



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

# Factors Affecting Relative Changes in U.S. Snack Foods Exports Among Countries: A Constant Market Share Analysis

Albert E. Myles and Albert J. Allen

This study used Constant Market Share (CMS) analysis to examine the competitiveness of U.S. snack food exports in terms of their revealed market shares and market potentials. The CMS analysis suggested that almost 99 percent of the gains in snack food exports were due to growth in world demand and 1.52 percent to the composition of snack food products between 2004 and 2008. Unfortunately, competitiveness of the world snack food market reduced U.S. exports by 1.52 percent during this same period.

The snack food industry consists of products such as potato chips, corn chips, tortilla chips, popped popcorn, pretzels, salted and roasted nuts, and seeds. United States (U.S.) snack food exports continue to grow, reaching an estimated \$20.35 billion in 2008 (USDA 2009). The U.S. is the largest market, accounting for about one-third of the world's total; Japan and the United Kingdom together account for another quarter of the world's total (Hodgen 2004). The spread of Western eating habits to other parts of the world continues as lifestyles in those parts of the world become busier, and traditional family meal times become a thing of the past. As a result, the demand for snack foods continues to increase (Hodgen 2004, p 1).

## Global Prospective

U.S. exports of snack foods have averaged about \$15.68 billion (Table 1) since 2004. The largest trading regions of U.S. snack foods in 2008 were APEC (\$2.17 billion, up 57.94 percent from 2004), Western Hemisphere (\$2.012 billion, up 71.76 percent from 2004), Free trade Area of America (\$1.98 billion, up 71.34 percent from 2004), North America (\$1.72 billion, up 65.46 percent from 2004), Developed Economies (\$1.64 billion, up 55.45 percent from 2004), CAIRNS Group/EU-15 (\$1.65 billion, up 59.14 percent from 2004), and the CAIRNS Group (\$1.54 billion, up 59.85 percent from 2004). The *Rest of the World* represented the largest snack foods export region for the U.S. in 2008 (\$2.01 billion, up 62.5 percent from 2004).

The actual growth in snack food purchases from 2004 to 2008 in these regions was the Rest of the

World up \$1.04 billion, Western Hemisphere up \$840.8 million, Free Trade Area of America up \$823.97 million, APEC up \$797.1 million, North America up \$680 million, CAIRNS Group/EU-15 up \$614.1 million, Developed Economies up \$586.69 million, and CAIRNS Group up \$577.35 million. These eight regions accounted for 80.9 percent of all U.S. snack food exports between 2004 and 2008.

In 2004 the largest export category was cocoa products at \$2.81 billion, followed by chocolate products at \$1.78 billion; confectionery products at \$1.75 billion; potato chips at \$1.3 billion; and breads, biscuits, and other baked products at \$946.46 million in exports. By 2008 exports of these products rose to \$4.33 billion, 3.04 billion, \$2.3 billion, \$2.93 billion, \$1.31 billion, and \$1.78 billion, respectively. However, crispbread and gingerbread exports decline almost \$3.21 million (6.95 percent) between 2004 and 2008.

