Transformation and Continuity: The U.S. Carbonated Soft Drink Bottling Industry and Antitrust Policy Since 1980

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Executive Summary

This report analyzes the U.S. carbonated soft drink ("CSD") industry, with its primary focus on the 1980s and early 1990s, a period of rapid structural change that transformed the industry. In addition to documenting these changes, an empirical model is developed to evaluate the antitrust merger policies that were pursued by the Federal Trade Commission ("FTC") during this period -- the FTC challenged large horizontal acquisitions of Dr Pepper and 7UP franchises by Coca-Cola and Pepsi-Cola bottlers, but did not challenge vertical acquisitions of CSD bottlers by their franchisors or other horizontal bottler acquisitions. Our findings tend to support or are consistent with these policies, but also identify areas that seem to warrant further study.

Until 1980, the fragmented independent franchised bottling distribution system that had characterized the industry since before the turn of the century was still in place. Bottlers held perpetual franchises with exclusive territories and were bound by flavor exclusivity clauses, as is true today. Since 1980, the number of bottlers with franchises of the major CSD brands has fallen by more than one-half, as franchised bottlers were acquired and consolidated by their franchisors and by other bottlers. In addition to FTC merger enforcement activities in the CSD industry, the Department of Justice brought many price-fixing cases in the mid- to late 1980s against CSD bottlers affiliated with each of the leading concentrate firms. By 1990, it had obtained more than forty bottler and individual guilty pleas or convictions in ten states.

The bottler acquisitions that took place during the study period are the main focus of this report. Alternative theories for each type of bottler transaction are summarized. The specific hypotheses we test, using price and output measures of competitive effects, are (1) whether horizontal transfers of Dr Pepper and/or 7UP franchises to Coca-Cola or Pepsi-Cola bottlers were anticompetitive (i.e., associated with higher prices and lower output), (2) whether vertical acquisitions by the Coca-Cola Company and/or PepsiCo of their respective bottlers were procompetitive (i.e., associated with lower prices and higher output), and (3) whether consolidations of third bottler franchises (i.e., franchises not held by a Coca-Cola or Pepsi-Cola bottler) were procompetitive.

The empirical model developed to test these three hypotheses includes qualitative variables to examine the competitive impacts that these types of events have on CSD prices and per capita volumes. The model also contains other control factors that may affect CSD prices and per capita volumes. These control variables include sets of factors that would affect the demand, supply, and market structure for CSDs.

Three different cross-section/time-series data sets were compiled to estimate the empirical model. Each data set contains dozens of local areas, and together they span more than 10 years. Separate CSD price and per capita volume regressions were run for each of these three data sets. The application of the model to three different data sets permits us to evaluate the robustness of the parameter estimates, including those that have public policy implications.

This study represents a substantial improvement over earlier CSD research efforts because (1) it considers a variety of events corresponding to a wide range of policy questions, including horizontal acquisitions and third bottler consolidations, rather than being limited to vertical integration; (2) it examines CSD performance during three periods spanning more than ten years, rather than being limited to a single relatively short-term time horizon; (3) it uses both CSD price and per capita volume regressions (rather than one or the other) to evaluate CSD performance; (4) it examines local CSD performance across all of the major CSD brand groups, rather than relying exclusively on individual company (and individual package size) observations, or aggregating private label and warehouse brand sales with sales of major brands; (5) all of its regression results are based on data for dozens of local areas, rather than using a handful or fewer local areas to perform empirical tests; and (6) it includes a more complete set of explanatory variables.

Of the three types of events analyzed, the regression results were strongest for the horizontal Dr Pepper and 7UP franchise acquisitions by Coca-Cola and Pepsi-Cola bottlers. Our specific findings include:

- Horizontal franchise acquisitions by Coca-Cola and Pepsi-Cola bottlers led to higher CSD prices and lower per capita CSD volumes, as hypothesized. On average, these transactions were associated with CSD prices that were 3.5%-12.8% higher than otherwise, and per capita CSD volumes that were 12.2%-19.8% lower than otherwise.

- Vertical integration was associated with lower CSD prices for alternative measures of the degree of vertical integration (as hypothesized), but had mixed results in the per capita CSD volume regressions using the three data sets. On average, vertical acquisitions that resulted in both the Coca-Cola Company and PepsiCo controlling their bottlers lowered CSD prices by 4.3%.

- The results for third bottler consolidations varied with the local market shares of the franchises being acquired. On average, large franchise acquisitions were associated with lower CSD prices (1.2%) and higher per capita CSD volumes (14.0%). In contrast, small franchise acquisitions were associated with higher CSD prices (5.5%) and lower per capita CSD volumes (13.2%), on average.

Overall, the results are generally consistent with prior expectations and with recent antitrust policy in the CSD industry. However, some results, particularly those associated with vertical integration, suggest that further study is warranted.

Chapter I

Introduction

The decade from 1980 to 1990 saw widespread transformation of the carbonated soft drink ("CSD") industry.[1] First PepsiCo and then the Coca-Cola Company moved rapidly toward vertical integration of their bottling systems while other concentrate companies completely divested themselves of bottling operations.[2] More and more Dr Pepper and 7UP bottling franchises migrated into the Coca-Cola or Pepsi-Cola bottling systems. Both Coca-Cola and PepsiCo introduced line extensions of their flagship brands and made significant efforts to advance non-cola flavor lines. This same decade saw attempts to merge the Dr Pepper and Seven-Up[3] concentrate operations into Coca-Cola and PepsiCo respectively; widespread

[1] CSDs are beverages manufactured by combining flavoring concentrate, sweetener, and carbonated water. The traditional industry organization includes a concentrate manufacturer that sells concentrate to exclusive bottlers in local territories and performs some marketing functions, advertising in particular. The traditional franchised bottlers manufacture the CSDs, market them, and distribute them directly to retailers' stores as well as through the bottlers' own vending operations. The bottlers' own employees place their CSDs on the retailers' shelves, price the products, and insure that point of sale signs are properly displayed using this store-door delivery system. We term the products produced and handled in this traditional way as "branded CSDs." Branded CSDs participate in all channels of distribution including retail food store sales, fountain sales, and vending sales. This report deals primarily with the five major branded CSD groups: Coca-Cola, Pepsi-Cola, 7UP, Dr Pepper, and Royal Crown. Non-traditional arrangements involving private label and "warehouse brand" CSDs are discussed in Chapter III.

[2] "Just three decades ago, the competitive environment of the carbonated soft-drink (CSD) industry was based on recognition of and implicit acquiescence to the dominance of The Coca-Cola Company. Beginning in the 1960s, however, Coca-Cola's dominance has been increasingly challenged, particularly by Pepsi-Cola." (See, Muris, Scheffman, and Spiller (1993 p. 1)). Part of Pepsi-Cola's (PepsiCo) effort to challenge Coca-Cola in the 1970s was its decision to reevaluate its traditional reliance on independent franchisees for bottling, marketing, and distributing CSDs to retailers and consumers.

[3] Except for shorthand notation in tables, "7UP" refers to the CSD brand or franchise, while "Seven-Up" refers to the concentrate company. Similarly, "RC" refers to the CSD brand or

consolidations among third bottlers (bottlers that do not carry Coke or Pepsi CSDs) as well as consolidations within the Coca-Cola and Pepsi-Cola systems; repeated turnover in the ownership of Dr Pepper and Seven-Up at the concentrate level; extensive upstream vertical integration by PepsiCo into fast-food restaurants; management difficulties for Royal Crown at the concentrate level; a dramatic, but short-lived, attempt to reformulate Coca-Cola; and increases in scale economies in distribution, marketing, and (especially) bottle and can production.

Antitrust agencies have been closely connected to the shape and pace of change in this more than $55 billion a year industry. The decade of the 1980s began with Congress overturning the Federal Trade Commission's (FTC's) challenge to exclusive CSD territories. Shortly thereafter, the Department of Justice (DOJ) started what became a major series of investigations, indictments, and, eventually, guilty pleas or convictions for price fixing between and among CSD bottlers. By the mid-1980s, the FTC was deeply involved in assessing many large vertical integration mergers as well as challenging the Coca-Cola/Dr Pepper and PepsiCo/Seven-Up proposed acquisitions at the concentrate level. Ultimately, none of the vertical acquisitions or consolidations of third bottlers was challenged, while both major concentrate mergers were stopped. By the end of the decade, the FTC also challenged some acquisitions of Dr Pepper and/or 7UP franchises by competing Coca-Cola or Pepsi-Cola bottlers.

This study is an effort to document the extent of the structural changes in the CSD bottling industry as well as to help assess the antitrust merger policies that were pursued during this era of rapid restructuring in the CSD bottling industry. In order to analyze these policies, we apply a series of regression models focusing on the local price and quantity effects associated

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franchise, while "Royal Crown" refers to the concentrate company.

with various types of bottling acquisitions during the 1980s and early 1990s.

The organization of this study is straightforward. Chapter II provides a historical sketch of the CSD bottling industry, including the industry's antitrust history. Chapter III presents statistics and text describing changes in the structure and operation of the CSD bottling industry, focusing on the last two decades. Chapter IV describes theoretical considerations that underlie the econometric model we use to examine the competitive effects of the horizontal and vertical consolidation in the CSD industry on CSD price and per capita volume levels, and to evaluate antitrust merger policy towards this industry. It also motivates the use of the variables in the model. Chapter V describes the data used to estimate our empirical model, and provides summary statistics for that data. Chapter VI presents the econometric results. Chapter VII compares our results to those obtained in earlier studies of antitrust policy toward CSD bottling acquisitions. Chapter VIII presents our conclusions. Details concerning the bottling collusion cases, our data sets, the variables used in our model, and our regression results are provided in the appendices.

Chapter II

History of the Industry

A. Introduction

The CSD industry is very big, very visible, highly concentrated, and appears to have been very profitable. Most CSDs are manufactured by "bottlers" who buy flavored syrup or concentrate ("syrup") from "parent" companies, and combine that syrup with carbonated water to make finished CSDs.[4] CSD distribution is ubiquitous. Grocery and drug stores, gas stations, and restaurants are among the many places where CSDs are sold. CSDs are consumed at home, work, and play for their taste and thirst quenching quality. In 1998, U.S. CSD sales exceeded $56 billion. U.S. per capita consumption reached 54.9 gallons in 1998, more than twice that of any other beverage, bringing CSD consumption up to 30.1% of total liquid consumption.[5]

The top three parent companies together spent approximately 600-625 million dollars on domestic CSD advertising during each of the last three years, making the industry's brands among the most recognized trademarks in the U.S. and throughout the world.[6] Today, about 90%

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[4] Syrup represents about 10% of the cost of finished CSDs (See, *In the Matter of The Coca-Cola Co.*, 117 F.T.C. 795, 927-28 (1994).

[5] Beer (12.3%), coffee (10.3%), and milk (10.0%) accounted for the next largest percentages of liquid consumption. Tap water and other liquids not analyzed separately together accounted for 16.8% of liquid consumption. See the *1999 Beverage Digest Fact Book* for these and other data on beverage consumption.

[6] See *Beverage Digest* (April 24, 1998 p. 3) and (July 23, 1999 p. 6). Bottlers and grocery retailers spend additional money advertising CSDs, and both parent companies and bottlers spend considerably more money marketing their CSDs. The marketing support bottlers receive from parent companies can be viewed as lowering their real cost of syrup. Since parent companies can provide different levels of support to different bottlers, this funding might be a way for parent companies to vary their syrup prices.

of total domestic CSD sales come from these three companies,[7] all of which own (typically about 40% or more of) multi-plant bottlers that produce and sell most of the CSDs sold in the U.S. (see Tables III.1 and III.5 below). The parent companies' average rate of return and stock performance appear to have exceeded that of other U.S. companies by a significant margin.[8]

The U.S. Department of Justice has brought many price-fixing cases against CSD bottlers, the vast majority of which led to guilty pleas. The FTC has conducted many investigations in the CSD industry, including investigations of horizontal and vertical acquisitions in the industry.

B. Early Historic Review[9]

The CSD industry's early history can be reviewed through the Coca-Cola Company's ("Coca-Cola's") experiences. Coca-Cola began over 100 years ago when a pharmacist named John Pemberton developed brand Coca-Cola as a medicinal drink that was sold at pharmacies' soda fountains. Early advertisements promoted it as an "Ideal Brain Tonic and Sovereign

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[7] See, *1999 Beverage Digest Fact Book* pp. 90-97.

[8] Between 1963 and 1977, the average rate of return among the five leading parent companies (defined as net income after taxes as a percent of stockholders' equity (i.e., an accounting return rather than an economic return)) was 21%, compared to 12% for all manufacturing (See, Testimony of William Comanor, *Soft Drink Interbrand Competition Act: Hearings on S. 598 Before the Subcommittee on Antitrust, Monopoly and Business Rights of the Senate Committee on the Judiciary*, 96th Cong., 1st Session, September 26, 1979, pp. 92 and 112 ("SDICA Hearings")). More recently, the stock price of Dr Pepper/Seven-Up Companies, Inc. ("DPSU"), which had been the third largest parent company, more than doubled between DPSU's 1993 initial public offering and its purchase two years later by Cadbury Schweppes PLC ("Cadbury"). Assuming DPSU's initial stock offering was reasonably priced, this performance far exceeded the approximately 10% increase that the S&P 500 had during that period.

[9] This brief history is capsulated from *The Coca-Cola Company, An Illustrated Profile* (1974), Riley (1958), Greer (1968), and Pendergrast (1993).

Remedy for Headache and Nervousness."[10] There were many companies, like Coca-Cola, selling flavored "soft" drinks at the time, with many of those companies bottling their drinks for consumption "off-premises." Patents did not limit use of the many different flavorings that were available, and bottling did not appear to require much capital. By the turn of the century, there were over one hundred different CSD brands and 2,763 bottling plants.[11] Both the number of flavorings and number of bottling plants grew substantially during the early 1900s. Ginger ale was the most popular flavor of bottled CSDs at the time.[12]

Coca-Cola and its bottlers changed this environment with distribution and marketing innovations. In 1889, Benjamin Thomas and Joseph Whitehead convinced a skeptical Coca-Cola to grant them the exclusive right, in perpetuity, to bottle and sell Coca-Cola throughout most of the U.S.[13] They, in turn, divided the U.S. between them and granted perpetual exclusive licenses to independent local bottling companies to produce and sell Coca-Cola in bottles. Although the contracts prohibited bottlers from selling a "product that is a substitute for or an imitation of Coca-Cola," in practice, they allowed them to sell other CSDs that were not colas. This

[10] See, Pendergrast (1993 p. 63).

[11] See, Greer (1968 p. 250).

[12] See, Riley (1958 pp. 115, 130, and 135).

[13] Six New England states were excluded from the contract because Seth Fowle & Sons had exclusive rights to the New England trade until 1912. Texas and Mississippi also were excluded from the contract because negotiations were taking place with other people there. Different accounts indicate that Thomas and Whitehead paid no more than $1, for their bottling rights. Coca-Cola retained the fountain business for itself. Coca-Cola was apprehensive about bottling CSDs itself because of the time and money it would entail, and hesitated letting others bottle Coca-Cola because it feared they would damage its reputation with inferior products. Thomas and Whitehead apparently allayed Coca-Cola's concerns by agreeing to satisfy various quality and control conditions.

subfranchising enabled Thomas and Whitehead to attract the capital needed to build bottling plants and to do so quickly. By 1904, Coca-Cola had more than 120 bottling plants, and by 1919 there were 1,200.[14] Many small family owned and run businesses became the backbone of Coca-Cola's distribution system. Given the large expense involved in transporting CSDs and handling the returnable bottles that were used, initial bottling territories were relatively small.

While Thomas and Whitehead expanded Coca-Cola's business geographically, Coca-Cola differentiated itself from its many competitors. Coca-Cola began positioning its CSD as a refreshing drink rather than a tonic. It used an unprecedented amount and variety of advertising and promotions to attract customers, including the use of celebrity spokespersons. It also guarded Coca-Cola's formula with great secrecy, brought a multitude of trademark infringement suits, and introduced a new patented swirl bottle to distinguish Coca-Cola from its many imitators. The perpetual, exclusive aspect of its bottler franchises gave its bottlers the incentive to market their CSDs heavily because they would not have to worry about others free-riding on their efforts. By 1940, Coca-Cola dominated CSD sales, accounting for about half of bottler sales.[15]

Coca-Cola's competitors followed its lead by granting bottlers perpetual exclusive territories and by advertising heavily to differentiate their products. Pepsi-Cola, Royal Crown, and Seven-Up were founded after Coca-Cola, and became Coca-Cola's main competitors.[16] In

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[14] See, Pendergrast (1993 p. 84).

[15] See, Greer (1968 pp. 255 and 258).

[16] Pepsi-Cola, Royal Crown, and Seven-Up, unlike Coca-Cola, also gave exclusive fountain rights to their local bottlers. However, in 1998, Pepsi-Cola asked its bottlers to sign new franchise agreements, which would give it control over lucrative fountain accounts that the

1960, these four companies accounted for about 72-75% of total CSD sales, with Coca-Cola accounting for about 37% of total CSD sales (see Table III.1 below). Dr Pepper, formerly a regional brand (that was formulated before Coca-Cola), joined the ranks of the leading brands after 1962 when it went national.[17] By 1980, these five companies accounted for about 80% of total CSD sales (i.e., including private label and warehouse brand CSD sales).[18] Almost two thirds of these CSD sales were colas.[19]

C. Bottler Consolidations

Over time, various demographic trends, innovations, and technological advances changed the cost of producing, distributing, and marketing CSDs. Population growth and increased per capita consumption led to substantial increases in CSD sales. Larger packages were added,

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bottlers used to handle. Most of its bottlers signed these agreements. In addition, to further challenge Coca-Cola's domination of the fountain business, Pepsi-Cola sued Coca-Cola for requiring that its food service distributors that serve fountain accounts only sell Coca-Cola products. See, *PepsiCo Inc. v. Coca-Cola* Co., No. 98 Civ. 3282 (S.D.N.Y. 1998).

[17] Dr Pepper's expansion beyond Texas and its neighboring states is at least in part attributable to a favorable court ruling declaring that Dr Pepper was not a cola. Before this ruling, Coca-Cola and Pepsi-Cola bottlers had not carried Dr Pepper because it was thought to violate the flavor exclusion provisions in the bottling franchise agreements for the major cola brands (See, *In the Matter of The Coca-Cola Co.*, 117 F.T.C. 795, 871 (1990) (Initial Decision). Dr Pepper allowed competing fountain suppliers, but provided for a payment to the bottler of local marketing funds based on fountain sales by firms other than its franchised bottler in the area (See, *In the Matter of Coca-Cola Bottling Co. of the Southwest*, Complaint Counsel's Proposed Findings of Fact, Conclusions of Law, and Order, Volume 1, FTC Docket No. 9215, Finding 421, (February 11, 1991)).

[18] For discussions on the relationship between advertising and concentration, including specific references to the soft drink industry, see Sutton (1992) and Greer (1968).

[19] Canada Dry, known for its ginger ale, accounted for about 8% of CSD sales as recently as the early 1960s, but only about 2% of such sales in the mid 1970s (See, Greer (1968 p. 265) and *Beverage Industry* (March 1986)).

nonreturnable plastic and aluminum can packages replaced returnable glass bottles, and bottling lines became faster. Average costs declined and bottlers benefitted from increases in economies of scale.[20] Similarly, trucking advancements, better roads, nonreturnable packages, and the growth in the number and size of grocery stores lowered per unit distribution costs, which also tended to decline with increased volume. Radio and television made promoting and marketing products across territories more efficient.

Economies of scale provided strong incentives for bottlers to expand their sales. Doing so would enable them to compete more profitably with other bottlers. The proliferation of new brands and packages also favored larger bottlers and larger bottling plants because of their economies of scale.[21] After peaking at over six and a half thousand bottling plants around 1950, the total number of CSD bottling plants fell dramatically.[22] There were consolidations of neighboring bottlers of the same brands, and of competing bottlers (e.g., Royal Crown and Seven-Up bottlers) within the same territory.[23] As supermarkets began to dominate retail food

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[20] Bottler manufacturing costs per unit were estimated to have declined 35% between 1950 and 1985 due to economies of scale (See, Boston Consulting Group (1985 pp. 9-12)). Other changes have had more ambiguous effects. For example, the proliferation of new CSD brands (e.g., diet CSDs were introduced in the early 1960s, and caffeine-free CSDs were introduced in the early 1980s) and packages (e.g., 3-Liter plastic bottles were introduced in the 1980s) increased overhead costs per case, ceteris paribus, while they appealed to certain segments of the market. How costs change, on balance, with these new products depends on the extent to which they complement -- rather than cannibalize -- old ones, and thereby increase sales overall. There may be economies or diseconomies of scope and scale (See, Boston Consulting Group (1985 pp. 20-21)).

[21] See, Boston Consulting Group (1985 p. 21).

[22] See, Table III.3 in Chapter III for the bottling plant figures cited in this paragraph.

[23] As discussed previously, noncolas like 7UP and Dr Pepper could “piggyback” onto cola bottlers, but flavor restrictions in franchise contracts typically prohibited bottlers from selling two CSDs of the same flavor. Thus, Coca-Cola, Pepsi-Cola, and RC Cola franchises could not

sales and expand across bottler territories, neighboring bottler mergers also brought economies in the promotion of their brands. Without such mergers, a single grocery chain often would find itself negotiating with many separate bottlers of the same brand, each potentially with a different price offer.[24] Computerization made operating larger bottlers more manageable and less costly, facilitating these bottler consolidations. By 1990, there were only about eight hundred CSD bottling plants in the U.S. Approximately five hundred CSD bottling plants are estimated to remain in operation in the U.S. today.

PepsiCo and Coca-Cola, the two biggest CSD parent companies, participated in these consolidations, buying many of their bottlers and combining their territories. For example, in 1986, PepsiCo acquired one of its biggest bottlers (MEI, a western and midwestern bottler). That same year, Coca-Cola bought two of its biggest bottlers (JTL, a southern bottler, and Beatrice, a western bottler) and formed Coca-Cola Enterprises ("CCE"), a separate public bottling company

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combine with each other.

[24] Bottlers routinely negotiate calendar marketing agreements ("CMAs") with food stores. CMAs require bottlers to pay food stores for selling their CSDs at reduced prices, and for providing concomitant special advertisements and in-store displays. Such promotions, which may run for a week or a month at a time, and have increased in use, are called "features" in the industry. Some Royal Crown bottlers have complained about Coca-Cola's and Pepsi-Cola's CMAs because they typically contain exclusivity provisions that prohibit retailers from promoting competing CSDs (in various ways) while the Coca-Cola and Pepsi-Cola CMAs are in effect. In some cases, Coca-Cola and Pepsi-Cola allegedly have alternated feature weeks for an entire year, with competitors like Royal Crown "locked out" of the feature cycle during that time period (See, the October 25, 1987 segment of the television program "60 Minutes" and *Sun-Drop Bottling Company, Inc. et al. v. Coca-Cola Bottling Co. Consolidated*, 604 F. Supp. 1197, (W.D.N.C. 1985)). The vast majority of CSD sales take place on promotion, and food stores (grocery stores, convenience stores, and "mom & pop" outlets) account for almost 70% of CSD sales (vending and fountain, the two other major sales segments, account for about 10-12% and 21% of such sales, respectively) (See, *In the Matter of the Coca-Cola Co.*, 117 F.T.C. 795, 814-15 (1990) (Initial Decision)). Thus, access to the feature cycle is of critical importance to bottlers (See, *In the Matter of Coca-Cola Bottling Co. of the Southwest*, 118 F.T.C. 452, 550-53 (1994).

in which Coca-Cola has been the principal investor (about 42% to 49%). The pace of vertical integration accelerated with these acquisitions. By 1989, PepsiCo was reported to own its bottlers in 23 of the 24 most heavily populated markets in the U.S. Coca-Cola was said to have equity in bottlers serving 21 of those 24 markets.[25] PepsiCo and Coca-Cola now reportedly own (or have equity in) bottlers that account for approximately 73% and 77%, respectively, of their U.S. sales.[26]

D. Federal Trade Commission Investigations

FTC investigations of the CSD industry focused attention on: (1) exclusive territories, (2) vertical integration, (3) parent company consolidations, and (4) bottler consolidations. During the 1970s, the FTC issued opinions and orders holding exclusive CSD bottling territories to be unlawful.[27] This challenge was avoided when Congress passed the Soft Drink Interbrand

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[25] See, *Beverage Digest* (May 12, 1989 p. 3). Coca-Cola, through CCE, typically has had a partial equity interest in its bottlers, while Pepsi-Cola typically has owned its bottlers outright. This changed recently, however, when PepsiCo had an initial public offering ("IPO") for its bottling unit. PepsiCo now owns about 40% of Pepsi Bottling Group (See, *Wall Street Journal* (April 1, 1999 p. A4)). Pepsi Bottling Group's IPO came shortly after PepsiCo spun off its $10 billion fast-food operations and sold its casual-dining chains to focus more on soft drinks (and snack foods) (See, *Wall Street Journal* (July 27, 1998 p. B4) and (January 11, 1999 p. A30)).

[26] See, *Beverage Digest* (December 11, 1998 p. 2). In contrast, Seven-Up, Dr Pepper, and Royal Crown sold the bottlers they owned before (or in some cases, shortly after) Coca-Cola and Pepsi-Cola accelerated the purchase of their bottlers. See, Table III.5 in Chapter III. However, in May, 1998, Cadbury, which now owns Dr Pepper and Seven-Up, reversed policy and formed a joint venture with the Carlyle Group (called the American Bottling Company ("ABC")) to begin acquiring Dr Pepper and Seven-Up third bottlers. Cadbury has a 40% equity interest in ABC. See, *Beverage Digest* (May 8, 1998 p. 4), and Sections D and G of Chapter III below.

[27] See, *In the Matter of The Coca-Cola Co.*, 91 FTC 517 (1978). The FTC concluded that exclusive CSD bottling territories were unreasonable restraints of trade because they lessened both intrabrand and interbrand competition.

Competition Act ("SDICA") in 1980. This act authorizes exclusive bottling territories subject to the following proviso: *"Provided,* That such product is in substantial and effective competition with other products of the same general class in the relevant market or markets."[28] After passage of the SDICA, the FTC dismissed its case.

Although the FTC has investigated major Coca-Cola and Pepsi-Cola vertical bottler acquisitions that took place, it has not challenged them. One might infer that the Commission viewed such manufacturer/distributor acquisitions as procompetitive or competitively neutral.[29]

The FTC has treated various CSD parent company consolidations differently, depending on the circumstances that were involved. In January, 1986, PepsiCo sought to acquire Seven-Up. Four weeks later, Coca-Cola sought to acquire Dr Pepper. The FTC investigated both of these proposed acquisitions concurrently and voted, unanimously, to challenge them. PepsiCo withdrew its offer, but Coca-Cola did not. Coca-Cola lost in both the preliminary injunction ("PI") hearing in federal district court and the administrative trial that followed under FTC

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[28] See, *Soft Drink Interbrand Competition Act*, 15 U.S.C. § 3501 (1980). Officials from both the FTC and the DOJ testified against passage of this legislation, which they characterized as a "special exemption" to the antitrust laws. Richard J. Favretto, Deputy Assistant Attorney General, Antitrust Division of the DOJ, testified that existing antitrust laws could deal fully with CSD bottler issues and was concerned that passage of this legislation would set an unfortunate precedent which would encourage other industries to seek similar specialized exemptions and treatment under the antitrust laws (See, SDICA Hearings p. 136). William S. Comanor, Director of the FTC's Bureau of Economics, testified that intrabrand CSD competition should not be restricted by exclusive bottling territories because there was "considerable monopoly power" among interbrand competitors in the CSD industry (See, SDICA Hearings p. 92).

[29] See, for example, a speech given by former FTC Chairman Daniel Oliver before the New England Antitrust Conference, Cambridge, MA (October 28, 1988), in which he referred to 1986 Coca-Cola and PepsiCo acquisitions of leading bottlers. He indicated that the Commission declined to challenge these vertical acquisitions, and suggested that they were motivated by the prospect of efficiency gains. In addition, see the discussion in Chapter VII on prior economic studies of the CSD industry.

Docket No. 9207.[30] When these proposed acquisitions "fell through," Seven-Up and Dr Pepper merged in late 1986 to form DPSU. In early 1995, Cadbury, which already had acquired a number of smaller CSD brands (including Canada Dry, Sunkist, A&W, Crush and Hires) and already had a partial equity interest in DPSU, acquired the rest of DPSU. The FTC did not oppose any of these acquisitions, possibly expecting consolidated noncola CSD brands to be more effective competitors of Coca-Cola and PepsiCo, which have dominated the CSD industry for decades.[31] In late 1995, the FTC also did not challenge Coca-Cola's acquisition of Barq's, one of the leading root beer concentrate suppliers. Barq's accounted for only about 0.6% of total CSD sales and there were several other competing root beer brands. Furthermore, Coca-Cola did not have a significant root beer brand of its own, and almost 90% of Barq's sales already took

[30] See, *In the Matter of The Coca-Cola Co.*, 117 F.T.C. 795 (1994). Actually, Coca-Cola withdrew its planned acquisition of Dr Pepper after it lost in the PI hearing. Nevertheless, it litigated against the FTC because it was not willing to accept the FTC's requirement that, for 10 years, it obtain the FTC's approval before making future acquisitions in the same market. After the FTC and Coca-Cola reached a consent limiting the prior approval requirement to Coca-Cola seeking to acquire Dr Pepper, the FTC changed its policy and no longer routinely includes prior approval provisions in its consents. Nevertheless, the FTC refused to release Coca-Cola from its limited prior approval requirement because the Commission thought there was a credible risk that Coca-Cola might again attempt to acquire Dr Pepper. See, *In the Matter of The Coca-Cola Co.*, 121 F.T.C. 958, 961 (1996).

