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PRODUCTION AND MARKETING
OF TROPICAL CROPS

Title: Factors Influencing Alcohol Consumption in Caribbean and Latin American Countries

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FACTORS INFLUENCING ALCOHOL CONSUMPTION IN CARIBBEAN AND LATIN AMERICAN COUNTRIES

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ABSTRACT:

Alcohol consumption is considered an important social activity but a major health risk in Latin American and Caribbean countries (LAC). Alcohol consumption net benefits are doubtful and the factors influencing alcohol consumption in the LAC countries are not well documented. In this study, we use secondary data and Ordinary Least Squares Regression models to evaluate the factors influencing alcohol consumption in LAC countries. The factors that significantly affect alcohol consumption are: alcohol imports, alcohol exports, alcohol production, consumer price index, real GDP per capita, urban population, number of television sets available to the household, and whether the person is from the Caribbean or not. A closer look at the factors indicates that a 1.0 percent increase in alcohol imports is associated with a 0.17 increase in alcohol consumption, while a 1.0 percent in alcohol exports reduces alcohol consumption by 0.05 percent. A 1.0 percent increase in alcohol production influences alcohol consumption by an increase of 0.43 percent. Gender and the number of tourist visitors had little effect on alcohol consumption. Price had an inverse relationship with alcohol consumption which may suggest that alcohol consumption is at the addiction level in LAC countries, or that alcohol may be a giffen good. Alcohol consumption in Caribbean countries was about 50 percent higher than Central American countries. The study provides useful information on factors influencing alcohol consumption in LAC countries, but many of the pertinent health variables were not included in the model.

Keywords: Alcohol consumption, Caribbean

INTRODUCTION:

Alcohol consumption has been associated with Latin American and Caribbean (LAC) vacation spots. The most prevalent forms of alcoholic beverages consumed are beer, wine, rum, and other forms of local brews. Alcohol is used for many different purposes: recreational, as part of religious ceremonies, industrial use, to sterilize and preserve foods, in medicine, and as part of pharmaceuticals (Smith, 2005). Alcohol consumption has been used to ease social and physical stress of working in the hot, damp Caribbean climate and as a means of psychic escape (Ryden, 2007). In the LAC countries alcohol is frequently used as part of dietary supplement and during social occasions (Caribbean Food and Nutrition Institute, 2004). Alcohol consumption in LAC countries is higher than most countries. Rehm and Monteiro (2005) stated that the population-weighted value of alcohol consumption in the Americas was 8.9 liters, well above the global average of 5.8 liters. Alcoholic consumption is acceptable as a means of improving ambiance in social gatherings in many LAC countries but the risks associated with its consumption may far outweigh the benefits. The disease burden in LAC countries and the societal costs associated to alcoholic beverage consumption have been highlighted by the World Bank (2003). Curry (1987) stated that alcoholic problems in developing countries are depleting national endowments of human and material resources; lowering production and labor productivity, life expectancy and may be responsible for premature deaths. Hence, it is

important to examine the underlying factors that influence alcohol consumption in LAC countries.

Over the period 1961 through 2003, alcohol consumption in the LAC countries varied over time with a slight upward trend in most countries (see figures 1-2). The most preferable forms of alcoholic beverages in LAC countries are spirits, followed by beer, and then wine (see Table 1). The table shows that the average per capita consumption of alcohol in the LAC countries. From the table one can calculate that Caribbean countries consume on the average 6.42 liters per year, compared to 4.26 liters per year for Latin American countries. With a per capita consumption of 13.6 liters of alcohol, the Bahaman islands have the highest alcohol consumption in the Caribbean, followed by Saint Lucia and Bermuda, with 10.2 and 9.85 liters, respectively. The countries with the lowest alcohol consumption in the Caribbean are Jamaica, Antigua, and Dominican Republic. In the Central American region, Belize had the highest alcohol consumption, with 5.78 liters per capita, while Honduras had the lowest alcohol consumption of 2.14 liters per capita. The annual percent consumption growth rate varied during the same period with a -0.91, -0.399, -0.28, and -0.13 percent for Guatemala, Haiti, Belize, and Suriname, respectively.

Alcohol consumption after work and during social gatherings is considered a healthy pastime in LAC countries. Visitors to these countries are encouraged to participate in local customs, which include the consumption of a wide variety of alcoholic beverage mixtures. Yet alcohol consumption is considered a major health risk in these countries. Some governments have tried to put in place policies to regulate alcohol consumption, but little is known about the factors influencing alcohol consumption. The main objective is to evaluate and estimate the factors that influence alcohol consumption in selected Caribbean and Latin American countries and to determine how the information generated can be used in policy formulation.

