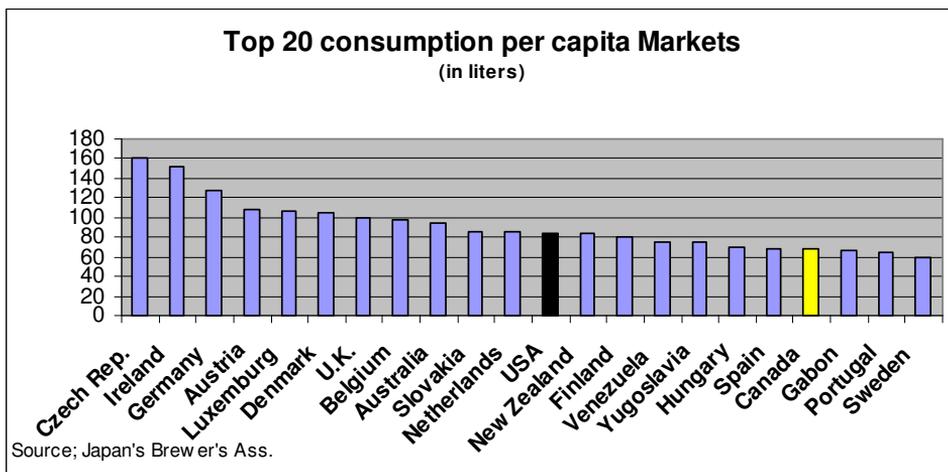


Figure 2

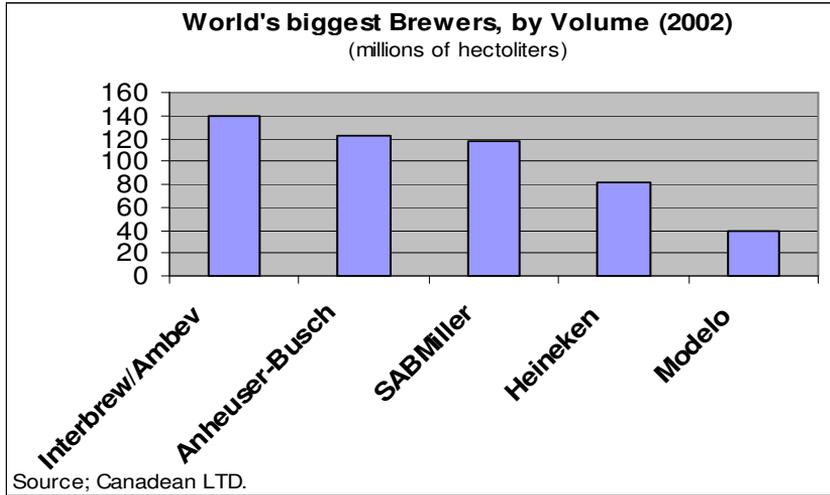


Figure 3

North American Beer Market			
	United States	Mexico	Canada
Market size ( Bill)	\$55.90	\$12.80	\$7.50
CAGR 1997-02	1.00%	10.50%	2.86%
Consumption per capita (ltrs)	84.4	52	68.1
Key players (market share)	Anheuser Busch (48.8%) SABMiller (19%) Coors (11%)	Grupo Modelo (55%) Femsa (43%)	Molson (37.2%) Lebatt's (30.4%) Anheuser Busch (14.7%)

Figure 4

Top five US beer import brands				
(in millions of 2.25 gallon cases)				
Brand	Origin	1990	2001	CAGR
Corona	Mexico	12.7 (10.8%)	84.2 (28.4%)	18.80%
Heineken	Netherlands	29.1 (24.7%)	56.7 (19.2%)	6.25%
Labatt B.	Canada	6.0 (5.1%)	15.3 (5.1%)	8.88%
Tecate	Mexico	2.9 (2.5%)	12 (4%)	13.80%
Guinness	Ireland	2.6 (2.2%)	10.7 (3.7%)	13.70%
<b>Total</b>		117.7	296	8.75%