[31] Noticeably absent from Cadbury's long list of acquisitions is Royal Crown, Coca-Cola and PepsiCo's biggest cola competitor. In fact, Royal Crown tried to consolidate its concentrate business with those of DPSU and A&W, but was outbid by Cadbury. See, *Beverage Digest* (January 23, 1995 p. 2). Cadbury reportedly has "absolutely no ambitions or intentions as far as the cola business is concerned." See, *Beverage Digest* (February 3, 1995 p. 3). As discussed below, a significant portion of Cadbury's CSDs are sold by Coca-Cola and Pepsi-Cola bottlers that are owned by parent Coca-Cola or PepsiCo. Cadbury may be hesitant to confront Coca-Cola and PepsiCo with head-on competition in the cola segment so as not to jeopardize its all-important relationship with their bottlers. Otherwise, one might expect Cadbury to pursue that flavor category, since about two-thirds of all CSD sales are colas. In fact, when Philip Morris owned Seven-Up in the 1980s, it pursued such a strategy with its introduction of Like Cola. Like Cola had trouble getting distribution because of the exclusive flavor provisions in Coca-Cola, Pepsi-Cola, and Royal Crown Cola bottler franchise agreements, and Philip Morris exited the CSD business.

place through Coca-Cola bottlers.[32] In light of these facts, it seems unlikely that the acquisition would raise substantial antitrust concerns.[33] Coca-Cola, PepsiCo, and Cadbury together now account for about 90% of all CSDs sold in the U.S. (i.e., including private label and warehouse brand CSD sales).

The bottler consolidation trend of the 1980s included horizontal transfers of 7UP and/or Dr Pepper franchises from "third bottlers" (i.e., non-Coca-Cola, non-Pepsi-Cola bottlers) to Coca-Cola and/or Pepsi-Cola bottlers.[34] The FTC litigated some of these transactions. In 1988,

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[32] These data were taken from *Beverage World* (March 1995 p. 57) and *Beverage Digest* (June 30, 1995 p. 1).

[33] Coca-Cola acquired Sprite, its lemon-lime drink, around 1960 from an individual Coca-Cola bottler that had introduced the brand in its territory (See, *The Coca-Cola Company, An Illustrated Profile* (1974)). PepsiCo acquired Mountain Dew and Mug, its citrus and root beer drinks, in 1964 and 1986, respectively (See, Muris, Scheffman, and Spiller (1993) and *New York Times* (May 27, 1998 p. D15)). Thus, although the FTC has prevented the two leading parent companies from acquiring major syrup competitors, it has let them acquire smaller syrup suppliers. Sprite, Mountain Dew, and Mug sales expanded greatly after being acquired by Coca-Cola and PepsiCo, respectively. Similarly, sales of Barq's nearly doubled in the three years after Coca-Cola acquired the drink. This far exceeded Barq's' previous growth rates and those of CSDs in general (See, *1999 Beverage Digest Fact Book* p. 91).

[34] It is ironic that DPSU/Cadbury, which arguably has been Coca-Cola and PepsiCo's only significant competitor in recent years, has approved many transfers of its franchises to Coca-Cola and/or Pepsi-Cola bottlers. DPSU/Cadbury may have placed its franchises with these bottlers because Coca-Cola and PepsiCo bottlers tend to be more efficient (by virtue of their higher volume) than third bottlers. However, given the perpetual nature of bottler franchises and the trend towards vertical integration, those transfers made DPSU/Cadbury captive to Coca-Cola and Pepsi-Cola bottlers that were owned by its major competitors. Recently (in a possible reaction to Cadbury's purchase of DPSU), CCE and at least one other major Coca-Cola bottler decided to drop several Cadbury franchises (See, *Beverage Digest* (March 28, 1996 p. 1)). This prompted Cadbury to reach an "understanding" with CCE regarding its continued bottling of Dr Pepper and other Cadbury brands (See, *Beverage Digest* (April 12, 1996 p. 1)). More recently, CCE agreed to extend its bottling of Dr Pepper at least through 2005, and other Cadbury brands at least through 2001 (See, *Beverage Digest* (January 23, 1998 p. 1)). Similarly, Cadbury recently reached a multi-year agreement with PepsiCo to "ensure future growth and security for DPSU soft drinks in the PBG [Pepsi Bottling Group] system" (See, *Beverage Digest* (December 11, 1998 p. 1)). Although bottler contracts prohibit parent companies from pulling their franchises, they allow bottlers to drop franchises without cause. Cadbury's recent investments in

it issued an administrative complaint in Docket No. 9215 alleging that Coca-Cola Bottling Co. of the Southwest's ("CCSW's") acquisition of the Dr Pepper and Canada Dry franchises from the third bottler in San Antonio, TX would increase the likelihood of collusion and/or the likelihood that CCSW would unilaterally exercise market power.[35] CCSW was the leading bottler in San Antonio and the "third bottler" there was its biggest competitor, since it outsold the local Pepsi-Cola bottler. The Dr Pepper and Canada Dry franchises accounted for about forty percent of the third bottler's sales. Although the Administrative Law Judge ("ALJ") who heard this case sided with CCSW, the FTC overturned the ALJ's decision regarding the Dr Pepper franchise acquisition, but let the much smaller Canada Dry franchise acquisition stand.[36] When CCSW appealed to the Fifth Circuit, the court ruled (in June, 1996) that the FTC used the wrong legal standard to analyze the transaction, and remanded the matter to the FTC for it to consider the transaction's validity under the SDICA, rather than the Clayton Act.[37] Although the FTC disagreed with the Fifth Circuit's application of the SDICA in this case, it dismissed its

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some of its third bottlers may have been motivated, at least in part, at insuring adequate distribution for its CSDs.

[35] See, *In the Matter of Coca-Cola Bottling Co. of the Southwest*, 112 F.T.C. 588, 591 (1988).

[36] As explained in the FTC's Opinion, the relevant product and geographic markets were major areas of dispute. Complaint counsel argued that the relevant product market was "branded" CSDs (i.e., CSDs using bottler store-door-delivery, which excluded private label and warehouse delivered CSDs). It argued that the relevant geographic market was 10 counties in the San Antonio, TX area. CCSW, on the other hand, argued that the relevant product market included all CSDs and many noncarbonated beverages (e.g., Lipton Iced Tea, Country Time Lemonade, and Hawaiian Punch). It argued that the relevant geographic market was far larger than the 10-county area. Although the ALJ rejected complaint counsel's definitions, the FTC accepted them (See, *In the Matter of Coca-Cola Bottling Co. of the Southwest*, 118 F.T.C. 452, 539-84 (1994)).

[37] See, *Coca-Cola Bottling Co. of the Southwest v. FTC*, 85 F.3d 1139 (5th Cir. 1996).

complaint against CCSW. Since "the circumstances described in the court's holding are not likely to present themselves in any future case," the FTC felt that the Fifth Circuit's decision was "highly unlikely to affect the Commission's future enforcement of the Clayton Act against combinations of competing soft drink brands."[38] In addition, the FTC concluded that further expenditure of resources on the case was not in the public interest, given "the age of the challenged transaction, the limited size of the market, and the age of the record evidence regarding the competitive impact of the challenged acquisition."[39]

In 1991 and 1992, the FTC sought to block Harold Honickman's acquisition of 7UP and other franchises from two third bottlers in New York City, where Honickman already owned the Pepsi-Cola and Canada Dry bottlers.[40] Although the area's Coca-Cola bottler would be

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[38] See, *In the Matter of Coca-Cola Bottling Co. of the Southwest*, 122 F.T.C. 110, 111-12 (1996). The atypical circumstances referred to by the FTC, which were a focus of the Fifth Circuit's decision, related to parent Dr Pepper having owned the San Antonio third bottler at the time the Dr Pepper franchise was sold to CCSW. The transfer of the franchise from a parent-owned bottler to CCSW caused the Fifth Circuit to view the entire transaction as predominantly vertical in nature, triggering application of the SDICA. Dr Pepper and Seven-Up did not own any of their bottlers when the FTC reached this decision.

[39] See, *In the Matter of Coca-Cola Bottling Co. of the Southwest*, 122 F.T.C. 110, 112 (1996).

[40] Honickman and others acquired one of these 7UP bottlers in 1987 without making the typical Hart-Scott-Rodino ("HSR") filing that notifies antitrust authorities of an impending sale. When the FTC investigated this transaction, Honickman sold his interest in the franchises at issue and entered into a consent agreement requiring him to get prior approval before other soft drink acquisitions. When the two New York City 7UP bottlers ceased operations due to bankruptcy and insolvency, Honickman applied for approval to acquire their 7UP and other franchises. The FTC rejected these applications and Honickman appealed the FTC's decisions to the district court (See *Dr Pepper/Seven-Up Cos., Inc. and Harold Honickman v. FTC*, 798 F.Supp. 762 (D.D.C. 1992), aff'd in part and rev'd in part 991 F.2d 859 (D.C. Cir. 1993)). Separately, Honickman argued that the structure of the 1987 transaction exempted him from making an HSR filing. The FTC/DOJ challenged this view. Both sides settled the HSR filing dispute, with Honickman paying almost $2 million to the U.S. treasury (see *United States v. Honickman*, 1992-2 Trade Cas. (CCH) ¶ 70,018 (D.D.C. Nov. 2, 1992)).

Honickman's only remaining significant competitor after these acquisitions, a divided FTC ultimately reversed itself in 1994 as part of a consent that it reached with Honickman and DPSU (which approved the 7UP transfer to Honickman). The consent let Honickman have the 7UP and other franchises. New York City's third bottlers had discontinued operations, DPSU actively sought to have Honickman acquire its franchises there, and the FTC seemed to conclude that no other competitively significant purchasers existed or were likely to emerge.[41]

In sum, at the syrup level, the FTC has prevented Coca-Cola and PepsiCo from acquiring major syrup competitors, but has allowed them to acquire smaller syrup suppliers and to greatly expand their vertical integration into CSD bottling. It also has allowed noncola syrup companies to consolidate. Thus, the syrup industry has become more concentrated, but not by as much as it would have absent the FTC's intervention. At the bottling level, the FTC similarly sought to prevent Coca-Cola and Pepsi-Cola bottlers from acquiring major franchises from horizontal competitors, but has allowed them to acquire smaller such franchises. It also has allowed third bottlers to consolidate. Although the FTC's efforts may well have deterred some Coca-Cola and Pepsi-Cola bottler acquisitions, the only two bottler cases the FTC litigated ended with

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[41] See, *Dr Pepper/Seven-Up Companies, Inc., et al. v. FTC*, Stipulation and Order of Dismissal, Civ. A. No. 91-2712 (D.D.C. 1994) (See, also, dissenting statement of Commissioner Deborah K. Owen, and separate statement of Commissioner Dennis A. Yao). The FTC also entered into consent agreements with PepsiCo regarding two of its vertical acquisitions that had horizontal implications. When PepsiCo sought to acquire MEI and General Cinema, two of its largest bottlers, MEI and General Cinema owned third bottler franchises in areas where they did not sell Pepsi-Cola CSDs. The FTC was concerned that if PepsiCo were both a bottler of CSDs and a supplier of concentrate to another CSD bottler in the same market, then direct competition between the two bottlers might be lessened and the risk of interbrand collusion would be increased (see *In the Matter of PepsiCo, Inc.,* 114 F.T.C. 629, 631-32 (1991) and *In the Matter of PepsiCo, Inc., et al.*, 111 F.T.C. 704, 707-08 (1989), respectively). The consent with DPSU in the Honickman matter also resolved disputes between DPSU and the FTC regarding these MEI and General Cinema acquisitions.

acquisitions taking place that it had sought to prevent.[42] Thus, there has been a significant increase in concentration at the bottling level. With the FTC not challenging most Coca-Cola and Pepsi-Cola bottler acquisitions of 7UP and Dr Pepper franchises (they typically have involved franchises with small shares or the transactions were small enough not to be reportable), and some acquisitions that it did challenge taking place anyway, the types of combinations that the FTC blocked at the syrup level (i.e., Coca-Cola and PepsiCo acquiring Dr Pepper or Seven-Up) generally have taken place at the bottler level. Nevertheless, such franchise combinations at the bottler (i.e., franchisee) level have different effects than comparable combinations at the parent company (i.e., franchisor) level, since the former leave independent competing franchisors, while the latter do not. In addition, while the blocked parent company consolidations were limited to Dr Pepper consolidating with Coca-Cola, and Seven-Up consolidating with PepsiCo, the bottler consolidations have been more varied (e.g., Dr Pepper has consolidated with Pepsi-Cola bottlers as well as Coca-Cola bottlers, and also with combination Pepsi-Cola/7UP bottlers).

[42] In other instances, planned acquisitions of 7UP or Dr Pepper franchises were abandoned after the FTC investigated those transactions. See, for example, the July 26, 1995 closing letter involving the planned acquisition of Seven-Up Bottling Co. of Topeka, Inc. by LinPepCo Corporation (a Pepsi-Cola bottler) in 1995 (File No. 951-0074). The courts, however, have not determined whether these or any of the aforementioned bottling acquisitions would have violated Section 7 of the Clayton Act or Section 5 of the Federal Trade Commission Act (which govern whether the planned acquisitions would lessen competition).

E. Department Of Justice ("DOJ") Price-Fixing Cases

While the FTC concentrated on challenging anticompetitive acquisitions in the CSD industry, the DOJ was bringing cases against CSD price-fixers. By 1990, the DOJ had obtained more than forty bottler and individual guilty pleas (or convictions) in ten states (Florida, Georgia, North Carolina, Ohio, Maryland, South Carolina, Tennessee, Virginia, West Virginia, and Washington) and Washington, D.C. Typically, the price-fixing took place in the early 1980s -- after the SDICA was passed, but before the FTC investigated the above horizontal and vertical acquisitions. Often, the defendants in these cases pleaded guilty to (a) meeting and discussing promotional CSD prices, (b) agreeing to set those prices, and (c) monitoring and enforcing their agreements.

Table II.1 and Appendix A summarize the publicly available information about the 20 "markets" in which bottlers were found guilty of fixing CSD prices.[43] The table identifies the main cities, the duration of the collusion, the types of named colluding bottlers, and the bottler alignments of Dr Pepper and 7UP franchises in the areas where price-fixing charges were successfully brought. The areas are listed chronologically, based on the dates the DOJ filed suit.

[43] The information contained in the table and appendix comes from "Indictments" and "Informations" issued by the DOJ against CSD bottlers and their employees, from DOJ summary reports of these cases, from the 1985 and 1986 editions of the *Beverage Bureau Book* (BBB), and from the 1982/83 and 1986 editions of the *National Beverage Marketing Directory* (NBMD). Hereafter, we will use "Informations" to include "Indictments." Each area is treated as a separate "market" because the DOJ brought separate charges in each area. Also, different time periods, bottlers, or products seemed to apply even when two areas may be near one another. In three instances, not reported here, the DOJ brought charges against bottlers (in other cities) that were acquitted, and in one instance a case was voluntarily dismissed. As seen in Appendix A, some of the bottlers that were guilty of fixing CSD prices operated in more than one of the 20 "markets" identified.

Table II.1

CSD Bottling Collusion Areas (Summary Information)

Area	Period of Collusion	Coke Bottler	Pepsi Bottler	Third Bottler	DP/7UP Affiliation
Washington, D.C.	10/84 - 8/85	X	X		I/I
Richmond, VA	2/83 - 12/84	X	X		PC/I
Norfolk, VA	‘82 - 1/85	X	X		PC/I
Athens, GA	12/78 -12/84	X			PC/PC
Toccoa, GA	1/82 - 4/85	X			PC/PC
Beckley, WV	‘76 - 11/85	X		X/X	I/I
Elyria, OH	1/80 - 3/83	X			PC/I
Roanoke, VA	‘77 - 11/85	X	X		PC/RC
Bryson City, NC	1/84 - 11/84	X			PC/I
Anderson, SC	5/83 - 12/84	X	X		CC/PC
Knoxville, TN	7/83 - 12/83		X		CC/PC
Columbia, SC	1/83 - 12/84	X	X		PC/PC
Greenville, SC	7/82 - 1/86		X		PC/PC
Ft. Lauderdale, FL	12/83 - 5/85	X	X		RC/RC
Johnson City, TN	12/85 - 9/86	X	X		PC/PC
Pasco, WA	1/85 - 9/85	X	X	X	I/I
Walla Walla, WA	1/85 - 11/85	X	X		CC/CC
Boone, NC	2/83 - 12/84			X	RC/RC
Baltimore, MD	‘82 - 1/85	X	X		PC/I

Notes: The period covered by these conspiracies encompasses a range which includes the time any bottler or employee of the bottler was guilty of price-fixing. If reference was made in the Information to a particular quarter, the last month of the quarter is used to identify the time frame of the conspiracy. An X identifies Coke, Pepsi, and third bottlers specifically named as conspirators in a given area. In the case of Beckley, WV, two third bottlers were named. The last column shows the bottler affiliation of the Dr Pepper and 7UP franchises. "PC" represents affiliation with the Pepsi-Cola bottler. "I" indicates an independent third bottler. “I/I” indicates that Dr Pepper and 7UP each were with separate independent third bottlers. "CC" indicates affiliation with the Coca-Cola bottler. "RC" means that the franchise is affiliated with the Royal Crown bottler in the area.

Appendix A provides additional detail on the collusion cases and the areas' bottlers.[44]

Unfortunately, much of the information about these conspiracies (and the markets in which they took place) is not available publicly, and even the information that is available is not complete. Therefore, we do not have a full picture of what happened. For example, we do not know all of the bottlers that participated in each conspiracy.[45] The fact that an Information was not issued against a bottler does not mean that that bottler did not conspire to fix prices. Many of the cities listed in Table II.1 only identify one bottler as having been found guilty of fixing CSD prices. But we know those bottlers did not conspire alone. Similarly, we do not know how long all of the conspiracies lasted. The DOJ Informations typically indicate that the price-fixing began "at least as early" as a given time period, and continued "at least through" a later time period.[46] Some conspiracies appear to have lasted considerably longer than the time period specified in the Information. For example, the Information against the Roanoke Coca-Cola bottler indicates that it began fixing prices in 1982, while the Indictment against its employees (who pleaded nolo contendere to fixing prices) indicates that the collusion started "at least as early as 1977."

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[44] The share figures were based on sales data from the NBMD, but should not be assumed to accurately reflect actual sales. The NBMD provides ranges of sales for the bottlers it lists, but those sales figures may apply to areas that are larger than the areas where the DOJ price-fixing took place. Nevertheless, we include these estimates because we wanted to see if any pattern seemed to emerge regarding the apparent relative shares of bottlers that were guilty of fixing CSD prices. Furthermore, although we only identify the fines imposed on the guilty bottlers, additional punishments (including jail terms, probations, and community service) also were imposed.

[45] Informations do not usually identify co-conspirators.

[46] The imprecision of the dates given is evident from the fact that two Informations for different bottlers that pleaded guilty to fixing prices in the same city sometimes give different dates for the time of the conspiracy. See, for example, the Beckley, Norfolk, and Richmond Informations.

We examined the brand line-ups of the bottlers in the areas where price-fixing took place to see if collusion was more prevalent with some brand line-ups than others. But without knowing more about which bottlers participated in the collusions, it is difficult to examine whether particular brand line-ups increase the likelihood of collusion. For example, nine of the twelve times that Dr Pepper bottlers were identified as price-fixers, the brand was carried by a Coca-Cola or Pepsi-Cola bottler, and six of the nine times that 7UP bottlers were identified as price-fixers, that brand was carried by Coca-Cola or Pepsi-Cola bottlers. Since these figures (especially the 7UP one) exceed the percentage of Dr Pepper and 7UP franchises that were carried by Coca-Cola and Pepsi-Cola bottlers at the time, one might think that collusion is more likely when such piggybacking takes place. But we do not know enough about the third bottlers that were not identified in Informations to draw such conclusions. Only two of the seventeen Coca-Cola bottlers identified as price-fixers also bottled 7UP or Dr Pepper, but ten of the fourteen Pepsi-Cola conspirators bottled 7UP or Dr Pepper. Five of the twenty conspiracies included Coca-Cola and Pepsi-Cola bottlers that did not carry 7UP or Dr Pepper, while the other fifteen did have such piggybacking. But without knowing how many markets, in general, have Coca-Cola and Pepsi-Cola bottlers with such piggybacking, as compared to the number of markets without such piggybacking, it is hard to use these findings to attempt to draw conclusions about the impact of piggybacking on the likelihood of collusion.

Nevertheless, many general observations can be made about these conspiracies from the information we do have. None of the cases identified price-fixers who were not branded CSD bottlers. While this does not necessarily prove that nonbranded CSDs did not participate in the

conspiracies, the evidence points in that direction.[47] Coca-Cola and Pepsi-Cola bottlers participated in the conspiracies the vast majority of the time (at least seventeen of twenty for Coca-Cola and fourteen of twenty for Pepsi-Cola).[48] Given the significant share of CSD sales that Coca-Cola and Pepsi-Cola bottlers typically have, one might expect their participation would be essential for price-fixing to succeed. Although only a few Informations were issued against third bottlers, many third bottlers appear to have participated in the conspiracies because the Informations that were issued against Coca-Cola and Pepsi-Cola bottlers often refer to "various" or "other" "corporations," in the plural, as co-conspirators.[49]

Perhaps the most interesting observation about the CSD price-fixing cases is the wide range of circumstances that characterize them. Although they did not cover the entire country, collusions were found in many parts of the eastern U.S. (from Florida to Maryland), in the east central states (Ohio and Tennessee), and out to the northwest (Walla Walla, WA). The sizes of

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[47] See, for example, United States v. Allegheny Bottling Co., 695 F. Supp. 856 (E.D. Va., 1988), aff'd, 870 F.2d 656 (4th Cir. 1989). Allegheny is the only bottler in Appendix A that was found guilty after trial and for which there is a public record.

[48] The Coca-Cola Company and PepsiCo have since acquired many of their bottlers that were guilty of price-fixing, just as they have acquired many of their other bottlers. Since collusion is expected to restrict output, the parent companies may have been motivated to acquire the bottlers that were guilty of price-fixing, at least in part, to insure that their concentrate sales would not be limited. (However, concentrate companies also may benefit from higher bottler prices in an area by charging correspondingly higher prices for concentrate in that area. Perhaps the easiest form of such a concentrate price increase would be to reduce concentrate discounts to the bottlers involved). They also may have been trying to protect the exclusive territories sanctioned in the SDICA, since it is questionable whether the CSDs of those bottlers who fixed prices really were in "substantial and effective competition with other products of the same general class in the relevant market."

[49] While it is possible that one of the other corporate co-conspirators may have been a nonbranded entity, a branded bottler outside of the area, or a parent company, these alternatives seem less likely. None of the DOJ Informations appear to have been targeted at such entities; yet, some third bottlers pleaded guilty to fixing CSD prices.

the geographic areas subject to the conspiracies also seemed to vary. In one extreme, a single county (Greenville, SC) was identified as the location of the conspiracy. But typically, the conspiracies covered many counties. For example, the Knoxville conspiracy included twelve counties, while the Baltimore, Richmond, and Norfolk conspiracies covered the regions serviced by those divisions of the conspiring bottlers. Cities of various sizes had CSD price-fixing -- from the Washington, DC area, with over two million people, to the Boone, NC area, with less than fifty thousand people. Large, multiple franchise, publicly-owned bottlers (e.g., General Cinema) colluded, as did small, single franchise companies that were privately-owned (e.g., the Dr Pepper Bottling Co. of West Jefferson, NC). Some price-fixing appears to have taken place without third bottlers (e.g., Norfolk, VA) while others included them (e.g., Boone, NC). In fact, the Beckley, WV area had two third bottler conspirators, as both the 7UP/Dr Pepper and RC bottlers there pleaded guilty to price-fixing (along with Beckley's Coca-Cola bottler). As mentioned earlier, neither the Coca-Cola nor the Pepsi-Cola bottler piggybacked either 7UP or Dr Pepper in some markets with price-fixing, while such piggybacking did take place in other price-fixing markets. Some of the conspiracies appear to have included Coca-Cola and Pepsi-Cola bottlers with comparable shares (e.g., Roanoke, VA), while others seem to have included Coca-Cola and Pepsi-Cola bottlers with very different shares (e.g., Athens, GA). Some price-fixing appears to have taken place in cities where food store sales were relatively unconcentrated (e.g., Baltimore, MD), while others appear to have taken place in relatively concentrated food store markets (e.g., Washington, DC). Most of the Informations refer to soft drinks, in general, as the products whose prices were fixed, but many only refer to specific packages (e.g., 2 liter), flavors (colas) or

types (post mix) of CSDs.[50] The bottler fines may have reflected the diversity of these conspiracies. At least six bottlers paid fines of at least one million dollars, while other bottlers had fines of two hundred thousand dollars or less. Thus, many different circumstances seem to have resulted in CSD price-fixing at the bottling level, with no one set of characteristics appearing to lend itself to such collusion more than another.

Aside from the specific *per se* law violations associated with these price-fixing cases, the cases provide insight into the major issues that typical antitrust merger cases confront. Even with our caveat that the Informations likely understate the true time period covered by the conspiracies, Table II.1 shows that almost three quarters of the conspiracies lasted at least one year without being detected or thwarted by competing products or firms, and at least half of them lasted at least two years without such action.[51] Thus, the DOJ cases suggest that private label CSDs, other warehouse distributed CSDs, and soft drinks that are not carbonated are unlikely to be in the "branded" CSD markets alleged by the FTC in FTC Docket Nos. 9207 and 9215, since

[50] These price-fixings may, nevertheless, have involved a broader group of soft drinks even though only specific types of soft drinks were identified in the Informations. The DOJ may have limited the subject of the price-fixing in an Information to a subset of soft drinks as part of its plea agreement with the bottler (perhaps the best evidence it had was for that subset of soft drinks).

[51] The Beckley, WV conspiracy appears to have lasted an entire decade. One and two years have been very important time periods in government enforcement guidelines. At the time the DOJ bottler price-fixing cases were brought, the DOJ merger analysis used a one year time frame to define product and geographic markets, and a two year time frame to examine whether the prospect of entry would deter an attempt to raise price. See U.S. Department of Justice, *Merger Guidelines*, § 2 and § 3, June 14, 1984. Two of the six conspiracies listed in Table II.1 as lasting less than one year appear to have lasted at least 11 months. More recently, the DOJ dropped the one year time frame in the context of defining markets (referring, instead, to the foreseeable future), while retaining the two year period for examining entry. See the U.S. Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines*, § 1 and § 3, issued April 2, 1992, revised April 8, 1997 ("*Horizontal Merger Guidelines*").

these other drinks apparently did not participate in the price-fixing and did not deter or defeat the collusions.[52] Similarly, the price-fixing cases suggest that bottlers outside of a given local area are unlikely to be in the relevant antitrust geographic market for that area because bottlers from outside of the local areas where the DOJ price-fixing took place apparently did not participate in those conspiracies and did not defeat them. Moreover, new entry did not defeat the branded CSD price-fixing, given that it sometimes lasted several years. This suggests that it is unlikely that timely new entry would be sufficient to defeat an anticompetitive branded CSD price increase. Lastly, the fact that price-fixing could take place among CSD bottlers in so many places around the country with varying circumstances buttresses the argument that branded CSD price-fixing or tacit collusion could take place elsewhere.[53]

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[52] Private label CSDs use warehouse delivery, while branded CSDs rely on bottlers who use direct store-door delivery. CSDs that use warehouse delivery do not have exclusive territories, so they would seem to have the potential to defeat local branded CSD price-fixing. But branded CSDs are perceived to be higher in quality than private label CSDs. Also, warehouse distribution does not service vending, fountain, and other types of CSD accounts. Therefore, it is harder for CSDs that rely on warehouse distribution to constrain branded CSD prices, other factors constant (See, *In the Matter of Coca-Cola Bottling Co. of the Southwest*, 118 F.T.C. 452, 538-74 (1994). The likelihood that price increases would be defeated is central to defining product markets. If some price-fixing were limited to a particular package size, flavor, or type of CSD, it would raise the possibility that a subset of branded CSDs may constitute a relevant product market for antitrust purposes.

[53] The Administrative Law Judge ("ALJ") presiding *In the Matter of The Coca-Cola Co.* allowed the DOJ price-fixing cases into evidence. See *In the Matter of The Coca-Cola Co.*, 117 F.T.C. 795, 809 (1990) (Initial Decision). However, the ALJ presiding *In the Matter of Coca-Cola Bottling Co. of the Southwest* refused to admit these cases into evidence, considering them to be irrelevant. The FTC disagreed with the ALJ's opinion in the CCSW matter on this issue. It found "the [price-fixing] evidence to be relevant to the likelihood of collusion by branded CSD bottlers in the San Antonio market, because such cases suggest that there are local or regional branded CSD bottling markets that are conducive to collusion ... The bottler price-fixing cases also are relevant to and reinforce our conclusion that the relevant market in this case is branded CSDs in the San Antonio market." See, *In the Matter of Coca-Cola Bottling Co. of the Southwest*, 118 F.T.C. 452, 602 (1994). The recent Fifth Circuit's decision in this matter did not address this point.