BACKGROUND

Alcohol manufacturing is linked to agricultural production, exports, and foreign currency earning. It is used by the industrial sector, the health sector, and the manufacturing sector. Alcohol consumption is tied to the service industry and generates much foreign exchange to the local economy (Curry, 1987). Alcohol consumption can have both positive and negative effects on human health, households and the community. The positive effect is that it can be used as a source of energy, a food substitute, a medicinal product, and a foreign income earner. The beneficial or harmful effects of alcohol consumption depend on the amount consumed, age, and other characteristics of the person consuming the alcohol, and specifics of the situation (World Bank, 2003). Wright et al. (2006) found that moderate alcohol intake may reduce cognitive degeneration. Moderate drinkers tend to have better health and live longer than those who are either abstainers or heavy drinkers (Hanson, 2007).The negative side of alcohol is the health and behavioral risk. In LAC countries, it has been shown that the health risks associated with drinking are extensive. Pregnant women and those individuals between 15 and 20 years old who take up alcohol as a habit are the ones exposed to the most risk (PAHO, 2002, Caribbean Food and Nutrition Institute, 2004). Maharajh and Akleema (2004) have associated crime in Trinidad and Tobago to alcohol consumption.

A number of demographic and socio-economic factors influence alcohol consumption. It is believed that in countries such as the Caribbean where alcohol is produced and consumption begins at an early age, alcoholism may persist in the society if not tempered by religious and cultural beliefs. The Caribbean islands are historically considered a place where people vacation and engage in heavy drinking to reduce stress (Smith, 2005). Therefore, alcoholic beverage consumption per capita is expected to be higher in the Caribbean than in the Latin American countries. Production and consumption seem to be positively related. An increase in production increases the availability of alcohol and may even lower prices. Hence, with lower prices, alcohol may become more affordable and, thus, consumption may increase. Brinkely (1999) believed that economic factors have little direct influence on alcohol consumption, but merely reflect or are a conduit for changes in social and demographic variables.

An inverse relationship is expected between price and consumption. As price increases, we expect alcohol consumption to fall. Some drinks may be considered as *giffen goods*, which means that, as the price increases, more of the good is consumed. For certain types of alcohol in the Caribbean, such as whiskey and gin, which are considered as elitist drinks (Smith 2005), consumption and price may be positively

related, but this may not necessarily be so for all alcoholic beverages. Chaloupka et al. (2002) believed that price would deter young people from consuming alcohol, but the addictive nature of drugs does not allow one to definitely conclude that an inverse relationship exists between alcohol consumption and price. Shaffer and Dave (2003) believed that the price elasticity for alcohol consumption varied from -0.31 to -0.51.

Imported alcohol influences the quantity of alcohol consumed and also the variety of alcohol made available at local markets. Imported alcohol is relatively cheaper than locally made brews. Hence, a positive relationship is expected between imports and consumption of alcohol in LAC countries. We expect that an increase in exports will translate to less alcohol for local consumption. Hence, an inverse relationship is expected between alcohol exports and alcohol consumption.

Population is expected to have a positive effect on alcohol consumption. As population increases, alcohol consumption is expected to increase. However, differences in alcohol consumption are expected for age groups and gender. Rehm and Monteiro (2005) stated that the heaviest drinking takes place between the ages of 15 to 44. It has been shown that men are more likely to drink heavily and excessively than women. Men and women differ in drinking during social occasions (PAHO, 2002). Mei-Yu (2006) found that high school boys more than girls. Boys tend to be more likely acquiesce and accept drinking than girls. Girls may adopt a more self-protective strategy against alcohol use than boys do.

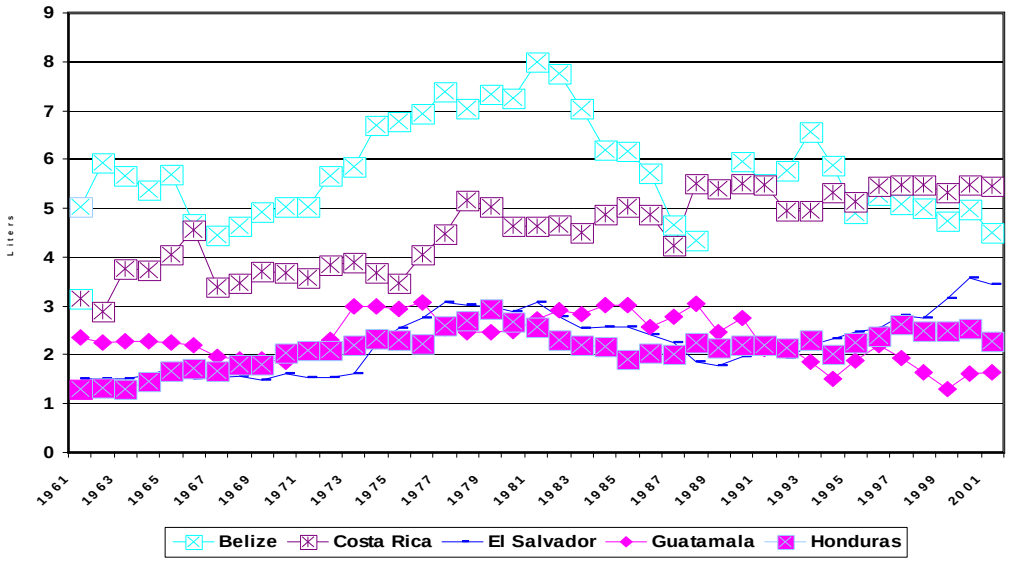
Higher income and education have been associated with increasing amounts of alcohol consumption (Buddy 2003). Mc Kee et al. (2000) have stated that age and income were the strongest and most consistent correlates of the likelihood of consuming alcohol by adults in the Baltic Republic. However, some studies have shown that drinking of alcohol is more frequent among the poorest in society who often use alcohol as a psychological escape from the difficulties of life.