Numbers in parenthesis equal market share of imports

Source: Impact Data Bank

Figure 5

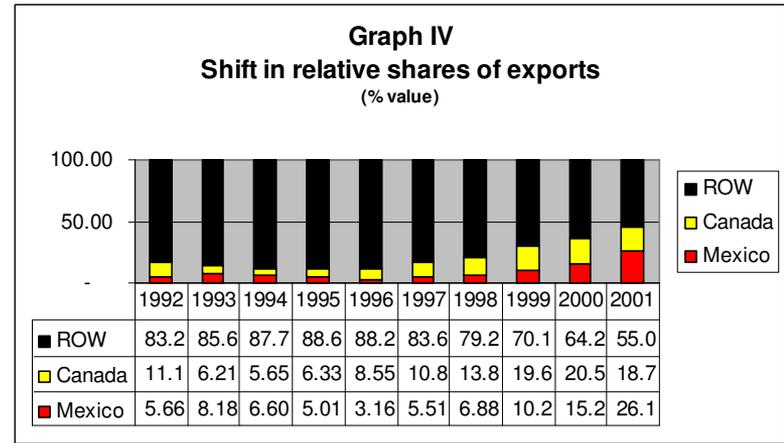
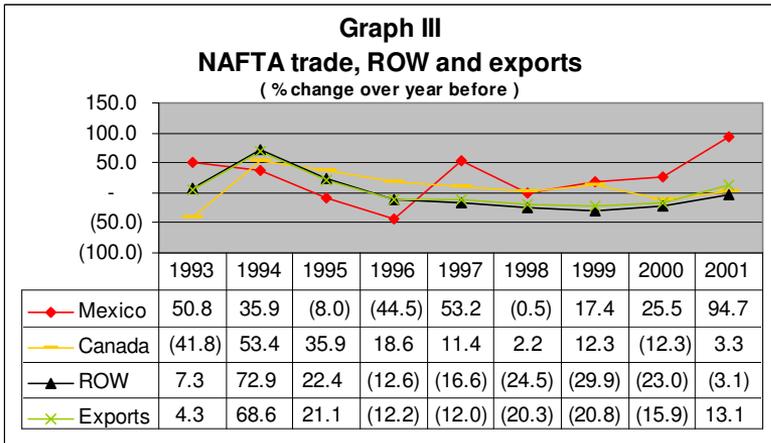
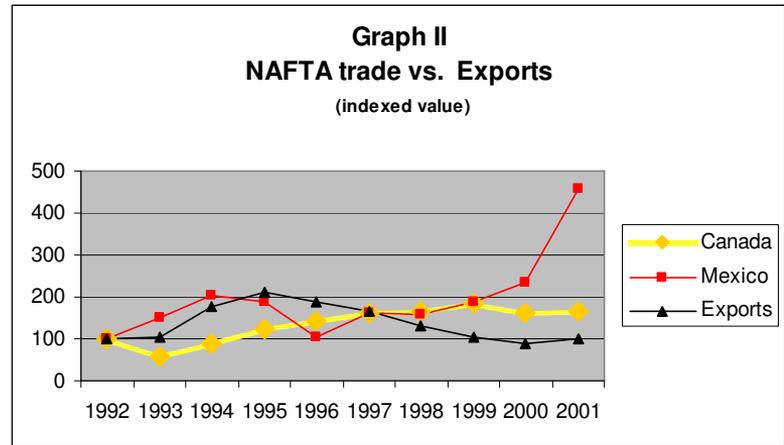
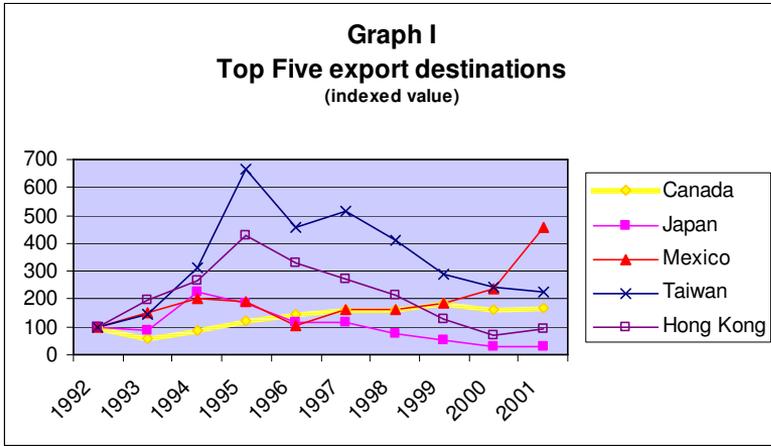
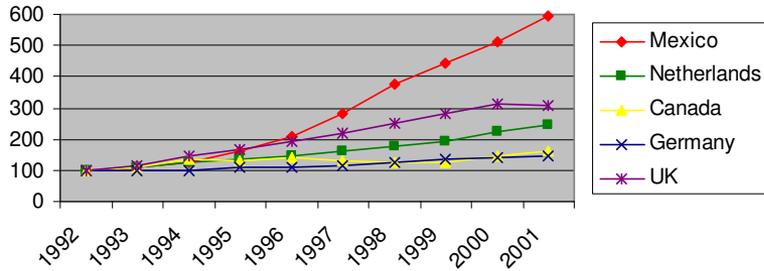
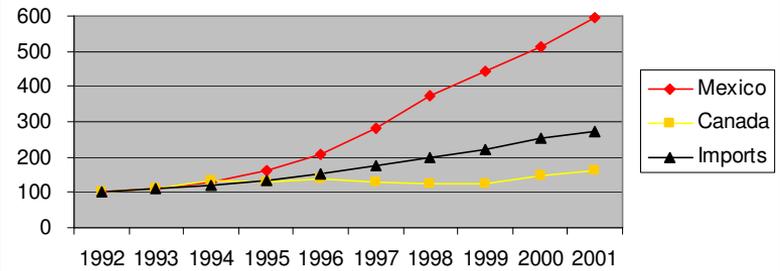