One final observation from the DOJ cases involves the likelihood that parent-owned bottlers would fix CSD prices. It has been argued that such collusion is unlikely because parent companies' incentives are inconsistent with fixing bottler prices. The DOJ price-fixing cases have been cited to support this argument, since some have reported that vertically integrated bottlers were never involved in any of these collusions.[54] However, the DOJ Informations and summary reports of bottler cases show that The Mid-Atlantic Coca-Cola Bottling Company, Inc. ("Mid-Atlantic Coke") pleaded guilty to fixing soft drink prices in the Washington, D.C. area from about October, 1984 to August 31, 1985. A former president of Mid-Atlantic Coke also pleaded guilty to fixing Mid-Atlantic Coke prices in the Baltimore, MD area between 1982 and January, 1985. Yet, an October 14, 1987 DOJ press release states that Coca-Cola "acquired a controlling interest in Mid-Atlantic Coke" in September, 1984. Coca-Cola continued owning and controlling Mid-Atlantic Coke until September, 1986, when the press release states that ownership of Mid-Atlantic Coke was transferred to CCE.[55] CCE had just been formed by Coca-Cola, with Coca-Cola owning 49% of CCE. Thus, Coca-Cola owned and controlled a bottler that fixed CSD prices in the nation's capital for about one year, and in at least one other major city for a shorter time period, though the actual length of the conspiracies may have been longer (as discussed above) and it is not clear how long the conspiracies would have lasted had the DOJ

[54] See, for example, Tollison *et al.* (1991 p. 103) who state that "no company-owned bottlers or personnel have been indicted" and Muris *et al.* (1993 p. 158) who state that "no bottlers owned by Pepsi-Cola or The Coca-Cola Company have been involved in price-fixing charges". According to press accounts, "[b]oth Coca-Cola Co. and PepsiCo said the parent companies were not involved in the price-fixing by their local bottlers." (See, *Washington Post* (October 15, 1987 pp. A1 and A40)).

[55] Apparently, Coca-Cola transferred "a majority ownership" in Mid-Atlantic Coke to CCE at that time (See, *1987 Moody's Industrial Manual* p. 2705).

not uncovered them.[56] This evidence at least raises questions about claims that CSD price-fixing (and other unlawful conduct) is unlikely when parent companies own bottlers.

In sum, many bottlers were guilty of fixing branded CSD prices during the 1980s. The specific circumstances surrounding these collusions differed, with no one set of characteristics appearing to lend itself to such collusion more than another. Nevertheless, the available evidence from these cases provides insight into CSD markets. For example, the evidence tends to support the product and geographic markets alleged by the FTC in its CSD litigation because branded CSDs were the only beverages identified as participating in the price fixing, and the cases tended to involve price-fixing in small local areas. Moreover, since some of these conspiracies lasted for several years, it would appear that entry into branded CSD bottling operations is difficult. For, if entry were easy, one might expect the higher profits typically associated with price-fixing to have attracted such entry. Lastly, even parent-owned bottlers were not immune from fixing branded CSD prices.

[56] Mid-Atlantic Coke also was found guilty (after trial) of defrauding the U.S. and violating its bribery law regarding CSD sales at a Norfolk, VA Navy facility for at least six months while it was controlled by Coca-Cola. See, *United States v. The Mid-Atlantic Coca-Cola Bottling Co., Inc.*, No. 90-27-N (E.D. Va. 1990).

Chapter III

Technical and Structural Change

A. Introduction: Structural Change and Institutional Stability

The CSD industry in the United States has undergone major structural changes over the past two decades. These changes have occurred at both the national concentrate level and at the local bottler level and have included horizontal consolidations, vertical integration, and vertical divestiture. This chapter focuses on these structural changes.

While the structure of the industry has changed, the major players and the terms of franchise arrangements have shown considerable stability. The Coca-Cola Company and PepsiCo continue to be the largest concentrate companies with the largest bottlers.[57] The other major brand groups have been Dr Pepper and, to a decreasing extent, 7UP and Royal Crown. Together, the branded CSD groups using traditional industry franchised distribution now account for more than 90% of total CSD sales, with the rest going to a wide assortment of private label and minor warehouse brands distributed outside of the franchised bottling systems.[58] The five

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[57] The terms "bottler" and "bottling" cover only a very limited portion of the actual operations of a CSD franchisee. The franchisee may even opt to contract out all of its manufacturing operations. The real heart of being a franchised CSD bottler is marketing and distribution.

[58] See, *1999 Beverage Digest Fact Book* pp. 90-97. Private label CSDs are manufactured by contract packers or directly by CSD bottling plants owned by the retail grocery chains and distributed to their own stores. Concentrates for these products are provided by flavoring suppliers or as a sideline by traditional concentrate manufacturers. Royal Crown has been a major supplier of concentrate for private label CSDs. See, for example, *Beverage Industry* (June 1994 pp. 10-13). Warehouse brand CSDs are produced in plants owned by another set of concentrate manufacturers and delivered to the warehouses of grocery retail chains. Private label and warehouse brands participate almost exclusively in the grocery retail distribution channel, rather than in the vending or fountain channels.

branded CSD groups that are the focus of this study accounted for approximately 87% of total CSD sales, and 95% of "branded" CSD sales in 1998.[59] Bottlers and concentrate companies continue to observe traditional contractual obligations that establish the framework of the business. Traditional flavor exclusivity clauses that generally allow a bottler to carry only one brand of a given flavor remain in place. PepsiCo, for example, has a "no other cola" provision in the Pepsi-Cola franchise agreements with bottlers:

> The Bottler will not bottle, distribute or sell, directly or indirectly, any other cola beverage or beverages with the name cola . . . or any other beverage which could be confused with Pepsi-Cola's.

Similar restrictions are in Bottling Appointments for other Pepsi-Cola products.[60]

Exclusive territories and rules against selling to customers outside one's appointed territories (transshipment) continue and are vigorously enforced by CSD bottlers and concentrate companies. Coca-Cola USA's bottling contract provides in part that:

> The Bottler has the sole, exclusive and perpetual right and license in the Bottler's territory (i) to manufacture and market all Covered Products for ultimate consumer purchase in such territory, and (ii) to use and vend on all Covered Products the trademarks and trade names associated with such Covered Products and any Modifications thereof, and all labels, designs, distinctive containers or other trade symbols associated therewith.

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[59] See, *1999 Beverage Digest Fact Book* pp. 90-97. Whether the "market" considered should be "branded CSDs," all CSDs, or some other group of beverages has been the subject of litigation, as discussed above. We believe the evidence supports the "branded CSD" antitrust markets adopted by the FTC in its litigation, as discussed earlier. However, share data presented below assume an all CSD universe (i.e., including private label and warehouse CSD sales) because the CSD industry publications relied on as the sources for those data use that universe. The traditional CSD brand groups other than the big five include, principally, Cadbury (A&W, Hires, Crush, Welch's, Schweppes, Canada Dry, and others and now owners of Dr Pepper and 7UP), Monarch, Barq's (now owned by Coca-Cola), Big Red, and Double Cola.

[60] See, *In the Matter of Coca-Cola Bottling Co. of the Southwest*, FTC Docket No. 9215, Complaint Counsel's Exhibit Nos. CX 379Z40, Z16, and Z22.

> The Bottler will not sell any Covered Product to any person . . . where the Bottler knows or should have known that such person would redistribute such Covered Product for ultimate sale outside Bottler's territory . . . . The Company will vigorously enforce the provisions of this Section 3 and will use its best efforts to prevent any Covered Product from being transshipped.[61]

The other major branded concentrate firms have similar contract provisions and policies which forbid a bottler from selling its CSDs outside of the exclusive territory described in the franchise agreements.[62]

Bottlers typically hold franchise rights in perpetuity, albeit with some limitation.[63] And, as shown below in Table III.7, bottlers continue to contract with more than one concentrate company in order to market a portfolio of CSD flavors to retailers and directly to consumers.

B. CSD Shares and Share Changes

Table III.1 provides CSD shares at the national level for the five branded CSDs that are the focus of this study.[64] Prior to World War II, Coca-Cola dominated the industry at the

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[61] See, *In the Matter of Coca-Cola Bottling Co. of the Southwest*, FTC Docket No. 9215, Respondent's Exhibit Nos. RX 2850A and 2850B.

[62] See, *In the Matter of Coca-Cola Bottling Co. of the Southwest*, Complaint Counsel's Proposed Findings of Fact, Conclusions of Law, and Order, Volume I, Finding No. 379, FTC Docket No. 9215, (February 11, 1991).

[63] A CSD franchise can be revoked "for cause" such as unsanitary manufacturing practices or failure to make a "best effort" to market the franchised brand. Franchisors retain the right to disapprove of ownership transfers. Bottlers may elect to drop a franchise, usually with only short notice to the franchisor.

[64] These and other CSD figures reported below are estimates obtained from industry sources. Seven-Up and Dr Pepper data are reported separately for greater detail, even though Seven-Up and Dr Pepper have been under common management since 1986.

Table III.1

National Carbonated Soft Drink Consumption and Shares of Big 5 Brand Groups

YEAR	VOLUME/ SHARE of BIG 5	COKE %	PEPSI %	7UP %	RC %	DP %
1900	39	n.a.	n.a.			n.a.
1930	253	40-60%	n.a.	n.a.	n.a.	n.a.
1940	550	53.0%	10.8%	10.6%	n.a.	n.a.
1950	990	48.0%	12.8%	11.6%	n.a.	n.a.
1960	1477	37.2%	18.1%	12.1%	5-8%	n.a.
1970	2971/ 74.6%	35.0%	23.6%	7.1%	5.8%	3.1%
1975	3633/ 77.2%	35.4%	24.5%	7.7%	5.1%	4.5%
1980	4930/ 80.0%	35.9%	27.7%	6.4%	4.0%	6.0%
1985	6385/ 83.2%	39.5%	30.3%	5.8%	3.1%	4.5%
1990	7780/ 85.2%	41.1%	32.4%	3.9%	2.6%	5.2%
1995	8970/ 85.3%	42.3%	30.9%	3.3%	2.0%	6.8%
1998 (Est.)	9880/ 87.2%	44.5%	31.4%	2.9%	1.3%	7.1%

Notes: Entries for 1900 through 1960 are from Greer (1968 Chapter 5). Entries for 1970 through 1980 are from Maxwell (1994). Entries for 1985 through 1998 are from the *1999 Beverage Digest Fact Book* pp. 90-97. "n.a." here and in subsequent tables means the data were not available. Industry volume is always in millions of cases. While the 1985 through 1998 figures are based on 192 oz cases and cover all distribution channels, it is not clear how the earlier figures were calculated.

concentrate level with shares as high as 60%. Following the war, the concentrate industry evolved into a near-duopoly, with PepsiCo brands gaining share while Coca-Cola's share declined. During the 1980s and 1990s, Coca-Cola regained part of its earlier lead, but not at the expense of PepsiCo. Since World War II, Seven-Up and Royal Crown generally lost share, while

Dr Pepper gained share as it moved to franchise bottlers outside of its home state of Texas. Both Seven-Up and Royal Crown have had shares declines of at least three quarters during this period. Seven-Up fell from a high share of 12.1% to 2.9%. Royal Crown fell from 5-8% to 1.3%. At the same time, Dr Pepper's share rose to 7.1%.

Within the national picture, regional share patterns are far from uniform across the country. For illustrative purposes, Table III.2 presents share data for the Coca-Cola, Pepsi-Cola, Dr Pepper, Seven-Up, and Royal Crown brand groups in seven regions within the U.S. As the

Table III.2

Year-to-Date August, 1991
Brand Group Shares in Selected Regions

AREA	COCA-COLA	PEPSI-COLA	DR PEPPER	SEVEN-UP	ROYAL CROWN
New England	41.7%	35.9%	0.9%	2.4%	0.2%
Mid-Atlantic	37.9%	45.0%	1.9%	4.3%	1.3%
Southeast	46.8%	33.1%	5.0%	2.8%	4.1%
East Central	34.6%	45.7%	4.3%	5.1%	3.6%
West Central	31.9%	45.0%	4.6%	6.2%	4.4%
Southwest	46.4%	30.7%	11.7%	2.9%	1.2%
Pacific	33.9%	45.4%	4.5%	6.8%	2.3%

Notes: These data are based on supermarket invoices analyzed by Data Bank (See, *Beverage Digest* (October 25, 1991 p. 3)). The range of shares would be even more pronounced if we examined individual cities within these regions, since the above figures are averages. For example, in March, 1989, Coca-Cola's share was reported to be 51.9% in Houston, TX and 21.1% in Pittsburgh, PA (See, *Beverage Digest* (May 12, 1989 p. 3)). Similarly, Dr Pepper's share was reported to be 21.3% in Dallas/Ft. Worth, TX for the fifty-two weeks ending April 7, 1996 (See, *Beverage Digest* (May 17, 1996 p. 6)), Seven-Up's share was reported to be 10.1% and 9.5% in San Francisco, CA and Los Angeles, CA, respectively, for the eight weeks ending February 20, 1993 (See, *Beverage Digest* (June 4, 1993)), and Royal Crown's share was reported to be 9.4% and 8.1% in Nashville, TN and Chicago, IL, respectively, in 1988 (see Tollison *et. al.* (1991 p. 28)).

table illustrates, Coca-Cola brands have not had the leading position in all areas despite their leading national position. Notwithstanding their national declines, Seven-Up and Royal Crown have retained sizeable shares in some areas of the country. Dr Pepper, while growing on a national basis, has been particularly strong in the southwest (e.g., Dallas/Ft. Worth), but has had a very small presence in some other areas.

C. Plant Consolidations

The number of CSD bottling plants has declined substantially, while the scale of production has increased dramatically. Table III.3 presents data on the number and average scale of CSD bottling plants. For example, in 1950 there were well over 6,000 CSD bottling

Table III.3

Number and Average Production of U.S. CSD Bottling Plants

Year	Number of Plants	Total Cases	Aver. Cases Per Plant
1940	6,118	550,000,000	89,899
1950	6,662	990,000,000	148,604
1960	4,519	1,477,000,000	326,842
1970	3,054	2,971,000,000	972,823
1980	1,859	4,930,000,000	2,651,963
1990	807	7,780,000,000	9,640,644
1995	541	8,970,000,000	16,580,406
1998	498	9,880,000,000	19,839,357

Notes: The number of bottling plants for 1940-90 are from various editions of *Beverage Industry Annual Manual* through July 1992. *Beverage Industry Annual Manual* no longer reports these data. The estimated number of bottling plants for 1995 is from *Beverage World* (October 1998 p. 71). The estimated number of bottling plants for 1998 is from a phone conversation with *Beverage World*. Case sales are taken from Table III.1 above.

plants in the U.S. compared to only about 500 in 1998. While the number of bottling plants decreased, total CSD volume continued to expand and economies of scale in production increased substantially. In the 1950 to 1998 period, average per plant production rose from about 150,000 cases to nearly 20,000,000 cases per year.

The change in number and scale of plants has been accompanied by diversification in the type and variety of sizes of CSD containers. Glass containers have been replaced by both metal cans and plastic bottles. Container sizes for consumers range from the original 6.5 oz glass bottles to plastic three liter bottles. With the decline of small glass containers and the rise of two and three liter plastic containers, average package size has increased over time. Table III.4 presents data on changes in container materials. The rapid decline and near elimination of returnable glass containers during the 1970s and 1980s marked a major shift in CSD packaging.

Table III.4

Shifts in the Types of CSD Containers (% of Packaged Volume)

CONTAINER TYPE		**1970**	**1982**	**1990**	**1998**
Metal Cans		20%	36.5%	54.4%	48.3%
Plastic	All	n.a.	21.4%	33.6%	50.9%
	20 ounce	n.a.	n.a.	0.2%	15.3%
	2 liter	n.a.	19.9%.	26.0%	23.2%
	3 liter	n.a.	n.a.	2.8%	4.2%
Nonreturnable Glass		20%	15.7%	11.4%	0.3%
Returnable Glass		60%	26.4%	0.6%	0.4%

Sources: See, National Soft Drink Association (1986) for 1970 and 1982 data, and *Beverage World* (June 1999) for 1990 and 1998 data. The National Soft Drink Association stopped reporting these container data in 1987.

The elimination of extensive collection, transportation, and sanitizing of returnable glass packaging greatly facilitated consolidation of bottling plants during the post-WWII period.

D. Vertical Integration

Another significant structural change over the past two decades has been vertical integration into CSD bottling by the Coca-Cola and PepsiCo concentrate companies. Table III.5 presents data on vertical integration by the major concentrate firms. As late as 1981, the Coca-Cola and PepsiCo parent companies had equity interests in U.S. bottlers accounting for 20% or less of their volume. By 1998, Coca-Cola and PepsiCo had equity interests in bottlers distributing about 77% and 73% of their volume, respectively. During the same time period, the other concentrate companies divested their bottling assets. Dr Pepper and Royal Crown consistently reduced their ownership positions, while Seven-Up undertook extensive vertical integration to launch its Like brand of cola and then divested as that brand faded.[65] As discussed

[65] Divestiture of bottling operations was reportedly undertaken to help finance leveraged buy-outs or other investments at both Dr Pepper and Royal Crown. Dr Pepper was acquired by Forstmann, Little & Co., a New York-based investment firm in February 1984. The ten bottling operations owned by the parent company were sold by Forstmann, Little & Co. soon after the acquisition to reduce the debt from the acquisition. See, *In the Matter of Coca-Cola Bottling Co. of the Southwest*, Complaint Counsel's Proposed Findings of Fact, Conclusions of Law, and Order, Volume I, Finding No. 157, FTC Docket No. 9215, (February 11, 1991). In August 1986, Dr Pepper was acquired by Hicks and Haas and combined with Seven-Up and A&W. See *In the Matter of Coca-Cola Bottling Co. of the Southwest*, Complaint Counsel's Proposed Findings of Fact, Conclusions of Law, and Order, Volume I, Findings No. 158 and 159, FTC Docket 9215, (February 11, 1991). Control of Royal Crown was acquired by Victor Posner in the mid-1980s. Mr. Posner reportedly used the cash flow of Royal Crown to invest in unrelated businesses and failed to provide adequate support for Royal Crown brands (*Washington Post*, December 2, 1993 p. B11). Triarc, an investment partnership, is Royal Crown's current owner. It provided substantial increases in promotional support and equipment allowances for RC bottlers after acquiring Royal Crown (Jabbonsky, Larry, "Having Endured Nine Years of 'Benign Neglect,' the RC System Embraces Its Prudently Beneficent New Parents -- and Plans to 'Shake Things Up,'" *Beverage World* (March 1994 pp. 23-39).

Table III.5

Vertical Integration of CSD Concentrate Companies into Bottling (Percent of Each Company's Concentrate Volume Through Company-Owned Bottlers)

FIRM	FORM	1981	1987	1993	1998
Coca-Cola	All Forms	**10%**	**59.7%**	**70.8%**	**77.3%**
	CCE (partial)	n.a.	38.1%	55.1%	68.1%
	Other Partial	n.a.	21.6%	15.7%	9.2%
PepsiCo	All Forms	**20%**	**31.2%**	**70.6%**	**72.5%**
	Full (COBO)	n.a.	31.2%	55.7%	58.6%
	Partial	n.a.	0.0%	14.9%	13.9%
Seven-Up	All Forms	**n.a.**	**none**	**none**	**23.4%**
Dr Pepper	All Forms	**20%**	**none**	**none**	**5.5%**
Royal Crown	All Forms	**25%**	**none**	**none**	**none**

Sources and Notes: 1981 estimates from *Standard and Poor's Industry Survey* (April 9, 1981 p. B66). Later estimates from *Beverage Digest* (December 11, 1998). Coca-Cola acquired full ownership of several of its major bottlers before forming Coca-Cola Enterprises in 1986. Parent Coca-Cola initially held 49% of CCE. In 1991 this proportion fell to 43%. See, *Beverage Digest* (September 6, 1991). Dr Pepper sold its bottlers in 1984-85 in connection with a leveraged buy-out of the concentrate company. Seven-Up purchased several of its bottlers in the 1982-1984 period as part of its entry efforts for Like (caffeine-free cola). These bottling operations were sold by 1987. Royal Crown sold its bottling operations in the early 1980s. Cadbury began acquiring sizeable equity interests in some of its largest third bottlers in May, 1998. As discussed in Chapter II, PepsiCo recently had an initial public offering of its company-owned bottling operations ("COBO"), reducing its equity stake in those bottlers.

in Chapter II, Cadbury, which now owns Dr Pepper and Seven-Up, reversed this trend last year. It formed a joint venture with the Carlyle Group (called ABC) and this joint venture began to acquire some of Dr Pepper and Seven-Up's largest third bottlers. In October, 1999, Cadbury and the Carlyle Group acquired the Dr Pepper Bottling Company of Texas (which was Dr Pepper's largest third bottler, and Seven-Up's second largest third bottler -- behind ABC). The Dr Pepper Bottling Company of Texas will be combined with ABC to form the Dr Pepper/Seven-Up

Bottling Group, Inc. ("DPSUBG"). DPSUBG will distribute 24% of Dr Pepper and Seven-Up's combined volume.[66]

E. Franchise/Bottler Consolidations

The decrease in the number of CSD plants illustrated in Table III.3, and the increased vertical integration illustrated in Table III.5, were accompanied by a decline in the number of separate franchise/bottler operations. Table III.6 shows this trend. It highlights the many Coca-Cola and PepsiCo franchise/bottler consolidations that took place around the time that Coca-Cola formed CCE, and PepsiCo acquired MEI (1986). The number of Coca-Cola and PepsiCo single-franchised bottlers declined 47% and 33%, respectively, in the four years between 1983 and 1987. Coca-Cola and PepsiCo franchise/bottler consolidations continued since then, though at a slower pace. We do not have data going back as far for all of the other major brand groups, but they also had substantial franchise/bottler consolidations. The number of single-franchise RC and 7UP bottlers declined by more than 60% between 1987 and 1998. The number of single-franchise Dr Pepper bottlers declined 45% during this period. The change in the number of multiple-franchise bottlers varied between groups. Coca-Cola had a significant decline, while other companies (except Dr Pepper) increased their number of multiple-franchise bottlers.

F. Cross Franchising and Shifts in Cross Franchising

Cross franchising has been an important aspect of CSD bottling for decades, as bottlers

[66] See *Beverage Industry* (October 1999 p. 9) and *Beverage World* (October 1999 p. 28).

Table III.6

Bottlers and Bottling Territories by Brand Group

BRAND GROUP	BASIC TERRITORIES	YEAR	TOTAL BOTTLERS	SINGLE-FRANCHISE BOTTLERS	MULTIPLE-FRANCHISE BOTTLERS
Coca-Cola	474	1998	94	75	19
		1987	192	137	55
		1983	319	259	60
Pepsi-Cola	421	1998	119	88	31
		1987	180	156	24
		1983	256	233	23
Royal Crown	232	1998	92	69	23
		1987	187	177	10
		1983	185	175	10
Dr Pepper	467	1998	158	122	36
		1987	264	220	44
		1983	n.a.	n.a.	n.a.
7UP	353	1998	149	104	45
		1987	288	269	19
		1983	n.a.	n.a.	n.a.

Source: Entries for 1983 and 1987 are from *Beverage Digest* (January 10, 1992), while those for 1998 are from *Beverage Digest* (December 11, 1998). Multiple franchise bottlers are bottlers with a given franchise in more than one territory/location (e.g., CCE, which has Coca-Cola franchises in New York City, Los Angeles, Dallas, and many other cities, was one of the Coca-Cola Company's 19 multiple franchise bottlers in 1998).

have sought to offer a full line of flavors with recognized brands in each flavor category. Table III.7 presents the cross franchising status of most substantial brands that were not owned by Coca-Cola or PepsiCo between 1995 and 1998. It shows that cross franchising by Coca-Cola

Table III.7

Cross Franchising of Selected Non-Cola Brands and Brand Groups Not Owned by Coca-Cola or PepsiCo Estimated 1995 - 1998 Percent of Volume Cross Franchised

NON-COLA BRAND GROUP	ALIGNED WITH COCA-COLA				ALIGNED WITH PEPSI-COLA				ALIGNED WITH THIRD BOTTLERS			
	1995	**1996**	**1997**	**1998**	**1995**	**1996**	**1997**	**1998**	**1995**	**1996**	**1997**	**1998**
Dr Pepper	41.5%	41.8%	41.6%	42.5%	34.3%	35.1%	36.0%	35.0%	24.2%	23.1%	22.4%	22.5%
7UP	5.7%	3.5%	2.3%	0.9%	32.6%	36.0%	37.4%	38.1%	61.7%	60.5%	60.3%	61.0%
Canada Dry	26.4%	38.3%	27.7%	26.8%	4.1%	7.0%	5.1%	4.9%	69.5%	54.6%	67.2%	68.3%
A&W	30.4%	17.3%	3.4%	1.5%	30.4%	10.5%	11.2%	7.4%	39.2%	72.2%	85.4%	91.1%
Sunkist	45.3%	37.1%	21.1%	14.2%	22.4%	25.7%	29.7%	25.6%	32.3%	37.2%	49.2%	60.2%
Squirt	38.6%	39.3%	36.9%	37.2%	25.2%	25.9%	25.1%	23.3%	36.2%	34.8%	38.0%	39.5%
Schweppes	17.0%	16.9%	16.4%	17.3%	64.1%	67.2%	66.0%	65.4%	18.9%	16.1%	17.6%	17.3%
Crush	7.9%	1.2%	1.8%	1.1%	12.3%	43.9%	15.3%	10.8%	79.8%	54.9%	82.9%	88.1%
Welch's	80.8%	35.7%	31.2%	13.9%	4.4%	7.7%	11.1%	10.9%	14.8%	56.6%	57.7%	75.2%
Hires	3.2%	2.7%	5.9%	0.0%	16.4%	38.9%	7.0%	7.4%	80.4%	58.4%	87.1%	92.6%
Monarch	35.0%	10.0%	10.0%	10.0%	35.0%	10.0%	10.0%	40.0%	30.0%	80.0%	80.0%	50.0%
Dr Pepper/7UP & Other Cadbury Brands	29.4%	25.7%	24.5%	24.4%	28.5%	30.2%	31.2%	30.8%	42.1%	44.1%	44.3%	44.8%

Source: See, *Beverage Digest* (December 8, 1995), (December 13, 1996), (December 12, 1997), and (December 11, 1998). Beverage Digest's estimate that 10% of Monarch's total volume was aligned with Pepsi-Cola bottlers in 1996 and 1997 seems inconsistent with its lists of Monarch's top 10 bottlers. The latter imply that more than 10% of Monarch's sales volume went through Pepsi-Cola bottlers in those years. Beverage Digest's Monarch figures are the only ones that appear to be rounded to the nearest 10%, which might partly explain this difference.
Note: Brands or brand groups with substantial realignment shifts are denoted in bold.

and Pepsi-Cola bottlers was widespread, but varied considerably by brand.[67] For example, it shows that in 1998 42.5% of Dr Pepper's sales went through franchises aligned with Coca-Cola

[67] Barq's is not shown. It was acquired by the Coca-Cola Company in 1995. Nearly 90% of Barq's volume was franchised by Coca-Cola bottlers at that time.

bottlers, but only 0.9% of 7UP's sales went through franchises aligned with Coca-Cola bottlers. The last row in the table gives the aggregate degree of cross franchising for the collection of brands now controlled by Cadbury. Table III.7 also shows that some dramatic shifts in cross franchising occurred between 1995 and 1998. In particular, some major bottlers in both the Coca-Cola and Pepsi-Cola bottling systems (including CCE and bottlers owned by PepsiCo) voluntarily surrendered franchises of brands owned by Cadbury and other concentrate firms.[68] A&W was among the franchises most impacted by these changes. The percent of its sales going through Coca-Cola and Pepsi-Cola bottlers fell from 60.8% in 1995 to 8.9% in 1998. Some brands had dramatic declines in the Coca-Cola system, but not in the Pepsi-Cola system. For example, 45.3% and 80.8% percent of Sunkist and Welch's sales, respectively, went through Coca-Cola bottlers in 1995. By 1999, their corresponding sales had fallen to 14.2% and 13.9%. Yet, the percent of Sunkist and Welch's sales through Pepsi-Cola bottlers increased somewhat during this time period. In aggregate, franchise realignments have reduced Cadbury's involvement in the Coca-Cola bottling system and increased its brands' shares in the Pepsi-Cola and third bottler systems.

Over a longer time horizon, three changes in the level of cross franchising at the bottling level are noteworthy. First, as shown in Table III.8, most 7UP volume continues to be sold by third bottlers, although the portion of 7UP volume sold by Pepsi-Cola bottlers has increased.

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[68] See, *Beverage Digest* (December 13, 1996 pp. 3-4). Franchise shifts were particularly common in the root beer category. Coca-Cola bottlers commonly took Barq's after the acquisition of Barq's by parent Coca-Cola. PepsiCo was also promoting its own Mug root beer brand. A&W and Dad's (Monarch) were delisted by both Coca-Cola and Pepsi-Cola vertically integrated bottlers. Displaced A&W franchises sometimes displaced Dad's or other root beer CSDs.

Table III.8					
7UP Volume Sold by Third Bottlers, Pepsi Bottlers, and Coke Bottlers					
BOTTLER TYPE		**1985**	**1990**	**1995**	**1998**
Third Bottlers		73.0%	70.0%	61.7%	61.0%
	RC Bottlers	40.0%	53.0%	n.a.	n.a.
	Other	33.0%	17.0%	n.a.	n.a.
Pepsi-Cola Bottlers		20.0%	23.0%	32.6%	38.1%
Coca-Cola Bottlers		7.0%	7.0%	5.7%	0.9%
Notes: The 1985, 1990, 1995, and 1998 data are from *Beverage Digest* (January 21, 1986), (December 14, 1990), (December 8, 1995), and (December 11, 1998), respectively.					

More than one third of 7UP volume went through Pepsi-Cola franchisees in 1998 compared to less than a quarter in 1990 and one fifth in 1985. The continued importance of 7UP in the Pepsi-Cola system reflects, in part, the relatively weak performance of PepsiCo's directly comparable brand, Lemon-Lime Slice, and the lack of a flavor exclusivity conflict between 7UP and PepsiCo's stronger non-cola, citrus flavor brand, Mountain Dew.[69] In contrast, Coca-Cola's lemon-lime Sprite brand has become well established and, consequently, very few Coca-Cola bottlers have 7UP franchises. The Coca-Cola company is aggressively seeking to franchise Sprite in the remaining Coca-Cola/7UP bottlers.[70] As Table III.8 indicates, this campaign

[69] The continued importance of 7UP in the Pepsi-Cola bottling system may be challenged in the future, however. PepsiCo recently expanded its test marketing of a new lemon-lime CSD called Storm (See, *Beverage Digest* (July 17, 1998 pp. 2-3)), and subsequently introduced a diet version of Storm (See, *Beverage Digest* (April 9, 1999 pp. 2-3)).