The migration of individuals to urban areas is likely to expose the migrants to a larger variety of social gatherings and increase drinking. On the other hand, a move the urban areas to the rural areas may present individuals more opportunities for out door activities such as hunting fishing and hiking, which may lower the amount of alcohol consumed. However, residents of rural areas may be more impoverished and exposed to homemade brews that may be cheaper than imported liquor and, hence, alcohol consumption may be higher in rural areas (Quinlan, 2006). There may be more unrecorded alcohol consumption in rural areas than in urban areas.

Television and other forms of entertainment may present diversions and recreation. Television may also be used to educate people on good eating and drinking habits. Individuals may substitute television watching for alcohol consumption. Hence, as the number of television sets increases individuals may engage in less drinking, especially binge drinking. However, there are those who believe that television advertisements about the glamour of drinking may influence young people to consume alcohol. The net effect of television watching on alcohol consumption may vary according to the age of the individuals watching and the gender of the person.

Alcohol provides energy to the body. The energy provided is often referred to as empty calories since very little or no other nutrients are added with the calories. Alcohol consumption also has an aperitif effect that enhances caloric intake. However, there is no link between obesity and alcoholic consumption (Foster and Marriott, 2006). Alcohol consumption affects individuals' eating habits and, hence, their caloric and protein intake. Alcoholics often eat poorly, limiting their supply of essential nutrients and affecting both energy supply and body structure maintenance. Furthermore, alcohol interferes with the nutritional process by affecting digestion, storage, utilization, and excretion of nutrients (Lieber, 1988).

The consumption of alcoholic beverages adds to the amount of calories consumed. Also, when alcohol is substituted for carbohydrates, calorie for calorie, subjects tend to lose weight, indicating that they derive less energy from alcohol than from food. Research indicates that alcohol affects protein nutrition by causing impaired digestion of proteins to amino acids, impaired processing of amino acids by the small intestine and liver, impaired synthesis of proteins from amino acids, and impaired protein secretion by the liver (Feinmam, 1989).



Source:Taken from the World Bank. http://www.worldbank.org/ ,2007. World Health Organization (WHO).

Figure 1: Alcohol Consumption (in liters) per capita for Central America, 1961 to 2001

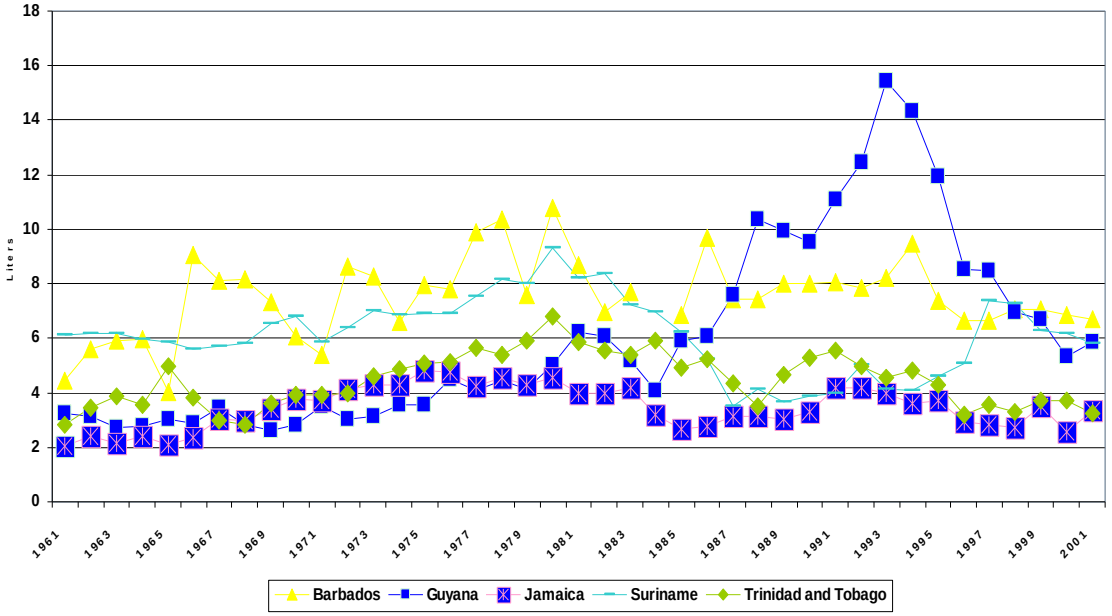


Figure 2: Alcohol consumption (in liters) per capita for Caribbean countries, 1961 to 2001