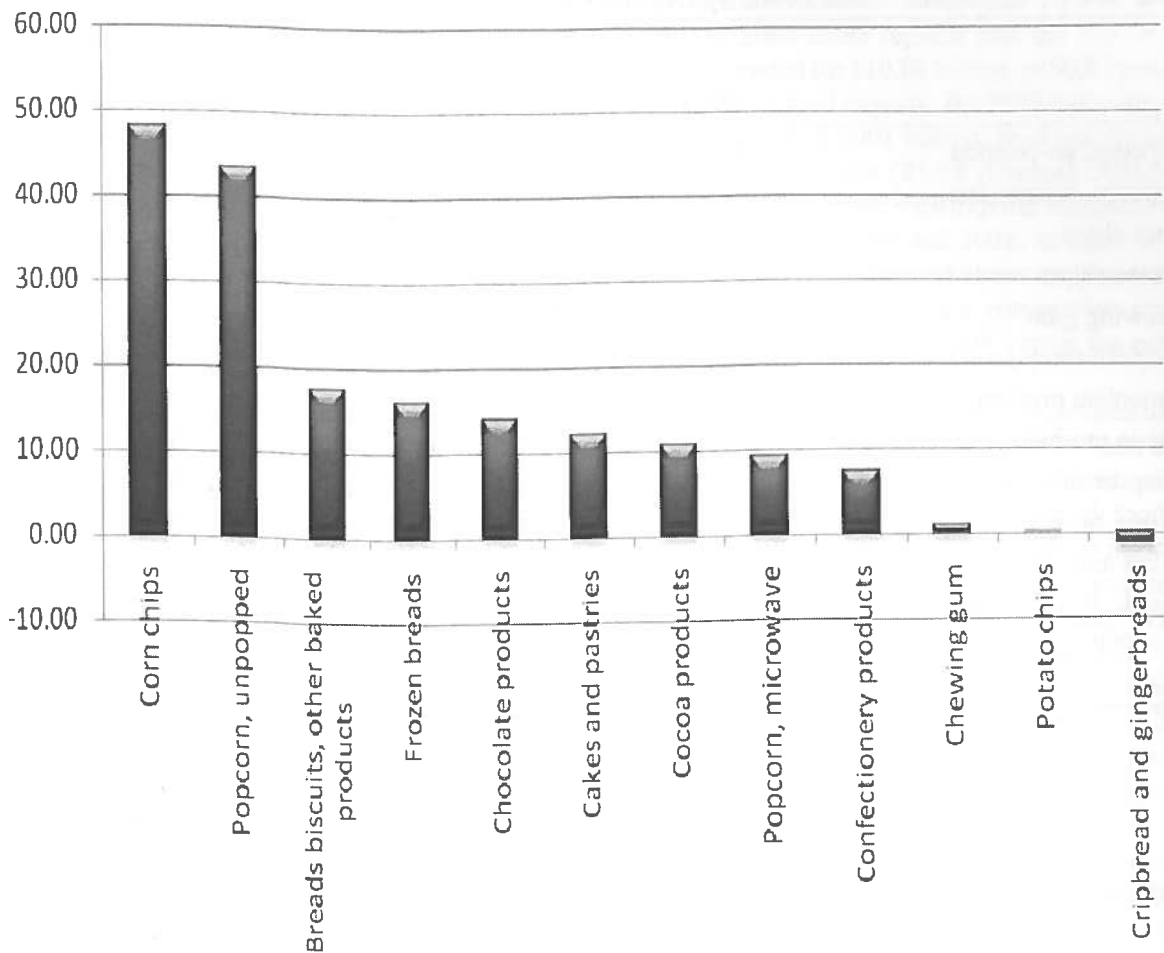
While cocoa, chocolates, confectionery, potato chips, bread and biscuits experienced huge growth in export sales between 2004 and 2008, in percentage terms, corn chips and un-popped popcorn products gained the largest increase in export sales during this period. These product groups experienced gains in export sales of 48.07 and 43.35 percent, respectively, between 2004 and 2008 (Figure 1). The next closest product group was breads, biscuits, and other baked products, at 17.54 percent. Sales of potato chip products grew less than one-fifth of one percent between 2004 and 2008.

## Data

The primary data source in this study was the Foreign Agricultural Service, BICO Export Commodity Aggregations database in 2009. These data

Table 1. U.S. Snack Foods Exports by Region in the World.