[70] In fact, Seven-Up sued Coca-Cola in Federal and state courts in 1992 seeking damages for alleged efforts by Coca-Cola to unfairly induce independently owned Coca-Cola bottlers to drop 7UP and take on Sprite. Although the initial Federal Court decision favored Seven-Up and awarded damages of $2.5 million, Coca-Cola won its appeal (See, *Seven-Up Co. v. Coca-Cola Co.*, 86 F.3d 1379 (5th Cir., 1996)).

appears to have been successful, with the share of 7UP volume sold through Coca-Cola bottlers dropping from 5.7% in 1995 to 0.9% in 1998.

Second, as shown in Table III.9, the vast majority of Dr Pepper already was sold by Coca-Cola or Pepsi-Cola bottlers in 1985. By 1995, Coca-Cola and Pepsi-Cola affiliated bottlers accounted for more than three quarters of Dr Pepper sales in the U.S. In part, this occurred because separate Dr Pepper bottlers historically were limited to Dr Pepper "heartland" areas in and around Texas, because Dr Pepper often piggybacked onto Coca-Cola and Pepsi-Cola bottlers when it went national, and because Dr Pepper franchises have shifted from “third” bottlers to Coca-Cola and Pepsi-Cola bottlers. In part, this also may be due to the fact that neither Coca-Cola nor PepsiCo has successfully developed a strong pepper flavor alternative to Dr Pepper. Mr. PiBB, Coca-Cola’s latest entry in the pepper category (after, reportedly, at least two earlier

Table III.9

Dr Pepper Volume
Sold by Third Bottlers, Pepsi Bottlers, and Coke Bottlers

BOTTLER TYPE		**1985**	**1990**	**1995**	**1998**
Third Bottlers		29-31%	27.0%	24.2%	22.5%
	RC Bottlers	n.a.	12.0%	20.1%	n.a.
	Other	n.a.	15.0%	4.1%	n.a.
Pepsi-Cola Bottlers		31-32%	32.0%	34.3%	35.0%
Coca-Cola Bottlers		38-39%	41.0%	41.5%	42.5%

Notes: The 1985, 1990, 1995, and 1998 data are from *Beverage Digest* (February 19, 1986), (December 14, 1990), (December 8, 1995), and (December 11, 1998), respectively.

failures),[71] remains a very small brand, and Dr. Slice, PepsiCo's pepper flavored CSD,[72] has very limited distribution.

Third, as shown in Table III.10, bottlers not carrying Coke or Pepsi brands have consolidated franchises to form third bottlers with more complete lines of product. More third bottlers have been cross-franchising Dr Pepper, 7UP, and RC brands, while fewer third bottlers sell only one or two of these brands. For example, more than four-fifths of the Dr Pepper volume through third bottlers was cross-franchised with Royal Crown in 1995, compared to less than half in 1990.[73]

G. Third Bottler Consolidation

Many third bottlers have grown both by acquiring other third bottlers in the same area and by acquiring third bottlers in other areas. Table III.11 presents concentration data for large Dr Pepper and 7UP bottlers. In 1998, a single bottler (Turner) accounted for more than half of Dr Pepper's volume outside of the Coke and Pepsi franchise systems.[74] The top five third bottlers of 7UP accounted for 84.8% of 7UP's volume outside of the Coke and Pepsi systems in 1998, compared to 64.2% for the top eight third bottlers of 7UP in 1989. The consolidation among

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[71] See, *Beverage Digest* (February 22, 1985).

[72] See, *Beverage Digest* (July 1, 1994).

[73] 83.1% (i.e., 20.1%/24.2%) of Dr Pepper's third bottler sales reportedly were with third bottlers that also sold RC in 1995, compared to 44.4% (i.e., 12.0%/27.0%) in 1990 (See, *Beverage Digest* (December 8, 1995 and December 14, 1990), respectively).

[74] Turner's Dr Pepper Bottling Co. of Texas, with major franchises in Dallas and Houston, accounted for 11.8% of total volume, which was 52.4% (i.e., 11.8%/22.5%) of the Dr Pepper volume outside of the Coke and Pepsi systems.

Table III.10				
Counts of Bottlers with Various Franchise Combinations (not including bottlers with only RC, Coke, or Pepsi Franchises)				
BOTTLER TYPE/COMBINATIONS	**1984**	**1986**	**1988**	**1990**
Third Bottlers			173	166
Dr Pepper only	15	8	8	6
7UP only			43	40
Dr Pepper with RC and 7UP	27	35	32	34
Dr Pepper with RC only	25	15	14	13
7UP with RC only			63	60
Dr Pepper with 7UP only	26	16	13	13
Coca-Cola Bottlers			220	214
Coke with Dr Pepper only	132	147	150	140
Coke with 7UP only			13	14
Coke with Dr Pepper and 7UP	62	55	57	60
Pepsi-Cola Bottlers			233	236
Pepsi with Dr Pepper only	80	82	77	73
Pepsi with 7UP only			65	65
Pepsi with Dr Pepper and 7UP	86	85	91	98
Total Bottlers of Major Brands (excluding RC, Coke, and Pepsi only bottlers)			626	616
Sources: Various concentrate company plant reports and franchising documents.				

third bottlers accelerated in recent years. Brooks and Trebilcock combined in 1995 to form Beverage America, Turner acquired Brodkin's operation in 1997, Cadbury (and the Carlyle Group) formed ABC to acquire Beverage America and Kemmerer's Select Beverages in 1998, and Cadbury (and the Carlyle Group) acquired Turner's business in October, 1999. As

Table III.11		
Large 7UP and Dr Pepper Third Bottlers		
BOTTLERS	**1989**	**1998**
7UP Volume Through All Third Bottlers	71.0%	61.0%
American Bottling Company (ABC)	n.a.	23.4%
Turner (TX)	2.2%	15.4%
Brodkin (CA)	13.9%	*
Brooks (MI, OH,)	8.7%	**
Trebilcock (IA, MO)	3.0%	**
Kemmerer (IL, IN, WI)	8.6%	**
Honickman (NY, VA)	3.3%	5.6%
Easley (CA)	3.7%	4.3%
Browne (OK)	2.2%	3.0%
Large Bottler Subtotal	45.6%	51.7%
Subtotal/Total Third Bottler Volume	64.2% (45.6%/71.0%)	84.8% (51.7%/61.0%)
Dr Pepper Volume Through All Third Bottlers	25.0%	22.5%
Turner (TX)	12.0%	11.8%
American Bottling Company	n.a.	5.5%
Kemmerer (IL, IN, WI)	1.9%	**
Large Bottler Subtotal	13.9%	17.3%
Subtotal/Total Third Bottler Volume	55.6% (13.9%/25.0%)	76.9% (17.3%/22.5%)

* Brodkin's bottling operation was acquired by Turner in March, 1997.
** Trebilcock combined with Brooks in June, 1995 to form Beverage America. ABC, a joint venture formed by Cadbury and the Carlyle Group, acquired Beverage America and Kemmerer's Select Beverages in May, 1998. Cadbury and the Carlyle Group acquired Turner's business in October, 1999, and will combine it with ABC.

Sources and Notes: *Beverage Digest* (December 8, 1989) and (December 11, 1998). 1989 Dr Pepper data are not available for Brooks or Trebilcock.

discussed above, once Turner's Dr Pepper Bottling Company of Texas is combined with ABC, the resulting entity will distribute 24% of Dr Pepper and Seven-Up's combined volume.

H. Concluding Overview

Over the past 15 years, the CSD industry has undergone a transformation. Strong Coca-Cola and Pepsi-Cola bottlers exist in most areas of the country, often formed by consolidating contiguous bottlers. In almost all major metropolitan areas these Coca-Cola and Pepsi-Cola bottlers now are at least partially owned by their respective concentrate companies. In most major metropolitan areas, Dr Pepper now is franchised with either the local Coca-Cola or Pepsi-Cola bottler. Important exceptions are the Dallas and Houston areas, the core of Dr Pepper's heartland. Indeed, a share comparison from Spring 1996 shows the Dr Pepper bottler to be more than twice as large as the PepsiCo bottler in the Dallas/Ft. Worth area.[75] In addition, fewer but larger third bottlers are active in several areas of the country, particularly where they have been able to consolidate franchises of 7UP, RC, Dr Pepper, Canada Dry, and other smaller brands over large territories.

Cadbury has been involved in the most recent structural changes in the CSD industry. By acquiring the Dr Pepper/Seven-Up Companies in 1995, it brought the most popular non-Coca-Cola and non-PepsiCo brands under its ownership. During 1996, Coca-Cola and Pepsi-Cola bottlers abandoned smaller Cadbury franchises in favor of comparable flavor franchises of the parent firms. In 1998, Cadbury reversed its policy and entered into a joint venture to acquire a sizeable equity interest in two of its largest third bottlers. It has acquired similar equity interests in other third bottlers since then.

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[75] According to a recent trade press account, "Beverage Digest Focus on Dallas/Ft. Worth: Coke System #1. Independent #2." (See, *Beverage Digest* (May 17, 1996 p. 6)).

Chapter IV

Alternative Theories of Bottler Transactions, And The Regression Model Used To Test The Theories

The horizontal and vertical consolidations in the CSD industry that are discussed in Chapters II and III raise the potential for anticompetitive effects in local CSD markets. These transactions could also generate efficiencies that reduce CSD prices. In what follows, we outline various conceptual models that underlie our empirical model which examines the impacts of these structural changes on CSD price and per capita volume levels.

A. Conceptual Considerations and Major Hypotheses

The empirical model described in the following section derives from various conceptual models that account for the impacts on CSD price and per capita volume levels of each of the following: (1) structural changes that include horizontal consolidation of CSD franchises at the bottling level, and vertical integration by parent companies into soft drink bottling; (2) demand and supply factors at both the consumer and bottling levels of the industry, such as consumer income and distribution cost measures, respectively; and (3) variables measuring key market structure features at the bottling level, such as buyer concentration and the capacity share of the largest bottler. We assume that all demand side variables (e.g., income and temperature measures) are exogenous, and that soft drink bottlers, which are subject to bottling capacity constraints, are price takers in the various markets for CSD inputs, including production and distribution labor markets. However, in light of the alternative hypotheses relating to structural

changes and key market structure variables, we do not necessarily restrict either bottlers or major grocery retailers to price taking behavior in local CSD markets. In what follows, we summarize the major conceptual considerations underlying the empirical model.

This analysis focuses on three types of structural events: (1) acquisitions by leading CSD bottlers of competing bottler franchises (i.e., Coca-Cola or Pepsi-Cola bottler acquisitions of Dr Pepper and/or 7UP franchises), (2), vertical integration by the Coca-Cola Company and/or PepsiCo, and (3) franchise consolidations by third bottlers. Other control variables are included in the regression model described below because they also are expected to affect CSD prices and per capita volumes. These control variables are identified in Table IV.1 (along with the key policy event variables) and are described and discussed in Appendices B, C, and D. Nevertheless, we focus our analysis on these three types of structural events because they may have policy implications for antitrust authorities.

Table IV.1

Definitions, Coefficients, and Expected Signs of the Variables

Variable Names	Descriptions of the Variables	Coefficients and Their Expected Signs in the Price Regressions		Coefficients and Their Expected Signs in the Per Capita Volume Regressions	
Dependent Variables					
FP	price in dollars per 100 oz. case	N/A	N/A	N/A	N/A
FV	volume in per capita 100 oz. cases	N/A	N/A	N/A	N/A
Event Variables					
TB	horizontal acquisition of a large 7UP or Dr Pepper franchise (i.e., a franchise with at least a 5% share) by a Coca-Cola or Pepsi-Cola bottler in the same area (dummy)	$a1_1$	+	$a2_1$	-
TS	horizontal acquisition of a small 7UP or Dr Pepper franchise (i.e., a franchise with a share below 5%) by a Coca-Cola or Pepsi-Cola bottler in the same area (dummy)	$a1_2$	+	$a2_2$	-
VX	full vertical integration of both Coca-Cola and Pepsi-Cola local bottlers (dummy)	$a1_3$	-	$a2_3$	+
VZ	full vertical integration of either or both major bottlers (dummy)	$a1_3$	-	$a2_3$	+
VAX	full or partial vertical integration of both major bottlers (dummy)	$a1_3$	-	$a2_3$	+
VAZ	full or partial vertical integration of either or both major bottlers (dummy)	$a1_3$	-	$a2_3$	+
CB	acquisition (consolidation) of a large third bottler franchise (i.e., a franchise with at least a 3.5% share) by another third bottler in the same area (dummy)	$a1_4$	-	$a2_4$	+

Table IV.1 (continued)

Definitions, Coefficients, and Expected Signs of the Variables

Variable Names	Descriptions of the Variables	Coefficients and Their Expected Signs in the Price Regressions		Coefficients and Their Expected Signs in the Per Capita Volume Regressions	
Event Variables (continued)					
CS	acquisition (consolidation) of a small third bottler franchise (i.e., a franchise with a share below 3.5%) by another third bottler in the same area (dummy)	$a1_5$	-	$a2_5$	+
MNG	management change unrelated to vertical, horizontal, or consolidation events (dummy)	$a1_6$	+/-	$a2_6$	+/-
FIX	period of price fixing (dummy)	$a1_7$	+	$a2_7$	-
Demand and Supply Variables					
TEMPA	average high temperature for the observation period in the area minus the area yearly average high temperature when the average high for the period exceeds the yearly average, otherwise 0	$ß1_1$	+	$ß2_1$	+
TEMP	average high temperature for the observation period in the area	$ß1_2$	+	$ß2_2$	+
TIME	number of the observation period for the area	$ß1_3$	-	$ß2_3$	+
TIMESQR	square of the number of the observation period for the area	$ß1_4$	+/-	$ß2_4$	+/-
POP	area population (hundred thousands)	$ß1_5$	+/-	$ß2_5$	+/-
INCOME	per capita disposable income for the area in thousands of dollars	$ß1_6$	+	$ß2_6$	+
COL	cost of living index for the area	$ß1_7$	+	$ß2_7$	-
WAGE	mean per employee production and distribution wage for CSD bottling plants in the area in thousands of dollars	$ß1_8$	+	$ß2_8$	-

Table IV.1 (continued)

Definitions, Coefficients, and Expected Signs of the Variables

Variable Names	Descriptions of the Variables	Coefficients and Their Expected Signs in the Price Regressions		Coefficients and Their Expected Signs in the Per Capita Volume Regressions	
Demand and Supply Variables (continued)					
PLASTICS	the percent of total CSD packaged volume sold in plastic containers in the area	$ß1_9$	-	$ß2_9$	+
P-SYRUP	price index for CSD syrup base	$ß1_{10}$	+	$ß2_{10}$	-
P-CORN	price index for corn syrup sweetener	$ß1_{11}$	+	$ß2_{11}$	-
P-PLASTIC	price index for plastic bottles	$ß1_{12}$	+	$ß2_{12}$	-
P-ALUM	price index for aluminum cans	$ß1_{13}$	+	$ß2_{13}$	-
P-PET	price index for petroleum products	$ß1_{14}$	+	$ß2_{14}$	-
DCOST	index of distribution cost economies proxied by the area's ratio of population to retail grocery food outlets	$ß1_{15}$	-	$ß2_{15}$	+
C	Christmas observation period (dummy)	$ß1_{16}$	-	$ß2_{16}$	+
E	Easter observation period (dummy)	$ß1_{17}$	-	$ß2_{17}$	+
M	Memorial Day observation period (dummy)	$ß1_{18}$	-	$ß2_{18}$	+
J	July 4th observation period (dummy)	$ß1_{19}$	-	$ß2_{19}$	+
L	Labor Day observation period (dummy)	$ß1_{20}$	-	$ß2_{20}$	+
T	Thanksgiving observation period (dummy)	$ß1_{21}$	-	$ß2_{21}$	+
NCOKE	introduction of the new formulation of brand Coca-Cola and discontinuation of the traditional formulation (dummy)	$ß1_{22}$	+/-	$ß2_{22}$	+/-
AD	annual national advertising by CSD concentrate firms in hundreds of million dollars	$ß1_{23}$	+	$ß2_{23}$	+
C-HEART	Coca-Cola heartland areas (dummy)	$ß1_{24}$	+	$ß2_{24}$	+

Table IV.1 (continued)

Definitions, Coefficients, and Expected Signs of the Variables

Variable Names	Descriptions of the Variables	Coefficients and Their Expected Signs in the Price Regressions		Coefficients and Their Expected Signs in the Per Capita Volume Regressions	
Demand and Supply Variables (continued)					
P-HEART	Pepsi-Cola heartland areas (dummy)	ß1_{25}	+	ß2_{25}	+
SV-HEART	7UP heartland areas (dummy)	ß1_{26}	+	ß2_{26}	+
DP-HEART	Dr Pepper heartland areas (dummy)	ß1_{27}	+	ß2_{27}	+
RC-HEART	Royal Crown heartland areas (dummy)	ß1_{28}	+	ß2_{28}	+
Structural Variables					
RDUMMY	area with significant regional brand (dummy)	?1_1	-	?2_1	+/-
B-THIRD	big third bottler with share regularly over 15% (dummy)	?1_2	-	?2_2	+
S-THIRD	small third bottler with share regularly over 5%, but less than 15% (dummy)	?1_3	+/-	?2_3	+/-
BIG-3RDC	production capacity of the largest third bottler in the area in thousands of 100 oz. cases	?1_4	-	?2_4	+
BIG-BTCS	production capacity share of the largest bottler in the area	?1_5	+	?2_5	-
BIG-BTC	production capacity of the largest bottler in the area in thousands of 100 oz. cases	?1_6	-	?2_6	+
BIG-3RDCS	largest third bottler's share of total third bottler capacity in the area	?1_7	-	?2_7	+
FHHI	index of retail grocery concentration in the area	?1_8	+/-	?2_8	+/-

Note: As discussed below, we use four different vertical integration variables. We use the same notation for the coefficients of each of the vertical integration variables because these variables each enter the regression equation separately. The entries for the vertical integration variables that do not assume control by both the Coca-Cola Company and PepsiCo are indented to emphasize this point. Where we have no prior expectation about the impact of a variable, we enter +/- in the "expected sign" cell.

1. Alternative Theories of Franchise Acquisitions by Leading CSD Bottlers

Both the vertical and horizontal merger literature are relevant to Coca-Cola or Pepsi-Cola bottler acquisitions of Dr Pepper or 7UP franchises. In this section we describe first the vertical and then the horizontal aspects of these acquisitions. We conclude that anticompetitive horizontal aspects are likely to predominate, but acknowledge that efficiencies may also accompany these transactions.

One might argue that third bottler franchise transfers to Coca-Cola or Pepsi-Cola bottlers are vertical transactions that occur when parent companies move franchises from one bottler to another.[76] In fact, in its recent decision concerning the transfer of a Dr Pepper franchise to a Coca-Cola bottler, the Fifth Circuit (unlike the FTC) characterized this transfer as a "predominantly vertical transaction."[77] Given parent Dr Pepper's and parent Seven-Up's

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[76] Acquisitions of Dr Pepper and 7UP franchises by Coca-Cola or Pepsi-Cola bottlers are usually initiated by retiring owners of third bottlers and not by the parent Dr Pepper or Seven-Up companies. In fact, because of the perpetual nature of bottling franchise agreements in the U.S., concentrate companies have little or no ability to force franchise transfers. The only exceptions are for egregious violations of transshipment, sanitation, anti-adulteration, and "best-efforts" provisions of franchise agreements. These are extremely rare. At the same time, if franchises are transferred from inefficient to efficient bottlers, then both of these bottlers, as well as the parent company of the transferring franchise, could be better off because of the transfer. By sharing in the cost-saving efficiencies arising from such transfers, it may not be necessary to compel any of the parties to undertake these franchise transfers.

[77] See, *Coca-Cola Bottling Co. of the Southwest v. FTC*, 85 F.3d 1139 (5th Cir. 1996). However, the Fifth Circuit qualified its view that this transaction was predominantly vertical by stressing that "[w]e hold only that the Soft Drink Act [which sanctioned exclusive CSD territories] applies in a case such as this one in which the manufacturer sells its wholly-owned bottling subsidiary and then enters the downstream market by licensing an independent distributor for the first time. We leave open the possibility that the FTC may challenge a bottler's acquisition of licenses held by a competing independent bottler, particularly where such a transfer did not flow from a manufacturer's independent desire to appoint a new distributor [emphasis added]."

incentives to increase their concentrate sales to bottlers, the parent firms' involvement or acquiescence in these transfers raises the possibility that these transfers create efficiencies at the bottling level that reduce costs and expand volume.[78] For example, when Dr Pepper is franchised by the Coca-Cola or Pepsi-Cola bottler, it might be produced in a larger scale plant at lower costs than a small third bottler could obtain. Distribution and marketing efficiencies might similarly be realized in franchising Dr Pepper with a larger bottler. Such efficiency gains in bottling, if passed on, could reduce wholesale and retail CSD prices and enhance Dr Pepper's concentrate sales.

However, Coca-Cola and Pepsi-Cola bottler acquisitions of 7UP and Dr Pepper franchises also may be viewed as horizontal transactions that change concentration among bottlers in local CSD markets.[79] Such transactions are potentially anticompetitive because they may increase the likelihood that Coca-Cola and/or Pepsi-Cola bottlers could either unilaterally or jointly exercise market power.[80] Unilateral anticompetitive effects could arise from these franchise acquisitions if the brands of the merging parties are close substitutes for one another, and if they are differentiated from other CSD brands in the market. The likelihood of coordinated interaction increases with these acquisitions in light of other characteristics of CSD

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[78] Franchise agreements require bottlers to obtain the permission of the parent firm before selling the franchise to another bottler or substantially changing the ownership structure of the bottler.

[79] In *Coca-Cola Bottling Co. of the Southwest*, 118 F.T.C. 452 (1994), the FTC considered such transactions to be horizontal in nature, and rejected respondent's contention that they were vertical.

[80] For a discussion of unilateral and collusive theories of horizontal mergers, see U.S. Department of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines*, §2, issued April 2, 1992, revised April 8, 1997. For discussions of these theories in the context of the CSD industry, see Muris, Scheffman, and Spiller (1993 pp. 137-39).

bottling, including: (1) relatively low elasticity of demand for CSDs at a whole; (2) the small number of competitors in local bottling markets;[81] (3) the difficulty of effective entry; and (4) the ready availability of pricing and promotional information to monitor and police price coordination agreements.[82] Overall, these market characteristics and structural changes are often consistent with a concern about increased market power stemming from such acquisitions. As explained below, the potential anticompetitive effects are perhaps most pronounced when a third bottler is eliminated as a result of these transactions, commonly reducing the number of competitors from three to two, or from four to three. Heightened concern about potential coordinated interaction as a result of a third bottler's elimination is supported by the many price-fixing cases involving franchised bottlers discussed in Chapter II. However, even when Coca-Cola and Pepsi-Cola bottler acquisitions of 7UP and Dr Pepper franchises leave a residual, smaller third bottler,[83] anticompetitive effects may occur.

An important consideration in evaluating the anticompetitive theories of such transfers is

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[81] The competitive significance of strong third bottlers is discussed below.

[82] These and other factors are discussed in the *Horizontal Merger Guidelines*, §2. It should also be noted that the Commission considered these factors in *Coca-Cola Bottling Co. of the Southwest*, 118 F.T.C. 452 (1994) and rejected the argument that various other factors (e.g., differing bottler sizes) make collusion less likely to occur. As discussed in Chapter II, the CSD bottler collusion cases included a wide variety of ownership and structural market characteristics.

[83] For example, if the owner of a third bottler with 7UP, Dr Pepper, and RC franchises wants to leave the business, and sells the Dr Pepper and 7UP franchises to the local Pepsi-Cola bottler, the flavor exclusivity clause in the Pepsi-Cola bottling contract precludes the acquiring bottler from buying the RC Cola franchise. As a result, the RC Cola franchise would have to be sold to someone else and would continue to operate as a residual third bottler. Similarly, a Coca-Cola bottler might acquire only the Dr Pepper franchise from a retiring third bottler with franchises for both Dr Pepper and 7UP (because of a flavor conflict between 7UP and Coca-Cola's Sprite). In this case, the retiring bottler would need to sell the 7UP franchise to another party in order to leave the industry. The new owner would operate the 7UP franchise as a residual third bottler.

that the Dr Pepper and Seven-Up parent companies have veto power over such transfers. Parent companies might be expected to oppose downstream cartels or unilateral bottler market power because either is likely to reduce concentrate sales in that area. Hence, any anticompetitive explanation for acquisitions of Dr Pepper or 7UP franchises by Coca-Cola or Pepsi-Cola bottlers must indicate how parent Dr Pepper and Seven-Up will benefit from the acquisition relative to the next best alternative available to them.[84]

a. Unilateral Market Power Effects

Under a unilateral market power theory, acquisition of the local Dr Pepper or 7UP franchise could be attractive to the local Coca-Cola or Pepsi-Cola bottler because it creates a dominant firm or otherwise leads to unilateral anticompetitive effects. For example, franchise transfers may enable the acquiring bottler to raise prices profitably since it is able to internalize some of the lost sales that would have occurred before the acquisition had it raised prices unilaterally. These transfers also may lead to dominant firm behavior by reducing the ability of the selling bottler to compete effectively after the acquisition. Reductions in the selling bottler's brand line-up and associated volume diminish its ability to take advantage of economies of scale and scope.[85]

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[84] With few entry opportunities for new bottlers, the parent company's next best alternative as a bottler may not be as attractive as the Coca-Cola or Pepsi-Cola bottler, even if the transfer is likely to create bottler market power.

[85] A Coca-Cola bottler, for example, will only be able to raise prices unilaterally after acquiring a third bottler's franchises, if its competing Pepsi-Cola bottler is unable to defeat such pricing. This may be the case, for example, if the Pepsi-Cola bottler's brands are not as close substitutes for the acquired brands as the Coca-Cola bottler's brands are (which would seem to be the case when Dr Pepper and 7UP brands are involved, as explained below), or if the Pepsi-Cola bottler faces production, distribution, or marketing constraints.

Why would parent Dr Pepper or Seven-Up approve a transfer that results in the creation of unilateral market power at the bottler level?[86] Aside from potentially sharing in these monopoly rents as discussed under the coordinated behavior theory below, these transfers could increase the sales of Dr Pepper or Seven-Up products. Since Coca-Cola and Pepsi-Cola bottlers typically have wider distribution than third bottlers, and tend to advertise their CSDs more frequently than third bottlers, Dr Pepper or Seven-Up sales could increase if their franchises switch from smaller third bottlers to larger Coca-Cola or Pepsi-Cola bottlers. For example, such franchise transfers may give Dr Pepper or Seven-Up access to many more vending machines and grocery and fountain accounts than third bottlers may have. Similarly, piggybacking onto Coca-Cola or Pepsi-Cola bottlers may enable Dr Pepper or Seven-Up CSDs to be featured more frequently in retail grocery stores.

Unique circumstances in the CSD industry may further increase Dr Pepper or Seven-Up sales when Coca-Cola or Pepsi-Cola bottlers acquire their franchises, providing even more of an incentive for parent Dr Pepper or Seven-Up to approve of such transactions. The flavor exclusivity clauses in bottler contracts prevent a single bottler from owning two major franchises for the same flavor. As a result, for example, when a Coca-Cola bottler acquires the Dr Pepper

[86] While unilateral market power at the bottler level could be created by the transfer of Dr Pepper or 7UP franchises to Coca-Cola or Pepsi-Cola bottlers, there could be an offsetting elimination of unilateral market power formerly held by the third bottler. To the extent that these offsetting effects are equivalent, the parent firms would be expected to be indifferent to the unilateral market power effects of the transfer. In practice, however, unilateral market power held by third bottlers seems unlikely to be as large as that held by Coca-Cola or Pepsi-Cola bottlers because third bottlers typically are the smallest bottlers in a given market, and the Dr Pepper and 7UP brands they may carry typically are not as close substitutes for the third bottler's other CSD brands as they are for the brands sold by the competing Coca-Cola or Pepsi-Cola bottlers.

franchise in its area, Mr. PiBB (Coca-Cola's pepper flavor CSD) exits the area, if it had been sold there previously. This happens because parent Coca-Cola appears to be unwilling to franchise multiple bottlers within the same local area. Hence, parent Dr Pepper may find it attractive to approve franchise transfers to Coca-Cola bottlers because this has the effect of eliminating arguably the closest substitute for Dr Pepper (Dr. Slice, PepsiCo's pepper flavored CSD, has very limited distribution), even if the Coca-Cola bottler acquires market power in the process. Dr Pepper sales are likely to increase, ceteris paribus, as demand for Mr. PiBB switches predominantly to Dr Pepper, even if total per capita volume for the Coca-Cola bottler declines.[87] Similar displacement effects would arise between the 7UP brand and Coca-Cola's Sprite or PepsiCo's Lemon-Lime Slice if 7UP were the brand transferred rather than Dr Pepper.[88] If exit of a close substitute brand results from a franchise transfer, parent Dr Pepper and/or Seven-Up may have an incentive to approve the acquisition even if their concentrate prices remain unchanged.

This suggests that if all else is equal, parent Dr Pepper would have less incentive to transfer Dr Pepper franchises, for example, to Pepsi-Cola bottlers since this would not displace Mr. PiBB. Mr. PiBB, however, is not available in all local areas, raising the possibility that

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[87] In *Coca-Cola Bottling Co. of the Southwest*, 118 F.T.C. 452, 609 (1994), the FTC was concerned that the transfer of Dr Pepper to the Coca-Cola bottler eliminated competition between Dr Pepper and Mr. PiBB in the local area.