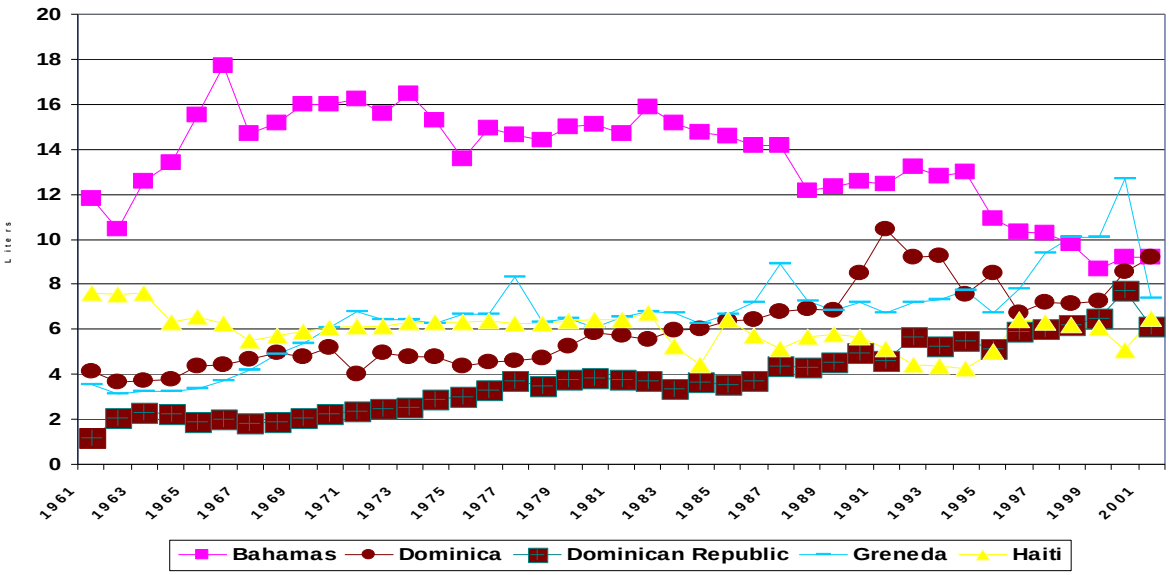
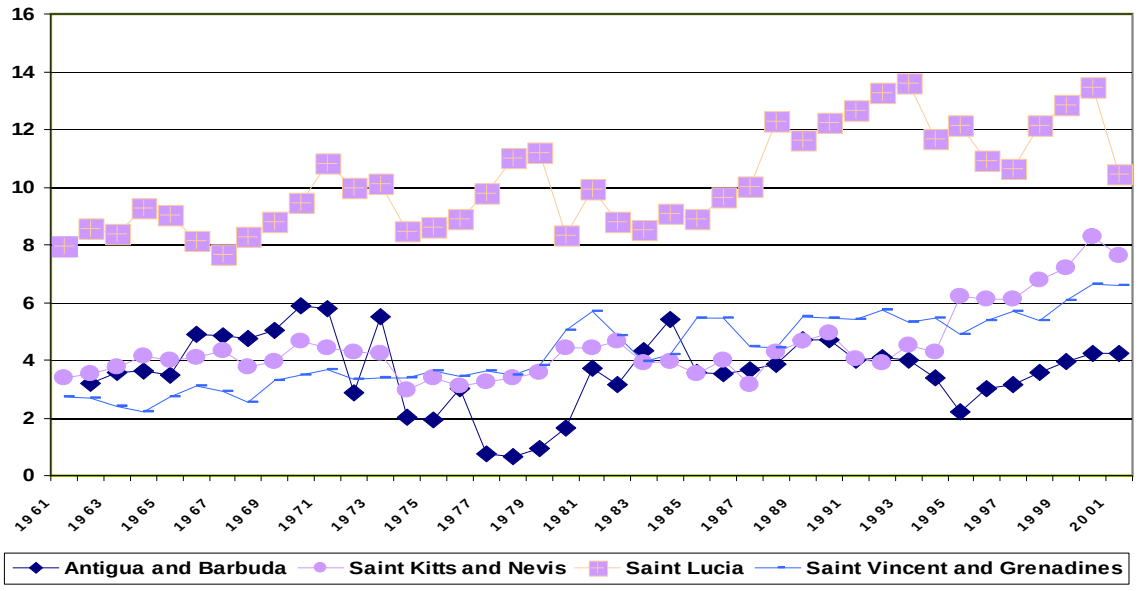


Figure 2 cont: Alcohol consumption (in liters) per capita for Caribbean countries, 1961 to 2001



Source: Taken from the World Bank. http://www.worldbank.org/ ,2007.