REGION	Totals(\$000)					5-year average	5-year Average-Growth
	2004	2005	2006	2007	2008		
APEC COUNTRIES	1,375,549	1,501,989	1,650,906	1,833,869	2,172,651	1,706,993	11.59
CAFTA-DR	29,710	33,347	42,204	56,255	69,066	46,116	26.49
CAIRNS GROUP	964,614	1,025,208	1,143,402	1,310,943	1,541,963	1,197,226	11.97
CAIRNS GROUP/EU-15	1,038,406	1,107,108	1,223,793	1,410,256	1,652,508	1,286,414	11.83
Caribbean (Miami)	34,869	43,132	49,383	55,420	67,578	50,076	18.76
Caribbean Islands	50,055	62,933	71,012	80,396	94,363	71,752	17.70
Central America	34,900	38,619	44,908	63,089	88,687	54,041	30.82
Developed Economies	1,058,115	1,123,936	1,257,212	1,416,679	1,644,808	1,300,150	11.09
Developing Economies	610,546	703,059	741,180	855,595	1,066,821	795,440	14.95
East Asia	336,910	369,006	386,426	424,710	454,791	394,369	7.00
Emerging Market	386,844	456,967	475,511	519,501	662,629	500,290	14.26
Europe	84,630	91,535	92,158	110,642	126,617	101,116	9.92
European Union-15	73,790	81,898	80,396	99,316	110,546	89,189	9.96
European Union-25	77,898	84,127	82,308	101,453	115,752	92,308	9.72
European Union-27	78,579	85,177	83,684	103,088	117,560	93,618	9.92
Free Trade Area Amer	1,155,017	1,263,390	1,411,517	1,604,542	1,978,988	1,482,691	14.27
Latin America	318,892	378,642	417,277	471,835	644,701	446,269	20.43
North America	1,038,771	1,132,366	1,264,048	1,409,735	1,718,791	1,312,742	13.09
Oceania/Pacificis	30,016	30,448	39,778	46,120	38,436	36,960	5.61
PacRim Nations	336,910	369,053	386,443	424,710	454,814	394,386	7.00
South America	48,031	50,749	57,267	79,528	110,723	69,260	26.10
Western Hemisphere	1,171,755	1,284,672	1,437,235	1,632,748	2,012,565	1,507,795	14.35
Other-C	472,239	512,303	498,760	592,600	695,345	554,249	9.45
Rest of World	1,668,664	1,826,996	1,998,390	2,272,269	2,711,625	2,095,589	12.50
World (total)	12,475,710	13,656,660	14,935,198	16,975,299	20,352,328	15,679,039	100.0000



**Figure 1. Annual Growth of U.S. Snack Food Exports by Product in the World.**

are compiled and maintained by the United States Department of Agriculture. The authors used a customized spreadsheet to maximize the flexibility and use of the data. The data set contains exports and imports from 47 major regions in the world from 1980 to 2009. However, 2009 is cumulative since the year has not ended.

The variable used to evaluate trade was the total value of snack food exports. Each year's data includes values for 27 product groups with each group containing many different food items. For any given year, with 47 regions and 27 commodity groups, there are 1,269 possible data points. Unfortunately, data on all 47 regions and/or countries are

not available for the entire analysis. Thus the authors aggregated the regions and products to correct for missing data in the study. A sample of available data is presented in Table 1 by regions and Table 2 by snack food products for the study.

### Objectives

This study disentangles actual growth of U.S. snack food exports during the period 2004–2008. Constant market share analysis (CMS) was used to partition actual growth into competitiveness, composition, and market effects that drove snack food exports during this period.

**Table 2. U.S. Aggregate Snack Foods by Exports Category.**

	TOTALS(\$000)				
	2004	2005	2006	2007	2008
Popcorn, un-popped	187,062	210,493	282,176	352,565	592,473
Popcorn, microwave	422,121	566,661	595,444	695,794	618,235
Corn chips	523,441	847,963	1,031,450	1,458,500	1,781,642
Potato chips	1,299,397	1,245,558	1,261,907	1,210,132	1,312,063
Chewing gum	370,207	426,152	381,258	324,672	386,479
Confectionery products	1,746,274	1,772,218	1,813,997	2,052,246	2,396,696
Chocolate products	1,783,823	1,810,827	2,147,142	2,599,093	3,038,831
Cocoa products	2,809,484	3,117,896	3,192,004	3,481,810	4,328,585
Crisp-bread and gingerbreads,	46,120	32,845	24,023	37,004	42,913
Frozen breads	1,630,469	1,856,116	2,078,851	2,317,024	2,933,764
Cakes and pastries	710,332	686,684	776,742	887,149	1,142,672
Breads, biscuits, other baked products	946,461	1,082,999	1,349,663	1,558,594	1,776,729
Total	12,475,191	13,656,412	14,934,657	16,974,583	20,351,082

## Methods

Constant market share analysis was used to evaluate growth in U.S. snack food exports between 2004 and 2008. The characteristic of this method is the assumption or norm that a country's export share in a given market should remain unchanged over time.<sup>1</sup> Thus the difference between the actual export growth from the U.S. to a given market and the unchanging export share implied by this constant-market share norm may be attributed to three factors: market demand, commodity composition, and competitiveness.