[88] The displacement effects likely would be greater if Sprite were involved than if Lemon-Lime Slice were involved because Sprite's CSD sales are much larger than Lemon-Lime Slice's CSD sales. Since RC Cola is often the primary residual brand in the acquisitions of Dr Pepper and 7UP franchises by Coca-Cola and Pepsi-Cola bottlers, extensive transfers of these types may weaken Royal Crown to the point that it is a less effective constraint on concentrate pricing of Coca-Cola and PepsiCo.

parent Dr Pepper would transfer its franchises to either Pepsi-Cola or Coca-Cola bottlers in these areas. Further, since the same parent company owns the Dr Pepper and 7UP brands, it might find it more profitable to diversify franchise offerings by transferring Dr Pepper franchises to Pepsi-Cola bottlers in local areas where Coca-Cola bottlers distribute 7UP, even though Mr. PiBB would remain in the market. Thus, displacement of brands is not the sole motivating factor behind parent Dr Pepper/Seven-Up franchising of its brands to Coca-Cola and Pepsi-Cola bottlers.

Even if these franchise transfers lead to volume increases for Dr Pepper or Seven-Up, this does not necessarily mean that overall market volume would increase as a result. To the contrary, overall market volume may fall while overall market prices rise, at the same time that the transferred franchise's sales increase. For example, with the area's Coca-Cola bottler acquiring Dr Pepper, the per capita volume of Coca-Cola brands could fall as the acquiring bottler internalizes sales losses that would have occurred pre-acquisition if Coca-Cola prices had been raised unilaterally. Since Coca-Cola brands typically have much larger sales than Dr Pepper brands, the overall effect may be a reduction in the bottler's volume. The Coca-Cola bottler's incentive to raise prices will be strongest in areas where Dr Pepper and Coca-Cola CSDs are particularly close substitutes.

Both parent Coca-Cola and parent Dr Pepper would experience lower concentrate sales if the acquiring bottler unilaterally increased its CSD prices, ceteris paribus. At the same time, the above discussion explains how parent Dr Pepper's sales may increase as a result of the franchise transfer, while parent Coca-Cola's sales may decline. Thus, parent Dr Pepper may benefit from such transactions, while parent Coca-Cola may be adversely affected by them.

b. Coordinated Interaction Market Power Effects

Following traditional industrial organization theory, coordinated interaction between competitors is more likely if an acquisition eliminates a substantial competitor. With fewer participants in the market, it is likely to be easier to reach, monitor, and enforce anticompetitive agreements. Further, the lost competitor could be a maverick firm.[89] Just as the presence of a significant third bottler may enhance competition (discussed below), the elimination of such a third bottler may facilitate coordinated interaction.

A similar increase in the risk of coordinated interaction may occur if an acquisition significantly weakens a competitor, even if the firm remains in the market.[90] Increased concentration is traditionally associated with increased risk of coordinated interaction, even if the number of firms remains the same after an acquisition. A weakened competitor may be unable to discipline the remaining competitors or a natural market leader may emerge from the shift in market structure. The residual third bottler, for example, is likely to face higher operating costs and may be a less effective competitor than its predecessor because of reduced scale economies

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[89] As the *Horizontal Merger Guidelines* state: "In some circumstances, coordinated interaction can be effectively prevented or limited by maverick firms -- firms that have a greater economic incentive to deviate from terms of coordination than do most of their rivals (e.g., firms that are unusually disruptive and competitive influences in the market). Consequently, acquisition of a maverick firm is one way in which a merger may make coordinated interaction more likely, more successful, or more complete." (See, *Horizontal Merger Guidelines*, §2.12). See, also, FTC Staff Report to the Congressional Task Force on Tobacco and Health entitled *Competition and the Financial Impact of the Proposed Tobacco Industry Settlement* (1997).

[90] Since the residual third bottler's operating costs (marginal and average) may be higher, the purchase price for such a franchise (or groups of franchises) should be lower than it would have been if all franchises of the pre-acquisition third bottler had been sold together. Conversely, the price of the Dr Pepper and/or 7UP franchise(s) sold by the retiring third bottler to the Coca-Cola or Pepsi-Cola bottler should be higher in order to compensate for the lower price of the residual franchises. The lower purchase price for the residual franchises presumably balances the lower expected rate of return effects of higher operating costs.

in the production, distribution, and promotion of the remaining CSD brands. Further, with a reduced brand line-up, the residual third bottler could find it more difficult to obtain features in retail grocery stores.[91] Under these theories, horizontal franchise transfers to leading CSD bottlers may raise prices and reduce volume levels through coordinated behavior by the remaining major bottlers.

Why might parent Dr Pepper or Seven-Up approve a franchise acquisition that results in coordinated interaction at the bottler level? Parent Dr Pepper or Seven-Up company incentives and bottler incentives to create market power at the bottler level might be compatible with each other if the parent firms can share the enhanced economic profits from any anticompetitive effects following a franchise transfer at the bottling level. In addition to the reasons given in our unilateral effects discussion above, parent companies may share the economic rents from the downstream exercise of market power by altering the amount of marketing and promotional support they provide to their affiliated bottlers.[92] In particular, in addition to supplying concentrate flavors to local area bottlers, parent companies provide them with different forms of marketing and promotional support. These range from monies for cooperative advertising to specialized funds for local promotional campaigns. Parent companies may be able to mitigate

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[91] Note that the loss in the breadth of the brand line-up of the third bottler is not necessarily offset by an increase in the breadth of the brand line-up of the acquiring Coca-Cola or Pepsi-Cola bottler. For example, when a Coca-Cola bottler acquires the local Dr Pepper franchise, the third bottler likely is left without a brand in the pepper category while the Coca-Cola bottler may simply displace Mr. PiBB with Dr Pepper, and Mr. PiBB exits the area.

[92] Rent sharing would not involve any increase in the nominal price of concentrate since the exercise of market power by downstream bottlers would reduce the demand for concentrate. At the same time, since purchases of concentrate by local area bottlers account for a small fraction of national concentrate sales, any reduction in local area demand is unlikely to significantly reduce the price of concentrate.

adverse effects on their profits associated with any acquisition-related price coordination among CSD bottlers by reducing the amount of such support that they provide to such bottlers.

To illustrate how parent companies might share in the economic rents from the exercise of franchise acquisition-related market power by downstream bottlers, assume parent Coca-Cola provides its affiliated Bottler A with $\$X_1$ per year in cooperative advertising monies and parent Dr Pepper provides its affiliated Bottler C with $\$Y_1$ per year in marketing support for the Dr Pepper brand. Assume Bottler A acquires the Dr Pepper franchise from Bottler C, causing the exit of Bottler C from the market. Bottlers A and B, the only two remaining local area bottlers, coordinate their conduct following this franchise acquisition, and engage in less promotional activity in their local area. To share in the economic rents from price coordination involving Bottlers A and B, Coca-Cola now provides Bottler A with $\$X_2 < \$X_1$ in advertising support and parent Dr Pepper provides Bottler A with $\$Y_2 < \$Y_1$ in marketing support. Consequently, these parent companies earn additional profit, assuming these differentials in marketing support are not offset by profit losses from reductions in concentrate sales brought about by the downstream collusion between Bottlers A and B. This form of rent sharing is possible in the CSD industry, particularly since it is common for concentrate companies to provide more (less) marketing and promotional support to downstream bottlers that face more (less) competition from rival local area CSD bottlers. In fact, findings in the FTC's case against the Coca-Cola Company indicate that parent companies base the amount of marketing and promotional support to their bottlers on several factors, including: (1) competitive conditions facing bottlers in local areas; (2) the amount of support competing parent companies provide to their bottlers; and (3) the ability of bottlers to expand their market shares in competition with other bottlers. For example, testimony

by Coca-Cola and parent Dr Pepper executives supported a finding that "Local competitive conditions help determine the extent to which an area will be targeted by a concentrate firm for marketing support ...."[93] Similarly, PepsiCo documents indicated that it targets local areas for special support or lack of support for its affiliated bottlers.[94] These facts raise the possibility that parent companies are unilaterally able to alter levels of financial support, i.e., rebates and discounts, to their affiliated bottlers as a means of sharing economic rents from anticompetitive conduct by downstream CSD bottlers.

In light of these considerations, we apply our empirical model to test the hypothesis that horizontal franchise transfers to leading local area bottlers cause anticompetitive effects, acknowledging that these effects may be diluted by vertical efficiency or other pro-competitive effects.

2. Alternative Theories of Vertical Integration

As described in Chapters II and III, significant vertical integration has occurred in the CSD industry by the Coca-Cola Company and PepsiCo. These parent companies have made substantial investments in their bottling operations throughout the period of our sample. On the one hand, vertical integration by these parent companies raises the possibility that the Coca-Cola Company and PepsiCo would restrict competition from upstream competitors like Cadbury (or

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[93] See, *In the Matter of The Coca-Cola Co.*, Complaint Counsel's Proposed Findings of Fact, Conclusions of Law, and Order, Volume II, Finding No. 827, FTC Docket No. 9207, (August 6, 1990).

[94] For more complete information on these and other findings, documents, and testimony relating to the marketing and promotional support parent companies provide to their affiliated CSD bottlers, see, *In the Matter of The Coca-Cola Co.*, Complaint Counsel's Proposed Findings of Fact, Conclusions of Law, and Order, Volume II, FTC Docket No. 9207, (August 6, 1990).

potential new entrants) by denying them access to the Coca-Cola Company and PepsiCo bottling distribution systems. That would force these concentrate competitors to use less efficient, more costly means of distributing their CSD brands.[95] Cadbury's recent experience with it's A&W root beer brand illustrates this possibility. As discussed in Chapter III, Coca-Cola and Pepsi-Cola bottlers recently dropped A&W in favor of Coca-Cola Company and PepsiCo root beer brands (Barq's and Mug, respectively). Cadbury, therefore, placed A&W with third bottlers that often are smaller and less efficient than the bottlers it left, which resulted in reduced A&W sales.[96] Under some circumstances, conduct that raises one's rival's costs could raise market prices and reduce market volume. For example, if Cadbury were the Coca-Cola Company's and PepsiCo's only significant competitor, entry were difficult, and foreclosure of Cadbury's brands raised Cadbury's costs significantly, then the Coca-Cola Company and PepsiCo may be able to coordinate a reduction in their competitive activities (e.g., raise prices or reduce marketing efforts) because Cadbury would be a weaker (i.e., higher cost) competitive constraint.[97]

Vertical integration also may enhance collusion among concentrate competitors by reducing the likelihood that aggressive independent bottlers, whose incentives might differ from

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[95] For conceptual discussions of these cost-raising strategies, see Krattenmaker and Salop (1986), Nelson (1957), and Salop and Scheffman (1983 and 1987). For more recent treatments, see Hart and Tirole (1990), Ordover, Saloner and Salop (1990), and Salinger (1988).

[96] See, *1999 Beverage Digest Fact Book* p. 93. When PepsiCo began test marketing its new Storm lemon-lime CSD in March, 1998, some people speculated that PepsiCo would drop Cadbury's 7UP brand if Storm succeeded. Although PepsiCo has introduced a diet version of Storm since then, a recent multi-year agreement between PepsiCo and Cadbury seems to prevent PepsiCo from dropping 7UP, at least in the short run. As of May, 1999, no Pepsi-Cola bottler had dropped 7UP for Storm. See, *Beverage Digest* (December 11, 1998 p.1) and (May 14, 1999 p. 2).

[97] For critiques of these models, see Reiffen (1992) and Reiffen and Vita (1995).

those of the parent companies, would act contrary to a tacit agreement to coordinate upstream prices.[98] For example, even without foreclosure, a parent-owned Coca-Cola bottler may have less incentive to market Cadbury's Dr Pepper brand aggressively than an independent Coca-Cola bottler (if all else is held constant). Similarly, a parent-owned Pepsi-Cola bottler may have incentives to promote Cadbury's 7UP brand less vigorously than an independent Pepsi-Cola bottler (if all else is held constant). Such parent-owned bottlers presumably are more concerned about potential adverse effects that their marketing of Cadbury's brands would have on their major cola brands than independent bottlers. That is because those effects directly impact vertically integrated CSD companies both at the concentrate and bottler levels, while they only directly impact independent bottlers at the bottler level. By promoting Cadbury's brands aggressively, independent Coca-Cola and Pepsi-Cola bottlers might thwart efforts by the Coca-Cola Company and PepsiCo to coordinate their upstream prices. Vertical integration may remove or reduce this competitive constraint.

On the other hand, vertical integration could result in any number of efficiencies, including: (1) the elimination of the so-called "double marginalization" problem;[99] and (2) the elimination of inefficiencies in parent company/bottler contractual and other relationships. For instance, with respect to double marginalization, if CSD bottlers exert downstream market power causing CSD prices to exceed marginal costs, then upstream concentrate volume declines as a

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[98] See, Muris, Scheffman, and Spiller (1993 pp. 137-39). These authors also suggest that similar collusion at the bottler level is possible with vertical integration by the parent companies. See, also, Bernheim and Whinston (1985) for a discussion of how bottlers might serve to facilitate collusion among competing parent companies.

[99] For discussions of this problem, see Spengler (1950) and Machlup and Taber (1960).

result. This may lower the combined profits of bottlers and their parent companies, and cause higher CSD prices in downstream markets. Vertical integration raises output and increases the joint profits of upstream and downstream firms.[100] Vertical integration by parent companies into bottling operations subject to the price-fixing conspiracies discussed in Chapter II raises the possibility that these parent companies made efforts to address a double marginalization problem.

Moreover, others argue that, owing to the frequency, complexity, and specific investments made in parent company/bottler relationships, vertical integration allows these parties to economize on transaction costs and to avoid opportunism.[101] Further, vertical integration may also facilitate the consolidation of nearby bottling territories, enabling integrated parent companies to better align CSD franchise territories to correspond with "areas of dominant influence" in advertising and chain store trading areas. This could enable bottlers to realize additional scale economies in production, as well as efficiencies in distribution and promotion of CSDs.[102] Vertical integration could also make it less costly for parent companies to coordinate the introduction of new products, such as the diet and caffeine-free cola flavors launched during our sample period. These, as well as other considerations, suggest that vertical integration would lower CSD prices and raise CSD per capita volume levels, other factors constant. Consequently,

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[100] In addition to vertical integration, other solutions to the double marginalization problem exist. For example, two-part pricing by parent companies could resolve this problem, but this method could be difficult to impose or sustain. For a discussion of these issues, see, Blair and Kaserman (1983) and Tirole (1988).

[101] See, Muris, Scheffman, and Spiller (1993).

[102] Economies of scale and/or scope may be realized even when a parent company acquires bottlers that are not in the same advertising and chain store trading areas. The larger volume, for example, may generate saving from the purchase of various inputs.

we test the efficiency hypothesis by applying the empirical model developed below.

3. Franchise Consolidations by Third Bottlers

Sometimes, third bottler franchises are sold to another third bottler in the area, rather than to the area's Coca-Cola or Pepsi-Cola bottler. We apply the literature on the competitive effects of additional competitors to test the hypothesis that sizeable third bottlers resulting from such transactions act as competitive constraints in local areas.[103] At the same time, we recognize that third bottler consolidations (i.e., franchise transfers not involving either of the two leading local area bottlers) may eliminate a rival bottler and potentially lead to additional symmetry among the remaining bottlers. This could increase the likelihood of coordinated interaction.[104]

Often, consolidations among third bottlers may be viewed as creating a significant new third competitor to the larger local area bottlers, typically Coca-Cola and Pepsi-Cola bottlers. Our experience suggests that such consolidations afford third bottlers more efficient scales of operation at the production, distribution, and promotional levels, and could increase the overall quality of their product lines by adding potentially valuable franchises to their brand lineups.[105] Limited access to feature and promotional activity in the retail grocery segment is one of the difficulties relatively small third bottlers face in competing with larger area bottlers.

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[103] For example, Bresnahan and Reiss (1991) find evidence indicating that much of the variation in competitive conduct in markets with five or fewer firms is explained by the entry of the second or third firm. For earlier discussions of the impacts of market structure on pricing, see, Kwoka (1979) and Kwoka and Ravenscraft (1986).

[104] For a discussion of factors conducive to the formation and operation of a price coordination agreement, see, *Horizontal Merger Guidelines*, §2.

[105] For a discussion of the competitive importance of a broad line-up of CSD brands, see, *Coca-Cola Bottling Co. of the Southwest*, 118 F.T.C. 452 (1994).

Consolidations may enable third bottlers to overcome this handicap and compete more effectively against their Coca-Cola and Pepsi-Cola bottler competitors. We, therefore, consider the hypothesis that these consolidations are procompetitive.[106]

4. Summary of Conceptual Considerations

The discussion above presents alternative models of the competitive effects of horizontal and vertical consolidation in the CSD industry. Although alternative theories exist, the discussion suggests that (1) horizontal consolidation of third bottler franchises into the Coca-Cola and Pepsi-Cola bottling systems is anticompetitive, (2) vertical integration is procompetitive, and (3) horizontal consolidation between and among third bottlers results in procompetitive effects in local areas. The next section describes an empirical model applied to test these hypotheses, and to estimate the quantitative impacts of these structural changes on local areas' CSD price and per capita volume levels.[107]

B. The Econometric Model

The key purpose of the econometric model is to examine, empirically, the effects of the horizontal and vertical consolidation in the CSD industry on CSD price and per capita volume levels, and to use the empirical findings to evaluate antitrust policy toward this industry over the last 15 years. To analyze the impacts of industry consolidation, we define qualitative variables

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[106] Later, we also test the hypothesis that third bottlers with a minimum market share enhance local CSD competition, while smaller third bottlers might not serve as competitive constraints in local areas.

[107] The empirical specification also contains various demand and supply factors and market structure measures to control for exogenous influences on CSD price and per capita volume levels.

that take on values of one once a horizontal or vertical transaction occurs, and are zero otherwise. In addition to this important set of "event" variables, the model incorporates other groups of variables, primarily to control for the variety of exogenous influences on CSD price and per capita volume levels. These other sets of variables include: (1) demand measures like income and temperature variables; (2) supply factors like wage rates and distribution cost measures; and (3) local area bottler market structure variables that include a measure of buyer concentration among major local area grocery retailers. Assuming a linear specification, two general equations, incorporating these independent variables, define our empirical model

(4.1) FP = Ea1 + DSß1 + MS?1 + e1

and

(4.2) FV = Ea2 + DSß2 + MS?2 + e2

where

FP = sales-weighted (nominal) retail prices of Coca-Cola, Pepsi-Cola, Dr Pepper, 7UP and RC company brands per 100 oz. case;[108]

FV = aggregate per capita volume in 100 oz. cases for these five companies;[109]

E = a vector of qualitative event variables;

DS = a vector of demand and supply determinants;

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[108] As discussed in Chapter III, these five companies' brands accounted for approximately 95% of branded CSD sales, and 87% of total CSD sales, in the U.S. in 1998. Although this dependent variable uses nominal prices, some of the model's independent variables capture the effects of inflation.

[109] Per capita volume is used instead of absolute volume to minimize any volume differences across the local areas attributable to variation in size of the local CSD markets. Use of absolute volume could lead to significant differences in the error variances across local areas, and could result in a heteroscedastic error structure.

MS = a vector of local area market structure measures;

a1, a2, ß1, ß2, ?1, and ?2, are vectors of coefficients; and

e1 and e2 are random error terms.

All of the individual variables that comprise the E, DS, and MS vectors are identified in Table IV.1, along with the signs their corresponding parameter estimates are expected to have.[110] Appendix B describes all of the variables included in Table IV.1 more fully. While the discussion below focuses on the key event variables that are used to test our hypotheses of bottler transactions, Appendix C provides the rationale behind including the demand, supply, and market structure variables in the model, and explains why those variables are expected to have the indicated signs.

This model is a reduced-form model of CSD prices and per capita volume levels. As a result, all of the independent variables are intended to measure changes in exogenous factors that cause equilibrium price and per capita volume levels to vary. The reduced-form approach was selected because we are examining several anticompetitive and efficiency hypotheses associated with alternative underlying structural models, including models of coordinated interaction and unilateral pricing conduct. Specification of a complete structural model of CSD price and per capita volume levels to account for these alternative hypotheses is beyond the scope of this study. At the same time, a reduced-form approach prevents us from (1) estimating structural demand and supply parameters that include price elasticities, and (2) testing for particular forms of conduct that include monopoly or collusive pricing. Nevertheless, the empirical model allows us

[110] Subscripts are used to identify each variable within a vector. For example, $a1_2$ refers to the second event variable (TS) in the price equation.

to examine the competitive effects of various structural changes, including horizontal and vertical consolidation, on equilibrium price and per capita volume measures in local areas.[111]

1. The Event Variables and Key Hypotheses [112]

Since the competitive effects of key policy-related events (E) is the major thrust of this study, we focus our analysis on this set of explanatory variables. Consistent with the foregoing discussion, we consider three different types of policy-related events: (1) horizontal transfers of Dr Pepper and 7UP franchises to Coca-Cola and Pepsi-Cola bottlers; (2) vertical integration by the parent companies of Coca-Cola and Pepsi-Cola bottlers; and (3) consolidations of third bottlers.[113] This collection of event variables is the first grouping of independent variables shown in Table IV.1.

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[111] We consider other model specifications in Chapter VI, where we analyze the sensitivity of our findings to the model's specification. We provide descriptive statistics from our data in Chapter V to familiarize the reader with the data used and to offer preliminary information about the competitive effects of our events.

[112] Appendix C contains a similar discussion for the other (demand, supply, and market structure) explanatory variables that comprise our model. Chapter V and Appendix B discuss the various data sources and methods of variable construction for all of these variables in greater detail. As explained in Chapter V, we test our model using three different data sets that span a time period of approximately ten years beginning in 1980. The regression results for our key event variables are provided in Chapter VI, while those for the model's other variables are given in Appendix D. Tables D.1 and D.2 in Appendix D summarize all of the price and per capita volume regression results, respectively.

[113] Two other types of events also are included in the model to account for their possible impact on CSD prices and per capita volumes: other managerial changes (MNG) and price-fixing events (FIX). The MNG events include changes in top management officials at the bottling level that are unrelated to horizontal or vertical acquisitions (i.e., they do not involve any transfer of physical assets). FIX accounts for price-fixing cases brought by the DOJ in some of the areas for which we have data. Appendix A provides a listing of collusion cases in the CSD bottling industry during the 1980s. Since MNG and FIX are not the focus of our analysis, these variables are discussed further in Appendix C (rather than here), with the empirical results for these variables given in Appendix D.

Qualitative variables are used to measure the events specified in the model. These variables take on values of one once the events take place, and are zero otherwise.[114] In all cases, events occur at the local area level, and the analysis focuses attention on fundamental hypotheses relating to each of these event variables as we describe below.[115]

a. Horizontal Franchise Acquisitions

The model tests our hypothesis that horizontal franchise transfers have anticompetitive effects. To account for the possibility that Coca-Cola and Pepsi-Cola bottler acquisitions of Dr Pepper and 7UP franchises of different sizes could have different competitive effects, the model specification disaggregates these types of transactions on the basis of the size of the transferring franchise. In particular, TB measures transfers of Dr Pepper and 7UP franchises with at least a five percent share, while TS involves transfers of these franchises with shares below five percent.[116] Other things equal, the larger the Dr Pepper and 7UP franchises transferred to Coca-

[114] The vertical integration variable, however, takes on a value of 1 when vertical integration takes place during our data set or when it already existed at the start of our data set. Thus, it measures both the short term vertical integration events and the long term pre-existence of vertical integration in given local areas. As discussed below, some evidence suggests that it takes time for the effects of vertical integration to be felt, so we defined the vertical event variable to include pre-existing vertical integration.

[115] We test hypotheses relating events to aggregate price and per capita volume measures, but recognize that more detailed hypotheses could be tested using these data. However, such disaggregated analyses sometimes become problematic due to few observations. For example, TB and TS could be disaggregated into horizontal acquisitions involving 7UP franchises and horizontal events involving Dr Pepper franchises, but in some of the data sets, there are too few observations for one brand group or the other. Similar disaggregations are possible for other event variables. Although the discussion focuses attention on the broader event classes, assessments of the impacts of brand-specific or company-specific events are also of some potential interest.

[116] The five percent threshold is somewhat arbitrary, but the findings indicate that both of these categories of transfers have similar impacts on CSD prices and per capita volume levels.

Cola or Pepsi-Cola bottlers, the more likely that the transaction would raise antitrust concerns.[117] Moreover, small franchises of third bottlers in certain local areas, and the small third bottlers themselves, might not exert a discernable influence on the price or per capita volume levels of the remaining bottlers.[118] This implies that horizontal franchise transactions involving such small third bottlers or small franchise transfers might not cause competitive effects that we can detect econometrically. Thus, the competitive harm thought to be associated with horizontal events might emerge in only a subset of the local areas under study. To consider alternative hypotheses about the impacts of large and small franchise transfers, we perform three analyses. First, we examine whether $a1_1$ and $a1_2 > 0$, and whether $a2_1$ and $a2_2 < 0$ (see Table IV.1). Second, to analyze whether the impacts of horizontal transfers decline with the size of the transferring franchise, we also examine whether $a1_1 > a1_2$ and $a2_1 < a2_2$. Third, we test whether $a1_2$ and $a2_2 = 0$ to test the hypothesis that small franchise transfers have no effect on CSD price and per capita volume levels.

b. Vertical Integration

The key hypothesis involving the vertical integration variable is that vertical integration by the Coca-Cola Company and PepsiCo into downstream bottling operations results in the efficiencies described earlier that reduce CSD prices and raise CSD per capita volume levels, even though we recognize the possibility that vertical integration could cause competitive harm.

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[117] See, *Horizontal Merger Guidelines*, §1.

[118] In the discussion of market structure variables in Appendix C, we present our formal analysis of the competitive significance of third bottlers in the various local areas. In particular, we incorporate into (4.1) and (4.2) measures of the sizes of different groupings of third bottlers in an effort to segment competitively significant third bottlers from other third bottlers supplying CSD products in local areas.

Four different vertical integration variables, reflecting four different levels or extent of vertical integration, are considered because we expect that the ability of parent companies to influence bottler prices and per capita volume levels may depend on whether both the Coca-Cola Company and PepsiCo own their bottlers in a given area (as opposed to just one of them), and on whether that ownership reflects parent company control of those bottlers (or just a relatively small equity interest without control).

The purest and most complete measure of vertical integration, VX, reflects ownership control by both Coca-Cola and PepsiCo parent companies of their respective bottlers.[119] The three remaining measures of vertical integration relax one or both of these conditions. VZ still requires ownership control, but includes situations when only one of the two parent companies controls its bottler. VAX, on the other hand, requires parent-ownership by both Coca-Cola and PepsiCo, but includes situations when that ownership interest does not reflect control. Finally, VAZ relaxes both conditions, including situations when either Coca-Cola or PepsiCo has only a partial equity interest in its local bottler (without control).

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[119] We designate ownership of the local Coca-Cola bottler by CCE as control by the Coca-Cola Company. Since CCE's inception, the Coca-Cola Company has been its largest shareholder by far, with an equity interest of up to 49 percent. Industry members perceive CCE as being controlled by parent Coca-Cola. One newspaper article, which described some of the relationships between the Coca-Cola Company and CCE, indicated that these relationships "leave no question about who is running the company." See, *Wall Street Journal* (October 15, 1986 p. A12). *Beverage Digest*, a leading industry publication, periodically estimates the shares of Coca-Cola Company and PepsiCo volume that go through bottlers the parent companies have equity interests in. In doing so, it has provided one set of figures for bottlers in which the parent companies have any equity interest, and another set of figures for bottlers owned by CCE or owned completely by PepsiCo (placing CCE in the same category as bottlers totally owned by PepsiCo). See, for example, *Beverage Digest* (December 12, 1997 p. 2). Recently it was reported that a growing number of financial analysts and accountants consider the Coca-Cola Company and CCE to be essentially one business whose financial statements should be consolidated. See, *New York Times* (August 4, 1998 p. D1).

We run four different sets of regressions to examine whether changing the vertical integration assumption yields different results. Other factors constant, we expect that $a1_3 < 0$, and that $a2_3 > 0$ (see Table IV.1), regardless of which vertical integration variable is used.[120] At the same time, if vertical integration does tend to lower price and raise per capita volume levels, as hypothesized, we expect instances when both parent companies have ownership control over their bottlers to have the most pronounced effects because those instances are more consistent with our theory.[121]

c. Third Bottler Consolidations

As explained above, the model tests the hypothesis that third bottler consolidations are procompetitive because they create more significant and effective third competitors in local markets. To account for the possibility that consolidations of different sizes could have different competitive effects, the model specification disaggregates these transactions on the basis of the size of the transferring franchise.[122] CB measures third bottler franchise transfers of at least a 3.5

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[120] We report regression results for all four of the vertical integration variables. But some of the analysis below (e.g., approaches used to examine some of the assumptions underlying our econometric model, and our sensitivity analysis) focuses just on the VX variable (since it best reflects the theoretical basis for the vertical variable) to keep the analysis manageable and less confusing.

[121] It is intuitive to expect a parent company's ability to influence its bottler's conduct to be greater when that parent company owns the bottler outright (or at least controls it) than when the parent company has a relatively small minority interest in that bottler. Nevertheless, since minority interests also may have significant affects on bottlers' conduct, we consider those situations too.

[122] Arguably, since these different consolidations have different impacts on the market shares and market share distribution of the remaining third bottlers, other factors equal, it is plausible that the competitive effects of these transactions could depend on the size of these transactions. Consequently, we differentiate small from large transactions.

percent share, while CS captures third bottler franchise transfers below 3.5 percent.[123] To analyze the competitive effects of third bottler consolidations, we examine whether (1) $a1_4$ and $a1_5 < 0$, while $a2_4$ and $a2_5 > 0$, and (2) $a1_5 > a1_4$, while $a2_4 > a2_5$ (see Table IV.1).