Figure 2 cont. Alcohol consumption (in liters) per capita for Caribbean countries 1961 to 2001

World Health Organization (WHO). MACROBUTTON HtmlResAnchor http://www.who.int/en,__2007

METHOD

Theoretical Model

An Ordinary Least Square (OLS) model was used to estimate the effects of the different economic factors on the alcohol consumption in Central American and Caribbean countries. The OLS model used study is:

(1) $Y = f(X_i;) + \varepsilon$

Where:

Y is alcohol consumption per capita, *Xi* is ith factor, *ß* is a vector of unknown parameters, and *e* is an error term.

Model Specification

The model is explicitly represented in equation 2 as:

(2)

$$Y_i = {}_0 + {}_1X_1 + {}_2X_2 + {}_3X_3 + {}_4X_4 + {}_5X_5 + {}_6X_6 + {}_7X_7 + {}_8X_8 + {}_9X_9 + {}_{10}X_{10} + {}_{11}X_{11} + {}_{12}X_{12} + {}_{13}X_{13} + {}_{14}X_{14} + {}_{15}X_{15}$$

The explanatory variables for this model are: Consumer Price Index (X_1), Alcohol Import (X_2), Alcohol Export (X_3), Alcohol Production (X_4), Real GDP per capita (X_5), Number of individuals in the population between 15 and 65 years (X_6), Squared number of individuals in the population between 15 and 65 years (X_7), Number of televisions (X_8), A measure of inflation (X_9), Tourism receipts (X_{10}), Meat consumption per capita (X_{11}), Calories per capita (X_{12}), Urban population (X_{13}), Rural population (X_{14}), Dummy Variable for region (X_{15}). The expected signs of the parameters to be estimated from the equation are:

ß1>0, ß2<0, ß3>0, ß4<0, ß5>0, ß6<0, ß7>0, ß8>0, ß9<0, ß10<0, ß11<0, ß12>0, ß13 ß14 ß15

A double log functional form was considered more appropriate for model estimation.

Data:

The data for this study were collected for the following Caribbean Common Market (CARICOM) and Latin American countries: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and Grenadines, Suriname, Trinidad and Tobago. Data were also collected for the CAFTA countries: Costa Rica, El Salvador, Guatemala, and Honduras. Data were collected for the period 1961 through 2003 from the World Bank, United Nation's Food and Agriculture Organization (FAO), and the World Health Organization (WHO) and are summarized in tables 2 and 3.

Table 2: Descriptive Statistics for Different Caribbean Countries, 1961 to 2001

	A&B	BAH	BAR	DOM	DOMR	GRE	GUY	HAI
Average of alcohol consumption per capita (L)	3.63	13.53	7.52	6.04	3.79	6.60	6.01	5.98
Average of alcohol imports (mton)	1700.38	14477.78	1159.95	1113.22	1876.00	695.39	888.51	1479.59
Average of alcohol exports (mton)	289.00	8008.37	4015.23	6.73	---	69.71	7902.68	100.46
Average of alcohol production (mton)	119.38	7051.07	13498.60	503.73	---	2043.56	24548.85	54398.71
Average of Real GDP per capita (US$)	6259.36	11920.40	6099.17	2593.51	1256.41	2530.84	759.08	499.04
Average of urban growth rate (%)	0.66	2.94	0.90	1.40	3.94	2.24	1.24	3.89
Average of rural growth rate (%)	0.96	0.46	-0.09	-1.08	1.05	-0.14	0.38	1.14
Average of consumer price index	78.49	58.19	54.63	56.46	25.35	73.17	86.49	21.42
Average of number of television (per 1000 inhabitants)	254.18	207.54	194.56	45.68	56.41	82.57	48.90	41.97

A&B=Antigua & Barbuda, BAH= Bahamas, BAR=Barbados, DOM=Dominica, DOMR=Dominican Republic, GRE=Grenada, GUY=Guyana, HAI=Haiti

Table 2 cont: Descriptive Statistics for Different Caribbean Countries, 1961 to 2001.

	JAM	SKN	SLU	SVG	SUR	TT
Average of alcohol consumption per capita (L)	3.44	4.47	10.19	4.32	6.12	4.46
Average of alcohol imports (mton)	2725.93	516.07	1632.29	876.85	2262.46	3157.32
Average of alcohol exports (mton)	15845.02	85.56	1718.10	99.44	501.05	11831.56
Average of alcohol production (mton)	72750.76	1185.73	5218.41	592.41	12384.80	40232.10
Average of Real GDP per capita (US$)	2002.19	4277.60	3109.55	1517.93	1835.61	4365.38
Average of urban growth rate (%)	2.20	0.13	2.35	4.28	2.12	1.39
Average of rural growth rate (%)	0.36	-0.41	1.18	-0.74	-0.79	0.22
Average of consumer price index	19.69	74.27	53.57	70.32	10.30	36.52
Average of number of television (per 1000 inhabitants)	127.18	147.59	99.78	94.53	124.61	201.15

JAM=Jamaica, SKN=Saint Kitts & Nevis, SLU=Saint Lucia, SVG=Saint Vincent & Grenadines, SUR=Suriname, TT=Trinidad & Tobago

Table 3: Descriptive Statistics for the Central America Countries, 1961 to 2001.