To capture the dynamical aspect of international trade, we divided the 2004–2008 period into three sub-periods and set forth results for each of them. These periods are 2004–2006, 2006–2008, and 2004–2008. Analyses and comparisons of the market shares were made among these periods.

<sup>1</sup> Constant Market Share (CMS) model, introduced by Richardson (1971), is based on the assumption that without changes abroad and maintained competitiveness at home, a country's share in the world market should remain unchanged overtime (Poramacom 2002).

## Model

The constant market share identity used in this study is (Poramacom, 2002)

$$(1) \quad x(t) - x(t-1) = \sum_i [ri - r_{world}] + \sum_i \sum_j [rij - ri] x V(t-1)_{ij} + \sum_i \sum_j [x V(t)_{ij} - x V(t-1)_{ij}],$$

where  $X$  = Value of U.S.'s snack food exports in the world market,  $X_i$  = Value of U.S.'s snack food exports of commodity  $i$ ,  $X_j$  = Value of U.S.'s snack food exports to region  $j$ ,  $x_{ij}$  = Value of U.S.'s snack food exports of commodity  $i$  to region  $j$ ,  $t$  = current year,  $r_{world}$  = percentage increase in U.S world snack food exports from previous year to current year,  $r_i$  = percentage increase in U.S. world snack food exports of commodity  $i$  from previous year to current year, and  $r_{ij}$  = percentage increase in U.S world snack food exports of commodity  $i$  to region  $j$  from previous year to current year.

The CMS model can vary in its formulation. For example, one form of the model may include four components of changes in world trade, while another variation of the model may include three

components of the CMS model. Regardless of the form used, the changes in world trade must equal the actual change between two periods in the study.

The model was applied to 24 regions and 12 product groups, separately for each year of the data. This analysis compared U.S.' export performance for each product and in each market against the world trade (total exports) for each of these product groups and regions respectively.

### Interpreting CMS Components

The first term on the left of Equation 1, actual export growth, estimates the overall growth in U.S. snack food exports between two periods. The first term on the right, commodity-composition effect (or product effect), suggests whether the U.S. snack food exports were concentrated in products whose markets were growing (or in commodity classes with growth rates higher than the world or reference average). A positive value suggested this was the case; a negative value suggested the opposite was true. The second term on the right, market distribution effect,<sup>2</sup> isolates the effect of differences in the growth rates of each commodity in each market. A positive value indicates concentration of exports on high growth market (Poramacom 2002). A negative sign suggests the exports were concentrated in stagnant markets (Kellman, Roxo, and Shachmurove 2003). The third term on the right, competitiveness effect (or residual), indicates the extent to which a country is able to gain international market shares despite potentially adverse world demand movements for both market and commodity. A positive sign of the residual implies the improved position of exports in terms of competitiveness, whereas a negative sign reflects deterioration in the country's export because of a decline in competitiveness (Kellman, Roxo, and Shachmurove 2003, p. 12).

### Results

One of the first observations from the study was the share of U.S. snack food exports to each trading partner (Figure 2). This figure contains among others the eight regions with the greatest share of U.S. snack food exports, each of which has at least

a five percent share or more, plus the rest of the world. In 2004 these regions and the rest of the world accounted for \$10.08 billion, or 80.81 percent of U.S. snack food exports. By 2008 these regions accounted for \$16.5001 billion, or about the same share of U.S. exports (81.08 percent). Although the value of U.S. snack food exports increased significantly between 2006 and 2008, its share of the snack food market remained about the same. This suggests that the U.S. faced a competitive export market between 2006 and 2008 versus the period 2004–2006.

Data on U.S. snack food exports were used to derive the CMS components between 2004 and 2008 (Table 3). The period 2004 to 2008 was examined to determine what happened to U.S. snack food exports during this time. During this analysis the study focused on two basic questions: "How competitive are these exports in the world market?" and "Where are the potential markets for these products?" The increase in U.S. snack food exports to its trading partners equaled almost \$7.9 billion between 2004 and 2008 (Table 4). This was decomposed into increases of \$2.46 billion between 2004 and 2006 and \$5.42 billion between 2006 and 2008.

During the period 2004–2008 the U.S. overall shares in the world market for snack food exports changed little. Both the market and composition effects were positive, which offset the negative competitive effects during this period. These results suggest that increased growth of U.S. snack foods exports in the world during the periods 2004–2006, 2006–2008, and 2004–2008 were due to the market and the composition effects.