Figure 6

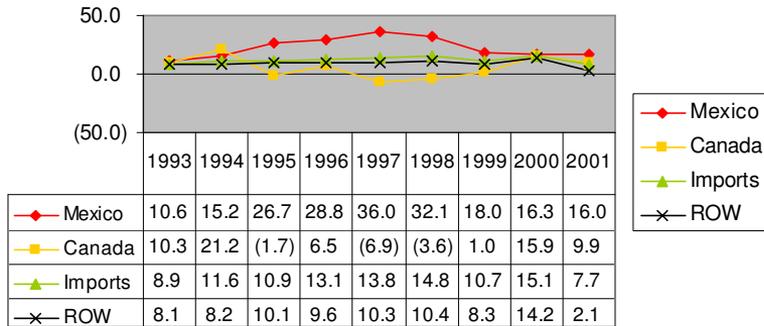
**Graph V**  
**Top five import destinations**  
 (indexed value)



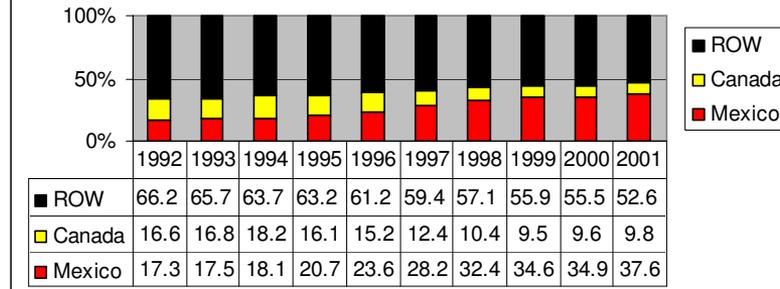
**Graph VI**  
**NAFTA trade vs. Imports**  
 (indexed value)



**Graph VII**  
**NAFTA trade, ROW and Imports**  
 (% change over year before)



**Graph VIII**  
**Shift in relative shares of imports**  
 (% value)



## REFERENCES

- [1] Beer Institute, "Beer serves America".
- [2] Beverage Industry, "Beer Trends shift upwards", pgs 92-96. June, by Elizabeth Davila, 2001.
- [3] Beverage Industry, "Beer report", pgs 18-24, May, by Jaime Popp, 2003.
- [4] Datamonitor Market Research.
- [5] Devlin, Robert and Antoni Estevadeordal, "What's new in the Regionalism in the Americas?", *Inter-American Development Bank*, Working paper 6, 2001.
- [6] Fukao, Kyoji, Toshihiro Okubo and Robert Stern, "An econometric analysis of trade diversion under NAFTA," *The institute of Economic Research at Hitotsubashi Univeristy*. November, 2002.
- [7] Gould, David, "Has NAFTA changed North American trade?" *Federal Reserve Bank of Dallas*, Economic Review. First Quarter, 1998.
- [8] Hufbauer, Gary and Jeffrey Schott, "North American Free Trade Issues and Recommendations," *Institute for International Economics*, 1992.
- [9] International Monetary Fund, *International Statistics Yearbook*, 1998.
- [10] Ivey School of Business, "The Global branding of Stella Artois", by Anthony Goerzen and Paul Beamish, 2000.
- [11] Krueger, Anne, "Trade Creation and trade diversion under NAFTA," *National Bureau of Economic Research*. December, 1999.
- [12] Producto, "Guerra sin fronteras", *Grupo Editorial Producto*, pgs 82-113, August, 2002.
- [13] Standard & Poor's, *Industry Surveys, Alcoholic Beverages & Tobacco*, 2003.
- [14] Strategy and Business, "Multinationals, Latin America's Great Race", pgs 1-12, August, by Alonso Martine, Ivan de Souza and Francis Liu, 2003.
- [15] United States Department of Commerce.
- [16] United States International Trade Commission.
- [17] Wall Street Journal, "Why Corona is Big here, and Miller is so Scarce in Mexico", by David Luhnnow.
- [18] World Bank, World Development Indicators Online.
- [19] World Trade Organization "Regionalism and the World Trading System," 1995.