	BEL	CRI	ELS	GUA	HON
Average of alcohol consumption per capita (l)	5.79	4.53	2.26	2.33	2.14
Average of alcohol imports (mton)	1131.43	4043.63	2661.12	2284.37	1793.76
Average of alcohol exports (mton)	243.38	562.41	1226.66	3691.12	114.68
Average of alcohol production (mton)	4006.63	39174.39	58037.68	78468.39	53967.80
Average of Real GDP per capita (US$)	1966.64	2823.05	1577.06	1340.18	657.22
Average of urban growth rate (%)	2.23	4.03	3.26	3.44	4.69
Average of rural growth rate (%)	2.83	1.51	1.24	1.91	2.22
Average of consumer price index	84.42	---	29.55	27.15	22.03
Average of number of television (per 1000 inhabitants)	174.45	120.18	83.97	41.27	43.47

BEL=Belize, CRI=Costa Rica, ELS=EL Salvador, GUA=Guatemala, HON=Honduras

RESULTS:

Ordinary Least Squares (OLS) regression was used to estimate the model. The estimated models that examine the factors that affect alcohol consumption in the Caribbean and Latin American countries are seen in Tables 4 and 5. In the first model (Table 4), the variable population was used to determine whether age of the population between 15 and 65 had any effect on consumption. The Ramsey RESET test shows there are no omitted variables in the model. The F statistic (DF=18/107) was significant at a =0.05, indicating that the coefficients of regression were significantly different from zero. The mean square error (MSE=0.17), the Ramsey RESET test, and the F statistic (DF=18/107) all indicate that the model has a good fit. The adjusted R^2 for this model was 0.92, indicating that 92 percent of the variation in the dependent variable is explained by the variation in the independent variables. Almost all the estimated coefficients had the expected signs.

The factors that significantly affect alcohol consumption are: alcohol imports, alcohol exports, alcohol production, consumer price index, real GDP per capita, urban population, number of television sets available to the household, and whether the person is from the Caribbean or not. A closer look at the factors indicates that a 1.0 percent increase in alcohol imports is associated with a 0.17 increase in alcohol consumption, while a 1.0 percent in alcohol exports reduces alcohol consumption by 0.05 percent.

A 1.0 percent increase in alcohol production influences alcohol consumption by an increase of 0.43 percent. When per capita GDP increases by 1.0 percent alcohol consumption increases by 0.14 percent indicating that alcohol is a normal good. An increase in the number of television sets by 1.0 percent reduces the amount of alcohol consumption by 0.23 percent. Meat and caloric intake were inversely related to alcoholic beverage consumption. These results also indicate that there is a significant difference between the alcohol consumption in the Caribbean and the Central American countries.

Table 4: Estimated Coefficients of Factors Influencing Alcohol Consumption with Distinction

ln alcohol consumption per capita	Coef.	Std. Err.	t	P>|t|
Year	-0.008	0.007	-1.120	0.263
ln cpi	0.154	0.032	4.900*	0.000
ln alcohol imports	0.172	0.026	6.650*	0.000
ln alcohol exports	-0.057	0.015	-3.750*	0.000
ln alcohol production	0.434	0.056	7.820*	0.000
ln real gdp per capita	0.141	0.076	1.860**	0.065
ln population between 15 and 65	0.029	0.028	1.040	0.299
ln square population between 15 and 65	0.083	1.737	0.050	0.962
Ln number of television	-0.237	0.050	-4.700*	0.000
Ln inflation consumer prices	-0.003	0.018	-0.150	0.877
Ln tourism receipts	0.041	0.031	1.340	0.182
Ln meat consumption per capita	-0.314	0.117	-2.690*	0.008
Ln calorie per capita	-1.101	0.402	-2.730*	0.007
Ln urban population	-0.382	0.070	-5.470*	0.000
Ln rural population	-0.134	0.068	-1.970*	0.051
region_Caribbean	0.517	0.086	6.000*	0.000
Constant	28.778	14.543	1.980*	0.050

Number of obs	=	136
F(16, 119)	=	96.85
Prob > F	=	0
R-squared	=	0.9287
Adj R-squared	=	0.9191
Root MSE	=	0.17377

Ramsey RESET test using powers of the fitted values of ln alcohol consumption per capita
Ho: model has no omitted variables
F(3, 116) = 2.07

Prob > F = 0.1083
* significant at a=0.05, **significant at a=0.10

The Caribbean nations are consuming 0.52 percent more alcohol per capita than the CAC countries.