We recognize, however, that some of these consolidations, particularly transactions captured by CS, might not materially enhance the efficiency of the consolidating bottler, and could weaken or eliminate any other remaining third bottler(s). Similarly, consolidations captured by CB might also weaken or eliminate any other remaining third bottler(s), resulting in little or no competitive impact on local area CSD prices and per capita volume levels. It is also possible that these consolidations could enhance the third bottler's overall brand line-up, enhancing the quality of its brand portfolio. Improvements in quality could lead to higher market price and per capita volume levels, other factors equal.[124] Consequently, while we test the

[123] The 3.5 percent threshold is somewhat arbitrary and was selected to correspond to a gap in the distribution of shares. It conveniently segments third bottlers into two different groups each with an equivalent number of observations. As discussed below, the empirical results suggest that price and per capita volume effects of these consolidations depend on the size of the transferring franchise.

[124] One might similarly argue that horizontal franchise transfers improve the quality of Coca-Cola or Pepsi-Cola bottlers, which might lead to higher prices when there are TB and TS events. This argument is much more persuasive for third bottler consolidations than horizontal franchise transfers, however, for a number of reasons. For example, when a third bottler acquires 7UP or Dr Pepper franchises, the brands acquired often will be the bottler's most popular CSDs, providing a substantial percentage increase in its volume. Such acquisitions may enable third bottlers to get feature advertising that retailers otherwise would not agree to provide. In contrast, when a Coca-Cola or Pepsi-Cola bottler acquires 7UP or Dr Pepper franchises, the incremental brands and volume will be secondary to the bottler's leading colas because colas account for about two-thirds of all CSD sales. Coca-Cola and Pepsi-Cola bottlers do not typically have the same difficulty getting into the feature advertising cycle that third bottlers have. In addition, the incremental 7UP or Dr Pepper volume that Coca-Cola and Pepsi-Cola bottlers obtain from acquiring these brands is mitigated by lost Sprite, Lemon-Lime Slice, and Mr. PiBB volume (i.e., competing flavor CSDs that are displaced), as discussed in Section A of this chapter. These three Coca-Cola/Pepsi-Cola brands typically outsell corresponding competing flavors that third bottlers may drop when taking on 7UP or Dr Pepper.

hypothesis that all of these consolidations enhance competition in local areas, we would not be surprised if estimation of $a1_4$, $a1_5$, $a2_4$ and $a2_5$ produced mixed results.

2. Demand, Supply, and Structural Factors

The model includes a set of demand and supply variables to control for other factors that commonly are thought to affect product prices and volumes, including those of CSDs. These factors, which include income, population, wages, distribution costs, and measures of product differentiation, are the second group of independent variables shown in Table IV.1. In addition, the empirical specification contains several characteristics of local area market structures that also are expected to affect CSD prices and per capita volume levels. These factors, which include seller and buyer concentration, are the third group of independent variables shown in Table IV.1. Appendices B and C describe these variables more fully, explain the rationale behind including them in the model, and explain why they are expected to have the indicated signs.

C. Econometric Model Summary

Table IV.1 lists all of the variables included in the model, describes these variables, and indicates the signs we expect them to have in the price and per capita volume regressions.

Chapter V

Data Summary

A. The Three Data Sets

Three local-area data sets, spanning approximately 10 years, were compiled to estimate our empirical model. In each case, separate observations for dozens of local areas were included. We refer to these data sets as NEGI, Scantrack 1, and Scantrack 2, where the names of the data sets refer to the sources of the price and per capita volume data used.[125] Table V.1 provides summary information about each of these three data sets, including the time periods they cover and the number of local areas contained in each data set.[126] Detailed information about the construction of all of the model's variables and the many sources of data used to estimate the model are provided in Appendix B. Appendix E contains correlation coefficients for the variables that are included in the three data sets. Simple statistics for these variables are provided in Appendix F.

[125] As discussed in Appendix B, NEGI and Scantrack record CSD prices and volumes in local areas over time. The price and per capita volume data were the limiting factors in our data collection because there were fewer observations available for these variables than for the demand, supply, and market structure variables that comprise our model.

[126] The three data sets tend to include the largest cities in the United States (and less populated areas around them), but not geographic locations more distant from these cities. The areas included in each of the NEGI and Scantrack 2 data sets account for more than 60% of the total U.S. population, while the areas included in the Scantrack 1 data set account for approximately 35% of the U.S. population.

Table V.1

Regression Data Sets

DATA SET NAME	TIME PERIOD	UNIT OF OBSERVATION	NUMBER OF AREAS	NUMBER OF OBSERVATIONS
NEGI (Nielsen Expanded Grocery Index)	December 1980 to November 1985	bimonthly	38	1122
Scantrack 1	various start dates in 1987 and 1988 to December 1988 or May 1989 (minimum of one year)	4 week periods	25	630
Scantrack 2	January 1989 to May 1991	4 week periods	47	1410

Note: Appendix B contains additional descriptive information on the data sets. Data for the Cleveland, OH; Memphis, TN; and Nashville, TN areas in the NEGI data set begin in December 1981 and go through November 1985. All of the other 35 areas in the NEGI data set have five full years of data. The areas in the Scantrack 1 data set have data for varying lengths of time, as specified, while all 47 areas in the Scantrack 2 data set have data for the entire January 1989 to May 1991 period.

Table V.2 provides summary information about the event variables that are the focus of our analysis. It indicates both the number of each type of event that took place in each data set, and the number of post-event observations within each data set as a percent of the total number of observations in that data set. Some statistics in this table are particularly noteworthy. The number of events and the rate of occurrence of events differs significantly across the different types of events. Vertical integration, for example, is the most common event, with nearly all observation periods in the Scantrack 2 data set having this type of event when the least restrictive version of vertical integration (VAZ) is used. In contrast, horizontal franchise transfers (TB and TS) are relatively infrequent. The TB events, in particular, account for 3.6% or less of the

Table V.2						
Number of Each Type of Event in Each Data Set (and the Percentage of each Data Set's Observations With Each Type of Event)						
Data Set/ Variable Name	**NEGI Data Set (1981-85)**		**Scantrack 1 Data Set (1987-89)**		**Scantrack 2 Data Set (1989-91)**	
TB (Big Horizontal Transfers)	3	(3.57%)	1	(2.38%)	0	(0.00%)
TS (Small Horizontal Transfers)	3	(1.96%)	3	(4.29%)	3	(4.68%)
VX (full vertical Integration of both Coca-Cola and Pepsi-Cola local bottlers)	4	(7.49%)	8	(22.86%)	18	(36.31%)
VZ (full vertical integration of either or both major bottlers)	17	(36.63%)	17	(62.54%)	37	(77.38%)
VAX (full or partial vertical integration of both major bottlers)	7	(14.26%)	17	(52.70%)	37	(76.31%)
VAZ (full or partial vert. integration of either or both major bottlers)	19	(39.13%)	23	(83.65%)	47	(99.86%)
CB (Big 3rd Bottler Consolidations)	6	(6.33%)	2	(6.51%)	3	(2.48%)
CS (Small 3rd Bottler Consolidations)	5	(6.24%)	2	(4.92%)	2	(2.62%)
Notes: This table contains the number of each type of CSD event that took place in each of the three data sets. It also indicates the percentage of each data set's observations that has each type of event. The observation periods in the NEGI data set are bimonthly, while those in the other two data sets are 28 days. The headings for the vertical integration variables that do not assume control by both the Coca-Cola Company and PepsiCo are indented to emphasize this point.						

observations in all three data sets. There are no TB events in the Scantrack 2 data set, and the one TB event that took place in the Scantrack 1 data set accounts for 2.4% of the Scantrack 1 observations. There are more third bottler consolidation events than horizontal franchise transfer events, but they never account for more than 6.5% of the total number of observations in any of the three data sets. While TS events are more common than TB events, CB and CS events take place with similar frequencies.

Separate regressions were run for the NEGI, Scantrack 1, and Scantrack 2 data sets. Three points are noteworthy about the data in these three data sets. First, since these data sets contain different numbers of local areas, different observational periods (e.g., bimonthly and four-week data) and are otherwise not suitable for pooling, we use them separately to obtain three different sets of parameter estimates.[127] This, unlike the prior studies we discuss in Chapter VII, allows us to evaluate the robustness of the parameter estimates across the three data sets, particularly estimates of the impacts of horizontal and vertical consolidation. Having price and per capita volume data also enables us to evaluate the consistency of our results within each data set by estimating separate equations for these variables.

This leads to a second point. It is difficult to compare these three data sets from the standpoint of reliability because of their significant differences. For instance, although all derive from Nielsen, Scantrack 1 and Scantrack 2 data are scanner data, while NEGI data stem from store audits by sampling personnel. This might suggest that the NEGI data are less reliable than the other two data sets, but the NEGI data cover more than twice as long a time period as the other data sets, which may suggest that estimates using NEGI data are more reliable. It is easier to compare the two Scantrack data sets to each other than to compare them to the NEGI data set. The Scantrack 1 data set seems likely to be less reliable than the Scantrack 2 data set[128] because it contains fewer cities and covers a shorter period of time than the Scantrack 2 data set (resulting

[127] In Chapter VI, we further discuss the reasons for this empirical approach, and address the issue of the appropriate estimator for our model.

[128] Other than the Scantrack versus NEGI distinction, all of these reasons also make the Scantrack 1 data set seem inferior to the NEGI data set.

in less than half as many observations), and because the Scantrack 1 data set is not square -- many of the areas covered have different starting dates and include different numbers of observation periods. Also, the Scantrack 1 data set covers a period of time that was probably subject to more disequilibrium than either of our other two data sets, which may raise questions about the reliability of its results. The Scantrack 1 time period data begins right after (or includes) four major events in the soft drink industry: (1) the failed Coca-Cola/Dr Pepper and PepsiCo/Seven-Up horizontal concentrate acquisitions, (2) major vertical bottler acquisitions by the Coca-Cola Company and PepsiCo, (3) the DOJ's filings of price-fixing law suits against CSD bottlers, and (4) the formation of CCE. Indeed, 40 percent of the cities included in the Scantrack 1 data set involved CCE bottlers.

A third point to note about these data is that while we incorporate control variables at both the bottling and retail levels, the dependent variables used in our model measure price and per capita volume levels at the retail level. We, therefore, examine the various hypotheses in terms of their impacts on downstream prices and per capita volume levels, and not on the CSD markets at the bottling level. At the same time, our reduced form model incorporates a measure of buyer concentration in an effort to control for the possible exercise of market power by food retailers. In addition, it is likely that price and per capita volume effects at the retail level will correspond to similar effects upstream since changes in the various independent variables would have similar impacts in upstream markets.

B. Summary Statistics

Table V.3, which contains means and standard deviations for all of the variables included in our model, provides some summary information about the three data sets used. Tables V.4 and V.5, which we use to crudely evaluate whether different types of events matter, provide additional information about mean CSD prices and per capita volumes, respectively. The figures in the first two columns of each data set in Tables V.4 and V.5 apply to areas where a given type of horizontal or vertical event took place, while the figures in the third column of each data set apply to areas that did not have that type of event. The areas with events have two means provided because one mean reflects the average CSD price or per capita volume in those areas before the event took place, while the other reflects these averages after the event took place.

The three columns of figures for each data set in Tables V.4 and V.5 enable us to make two types of naive price and per capita volume comparisons. First, we compare the first two means to see if the average CSD prices (and per capita volumes) in areas that had an event were higher (or lower) after the event than before it. That is, we examine whether events appeared to change average prices (and per capita volumes) in those areas where the events took place. Second, we compare before and after average CSD prices (and per capita volumes) in areas with a given event to average CSD prices (and per capita volumes) in areas that did not have the event. That is, we compare average prices (and per capita volumes) in areas with events before (and after) the events took place to those in areas without the events. We view these comparisons as naive because they do not control for the many other factors that may affect CSD

Table V.3

Definitions, Means, and Standard Deviations of the Variables

Variable Name	Description	NEGI Data Mean (Standard Dev.)	Scantrack 1 Data Mean (Standard Dev.)	Scantrack 2 Data Mean (Standard Dev.)
Dependent Variables				
FP	price in dollars per 100 oz. case	2.2900 (.252)	1.9253 (.171)	1.8861 (.170)
FV	volume in per capita 100 oz. cases	2.7932 (.773)	1.0651 (.248)	.8317 (.388)
Event Variables				
TB	horizontal acquisition of a large 7UP or Dr Pepper franchise (i.e., a franchise with at least a 5% share) by a Coca-Cola or Pepsi-Cola bottler in the same area (dummy)	.0357 (.186)	.0238 (.153)	N/A
TS	horizontal acquisition of a small 7UP or Dr Pepper franchise (i.e., a franchise with a share below 5%) by a Coca-Cola or Pepsi-Cola bottler in the same area (dummy)	.0196 (.139)	.0429 (.203)	.0468 (.211)
VX	full vertical integration of both Coca-Cola and Pepsi-Cola local bottlers (dummy)	.0749 (.263)	.2286 (.420	.3631 (.481)
VZ	full vertical integration of either or both major bottlers (dummy)	.3663 (.482)	.6254 (.484)	.7738 (.419)
VAX	full or partial vertical integration of both major bottlers (dummy)	.1426 (.350)	.5270 (.500)	.7631 (.425)
VAZ	full or partial vertical integration of either or both major bottlers (dummy)	.3913 (.488)	.8365 (.370)	.9986 (.038)

Table V.3 (continued)

Definitions, Means, and Standard Deviations of the Variables

Variable Name	Description	NEGI Data Mean (Standard Dev.)	Scantrack 1 Data Mean (Standard Dev.)	Scantrack 2 Data Mean (Standard Dev.)
Event Variables (continued)				
CB	acquisition (consolidation) of a large third bottler franchise (i.e., a franchise with at least a 3.5% share) by another third bottler in the same area (dummy)	.0633 (.244)	.0651 (.247)	.0248 (.156)
CS	acquisition (consolidation) of a small third bottler franchise (i.e., a franchise with a share below 3.5%) by another third bottler in the same area (dummy)	.0624 (.242)	.0492 (.216)	.0262 (.160)
MNG	management change unrelated to vertical, horizontal, or consolidation events (dummy)	.3699 (.483)	.3952 (.489)	.1078 (.310)
FIX	period of price fixing (dummy)	.0250 (.156)	N/A	N/A
Demand and Supply Variables				
TEMPA	average high temperature for the observation period in the area minus the area yearly average high temperature when the average high for the period exceeds the yearly average, otherwise 0	12.4762 (11.633)	12.6754 (12.716)	12.4475 (11.077)
TEMP	average high temperature for the observation period in the area	65.9180 (17.326)	65.4333 (17.613)	67.4664 (16.304)
TIME	number of the observation period for the area	15.6925 (8.590)	18.7730 (8.350)	15.5000 (8.659)
TIMESQR	square of the number of the observation period for the area	319.9795 (276.216)	422.0365 (305.512)	315.1667 (276.630)

Table V.3 (continued)

Definitions, Means, and Standard Deviations of the Variables

Variable Name	Description	NEGI Data Mean (Standard Dev.)	Scantrack 1 Data Mean (Standard Dev.)	Scantrack 2 Data Mean (Standard Dev.)
Demand and Supply Variables (continued)				
POP	area population (hundred thousands)	38.3274 (37.097)	35.1332 (15.267)	33.5396 (22.7297)
INCOME	per capita disposable income for the area in thousands of dollars	10.2796 (1.516)	13.0308 (1.441)	13.5896 (1.786)
COL	cost of living index for the area	100.7274 (5.326)	101.0644 (8.967)	100.7977 (9.213)
WAGE	mean per employees production and distribution wages for CSD bottling plants in the area in thousands of dollars	20.8021 (3.268)	26.8644 (3.892)	27.2836 (3.987)
PLASTICS	the percent of total CSD packaged volume sold in plastic containers in the area	23.2240 (9.412)	31.6392 (10.232)	29.4785 (9.090)
P-SYRUP	price index for CSD syrup base	90.7173 (5.652)	110.5783 (5.559)	125.1267 (3.381)
P-CORN	price index for corn syrup sweetener	119.0122 (16.097)	91.7852 (9.403)	112.9467 (9.285)
P-PLASTIC	price index for plastic bottles	100.8054 (2.321)	111.3729 (6.603)	119.6367 (1.850)
P-ALUM	price index for aluminum cans	100.2053 (4.389)	102.3432 (1.954)	104.0267 (1.967)
P-PET	price index for petroleum products	93.2376 (8.582)	55.9865 (3.598)	68.6833 (10.623)
DCOST	index of distribution cost economies proxied by the area's ratio of population to retail grocery food outlets	1.1159 (.375)	1.0437 (.1960)	1.0070 (.242)
C	Christmas observation period (dummy)	.1667 (.373)	.0794 (.271)	.0667 (.250)

Table V.3 (continued)				
Definitions, Means, and Standard Deviations of the Variables				
Variable Name	**Description**	**NEGI Data Mean (Standard Dev.)**	**Scantrack 1 Data Mean (Standard Dev.)**	**Scantrack 2 Data Mean (Standard Dev.)**
Demand and Supply Variables (continued)				
E	Easter observation period (dummy)	N/A	.0921 (.289)	.1000 (.300)
M	Memorial Day observation period (dummy)	.1667 (.373)	.0667 (.250)	.0667 (.250)
J	July 4th observation period (dummy)	.1667 (.373)	.0667 (.250)	.0667 (.250)
L	Labor Day observation period (dummy)	.1667 (.373)	.0683 (.252)	.0667 (.250)
T	Thanksgiving observation period (dummy)	.1667 (.373)	.0730 (.260)	.0667 (.250)
NCOKE	introduction of the new formulation of brand Coca-Cola and discontinuation of the traditional formulation (dummy)	.0677 (.251)	N/A	N/A
AD	annual national advertising by CSD concentrate firms in hundreds of million dollars	2.7803 (.721)	3.8029 (.268)	4.2553 (.292)
C-HEART	Coca-Cola heartland areas (dummy)	.2032 (.403)	.2571 (.437)	.1915 (.394)
P-HEART	Pepsi-Cola heartland areas (dummy)	.2888 (.453)	.3302 (.471)	.2766 (.447)
SV-HEART	7UP heartland areas (dummy)	.3155 (.465)	.2460 (.431)	.2340 (.424)
DP-HEART	Dr Pepper heartland areas (dummy)	.1070 (.309)	.1190 (.324)	.1277 (.334)
RC-HEART	Royal Crown heartland areas (dummy)	.3904 (.488)	.3556 (.479)	.3830 (.486)

Table V.3 (continued)

Definitions, Means, and Standard Deviations of the Variables

Variable Name	Description	NEGI Data Mean (Standard Dev.)	Scantrack 1 Data Mean (Standard Dev.)	Scantrack 2 Data Mean (Standard Dev.)
Structural Variables				
RDUMMY	area with significant regional brand (dummy)	.3351 (.472)	.2333 (.423)	.2340 (.424)
B-THIRD	big third bottler with share regularly over 15% (dummy)	.2941 (.456)	.1349 (.342)	.1064 (.308)
S-THIRD	small third bottler with share regularly over 5%, but less than 15% (dummy)	.7380 (.440)	.7952 (.404)	.5745 (.495)
BIG-3RDC	production capacity of the largest third bottler in the area in thousands of 100 oz. cases	1640.0805 (1662.198)	607.1807 (466.221)	418.8631 (531.348)
BIG-BTCS	production capacity share of the largest bottler in the area	.4859 (.075)	.4928 (.078)	.5118 (.082)
BIG-BTC	production capacity share of the largest bottler in the area in thousands of 100 oz. cases	5451.2432 (3363.114)	2361.6308 (1146.296)	1807.0749 (1467.848)
BIG-3RDCS	largest third bottlers share of total third bottler capacity in the area	.7733 (.183)	.8480 (.196)	.8963 (.181)
FHHI	index of retail grocery concentration in the area	1.6120 (.777)	1.7455 (.701)	1.6914 (.634)

Note: The NEGI data set has 1122 observations. The Scantrack 1 data set has 630 observations. The Scantrack 2 data set has 1410 observations. N/A means not applicable. The entries for the vertical integration variables that do not assume control by both the Coca-Cola Company and PepsiCo are indented to emphasize this point.

Table V.4

Mean Prices and Standard Deviations Associated With Events

Variable Name	NEGI Data Set (1981-85)			Scantrack 1 Data Set (1987-89)			Scantrack 2 Data Set (1989-91)		
	Areas W/ Events		Areas W/O Events	Areas W/ Events		Areas W/O Events	Areas W/ Events		Areas W/O Events
	Obs. Before Event	*Obs. After Event*	*All Obs.*	*Obs. Before Event*	*Obs. After Event*	*All Obs.*	*Obs. Before Event*	*Obs. After Event*	*All Obs.*
TB (Big Horizontal Transfers)	2.4799 (0.308)	2.5234 (0.197)	2.2717 (0.243)	2.2957 (0.095)	2.1678 (0.103)	1.9125 (0.161)	N/A	N/A	1.8861 (0.170)
TS (Small Horizontal Transfers)	2.3180 (0.180)	2.5043 (0.168)	2.2836 (0.256)	1.8939 (0.070)	1.9838 (0.097)	1.9243 (0.177)	2.1406 (0.231)	1.8703 (0.216)	1.8823 (0.163)
VX (full vertical Integration of both Coca-Cola and Pepsi-Cola local bottlers)	1.9556 (0.218)	2.1402 (0.134)	2.3145 (0.248)	2.0734 (0.147)	1.8634 (0.118)	1.9184 (0.174)	1.9983 (0.189)	1.8884 (0.157)	1.8812 (0.176)
VZ (full vertical integration of either or both major bottlers)	2.2074 (0.218)	2.3397 (0.237)	2.2699 (0.261)	1.8629 (0.181)	1.9149 (0.148)	1.9573 (0.203)	1.7501 (0.098)	1.8942 (0.169)	1.8655 (0.172)
VAX (full or partial vertical integration of both major bottlers)	2.2447 (0.147)	2.1508 (0.124)	2.3169 (0.265)	2.0673 (0.206)	1.8880 (0.135)	1.8835 (0.140)	1.9219 (0.228)	1.8878 (0.170)	1.8759 (0.164)
VAZ (full or partial vert. integration of either or both major bottlers)	2.2176 (0.202)	2.3119 (0.222)	2.2890 (0.280)	1.8959 (0.180)	1.9160 (0.161)	2.0344 (0.213)	1.9664 (0.341)	1.8860 (0.170)	N/A
CB (Big 3rd Bottler Consolidations)	2.1696 (0.247)	2.3567 (0.174)	2.2989 (0.254)	2.1737 (0.185)	1.9653 (0.161)	1.9150 (0.165)	1.8280 (0.112)	1.8260 (0.083)	1.8901 (0.173)
CS (Small 3rd Bottler Consolidations)	2.2605 (0.234)	2.4708 (0.264)	2.2794 (0.248)	1.8128 (0.115)	1.8510 (0.086)	1.9340 (0.174)	1.8330 (0.078)	1.8101 (0.130)	1.8891 (0.172)

Table V.4 (continued)

Mean Prices and Standard Deviations Associated With Events

Notes: This table contains mean values associated with events, and standard deviations in parentheses. N/A means not applicable. Mean values for prices are stated in dollars per 100 ounce case. The headings for the vertical integration variables that do not assume control by both the Coca-Cola Company and PepsiCo are indented to emphasize this point.

The observations on which the means for a given event within a given data set are based are mutually exclusive. Two means are provided for areas that have a given event, one based on observations before the event, and the other based on observations after (and including) that event. The third mean value for each event is based on observations for those areas that do not have the event. The observations that go into the calculations of these three means are complementary. Together they represent all of the observations that comprise a given data set.

Table V.5

Mean Per Capita Volumes and Standard Deviations Associated With Events

Variable Name	NEGI Data Set (1981-85)			Scantrack 1 Data Set (1987-89)			Scantrack 2 Data Set (1989-91)		
	Areas W/ Events		Areas W/O Events	Areas W/ Events		Areas W/O Events	Areas W/ Events		Areas W/O Events
	Obs. Before Event	*Obs. After Event*	*All Obs.*	*Obs. Before Event*	*Obs. After Event*	*All Obs.*	*Obs. Before Event*	*Obs. After Event*	*All Obs.*
TB (Big Horizontal Transfers)	2.5013 (0.662)	3.2244 (0.618)	2.7906 (0.776)	0.8602 (0.167)	0.7272 (0.079)	1.0772 (0.244)	N/A	N/A	0.8317 (0.388)
TS (Small Horizontal Transfers)	2.5387 (0.547)	2.8861 (0.351)	2.8079 (0.789)	0.8132 (0.080)	0.7392 (0.074)	1.0946 (0.240)	0.4943 (0.073)	0.6295 (0.102)	0.8480 (0.395)
VX (full vertical Integration of both Coca-Cola and Pepsi-Cola local bottlers)	2.4980 (0.620)	2.6589 (0.747)	2.8150 (0.777)	1.0064 (0.239)	1.2082 (0.257)	1.0259 (0.226)	0.6284 (0.268)	0.9042 (0.326)	0.7957 (0.417)
VZ (full vertical integration of either or both major bottlers)	2.3039 (0.546)	2.7129 (0.813)	2.9262 (0.737)	0.8016 (0.112)	1.1173 (0.256)	1.0108 (0.204)	0.7163 (0.158)	0.8394 (0.398)	0.8112 (0.360)
VAX (full or partial vertical integration of both major bottlers)	2.0628 (0.511)	2.5966 (0.818)	2.8677 (0.750)	0.9890 (0.232)	1.1569 (0.243)	0.9411 (0.189)	0.5692 (0.209)	0.8066 (0.288)	0.9519 (0.619)
VAZ (full or partial vert. integration of either or both major bottlers)	2.8076 (0.831)	2.7320 (0.805)	2.8380 (0.730)	0.7982 (0.105)	1.0879 (0.252)	1.0697 (0.149)	0.7021 (0.015)	0.8319 (0.389)	N/A
CB (Big 3rd Bottler Consolidations)	2.5329 (0.415)	2.3589 (0.561)	2.8560 (0.801)	1.2102 (0.181)	1.3653 (0.164)	1.0393 (0.239)	0.8945 (0.235)	1.1007 (0.237)	0.8220 (0.394)
CS (Small 3rd Bottler Consolidations)	2.3222 (0.448)	2.4312 (0.484)	2.8580 (0.790)	1.2966 (0.166)	1.1392 (0.114)	1.0514 (0.250)	0.4551 (0.090)	0.6147 (0.186)	0.8441 (0.391)

Table V.5 (continued)

Mean Per Capita Volumes and Standard Deviations Associated With Events

Notes: This table contains mean values associated with events, and standard deviations in parentheses. N/A means not applicable. Mean values for per capita volumes are stated in ounces per capita for the observation period (bimonthly for the NEGI data set and 28 days for the other two data sets). The headings for the vertical integration variables that do not assume control by both the Coca-Cola Company and PepsiCo are indented to emphasize this point.

The observations on which the means for a given event within a given data set are based are mutually exclusive. Two means are provided for areas that have a given event, one based on observations before the event, and the other based on observations after (and including) that event. The third mean value for each event is based on observations for those areas that do not have the event. The observations that go into the calculations of these three means are complementary. Together they represent all of the observations that comprise a given data set.

prices and per capita volumes, in addition to the events themselves.[129]

Nevertheless, the figures in Tables V.4 and V.5 give some preliminary information about CSD prices and per capita volumes associated with horizontal and vertical events during the time periods covered by our three data sets. Some general observations are particularly noteworthy from comparing the figures within each of these tables. First, the events do seem to matter. In 33 of the 46 cases recorded in Tables V.4 and V.5, the post-event mean CSD prices and per capita volumes differ from their corresponding pre-event figures by more than 5%, and 20 of the 46 differences exceed 10%. Second, the differences in means sometimes appear to be quite large. This is particularly true of the mean per capita volumes in the Scantrack 2 data set, where 5 of the 7 differences between post-event and pre-event means exceed 20%.

Similarly, the mean CSD price and per capita volume figures in areas with events seem to differ significantly from their corresponding means in areas without those events. In 32 of the 44 cases, the pre-event mean figures in Tables V.4 and V.5 differ from their corresponding means in areas without those events by more than 5%, and 21 of the 44 differences exceed 10%. As in the pre-event and post-event comparison of means, some of the differences in means appear to be quite large.

Regarding particular types of events, it is noteworthy that the pre-event mean per capita CSD volumes in areas where vertical integration took place were lower than the corresponding mean per capita CSD volumes in areas without vertical integration 10 out of 11 times

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[129] For example, CSD price changes over time within a given area may be related to demand and/or supply changes that are independent of the events that took place. The regression model described in Chapter IV attempts to refine our understanding of the relationship between events and CSD prices/per capita volumes, while controlling for the many other factors that are expected to affect CSD prices and per capita volumes. We discuss this further in Chapter VI.

(considering all four definitions of vertical integration), and the mean per capita CSD volumes in areas with vertical integration rose 11 out of 12 times after those events took place.[130] This is consistent with the hypothesis (discussed in Chapter VII below) that parent companies target poorly performing bottlers for acquisition, and improve the sales of those bottlers after acquiring them.[131] The figures in Tables V.4 and V.5 also show that pre-event mean CSD prices in areas with horizontal franchise transfers were higher than mean CSD prices in areas without those events 4 out of 5 times (considering both TB and TS events), and the pre-event mean per capita CSD volumes in areas with horizontal franchise transfers were lower than the mean per capita CSD volumes in areas without those transfers in all 5 cases. In 3 of the 5 cases mean CSD prices in areas with horizontal franchise transfers rose after those events, and in 2 of the 5 cases mean per capita CSD volumes in these areas fell after those events. As alluded to above, it is difficult to draw inferences from these figures alone. We return to these comparisons of means in Chapter VI when we discuss our regression results.

[130] There are only 11 comparisons to areas without vertical integration (versus the 12 before and after event comparisons) because virtually all areas in the Scantrack 2 data set had at least one type of vertical acquisition.

[131] This hypothesis does not seem to be supported by the mean price data reported in Tables V.4 and V.5. In 7 of the 11 cases, pre-event mean prices were lower in areas with vertical integration than they were in areas without vertical integration, and the mean prices rose in areas with vertical integration half of the time after those events took place.