Although the competitive effects<sup>3</sup> were both positive and negative during the study, the market and composition effects were significantly positive, causing actual growth to be positive for the

<sup>3</sup>The interpretation of the competitiveness effect is complicated by the very fact that it is trying to measure competitiveness. It is further complicated by the nature of the arbitrary selections of a base period and the level of disaggregation of the commodity and market groups; this complicates the interpretation of the market and commodity effects. Finally, constant market share analysis is not a substitute for traditional least-squares demand analysis. This method, like its shift-share counterpart, offers no probability basis and thus cannot be used to make valid probability statements about demand or about future exports. Despite these reservations, the authors do make some general observations in the paper about the competitive snack food export markets the U.S. faces.

<sup>2</sup> According to Kellman, Roxo, and Shachmurove (2003), the market effect reflects trade policies, changes in income, and relative exchange rates within markets for U.S. exports.

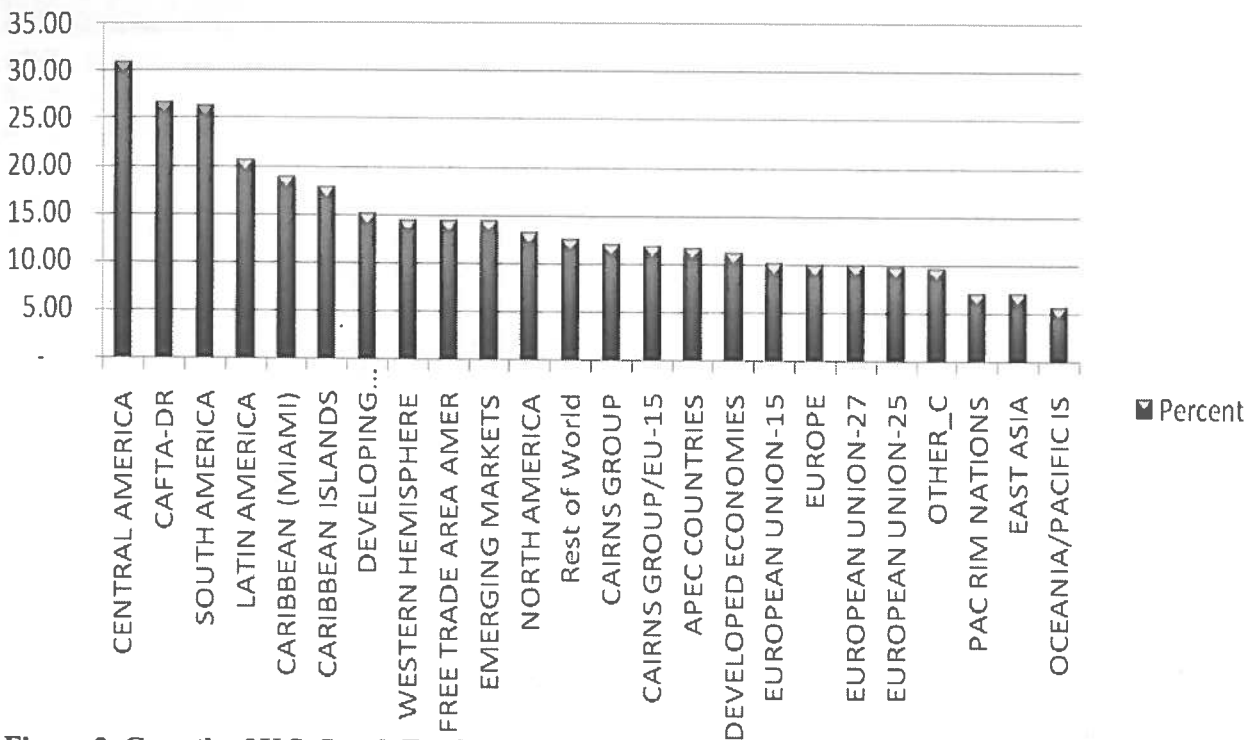


Figure 2. Growth of U.S. Snack Food Exports by Region in the World.

three time periods. The components of export gain between Periods 1 and 3 were derived from Table 3. The results suggested that more than 99 percent of the U.S. snack food gains between 2004–2008 were attributed to the growth in world demand. The composition effects contributed 1.52 percent to U.S. snack food exports during this period. Unfortunately, the competitive nature of these products in world markets reduced U.S. exports by a similar amount (1.52 percent) between 2004 and 2008.