In the second model we tried to evaluate the effect of gender on alcohol consumption In this model we see that gender had no or limited effect on alcohol consumption (Table 4). The Ramsey RESET test, the F (DF=18/107), MSE, and the adjusted R^2 all indicate that the model has a good fit and had high explanatory power. The effect of gender on alcohol consumption was not significant. Meat and caloric intake vary inversely with alcohol consumption.

DISCUSSION AND SUMMARY

Alcohol consumption is much higher for the Caribbean than for other Latin American countries. We see that gender did not have any significant effect on alcohol consumption. This result is unexpected since other researchers have stated that the male population in the Caribbean and Latin America consume larger quantities of alcohol than their female counterparts. Drinking takes place at clubs, during festive occasions, and during and after sporting activities dominated by men. Reports by WHO (2003), PAHO (2002), and Rehm and Monteiro (2002) have all noted gender differences in alcohol consumption. The lack of effect may be due to the consumption of unrecorded alcohol by the population. The deviation from expectation may be due to the division of age into such a large grouping. The age group from 15 to 55 and 55 an older in place of a division of 15 to 65 and 65 and older could have generated opposite results since this age group is more representative of our income-earning class. Rehm and Monteiro (2005) note that there exists differences in drinking among age groups and that drinking in LAC countries was heaviest for the 15 to 44 age group.

Table 5: Estimated Coefficients of Factors Influencing Alcohol Consumption with Distinction Made for Gender

Consumption per capita	Coef.	Std. Err.	T	P>|t|
Year	-0.017	0.008	-2.020*	0.046
ln cpi	0.184	0.038	4.840*	0.000
ln alcohol imports	0.172	0.028	6.190*	0.000
ln alcohol exports	-0.074	0.017	-4.410*	0.000
ln alcohol production	0.477	0.068	7.050*	0.000
ln real gdp per capita	0.119	0.085	1.390	0.168
ln male ppopulation between 15 and 65	0.291	0.366	0.790	0.429
ln female population between 15 and 65	-0.044	0.150	-0.290	0.769
ln square female population between 15 and 65	-5.623	6.322	-0.890	0.376
ln square male population between 15 and 65	1.213	6.922	0.180	0.861
ln number of television	-0.256	0.064	-3.990*	0.000
ln inflation consumer prices	-0.027	0.021	-1.320	0.190
ln tourism receipts	0.044	0.032	1.380	0.170
ln meat consumption per capita	-0.270	0.122	-2.220*	0.029
ln calorie per capita	-1.139	0.472	-2.410*	0.018
ln urban population	-0.491	0.250	-1.960*	0.052
ln rural population	-0.234	0.167	-1.400	0.164
region_Caribbean	0.387	0.117	3.320*	0.001
Constant	46.865	16.167	2.900*	0.005

F(18, 107)	=	86.65
Prob > F	=	0
R-squared	=	0.9358
Adj R-squared	=	0.925
Root MSE	=	0.16945

Ramsey RESET test using powers of the fitted values of ln alcohol consumption per capita
Ho: model has no omitted variables
F(3, 104) = 1.94
Prob > F = 0.1272
* significant at a=0.05, **significant at a=0.10

Revenue per capita, represented by GDP per capita, had a positive effect on alcohol consumption. This indicates that, as income increases, more alcohol might be consumed. Also, individuals might graduate from the consumption of local unrecorded alcohol use to more sophisticated drinks. The significance of the effect depends on how much individuals substitute alcohol as a form of recreation with television and other forms of electronic entertainment. We see that alcohol consumption varies indirectly with the number of television sets in use.

As expected, alcohol consumption increases with the amount of imports and decreases with the quantity of exports. However, a decrease in the amount of imports may force price upwards and force low-income consumers to use more of the unrecorded locally manufactured alcoholic beverages. The amount of non-recorded alcoholic beverages is significant in Central America and the Caribbean (Rehm and Monteiro, 2005).

Of significant importance is the limited effect of tourism on alcohol use in LAC countries as noted in Table 4.. The number of tourists seems to have minimal effect on alcohol use. This removes the myth that LAC countries may be the area where tourists engage in rampant drinking, but rather visitors may be more attracted to the area for the sun, sand, and natural beauty. We should reconsider the effect of cheap alcohol as a tourist attraction. We should, however, be careful with the interpretation of this outcome since no distinction was made between the alcohol consumed by visitors and local inhabitants.

We examined the effects of certain parameters on alcohol consumption but we excluded all the health parameters because of unavailability of data and the lack of coherence in the outcome of alcohol drinking on certain diseases and the effects of this awareness on alcohol consumption. However, we noticed that caloric and meat intake was inversely related to alcohol consumption. This phenomenon may indicate that, when people begin to consume alcohol, they substitute the energy from alcohol for that from other carbohydrate and protein sources. The consumption of “empty calories” as designated when this phenomenon occurs is the initiation of many physiological diseases. It is, however, stated in the literature that intense use of alcoholic beverages may affect various health parameters.