Chapter VI

Regression Results

A. Introduction and Summary

The richness of our data offers us the unusual opportunity to examine the performance of CSD bottling markets across dozens of U.S. cities over an extended period of time (1981-91).[132] Since we have three data sets (NEGI, Scantrack 1, and Scantrack 2) covering three different time periods, we are able to evaluate our model three times to examine its robustness. Estimation of both price and per capita volume regression equations provides another consistency check. The nature of this cross-section, time series data raises various econometric issues that are accounted for in the estimation of our regression model.[133] This chapter discusses these econometric issues and reports the empirical results associated with our estimation. We also examine the robustness of the estimation.

In general, the regression results support the model specification outlined in Chapter IV.[134] Each of the three sets of explanatory variables included in the model ((1) event, (2)

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[132] As discussed in Chapter VII, in addition to covering more areas and time than previous CSD bottling research, we also examine more types of events than previous researchers (who focused on vertical acquisitions), and have a wider array of explanatory variables.

[133] These issues include serial correlation and heteroscedasticity. Serial correlation occurs when the error term in the regression in one period of time is related to that in one or more subsequent periods of time. Heteroscedasticity occurs when variation in the error term of the regression changes over time and/or across local areas of cross-sectional data sets. This could occur, for example, if the error term depends on population changes over time and/or across local areas.

[134] Regression analysis enables us to obtain statistical results that reflect relationships among variables. However, the existence of a relationship among variables proves neither the existence of causality, in the normal dictionary definition of the term, nor its direction. Although

demand and supply, and (3) structural variables) has a statistically significant impact on CSD prices and per capita volumes.[135] All three sets of explanatory variables, taken together, account

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the selection of cities included in the three data sets is not random, the results obtained from the regression analysis are likely to be reasonably reliable because the cities and surrounding areas in each data set cover a large percentage of the total U.S. population, as discussed in Chapter V.

[135] We performed Wald tests to evaluate the impact of subsets of independent variables on CSD price and per capita volume levels. Wald statistics are used to test null hypotheses that sets of independent variables (e.g., event variables) collectively have no statistically significant impact on dependent variables (e.g., CSD prices and per capita volumes). The subsets of independent variables subject to these tests are the (1) event variables, (2) demand and supply variables with the exception of product differentiation variables, (3) product differentiation variables, and (4) market structure variables. In all cases, on the basis of the Wald statistics and critical probabilities summarized below, we reject the various null hypotheses that these subsets of independent variables collectively exert no statistically significant impact on CSD prices and per capita volumes. Although the events results presented apply to a model with VX as the vertical integration variable, similar results were obtained when each of the other three vertical integration variables was used instead (For discussions of the Wald test, see Greene (1990) and Maddala (1988)).

for fifty-three to seventy percent of the variation in CSD prices, and sixty-nine to eighty-eight percent of the variation in CSD per capita volumes across the three data sets.

The most noteworthy findings from the regression analysis, however, come from the individual event variables that are the focus of our analysis. These variables are statistically significant in the vast majority of the price and per capita volume regressions using our three data sets. This suggests that the events do have an impact on CSD prices and per capita volumes, and is consistent with the naive finding in Chapter V that mean prices and per capita volumes in cities with events differ after the event in comparison to the corresponding figures before the

Data Set/Test Results	**Event Variables**	**Demand & Supply Variables**	**Product Differen-tiation Vars.**	**Market Structure Variables**
Price Regressions				
NEGI Data Set				
Wald-Statistic	423.67	971.39	325.12	655.73
Probability	0.00	0.00	0.00	0.00
Scantrack 1 Data Set				
Wald-Statistic	119.05	537.91	63.82	313.96
Probability	0.00	0.00	0.00	0.00
Scantrack 2 Data Set				
Wald-Statistic	36.77	862.94	130.02	285.21
Probability	0.00	0.00	0.00	0.00
Volume Regressions				
NEGI Data Set				
Wald-Statistic	122.62	2334.26	160.74	1324.83
Probability	0.00	0.00	0.00	0.00
Scantrack 1 Data Set				
Wald-Statistic	136.83	1564.12	51.41	899.39
Probability	0.00	0.00	0.00	0.00
Scantrack 2 Data Set				
Wald-Statistic	207.40	987.68	276.68	1119.99
Probability	0.00	0.00	0.00	0.00

event.

Of the three main types of events analyzed (horizontal acquisitions, vertical integration, and third bottler consolidations), the results are strongest regarding the horizontal franchise acquisition variables. With the exception of the effects of small horizontal franchise transfers during the period covered by the Scantrack 1 data set, all three data sets indicate that horizontal acquisitions of 7UP and Dr Pepper franchises by Coca-Cola or Pepsi-Cola bottlers lead to higher prices and lower per capita volume levels.[136] These results are statistically significant in all cases, and apply to both large (TB) and small (TS) 7UP and Dr Pepper franchise acquisitions.[137] Large 7UP and Dr Pepper franchise acquisitions, for example, are found to increase CSD prices by 12.8%, on average, and lower per capita volumes by 12.2%, on average.[138]

Although results for the vertical integration and third bottler consolidation event variables were more mixed (as was the case with many of the model's demand, supply, and structural variables), some of these results also were consistent and strong, as expected. In particular, all of the vertical variable definitions except VAZ (the weakest form this variable takes) show CSD prices falling with more vertical integration into CSD bottling by the Coca-Cola Company and PepsiCo, as expected. In fact, even the regressions using VAZ as the vertical integration variable show CSD prices falling with more vertical integration when VAZ is statistically significant.

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[136] This and similar statements throughout are based on the assumption that one explanatory variable changes while all else is held constant.

[137] All references, here and below, to statistical significance assume the 5% level.

[138] Although not quite analogous, these bottling results are consistent with the FTC's 1986 challenge of Coca-Cola's planned acquisition of Dr Pepper, and PepsiCo's planned acquisition of Seven-Up, at the concentrate level.

However, the per capita volume results for the vertical integration variable tend to be ambiguous. All of the vertical variable definitions except VZ yield mixed per capita volume results, while the VZ definition shows per capita volume declining with more vertical integration.

Although the large third bottler consolidation variable (CB) was significant and had the expected procompetitive sign in five of the six regressions, the small third bottler consolidation variable (CS) was significant and had unexpected signs in five of the six regressions.

Overall, the findings relating to the important large horizontal and vertical transactions that took place in the three data sets are consistent with both prior expectations and recent antitrust policy in the CSD industry. The TB and CB results, in particular, strongly support the FTC's challenges of transfers of large Dr Pepper and/or 7UP franchises from third bottlers to Coca-Cola or Pepsi-Cola bottlers, while allowing large third bottler consolidations to go unchallenged. The vertical integration variable results generally are consistent with the FTC's decisions not to challenge CSD bottler acquisitions by the Coca-Cola Company and PepsiCo. However, the TS and CS results, along with the vertical integration variable's per capita regression results, suggest that further study of these types of bottler acquisitions may be warranted.[139]

These and other empirical results are examined in greater detail in the remainder of this chapter.

[139] Given the relatively small number of TS and CS events and somewhat unexpected results, further study of these types of bottler acquisitions likely would require the use of additional data.

B. The Econometric Model and the Estimation Procedure

The empirical analysis raises several econometric issues, particularly since three sets of time series/cross sectional data are available to estimate the various parameters discussed in Chapter IV. To discuss these econometric issues, we make use of the regression model below

(6.1) $Y = XB + u$,

where

Y is an NT x 1 vector of observations for each of the dependent variables in the regression model (N = the number of local areas and T = the number of observations for each local area;

X is an NT x k matrix of observations for the set of independent variables in the regression model (k = the number of independent variables);

B is a k x 1 vectors of parameters; and

u is an NT x 1 vector of random errors.

In what follows, we discuss the structures of X and *u*, and what they imply about the estimation of model parameters.

The model in (6.1), particularly the structure of X, assumes that the marginal impacts of the independent variables on CSD price and per capita volume levels are the same across all local areas and over the time period of a given sample.[140] Since the primary focus is on the impacts of the various event variables and because we have no prior information about cross-sectional variation in these effects, we assume they are the same across the local areas. Further, we model possible differences across local areas by incorporating a number of localized variables, including the heartland variables, population, temperature measures, and other variables that

[140] For discussions of alternative cross-sectional and time series models, see, among other references, Judge *et al.* (1980), Kmenta (1986), and Theil (1971).

capture any number of differences across local areas that could impact CSD price and per capita volume levels.

Moreover, we also assume that the parameters in *B* are fixed over the time period of a given sample. Although the NEGI data span some five years, the other two data sets span time frames from one to slightly more than two years each. It seems reasonable to assume that the model's parameters are unlikely to vary significantly over time frames of about two years. However, since the three data sets span approximately ten years in total, this is sufficient time to permit parametric changes over time. Therefore, we allow the parameters to vary across the three data sets.[141]

Turning to the error structure in (6.1), three main econometric issues are relevant. First, serial correlation of the errors within *u* is possible, owing to the time series nature of the data.[142] If so, estimation by ordinary least squares (OLS) methods could lead to biased coefficients and errors in variance estimates, and would not produce efficient parameter estimates.[143] We, therefore, applied the Durbin-Watson (DW) test for first-order serial correlation to each data set

[141] From a conceptual standpoint, it would be possible to pool these data. However, aggregation of the data sets would be impractical because the local areas do not fully match and there are differences in the data themselves (e.g., the definitions of the areas may change among the data sets).

[142] Again, serial correlation occurs when the error term in the regression (i.e., the difference between the actual and estimated value of the dependent variable) in one period of time is related to that in one or more subsequent periods of time.

[143] OLS estimates with serially correlated errors are unbiased unless one (or more) of the independent variables is a function of the random error term. For discussions of serial correlation, see Greene (1990) and Maddala (1988).

(see Table VI.1).[144] The test results do not suggest the presence of first-order serial correlation

Table VI.1		
DW Tests for Serial Correlation		
	DW Statistic	**Result of DW Test**
Price Regressions		
NEGI Data Set	1.88	Cannot Reject Ho: *?* = 0
Scantrack 1 Data Set	1.99	Cannot Reject Ho: *?* = 0
Scantrack 2 Data Set	2.01	Cannot Reject Ho: *?* = 0
Volume Regressions		
NEGI Data Set	2.04	Cannot Reject Ho: *?* = 0
Scantrack 1 Data Set	1.83	Cannot Reject Ho: *?* = 0
Scantrack 2 Data Set	2.47	Cannot Reject Ho: *?* = 0

Notes: ? represents the first-order autocorrelation coefficient. All test results indicate that we cannot reject the null hypothesis of no first-order autocorrelation at the 1%, 5%, or 10% levels of significance. Test statistics for the NEGI data set exclude three cities for which complete data were not available. Test statistics for the Scantrack 1 data set use only a subset of the local areas for which at least two years of data are available.

[144] To obtain the DW statistics for our cross-sectional-time series data, we arrayed the data by cross section (i.e., the first cross section, followed by the second, followed by the third, etc.). Then, defining the vector of residuals as $\{e_1, ...e_{NT}\}$, we calculated our DW statistic as follows:

$$d = \frac{\sum_{j=N}^{NT} (e_{j-1} - e_{j-1-N})^2}{\sum_{j=1}^{NT} (e_j)^2}$$

This is equivalent to the formula for panel data provided in Bhargava, Franzini, and Narendranathan (1982).

for regression estimates using any of the three data sets.[145]

Second, in light of the heterogeneity of the local areas in the three data sets, and the fact that volume is on a per capita basis, we suspected a heteroscedastic error structure in the model given by equation (6.1).[146] Casual observation of residual plots from OLS regressions pointed to significant differences in the dispersion of residuals across the local areas within the three data sets. Further, because we did not know the form of the heteroscedasticity, we performed general tests for heteroscedasticity. The results of these tests supported the casual observations made from the plots of OLS residuals.[147] Although OLS parameter estimates are unbiased with a heteroscedastic model, they are not efficient. As a result, while the coefficients of the model in (6.1) were estimated using ordinary least squares, we estimated the variance-covariance matrix for these coefficients using an approach developed by White (1980).[148] White's estimator of the variance-covariance matrix of the least squares estimator of *B* does not require any specification of the form of the heteroscedastic error structure, and allows us to perform hypothesis tests using

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[145] In contrast to our results, Muris, Scheffman, and Spiller (1993) found evidence of serial correlation. It is possible that because our model is more fully specified than MSS's model, we found no first order serial correlation. At the same time, we recognize that seasonal considerations in the CSD industry raise the possibility of higher-order serial correlation (e.g., the error terms during a given year could be correlated with those of subsequent years, particularly because of the impacts of holidays on CSD price and volume levels). Arguably, this higher-order serial correlation is less likely to emerge in our model because the various holiday dummy variables are likely to account for this seasonal variation.

[146] For a discussion of this issue and of the more general problem of heteroscedasticity, see Greene (1990).

[147] For example, for all price and per capita volume regressions, Breusch-Pagan test results indicate that we cannot accept the null hypothesis of homoscedastic errors. For a discussion of this test statistic, see Greene (1990).

[148] For a discussion of this approach, see White (1980). For a summary discussion of this estimator, see Greene (1990).

these estimates. Since prior information about its form was not available, we corrected for this heteroscedastic error structure by using White's estimator of the variance-covariance matrix. In what follows, therefore, we report OLS parameter estimates along with t-test results based on White's estimator of the variance/covariance matrix of these parameter estimates.

Third, the use of cross-sectional and time series data also raises the possibility of some correlation in the error structures across the local areas in our samples. It is noteworthy that omitted variables can give rise to these cross-sectional correlations. Either contemporaneous or intertemporal correlations could arise in this context. For example, if all CSD bottlers face cost increases that are not accounted for by the model, errors across cities could be contemporaneously correlated as a result. Intertemporal correlations could arise if, for example, we are unable to model new CSD brands that are systematically introduced at different times across the local areas in the three data samples. Although we recognize these issues, the model assumes that these correlations are minimal. In part, we make this assumption because the price and per capita volume regression models are quite comprehensive, containing some 40 independent variables in each case. This raises doubts about any omitted variables problem with the model. Further, while these correlations could lead to biased estimates of the parameters in (6.1) should any remaining omitted variables be correlated with corresponding independent variables, we believe it is unlikely that any such variables are correlated with the key event variables.[149]

[149] In fact, when we added different independent variables at different stages of developing the model, the parameter estimates associated with the event variables remained stable. This suggests that any cross-sectional correlations would probably not impact on estimates of the competitive effects of the key event variables. The discussion on robustness below also suggests that the estimates of the impacts of the event variables on CSD price and per capita volume measures are robust to changes in the model specification.

In sum, while OLS coefficient estimates are likely to be unbiased, we obtain the relevant variance/covariance estimates by applying White's estimator, and use these estimates to correct for an unknown heteroscedastic error structure and test various hypotheses concerning the statistical significance of the model's coefficient estimates.

C. Regression Results for the Key Policy "Event" Variables

As discussed in Chapter IV, the model contains three different types of events that are the focus of our analysis: (1) horizontal transfers of Dr Pepper and 7UP franchises to Coca-Cola and Pepsi-Cola bottlers, (2) vertical integration by the parent companies of Coca-Cola and Pepsi-Cola bottlers, and (3) consolidations of third bottlers.

As explained previously, the model differentiates horizontal transactions by their size. TB measures transfers of Dr Pepper and 7UP franchises with at least a five percent share, while TS involves transfers of these franchises with shares below five percent. Similarly, CB measures third bottler franchise transfers of a least a 3.5 percent share, while CS captures third bottler franchise transfers below 3.5 percent. Four different vertical integration variables (VX, VAX, VZ, and VAZ) are considered, with the definitions of these variables depending on the extent of a parent company's control over its bottler, and on whether the Coca-Cola Company and PepsiCo both own their bottlers in a given area. VX reflects the highest level of vertical integration, while VAZ reflects the lowest level of vertical integration. This chapter focuses attention on the effects these different types of events have on CSD prices and per capita volumes. First we examine the directional effects these events have (i.e., whether they seem to have significant procompetitive or anticompetitive effects). Then we examine the magnitude of those effects to determine the

extent of their impact. Results for the other variables (control variables) included in the model are provided in Appendix D.

1. Directional Effects

a. Horizontal Franchise Transfers

Table VI.2 summarizes the estimation results for the key policy event variables used in the model. According to these empirical results, horizontal transfers of Dr Pepper and 7UP franchises to Coca-Cola and Pepsi-Cola bottlers raise antitrust concerns. With the exception of the effects of small horizontal transactions during the period of the Scantrack 1 data set, both the large and small horizontal transfers of Dr Pepper and 7UP franchises in the sample are consistently associated with higher CSD prices and lower per capita volumes, other variables equal. The relevant positive coefficients from the price regressions range from .1689 to .3835 for TB and from .0866 to .2120 for TS, while the relevant negative coefficients from the per capita volume regressions range from -.1226 to -.3596 for TB and from -.2223 to -.5033 for TS. All of these estimates are statistically different from zero, suggesting that horizontal franchise transfers (both large and small) have significant anticompetitive impacts on CSD prices and per capita volumes, other variables constant.[150] These findings are consistent with the unilateral and/or collusive anticompetitive theories discussed in Chapter IV, and with an antitrust policy that challenges both large and small acquisitions of Dr Pepper and 7UP franchises by Coca-Cola and Pepsi-Cola bottlers. While small horizontal transfers of Dr Pepper and 7UP franchises to Coca-Cola and Pepsi-Cola bottlers have not been subject to FTC antitrust enforcement actions to date,

[150] The magnitudes of these impacts (and those from other events) are discussed in Section C(3) of this chapter.

Table VI.2

Estimation Results - The Key Policy Event Variables

Regression Set/ Variable Name	Expected Sign	NEGI Data Set (1981-85)	Scantrack 1 Data Set (1987-89)	Scantrack 2 Data Set (1989-91)
Price Regressions				
TB (Big Horizontal Transfers)	+	0.3835 (11.81)	0.1689 (3.06)	N/A
TS (Small Horizontal Transfers)	+	0.2120 (4.86)	-0.0619 (-2.95)	0.0866 (3.80)
VX (Vertical Integration)	-	-0.2358 (-11.33)	-0.0228 (-1.17)	-0.0264 (-3.10)
CB (Big 3rd Bottler Consolidations)	-	0.0869 (4.06)	-0.0981 (-4.12)	-0.0461 (-2.73)
CS (Small 3rd Bottler Consolidations)	-	0.2064 (6.49)	0.1188 (4.97)	0.0245 (1.20)
Volume Regressions				
TB (Big Horizontal Transfers)	-	-0.3596 (-5.93)	-0.1226 (-3.82)	N/A
TS (Small Horizontal Transfers)	-	-0.2223 (-4.07)	0.0998 (6.03)	-0.5033 (-13.85)
VX (Vertical Integration)	+	-0.0397 (-0.89)	0.0001 (0.01)	-0.0998 (-4.96)
CB (Big 3rd Bottler Consolidations)	+	0.2102 (4.87)	0.1238 (4.86)	0.1890 (5.80)
CS (Small 3rd Bottler Consolidations)	+	-0.2330 (-5.50)	-0.0955 (-3.60)	-0.1846 (-4.97)

Notes: For a complete set of regression results, see Tables D.1 and D.2 of Appendix D. This table contains coefficient estimates and t-statistics in parentheses. The t-statistics are adjusted for heteroscedasticity. N/A means not applicable. Estimated coefficients for the price regressions are stated in dollars per 100 ounce case. Coefficients for the volume regressions are stated in ounces per capita for the observation period (bimonthly for the NEGI data set and 28 days for the other two data sets). The analysis of each vertical variable requires its own full set of regressions. The estimates in this table apply to the regressions that contain VX, the purest form of vertical integration. However, regression results for variables other than the vertical variable are fairly stable across the different versions of the vertical variable. All of the key event variables (other than the vertical variable itself) have the same signs and levels of significance in each of the three data sets, regardless of which vertical variable is used.

a case by case investigation of the competitive impacts of these transactions may be warranted, according to our statistical results.

b. Vertical Integration

While the different definitions for the vertical integration variable yielded relatively consistent, anticipated results in the price regressions, this is not the case in the per capita volume regressions. The competitive effects associated with the vertical integration variable in the per capita volume regressions are mixed.

Focusing first on the price regressions, Table VI.3 shows that vertical integration into CSD bottling by the Coca-Cola Company and PepsiCo tends to reduce CSD prices, as expected. The purest form of vertical integration (VX, where both parent companies control their bottlers) produced results that are most consistent with our expectations. All three of the data sets have negative coefficients for the VX variable, with the coefficient estimates ranging from -.0228 to -.2358.[151] These results hold over the entire time period of our data, and two of the estimates are statistically significant.

The other definitions for the vertical integration variable also have results that are consistent with our expectations in the price regressions. Table VI.3 shows vertical integration leading to lower CSD prices in five of the remaining eight regressions, with all five of these being statistically significant. The VAX and VZ definitions, both of which relax one of the definitional requirements for vertical integration, have two of the three regressions with

[151] This is -2.3 to -23.6 cents per 100 oz. case. The estimate of -2.3 cents per case applies to the Scantrack 1 data set where the mean price is $1.93 per case, hence the estimated effect in that data set is -1.2 percent. The estimate of -23.6 cents per case is from the NEGI data set where the mean price is $2.29 per case. In the NEGI data set, the estimated effect is thus -10.3 percent.

Table VI.3				
Vertical Integration Results Sensitivity				
Regression Set/ Variable Name	**EXPECTED SIGN**	**NEGI Data Set**	**Scantrack 1 Data Set**	**Scantrack 2 Data Set**
Price Regressions				
VX (full vertical integration of both Coca-Cola and Pepsi bottlers)	-	-0.2358 (-11.33)	-0.0228 (-1.17)	-0.0264 (-3.10)
VAX (full vertical or partial integration of both major bottlers)	-	-0.1720 (-8.54)	0.0342 (2.08)	-0.0230 (-2.32)
VZ (full vertical integration of either or both major bottlers)	-	-0.0594 (-4.07)	0.2217 (6.48)	-0.0245 (-2.12)
VAZ (full or partial vertical integration of either or both major bottlers)	-	-0.1134 (-8.73)	0.0188 (0.87)	N/A
Volume Regressions				
VX (full vertical integration of both Coca-Cola and Pepsi bottlers)	+	-0.0397 (-0.89)	0.0001 (0.01)	-0.0998 (-4.96)
VAX (full vertical or partial integration of both major bottlers)	+	0.0153 (0.38)	0.0449 (4.09)	-0.2593 (-12.45)
VZ (full vertical integration of either or both major bottlers)	+	-0.0783 (-2.79)	-0.0535 (-2.59)	-0.0453 (-2.50)
VAZ (full or partial vertical integration of either or both major bottlers)	+	-0.0917 (-3.29)	0.0192 (1.23)	N/A
Note: This table contains coefficient estimates and t-statistics in parentheses. The t-statistics are adjusted for heteroscedasticity. Estimated coefficients for the price regressions are stated in dollars per 100 ounce case. Coefficients for the volume regressions are stated in ounces per capita for the observation period (bimonthly for the NEGI data set and 28 days for the other two data sets). Regression results are not reported for the VAZ type of vertical integration event in the Scantrack 2 data set because nearly all of the observation periods in that data set have this type of event.				

significant negative coefficients, just like the VX variable did. VAZ, the weakest measure of vertical integration, also has a negative coefficient when its result is statistically significant.

Thus, we consistently find that vertical integration tends to lower CSD prices, as we expected.[152]

The per capita volume regression results for the vertical integration variable, however, are ambiguous across our three data sets, and seem to vary with the extent of vertical integration into CSD bottling operations. As seen in Table VI.3, all of the vertical integration variables, except VZ, have mixed per capita volume results. Only three of the six regressions with the VX and VAX definitions are statistically significant, and they do not all have the same sign. Although the VZ definition yields significant negative coefficients in all three per capita regressions (contrary to our expectations), only one of the two regressions with the VAZ variable is statistically significant.

Overall, these vertical integration variable results are consistent with FTC decisions not to challenge parent company acquisitions of their bottlers. The price regression results (which suggest that vertical integration is procompetitive because it lowers CSD prices) clearly support such decisions. The per capita volume regression results are ambiguous, providing little guidance for policy makers. Three of the four vertical integration variables have mixed per capita volume results. Although the VAZ definition yielded (unexpected) consistent negative per capita volume coefficients, this finding, alone, is not sufficient to support any of the anticompetitive theories of vertical integration discussed in Chapter IV. With the price regression results supporting FTC decisions not to challenge parent company acquisitions of their bottlers, and the per capita volume regression results not inconsistent with that approach, the

[152] It should be noted that all of the vertical integration results that do not have statistically significant negative price effects involved the Scantrack 1 data set. As discussed in Chapter V, that data set likely covered a period of significant disequilibrium -- with a lot of vertical integration having taken place just before it. Therefore, it may be difficult to isolate the effects of vertical integration from the effects of other activities that contributed to this state of disequilibrium during the Scantrack 1 data period.

overall results do not warrant changing current antitrust policy towards vertical integration in the CSD industry. Rather, these results seem to call for further study of the effects of vertical integration on CSD per capita volumes.

c. Third Bottler Consolidations

Empirical findings relating to consolidations between third bottlers, unlike the results for the horizontal franchise transfers, vary with the size of the acquired franchise. On one hand, third bottler transactions that involve the consolidation of large CSD franchises generally reduce prices and raise per capita volume levels. As seen in Table VI.2, two of the three parameter estimates from the price regressions have negative signs that are statistically significant, while all three of the parameter estimates from the per capita volume regressions have positive signs that are statistically significant. These empirical findings indicate that large third bottler consolidations are associated with additional competition in local CSD markets, as expected, with attendant lower prices and higher per capita volumes.

On the other hand, small third bottler consolidations are associated with higher prices and lower per capita volume levels, according to the empirical results in Table VI.2. These results hold for all regressions, and are statistically significant in five of the six cases.

The contrast between the results for large and small bottler consolidations was unexpected. One potential explanation is that the efficiency effects for large third bottler consolidations generally are greater than the potential anticompetitive effects of the reduced number of bottlers in the area. Conversely, for small consolidations of third bottlers, relatively small efficiency gains are available, allowing the anticompetitive effects of fewer bottlers to

predominate. It is also possible that small third bottlers are more likely to be maverick firms.[153] Overall, while small third bottler consolidations have not been subject to any antitrust enforcement actions, further examination of the competitive impacts of these transactions may be warranted, according to our statistical results.[154]

d. Summary

In sum, the findings relating to the important large horizontal and vertical acquisitions contained in the three data sets are consistent with both prior expectations and recent antitrust policy in the CSD industry. The results strongly support the FTC's challenges of Coca-Cola or Pepsi-Cola bottler acquisitions of large Dr Pepper and/or 7UP franchises from third bottlers (TB events), while allowing large third bottler consolidations (CB events) to go unchallenged. The results for the vertical integration variable generally are consistent with the FTC's decision not to challenge Coca-Cola Company and PepsiCo acquisitions of their bottlers. However, the CS results, along with the vertical integration variable's per capita regression results, suggest that further study of these types of bottler acquisitions may be warranted.

2. Interpreting the Directional Effects

One might question whether the CSD price and per capita volume effects observed in the above regression analysis actually capture the impacts of events (as intended), or simply reflect differences in preexisting performance levels in different areas. Perhaps horizontal franchise

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[153] Maverick firms may discourage coordinated interaction. See, *Horizontal Merger Guidelines*, §2.12.

[154] Additional insights may be available from examining individual brand group price and per capita volume data. For example, they may indicate whether the observed price and per capita volume changes are associated with individual brand groups or reflect a market-wide phenomenon.

transfers, for example, take place in markets with high CSD prices and low per capita CSD volumes to begin with (as suggested by some of the data in Tables V.4 and V.5 above). If so, then perhaps the anticompetitive effects our regression analysis associates with horizontal franchise transfers do not reflect event-related changes, but simply the preponderance of areas with high CSD prices and low per capita CSD volumes where such transfers took place.

The econometric model applied to our data addresses this potential problem by attempting to include a separate variable for each factor that may impact CSD prices and per capita volumes in the model. When the regression analysis examines how horizontal franchise transfer events affect CSD prices, for example, it does so by controlling for (i.e., holding constant) all of the other factors/variables included in the model (including variables that account for area-specific differences like cost/price differences) that also may affect CSD prices.

A simple comparison of pre-event and post-event CSD mean prices or per capita volumes (or of CSD means in areas with events to CSD means in areas without events) that does not control for other factors that also may affect CSD prices and per capita volumes, would not yield conclusive results about the impacts of those events. For example, if post-event CSD mean prices exceed pre-event CSD mean prices, one might be tempted to infer that CSD prices increased as a result of the event; however, the price increase may have been due to cost increases (over time), and not to the event at all. Similarly, one might observe higher per capita CSD volumes after an event than before it, and assume that the event was responsible for that increase when, in fact, that is not the case. Rather, the higher per capita volumes may have been due to increases in income, higher temperatures, or other demand factors. Our regression analysis sorts out the effects that events have on CSD prices and per capita volumes from the

effects that other factors have on CSD prices and per capita volumes, which a simple comparison of means does not do.

Moreover, our regression results have been subject to various sensitivity tests. In addition to the three sets of regressions corresponding with our three data sets (discussed above), we also considered different model specifications (discussed below).[155] These tests show our regression results to be robust with respect to the effects that the event variables have on CSD performance. Thus, it is unlikely that the regression results for our event variables simply reflect preexisting differences in area performance levels (e.g., high-priced or low per capita volume areas).