The heavy reliance on world demand suggests that U.S. exports were concentrated in markets where demand was growing faster than world demand during this period. (See Figure 2 for other fast-growth regions in the study). Table 4 shows (in rank order) the top regions from which the U.S. received the majority (83.2 percent) of its snack food exports earnings between 2004 and 2008.

Specifically, the U.S. relied heavily on Central America, CAFTA\_DR, South America, Latin America, Caribbean (Miami), Caribbean Islands, Developing Economies, and the Western Hemisphere (Figure 2) for most of its export earnings

during this period. Unfortunately, however, the “market effect” for the Caribbean Islands, Caribbean (Miami), CAFTA\_DR, Central America, and Oceania/Pacific island regions were below for most of the period 2004–2008.

The components of export gains between 2004–2006 and 2006–2008 were also derived from Table 4. Although the size of the component effects was less than their overall 2004–2008 counterparts, the direction and implications of the message was unchanged. During the 2004–2006 period, the market demand effect was unchanged and even increased to about 100 percent, essentially explaining all of the variations in U.S. snack food exports during this period. The remaining composition and competitive effects contributed little to explaining changes in snack food exports during this period. The CMS components for the period 2006–2008 were noticeably different from the previous results in all component areas. For example, the market effect on U.S. snack food exports declined to about 88 percent between 2006 and 2008. The composition effects were a negative 2.98 percent, while the

Table 3. Constant Market Share Effects of U.S. Snack Food Exports by Region and World, 2004–2008 (\$000)

Region	Actual export growth			Market growth			Composition effect			Competitiveness effect		
	04–06	06–08	04–08	04–06	06–08	04–08	04–06	06–08	04–08	04–06	06–08	04–08
APEC Countries	275,357	521,745	797,102	270,831	590,281	861,113	412,967	1,069,421	1,482,388	(408,441)	(1,137,958)	(1,546,399)
CAFTA-DR	12,494	26,862	39,356	5,934	16,955	22,889	9,143	31,853	0,996	(2,584)	(21,945)	(24,529)
CAIRNS Group	178,788	398,561	577,349	187,295	416,944	604,238	282,663	760,329	1,042,992	(291,170)	(778,712)	(1,069,882)
CAIRNS Group/EU-15	185,387	428,715	614,102	201,948	447,679	649,627	305,144	817,226	1,122,371	(321,705)	(836,190)	(1,157,895)
Caribbean (Miami)	14,514	18,195	32,709	7,339	17,769	25,108	11,717	32,261	43,978	(4,542)	(31,835)	(36,377)
Caribbean Islands	20,957	23,351	44,308	10,630	25,692	36,322	17,071	46,729	63,801	(6,745)	(49,070)	(55,814)
Central America	10,008	43,779	53,787	6,919	18,683	25,603	10,604	35,449	46,053	(7,515)	(10,353)	(17,868)
Developed Economies	199,097	387,596	586,693	205,389	453,521	658,910	309,903	824,091	1,133,993	(316,195)	(890,016)	(1,206,211)
Developing Economies	130,634	325,641	456,275	123,616	271,429	395,045	192,285	495,661	687,946	(185,267)	(441,449)	(626,716)
East Asia	49,516	68,365	117,881	66,440	137,263	203,703	101,425	248,131	349,557	(118,349)	(317,029)	(435,378)
Emerging Markets	88,667	187,118	275,785	79,401	168,287	247,687	124,674	303,832	428,506	(115,408)	(285,001)	(400,408)
Europe	7,528	34,459	41,987	16,581	34,596	51,177	25,192	63,681	88,872	(34,245)	(63,818)	(98,062)
European union-15	6,606	30,150	36,756	14,653	30,737	45,389	22,480	56,899	79,380	(30,527)	(57,486)	(88,013)
European Union-25	4,410	33,444	37,854	15,250	31,423	46,673	23,157	58,144	81,300	(33,997)	(56,123)	(90,120)
European Union-27	5,105	33,876	38,981	15,413	31,936	47,349	23,437	59,087	82,523	(33,745)	(57,147)	(90,891)
Free Trade Area of Amer	256,500	567,471	823,971	227,617	511,967	739,584	347,303	931,971	1,279,274	(318,420)	(876,467)	(1,194,887)
Latin America	98,385	227,424	325,809	65,636	150,851	216,486	103,254	274,306	377,560	(70,505)	(197,733)	(268,238)
North America	225,277	454,743	680,020	204,347	453,074	657,420	311,393	821,519	1,132,912	(290,462)	(819,849)	(1,110,312)
Oceania –Pacific Islands	9,762	(1,342)	8,420	5,692	14,607	20,299	8,437	26,698	35,135	(4,367)	(42,648)	(47,014)
Other_C	26,521	196,585	223,106	92,666	186,003	278,669	140,950	341,657	482,606	(207,095)	(331,074)	(538,169)
PAC RIM nations	49,533	68,371	117,904	66,444	137,265	203,709	101,437	248,133	349,570	(118,348)	(317,028)	(435,376)
South America	9,236	53,456	62,692	9,298	23,641	32,939	14,001	44,760	58,761	(14,063)	(14,945)	(29,008)
Western Hemisphere	265,480	575,330	840,810	231,194	521,090	752,284	353,070	948,456	1,301,527	(318,784)	(894,216)	(1,213,001)
Rest of World	329,726	713,235	1,042,961	329,006	724,949	1,053,955	502,188	1,319,750	1,821,937	(501,468)	(1,331,463)	(1,832,931)