The results of this study provide some helpful insights into the factors influencing alcohol consumption. However, this paper can only assist in the development of other studies designed to evaluate the factors that influence alcohol consumption. We may need to examine in more detail the gender differences in drinking, the effects of prices on alcohol use, and the effects of tourism on alcohol purchases. Differences should be noted among countries since the level of drinking may vary among nations in the LAC countries with different numbers of tourist visitors. This paper is one of the first that uses quantitative measurements to evaluate alcohol consumption in LAC countries. It brings to light the importance of certain key factors that influence alcohol consumption in the area.

REFERENCES:

American Heart Association (2001). Alcohol consumption and hemostatic factors, *Circulation* 104:1367.)

Brinkley, G. L. (1999). The causal relationship between socioeconomic factors and alcohol consumption: a Granger-causality time series analysis, 1950-1993. *Stud Alcohol*, Nov. 60(6): 759-68.

Buddy, T. (2003). Alcohol consumption connected to education, Income, *Alcohol Newsletter*

Caribbean Food and Nutrition Institute (2004). Alcohol, Ryam News, Nos 1&2, pages 1-3.

Curry, Jr. R. L. (1987). A Framework for National Alcohol programmes in developing countries, *British Journal of Addiction*, (82):721-726.

Chaloupka, F. Grossman and H Saffer, (2002). The effects of price on alcohol consumption and alcohol-related problems, The National Institute on Drug Abuse. http://pubs.niaaa.nih.gov/publications/arh26-1/22-34.pdf.

Feinman, L. (1989). Absorption and utilization of nutrients in alcoholism.

Alcohol Health & Research World 13(3):207-210.

Food and Agriculture Organization of the United Nation (FAO), http://www.fao.org/

Foster, E., and H. E. Marriott (2006). Alcohol Consumption in the new Millennium weighing up the risks and benefits for our health, *British Foundation Nutrition*, 31, 286-331.

Hanson, D. J. (2007). Alcohol and Solutions, http://www2.potsdam.edu/hansondj/AlcoholAndHealth.html

Lieber, C.S. (1988). The influence of alcohol on nutritional status. *Nutrition Reviews* 46(7):241-254.

Maharajh, H. D., and Akleema, A. (2004). Crime in Trinidad and Tobago: the effect of alcohol use and employment; *Pan American Journal Review of Public Health*, Vol. 15 (6): 417-23.

Mc Kee, M. Pomeleau, J. Robertson, A. Pudule, I. Grenberga, D. Kaziau, S. Klene, K. Abaravicaus, A., and Vaask, S., (2000). Alcohol consumption in Baltic Republic, *Journal of Epidemiology and Community Health*, 54(3) 361-365.

Mei- Yu Yey (2006). Factors associated with alcohol consumption, problem drinking, and related consequences among high school students in Taiwan, *Psychiatry and Clinical Neurosciences*, 60:46-54.

PAHO (2002). Gender and alcohol consumption and alcohol-related problems in Latin America and the Caribbean, *Revista Panamericana de Salud Publica*, vol. 12. no.1. 1 - 6.

Quinlan, R. J. (2006). Gender and risk in a matrifocal Caribbea community: A view from behavioral ecology, *American Anthropologist*, vol. 108, Issue 3: 464-479.

Rehm, J., and Monteiro M. (2005). Alcohol consumption and burden of diseases in the Americas; implications for alcohol policy, *Revista Panamericana de salud Publica* vo., 18 (4-5):241-248.

Ryden, D. B. (2007). Caribbean Rum: Asocial and economic History. By Federick Smith, Book Review, *Business History review*, Page 1 to 4.

Shaffer, H. and D. Dave (2003). Alcohol advertising and alcohol consumption by adolescents, NBER working paper. 9676. NBER Program.

Smith, F. H. (2005). Caribbean rum: A social and economic history, University Press of Florida, Gainesville.

USDA (2001). *Alcohol intake affects caloric, protein, and cholesterol consumption, American Journal of Clinical Nutrition*; 74(3):322-327

U.S. Department of Health and Human Services (2007). *The Surgeon General's Report on Nutrition and Health*. DHHS Pub. No. (PHS) 88-50210.

Wright, C. B. M.S.V. Elkind, Xiaodong, L. Paik, C. and R. L. Sacco (2006) Reported alcohol consumption and cognitive decline: the North Manhattan study, *Neuroepidemiology*; 27(4):201-207.

World Bank (2003). Global Alcohol Policy and Alliance, The Globe 1-4**.**

World Bank. http://www.worldbank.org/

World Health Organization (WHO). MACROBUTTON HtmlResAnchor http://www.who.int/en