**Table 4. Constant Market Share Effects of All U.S. Snack Food Exports, 2004–2008 (\$000).**

Period	Actual export growth (AEG)	Market effect (ME)	Commodity composition effect (CCE)	Competitiveness effect (CE)
2004–2008	7,876,618	7,876,219	11,938,702	(11,938,303)
2004–2006	2,459,488	2,459,568	(48)	(33)
2006–2008	5,417,130	414,765,677	(145,337)	(796,790)

competitive effects contributed about 1.3 percent to explaining gains in U.S. snack food exports during this period.

On the average, market demand by importing countries explained about 95.97 percent of the gains in U.S. snack food exports between 2004 and 2008. The composition of U.S. snack food exports explained about 1.49 percent of the reductions in snack foods compared to 1.39 percent for the competitive effects during this period.

Table 5 shows the CMS effects for U.S. snack food exports by product groups between 2004 and 2008. The table shows the main snack food groups by export gains and how these gains were obtained as they relate to the CMS effects. Although unpopped popcorn was not one of the top snack food exports, the composition effect accounted for a larger portion of the gains in U.S. earnings from this product, especially during the periods 2004–2006 and 2006–2008.

This suggests that the markets in which the U.S. exported unpopped popcorn were growing faster than the world average demand this product. By far, the primary effect on snack food exports by product groups was the “market.” Expansions in U.S. snack food exports were driven largely by growing demand worldwide and changing eating habits because of work and the fast pace world in which we live.

## Conclusion

This study explores the factors responsible for the growth and performance of U.S. snack food exports between 2004 and 2008. The constant market shares analysis of export growth was used

to capture the commodity composition effect, the market distribution effect and the competitiveness effect for the periods 2004–2008, 2004–2006, and 2006–2008. The market distribution effect (MDE) was positive for all three periods, reflecting that income growth and trade policies in the importing countries contributed positively to the growth of U.S. snack food exports. The commodity composition effect (CCE), which captured the impact of resource endowments, income, and price elasticity of demand for exports, was positive for some of the periods. The competitive effects (CE) were largely negative during these periods, suggesting the growth in U.S. exports during the last five years could largely be explained by positive increases in market and product composition effects. A closer look at the results suggested the U.S. snack food performance between 2004 and 2008 was largely based on market distribution effects as the positive commodity composition effects offset the negative competitiveness effects.

Although the U.S. accounts for about one-third of all snack food exports in the world, the results suggest the U.S. faced some competitive markets during these periods especially between 2006 and 2008. Thus the factor of competitiveness could pose a problem for continuing growth in U.S. snack food exports.

Market distribution gave a strong and positive impact to the U.S. snack food exports, increasing almost two-fold between the 2004–2006 and 2006–2008 periods. Since more than 80 percent of snack food exports go to about nine selected regions (see Table 1), the performance of those markets will have a strong impact on the future performance of U.S. snack food exports.

**Table 5. Constant Market Share Effects of U.S. Snack Food Exports by Product Group, 2004–2008.**

Product group	Export gain (loss)	Market share effect	Composition effect	Competitive effect
<b>Total snack foods</b>				
04–06	329,726	0.998	0.002	0.00019
06–08	713,235	0.894	-0.027	0.133
04–08	1,042,961	1.010	1.517	-1.527
<b>Popcorn, unpopped</b>				
04–06	15,034	2.45	3.87	0.0191
06–08	44,335	2.03	3.57	1.3995
04–08	59,369	1.99	0.45	4.3990
<b>Popcorn, microwave</b>				
04–06	25,480	3.27	3.54	(0.0043)
06–08	(35)	(5,428.65)	4,871.38	(93.7078)
04–08	25,445	10.48	(7.04)	4.2660
<b>Corn chips</b>				
04–06	68,129	1.51	5.94	0.0000
06–08	98,740	3.33	2.04	2.2246
04–08	166,869	1.98	1.06	4.5027
<b>Potato chips</b>				
04–06	(3,519)	(72.80)	83.45	0.0000
06–08	10,025	40.17	(34.95)	(0.2036)
04–08	6,506	126.09	(123.54)	(0.5821)
<b>Chewing gum</b>				
04–06	562	129.87	(110.20)	(0.0000)
06–08	(156)	(779.84)	740.54	5.8330
04–08	406	575.67	(554.14)	18.5558
<b>Confectionery products</b>				
04–06	7,644	45.05	(36.19)	(0.0548)
06–08	75,317	7.69	(0.85)	0.8979
04–08	82,961	13.29	14.07	(19.5257)
<b>Chocolate products</b>				
04–06	49,601	7.09	0.23	(0.0004)
06–08	117,318	5.84	0.44	1.3217
04–08	166,919	6.75	44.14	(43.3703)

**Table 5. Constant Market Share Effects of U.S. Snack Food Exports by Product Group, 2004–2008.**

Product group	Export gain (loss)	Market share effect	Composition effect	Competitive effect
Cocoa products				
04–06	48,279	11.47	(3.55)	0.0005
06–08	148,005	6.88	0.16	0.6397
04–08	196,284	9.04	14.61	(15.9067)
Crispbread and ginger-breads,				
04–06	(2,776)	(3.28)	11.24	0.0000
06–08	2,440	3.14	1.88	2.7158
04–08	(336)	(86.66)	87.52	8.6823
Frozen breads				
04–06	60,751	5.29	2.09	(0.0000)
06–08	112,831	5.88	0.92	0.7789
04–08	173,582	5.93	5.06	(3.4774)
Cakes and pastries				
04–06	8,914	15.71	(8.26)	0.0233
06–08	49,547	5.00	1.46	0.9213
04–08	58,461	7.67	0.01	(0.2817)
Breads, biscuits, other baked products				
04–06	51,627	3.61	4.20	(0.0001)
06–08	54,868	7.85	(1.11)	1.0434
04–08	106,495	5.61	6.49	(4.3070)

## References

- Hodgen, D. A. 2004. "Global Snack Food Industry Trends, Snack Food and Wholesale Bakery." <http://www.fas.usda.gov/ustrdscrip/USReport.exe>.
- Kellman, M., T. Roxo, and Y. Shachmurove. "South Africa's International Competitiveness: A Product Level Analysis." Penn Institute for Economic Research. Department of Economics. University of Pennsylvania. <http://economics.sas.upenn.edu/system/files/03-020.pdf>.
- Poramacom, N. 2002. "Revealed Comparative Advantage (RCA) and Constant Market Share Model (CMS) on Thai Natural Rubber." Department of Agricultural and Resource Economics. Kasertart University.
- Richardson, D. J. 1971. "Constant Market-Shares Analysis of Export Growth." *Journal of International Economics* 1(2):227–39.
- United States Department of Agriculture, Foreign Agricultural Service. 2009. "BICO Export Commodity Reports." <http://www.fas.usda.gov/ustrdscrip/USReport.exe>.