3. Magnitude of the Effects of Horizontal and Vertical Events

Our results for horizontal and vertical consolidations in the CSD industry indicate that the effects are not just statistically significant, but also sizeable in their magnitudes. We summarize the magnitudes of these effects during the three sample periods in Table VI.4. In each case, since the policy event variables assume a value of one at the time of (and after) an event and zero otherwise, a given parameter estimate in this table reflects a once and for all change in CSD price or per capita volume caused by a horizontal or vertical transaction from the time of the transaction through the end of the sample period.[156] The elasticity estimates measure these changes in percentage terms. For example, the transfer of a large 7UP or Dr Pepper franchise from a third bottler to a Coca-Cola or Pepsi-Cola bottler during the period covered by the NEGI data raised the price of a 100 ounce unit by about $.38 (see the estimated coefficients for TB in

[155] The specifications considered include models with all of our explanatory variables, and models with subsets of our explanatory variables.

[156] In a few areas, a dummy event variable is reassigned a value of zero before the end of the sample period because the acquisition was reversed before the end of the sample period.

Table VI.4				
Price/Volume Elasticity Estimates for the Key Policy Event Variables [95% Confidence Intervals]				
Regression Set/Variable Name Estimates	**NEGI Data Set**	**Scantrack 1 Data Set**	**Scantrack 2 Data Set**	**Average**
Price Regressions (Mean Values)	$2.29 per 100 oz. case	$1.93 per 100 oz. case	$1.89 per 100 oz. case	$2.04 per 100 oz. case
TB - Elasticity Estimate [95% Confidence Interval]	.1675 [.1391 to .1959]	.0875 [.0303 to .1447]	N/A	.1275
TS - Elasticity Estimate [95% Confidence Interval]	.0926 [.0540 to .1306]	-.0321 [-.0538 to -.0104]	.0458 [.0217 to .0699]	.0354
VX - Elasticity Estimate [95% Confidence Interval]	-.1030 [-.1212 to -.0848]	-.0118 [-.0320 to .0084]	-.0140 [-.0230 to -.0050]	-.0429
CB - Elasticity Estimate [95% Confidence Interval]	.0379 [.0193 to .0565]	-.0508 [-.0755 to -.0261]	-.0244 [-.0423 to -.0065]	-.0124
CS - Elasticity Estimate [95% Confidence Interval]	.0901 [.0623 to .1179]	.0616 [.0368 to .0864]	.0130 [-.0086 to .0346]	.0549
Per Capita Volume Regressions (Mean Values in 100 oz. cases)	2.79 cases per bimonthly period	1.07 cases per four-week period	.83 cases per four-week period	.83 cases/4-week period
TB - Elasticity Estimate [95% Confidence Interval]	-.1289 [-.1723 to -.0855]	-.1146 [-.1746 to -.0546]	N/A	-.1218
TS - Elasticity Estimate [95% Confidence Interval]	-.0797 [-.1189 to -.0405]	.0933 [.0624 to .1242]	-.6064 [-.6940 to -.5188]	-.1976
VX - Elasticity Estimate [95% Confidence Interval]	-.0142 [-.0462 to .0178]	.0001 [-.0186 to .0188]	-.1202 [-.1687 to -.0717]	-.0448
CB - Elasticity Estimate [95% Confidence Interval]	.0753 [.1063 to .0443]	.1157 [.0681 to .1633]	.2277 [.1492 to .3062]	.1396
CS - Elasticity Estimate [95% Confidence Interval]	-.0835 [-.1139 to -.0531]	-.0893 [-.1389 to -.0397]	-.2224 [-.3119 to -.1329]	-.1317
Notes: N/A means not applicable. No TB events took place during the time period covered by the Scantrack 2 data set. The average values are the mean values of the elasticity estimates across the three data sets.				

Table VI.2), or by about 17 percent of the $2.29 average unit price (as shown for TB in the NEGI column of Table VI.4). In what follows, we discuss the magnitude of the effects of horizontal and vertical transactions involving CSD bottlers and their parent companies. VX is used as the vertical integration variable because it is the purest and most complete measure of vertical integration.

Transfers of large 7UP or Dr Pepper franchises from third bottlers to Coca-Cola and Pepsi-Cola bottlers (TB) generally led to greater price increases than transfers of smaller franchises (TS). In fact, large franchise transfers raised prices an average of 12.8 percent, while small franchise transfers increased prices by some 3.5 percent.[157] Small horizontal franchise transfers reduced per capita volume by 19.8 percent, on average, exceeding the 12.2 percent average per capita volume reduction for large horizontal franchise transfers. However, the magnitude of the average TS per capita volume result was driven by the unusually large impact of small franchise transfers in the Scantrack 2 data set.[158] These results suggest that, in addition to other competitively significant horizontal and vertical acquisitions, even transfers of small 7UP or Dr Pepper franchises from third bottlers to Coca-Cola and Pepsi-Cola bottlers may have significant competitive effects in local areas.

Vertical ownership of Coca-Cola and Pepsi-Cola bottlers by their respective parent

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[157] Again, these price increases apply to periods at and after the time periods at which these transfers took place.

[158] We analyzed whether the high TS elasticity in the Scantrack 2 data set's per capita volume regression may be attributable to a single TS event, but found no such explanation. In light of the unexpectedly large magnitudes of the Scantrack 2 and average TS elasticities in the per capita volume regressions (and the sizes of those elasticities in comparison to the TS elasticities in the price regressions), further study of these types of bottler acquisitions may be warranted.

companies (as measured by VX) reduced CSD prices by an average of 4.3 percent during those portions of the sample period the parent companies controlled these bottlers. Vertical integration lowered per capita volume an average of 4.5 percent over the same time frame.[159]

Table VI.4 highlights the different (and opposite) impacts that large and small third bottler consolidations appear to have on CSD prices and per capita volumes. Large third bottler consolidations (CB) appear to lower CSD prices an average of 1.2 percent, while small third bottler consolidations (CS) appear to raise CSD prices an average of 5.5 percent. The per capita volume impacts of these third bottler consolidations are even greater. Large third bottler consolidations appear to raise CSD per capita volumes an average of 14.0 percent, while small third bottler consolidations appear to lower CSD per capita volumes an average of 13.2 percent.[160] As discussed above, these unexpected opposite results may arise because third bottler consolidations of different sizes may have different efficiency and anticompetitive effects. These findings suggest that further examination of the competitive effects of third bottler consolidations may be warranted.

[159] It should also be noted that, like the impacts of horizontal franchise transfers, the magnitude of the competitive effects of vertical integration changed over the sample period. For example, vertical integration lowered prices by 10.3 percent during the NEGI time period, but by slightly over 1.0 percent during the time periods covered by the Scantrack 1 and Scantrack 2 data sets. It also should be noted that two of the three parameter estimates underlying the average per capita volume elasticity figure are not statistically different from zero. As a result, the reliability of this volume effect may be weak.

[160] Given the heterogeneity of our third bottler consolidations, it is difficult to interpret the magnitudes of our CB and CS results (e.g., one might expect different results from combinations of Dr Pepper and 7UP franchises (noncolas) than from either of these franchises combining with RC (a cola) because colas account for more than 60% of CSD sales).

D. Regression Results for the Other Explanatory Variables

Appendix D contains empirical findings for the impacts that the control variables had on CSD prices and per capita volumes. On the whole, just as with the event variables, some of these control variables had strong, consistent results that were expected, while other results were mixed or unexpected.

E. Robustness of the Results

The above discussion of regression results demonstrates, with some exceptions, that the empirical findings tend to be robust for the key policy-related event variables. The coefficient estimates generally had the anticipated signs and usually were statistically significant. In this section we further analyze the robustness of the model by considering different model specifications.

First, we report regression results using non-linear forms of the variables rather than the linear specification that underlaid the model developed in Chapter IV and the results reported earlier in this chapter. In addition, we report results for (1) a sparse linear model limited only to the policy event variables, (2) an events model with time and city dummy variables that provide gross controls for other factors affecting CSD prices and per capita volumes, and (3) our expanded reduced form model without its capacity-related variables.

These three linear models may be viewed as simplified versions of the reduced form model developed in Chapter IV, and tested above. The first of these models includes the events that are the focus of our analysis, but does not control for other explanatory variables that are expected to affect CSD prices and per capita volumes. The second model with time and city

dummy variables improves this specification because it attempts to control for these other variables, but does so in an indirect, gross way rather than the more direct, detailed approach taken in the model specified in Chapter IV. The third model approaches our complete regression model, but without capacity-related variables that arguably may create a simultaneity problem with our per capita volume dependent variable.[161]

Since we are most interested in the policy event variables, we focus on the robustness of the results for these variables. The VX definition is used for the vertical integration variable because it represents the purest form of vertical integration and best reflects the theoretical basis for this variable. The similarity in sign and significance of the event coefficients across these different specifications (shown below) indicates that the results for the policy event variables are generally robust.

Table VI.5 shows the sign and significance of the policy event variables in our full linear model compared to those using four common nonlinear specifications. Specification LB converts both dependent and continuous independent variables to logarithmic form. Specification L converts only the continuous independent variables to logarithmic form. Specification SB converts both dependent and continuous independent variables to squared form.

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[161] The use of bottler capacity and capacity share variables (BIG-3RDC, BIG-BTCS, BIG-BTC, and BIG-3RDCS) could raise a simultaneity issue if these variables are not independent of CSD price and per capita volume levels in local areas. We constructed the capacity variables on the basis of peak volume and market share data over relatively long periods of time (e.g., one year or more), in part, to minimize correlation with endogenous volume and market share measures (Note from Appendix E, for example, that the correlations between BIG-BTC (the biggest bottler's capacity) and FV (per capita volume) are only -.08, +.43, and +.20, respectively, for the NEGI, Scantrack 1, and Scantrack 2 data sets). Nevertheless, the capacity measures still may be endogenous. We, therefore, estimated our model without these capacity variables to determine if their exclusion would produce any significant changes in the parameter estimates relative to those of the complete model (see Specification G discussed below).

Table VI.5

Policy Event Variable Robustness -- Nonlinear Variables

Policy Event Variable & [Expected Sign]	**Full Linear Model**	**Spec. LB (log both depen. and indep.)**	**Spec. L (log indep.)**	**Spec. SB (sq. both depen. and indep.)**	**Spec. S (sq. indep.)**
Price Regressions					
TB (big horizontal transfer) [pos]	N pos sig 1 pos sig 2 n/a	pos sig pos sig n/a	pos sig pos sig n/a	pos sig pos sig n/a	pos sig pos sig n/a
TS (small horizontal transfer) [pos]	N pos sig 1 neg sig 2 pos sig	pos sig pos pos sig	pos sig pos pos sig	pos sig neg sig pos sig	pos sig neg sig pos sig
VX (vertical) [neg]	N neg sig 1 neg 2 neg sig	neg sig neg neg	neg sig neg neg	neg sig pos neg sig	neg sig pos neg sig
CB (big consoli-dation) [neg]	N pos sig 1 neg sig 2 neg sig	pos sig neg sig neg	pos sig neg sig neg	pos sig neg sig neg sig	pos sig neg sig neg sig
CS (small consolidation) [neg]	N pos sig 1 pos sig 2 pos	pos sig pos sig pos	pos sig pos sig neg	pos sig pos sig pos	pos sig pos sig pos
Volume Regressions					
TB (big horizontal transfer) [neg]	N neg sig 1 neg sig 2 n/a	neg sig neg sig n/a	neg sig neg sig n/a	neg sig neg sig n/a	neg sig neg sig n/a
TS (small horizontal transfer) [neg]	N neg sig 1 pos sig 2 neg sig	neg sig neg neg sig	neg sig pos neg sig	neg sig pos sig neg sig	neg sig pos sig neg sig
VX (vertical) [pos]	N neg 1 pos 2 neg sig	pos neg pos	neg neg neg sig	neg neg neg sig	neg neg neg
CB (big consoli-dation) [pos]	N pos sig 1 pos sig 2 pos sig	neg pos sig pos sig	pos pos sig pos sig	pos pos sig pos sig	pos pos sig pos sig
CS (small consolidation) [pos]	N neg sig 1 neg sig 2 neg sig	neg sig neg sig neg sig	neg sig neg sig neg sig	neg sig neg sig neg sig	neg sig neg sig neg sig

Notes: "pos" indicates a positive sign for the coefficient, while "neg" indicates a negative sign for the coefficient. "Sig" indicates that the coefficient is statistically significant at the five percent level. "n/a" means not applicable. Rows of regressions labeled N are from the NEGI data set, while rows labeled 1 and 2, respectively, are from the Scantrack 1 and Scantrack 2 data sets. All of the significant results for the nonlinear specifications are in the same direction as the main full linear regression model results.

Specification S converts only the continuous independent variables to squared form. The signs and significance levels of the policy event variable coefficients in the logarithmic and squared models correspond closely to those of the full linear model. In fact, there are no instances where a nonlinear model result is significant and in the opposite direction (i.e., opposite sign) from the full linear model's results.

Table VI.6 shows the sign and significance of the policy event variables in our full linear model compared to those using the three more limited linear models described above. Specification E is the model in which the events variables are the only independent variables. Specification F is the model that has time and city dummy variables to supplement the event variables. Specification G is the model without capacity-related variables. The entries and labels of this table are the same ones used in Table VI.5. Italics is used if the coefficient is significant and in the opposite direction from the results in the full linear model. In the majority of cases, the policy event variable results from these limited models are very similar to those in the full linear model. The largest number of differences occur when the events only model (Specification E) is compared to the full model. This is understandable since the events only model has no controls to account for other factors (e.g., demand, supply, and structural variables) that may explain CSD prices and per capita volumes.[162]

Tables VI.5 and VI.6 show that the coefficients associated with the policy event variables are robust to changes both in the included variables and in the form of the specification.

[162] In the events only model, the exceptions are most pronounced for the small consolidations variable (CS) which appears to have a negative relationship to price in two data sets, but proves to have a positive relationship in the full linear model. The other exceptions are scattered. The other two limited models, combined, have only two policy event variable results that are significant and different in sign from the full model for the price regressions, and two such differences in the per capita volume regressions.

Table VI.6				
Policy Event Variable Robustness -- Different Variable Specifications				
Policy Event Variable & [Expected Sign]	**Spec. E (events only model)**	**Spec. F (events with time and city dummies)**	**Spec. G (full model without capacity-related variables)**	**Full Linear Model**
Price Regressions				
TB (big horizontal transfer) [pos]	N pos sig 1 pos sig 2 n/a	pos sig *neg sig* n/a	pos sig pos sig n/a	pos sig pos sig n/a
TS (small horizontal transfer) [pos]	N pos sig 1 pos 2 neg	pos neg sig pos	pos sig neg sig pos sig	pos sig neg sig pos sig
VX (vertical) [neg]	N neg sig 1 neg sig 2 neg	neg sig neg sig *pos sig*	neg sig pos neg sig	neg sig neg neg sig
CB (big consolidation) [neg]	N pos sig 1 *pos sig* 2 neg sig	pos sig neg sig neg	pos sig neg neg sig	pos sig neg sig neg sig
CS (small consolidation) [neg]	N pos sig 1 *neg sig* 2 *neg sig*	pos pos sig pos	pos sig pos pos	pos sig pos sig pos
Volume Regressions				
TB (big horizontal transfer) [neg]	N *pos sig* 1 neg sig 2 n/a	neg sig neg sig n/a	neg sig pos n/a	neg sig neg sig n/a
TS (small horizontal transfer) [neg]	N pos 1 *neg sig* 2 neg sig	neg sig neg neg	neg sig pos neg sig	neg sig pos sig neg sig
VX (vertical) [pos]	N neg 1 pos sig 2 *pos sig*	pos pos sig neg sig	neg pos *pos sig*	neg pos neg sig
CB (big consolidation) [pos]	N *neg sig* 1 pos sig 2 pos sig	neg pos sig pos sig	*neg sig* pos sig pos sig	pos sig pos sig pos sig
CS (small consolidation) [pos]	N neg sig 1 *pos sig* 2 neg sig	neg sig neg sig pos	neg sig neg sig neg sig	neg sig neg sig neg sig

Notes: "pos" indicates a positive sign for the coefficient, while "neg" indicates a negative sign for the coefficient. "Sig" indicates that the coefficient is statistically significant at the five percent level. "n/a" means not applicable. Rows of regressions labeled N are from the NEGI regression data, while rows labeled 1 and 2, respectively, are from the Scantrack 1 and Scantrack 2 data sets. Results in italics are significant and in the opposite direction from the main full linear regression model results (last column).

Although the policy event variable results for the more naive models often are consistent with the empirical findings of the full model, the full linear model contains variables we believe impact on CSD prices and per capita volume levels. The significance of many of these parameter estimates indicates that their inclusion materially adds to our price and per capita volume models.[163]

[163] The results for the demand and supply and structure variables are also generally stable across the alternative forms with scattered exceptions.

Chapter VII

Comparison to Prior Studies

The most notable prior studies of the CSD industry are Muris, Scheffman, and Spiller (MSS) (1993) and Tollison, Kaplan, and Higgins (TKH) (1991).[164] As with the present study, MSS and TKH were seeking evidence about antitrust policy questions in the CSD industry.

A. Horizontal Franchise Transfers

Neither MSS nor TKH treat the question of horizontal transfers of Dr Pepper or 7UP franchises out of third bottlers and into either the Coca-Cola or Pepsi-Cola bottler in the same area. With one exception, we find both large and small horizontal transfers of Dr Pepper and 7UP franchises from third bottlers to Coca-Cola or Pepsi-Cola bottlers resulting in higher CSD prices and lower per capita CSD volumes. All of these results are statistically significant.

B. Vertical Integration

Both MSS and TKH performed empirical tests to examine the effects of vertical integration into bottling by PepsiCo and the Coca-Cola Company during the 1980s.[165] MSS focused, first, on the effects PepsiCo's vertical acquisitions had on PepsiCo's CSDs. They ran regressions using four years of bimonthly Nielsen Audit PepsiCo volume data for five local areas

[164] There are a limited number of other economic articles on the CSD industry, none of which are as related to the present study as MSS and TKH. They include, for example, Higgins *et al*. (1995), Muris *et al*. (1992), Gasmi, Laffont, and Vuong (1992), Tedlow (1990), White (1989), and Adelman and Ardolini (1970).

[165] See, Muris *et al.* (1993 Chapters 10 and 11) and Tollison *et al.* (1991 Appendix M).

(Minneapolis, Omaha, St. Louis, Wichita, and Tulsa) involved in PepsiCo's May 1986 acquisition of MEI, one of PepsiCo's largest bottlers.[166] For a broader sample of forty-eight areas, their regressions used monthly Nielsen Scantrack price data covering two and one-half years from February 1987 to September 1989, but the price data were limited to 12-packs of canned regular brand Pepsi-Cola.[167]

MSS found, generally, that PepsiCo volume increased, retail prices for 12-packs of canned regular brand Pepsi decreased, and Pepsi bottler costs were reduced as a result of vertical integration.[168] MSS also employed detailed case analyses of PepsiCo vertical acquisitions in Denver and St. Louis,[169] and econometric work with stock market data,[170] in reaching this conclusion. MSS also found that long-established vertical integration of an area's Pepsi-Cola and/or Coca-Cola bottler was associated with lower prices for 12-packs of canned regular brand Coca-Cola. Similarly, 12-pack canned regular Pepsi-Cola prices were found to be lower in areas with PepsiCo or Coca-Cola parent-owned bottlers.[171]

In seeking to better understand their results, MSS found evidence that parent companies target poorly performing independent bottlers for full vertical integration or partial ownership

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[166] See, Muris *et al.* (1993 pp. 194-95)

[167] See, Muris *et al.* (1993 pp. 212-16).

[168] See, Muris *et al.* (1993 Chapters 9 through 11). In Tulsa, MSS found that volume declined significantly (30%) after PepsiCo's vertical integration. They reject this "implausibly large" sales reduction as possibly due to a data error or to an economic decline in the area associated with a drop in oil prices. See, Muris *et al.* (1993 pp. 195-199).

[169] See, Muris *et al.* (1993 Chapter 9).

[170] See, Muris *et al.* (1993 Chapter 12).

[171] See, Muris *et al.* (1993 pp. 216-223).

investments.[172] Further, MSS found that the efficiency effects of vertical integration took time to achieve because bottler acquisitions typically result in some turmoil.[173] Nevertheless, bottler cost reductions of 30% or more were observed in Denver and St. Louis within a few years of PepsiCo's acquisition of its bottlers in these cities.[174] MSS found that price declines from vertical integration took several years to fully materialize.[175]

TKH also analyzed the effects of PepsiCo's acquisition of MEI. They used four years of bimonthly Nielsen Audit data (from December 1984-January 1985 to October-November 1988) for three local areas (Minneapolis, Omaha, and St. Louis) in their analysis. TKH found that total CSD volume in all three areas increased following the MEI acquisition relative to U.S. volume. However, only one of these increases was statistically significant.[176]

TKH also used bimonthly Nielsen Audit data to examine whether vertical integration may facilitate collusion when both Coca-Cola and Pepsi-Cola bottlers in given areas become parent-owned. To do so they analyzed five local areas (Los Angeles, Phoenix, Detroit, Orlando, and

[172] See, Muris *et al.* (1993 pp. 224-232).

[173] See, Muris *et al.* (1993 p.192).

[174] See, Muris *et al*. (1993 Chapter 9). Mindful of this finding, we defined the vertical integration dummy variables in our regressions to have a value of one whenever vertical integration was present, even if the vertical integration took place before the data set began. In early modeling we used a vertical integration definition that did not account for vertical integration prior to the data set. We found more positive price and negative volume effects using this shorter-run definition of vertical integration.

MSS indicate that some of the cost reductions were associated with changes in product (elimination of returnable bottles) and service (increasing delivery of bulk sales) offerings. Such reductions in product and service variety may reduce consumer welfare because they may reduce consumer choice or lead to higher consumer prices due to higher retailer storage and handling costs associated with bulk deliveries.

[175] See, Muris *et al.* (1993 p. 211).

[176] See, Tollison *et al.* (1991 pp. 197-200).

Houston) where Pepsi-Cola bottlers were owned by PepsiCo, and where subsequently CCE acquired the Coca-Cola bottlers there.[177] They found that CSD volume increased in two of these areas and decreased in the other three areas (relative to the U.S. volume) after the acquisitions. None of the measured changes was statistically significant.[178]

MSS and TKH also examined the effects of vertical acquisitions by PepsiCo on brands of other concentrate manufacturers ("allied brands") that are sold by the acquired bottler. MSS estimated that vertical integration by PepsiCo in the Minneapolis area, where the Pepsi bottler also sold Dr Pepper, 7UP, and A&W, resulted in a statistically significant increase in 7UP case sales of about 10 percent.[179] Similarly, TKH found that non-PepsiCo CSD volume increased relative to U.S. volume in the three areas analyzed following PepsiCo's May 1986 acquisition of MEI. The increase in one of those areas (Minneapolis) was statistically significant.[180]

Our vertical integration results are consistent with those of MSS with respect to price (TKH did not examine the effects of vertical integration on price). All of the vertical integration definitions we use (except for the weakest one, VAZ) are associated with lower prices. Coefficients for the VX, VAX, and VZ vertical integration variables generally are negative in

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[177] This is analogous to the VX events described in Chapter IV, where a Coca-Cola or Pepsi-Cola vertical acquisition results in both parent Coca-Cola and parent Pepsi-Cola controlling their bottlers in a given area.

[178] See, Tollison *et al.* (1991 pp. 202-205).

[179] The estimated effect for Dr Pepper was positive, but not statistically significant, while that for A&W was negative (albeit virtually zero) and not statistically significant. MSS did not examine effects on allied brands in the other areas they studied on the basis that allied brand sales were not substantial in those areas pre-merger. See, Muris *et al.* (1993 pp. 200-06).

[180] Of the three areas analyzed (Minneapolis, Omaha, and St. Louis), only Minneapolis sold Dr Pepper or 7UP. Hires and Crush were the non-PepsiCo brands in Omaha, while A&W and Crush were the non-PepsiCo brands in St. Louis. See, Tollison *et al.* (1991 pp. 197-201).

sign and statistically significant in the price regressions. In fact, even VAZ shows CSD prices falling with more vertical integration when VAZ is statistically significant.

But, unlike MSS, we find little support for a positive volume effect of vertical integration. Like TKH, we do not find statistically significant consistent volume effects of vertical integration. Our per capita volume regression results for the vertical integration variable are mixed, and seem to vary with the extent of vertical integration into CSD bottling, as discussed in Chapter VI.

C. Third Bottler Consolidations

Neither MSS nor TKH provide any original treatment of third bottler consolidations. The closest element is TKH's general agreement that increased economies of scale in production, distribution, and promotion have increased the optimal size of territories, and made consolidations generally efficient.[181] This general statement is consistent with our empirical finding that large third bottler consolidations are associated with higher volume levels in all three data sets, and commonly with lower prices.[182]

D. Data Advances

Aside from the differences in coverage of policy variables discussed above, the present study makes a wide range of advances over previous studies in the span and scope of data. The distinctions in data between the present study and those of MSS and TKH are sketched below.

[181] See, Tollison *et al.* (1991 pp. 107-108).

[182] TKH's position is not supported by our results for small third bottler consolidations, which (as discussed in Chapter VI) may warrant further study.

The most important cautionary observation about data improvements is that some of the explanatory variables display marked shifts in the direction and/or significance of effects over time, making results from single-period studies of the industry suspect. The present study represents a substantial improvement over earlier research efforts in the CSD industry for the following reasons:

(1) we consider a variety of events corresponding to a wider range of policy questions, including horizontal acquisitions of third bottler franchises by Coca-Cola and PepsiCo bottlers, rather than limiting the study to the effects of vertical integration;

(2) we use three data sets to examine local CSD performance during three periods spanning more than ten years, rather than being limited to a single relatively short-term time horizon (as our findings indicate, bottler performance sometimes has changed over time, so focusing on one relatively short time period may less accurately reflect the dynamics in the marketplace);[183]

(3) with each data set, we use both CSD price and per capita volume regressions (rather than one or the other) to evaluate CSD performance;

(4) we examine CSD performance using variables that aggregate across all of the major

[183] The MSS and TKH analyses of vertical integration cover a period of time during which the CSD industry was undergoing a substantial amount of change. CCE had just been formed, PepsiCo also acquired some of its biggest bottlers, the FTC had recently blocked Coca-Cola and PepsiCo from acquiring Dr Pepper and Seven-Up, respectively, and the DOJ was pursuing numerous price-fixing cases against CSD bottlers. These changes may have effects both during and after the time period analyzed by MSS and TKH, which might raise questions about the reliability of their results. As noted earlier, in looking at the effects of vertical acquisitions, MSS concluded that there are lags between ownership changes and the full effects of those acquisitions (See, Muris *et al.* (1993 Chapters 9 and 11).

CSD brand groups, which arguably are better performance measures than those that rely exclusively on individual company (and individual package size) observations or those that aggregate private label and warehouse brand sales with sales of major brands;

(5) all of our regression results are based on CSD data for dozens of local areas (rather than using a handful or fewer local areas to perform empirical tests); and

(6) we include a more complete set of explanatory variables, including variables representing several plainly relevant event, supply, demand, and structural concepts excluded from the specifications of the MSS and TKH models.[184]

Overall, in contrast to prior empirical studies of the CSD industry, this study accounts for a considerably broader set of antitrust policy variables and other explanatory variables, and analyzes the effects of these variables on CSD prices (and per capita volumes) over a longer period of time.

[184] The MSS analyses of individual brand prices (for regular cola) for a specific package size (12-pack cans) contained subsets of the following explanatory variables: vertical event, population, population growth, time, temperature, unemployment, U.S. price of the brand being analyzed, and seasonal dummy variables (See, Muris *et al.* (1993 Chapter 11)). The TKH analyses contained vertical event and seasonal control variables, and examined local area volume in comparison to U.S. volume (See Tollison *et al*. (1991 Appendix M)).

Chapter VIII

Conclusion

After decades of relative antitrust obscurity, the CSD industry moved front and center in the late 1970s with the FTC's investigation of exclusive CSD territories and subsequent Congressional action reversing the FTC's decision to challenge such exclusive territories. This was followed by dozens of cases of explicit collusion between bottlers brought by the DOJ in the late 1980s,[185] and the FTC's investigations of acquisitions at both the bottling and parent company levels. This increased antitrust attention continued into the 1990s, with numerous investigations (and occasional litigation) of mergers at both the bottling and concentrate levels.

Although the merger investigations of bottling acquisitions may have started with several competitive concerns, the focus seems to have narrowed primarily to acquisitions by Coca-Cola and Pepsi-Cola bottlers of important franchises from the independent third bottlers in the same area. At the concentrate level, acquisitions of additional major brand groups by the Coca-Cola Company and PepsiCo would appear to remain a concern. Other potential antitrust concerns with vertical integration of bottlers with concentrate firms, consolidations of third bottlers, and consolidations of brands outside of the Coca-Cola Company and PepsiCo at the concentrate level seem to have largely been put in abeyance.

The antitrust focus on CSD bottling has been in large part simultaneous with, and perhaps causally related to, major developments in CSD production, distribution, marketing, and

[185] By authorizing exclusive territories (and thereby preventing bottlers in adjacent territories from competing against one another), Congressional passage of the SDICA may have facilitated collusion.

franchise management. As described in Chapters II and III, scale economies in bottling have increased rapidly as CSD packaging shifted from returnable glass bottles to nonreturnable cans and plastic bottles. At the same time, expanded media markets and the network of superhighways facilitated broader marketing areas. Further, many of the pioneering families in the bottling business found themselves in transition as first or second generation owners approached retirement, thus raising the issue of cashing out of their investments.

Into this scene of shifting technology and uncertain bottling management, came the concentrate companies with varying agendas. The Coca-Cola Company and PepsiCo saw a need to consolidate franchises to better approximate natural marketing areas and a need to facilitate transfers of ownership from the founding families to new bottlers or expanding bottlers. Vertical integration appears to have been the quickest and most effective solution to this confluence of events for the Coca-Cola Company and PepsiCo. Perhaps ironically, some of the same disparities in prices and costs between areas that helped spark the FTC's concerns in the 1970s, seem to have caught the attention of management at the Coca-Cola Company and PepsiCo during the 1970s and 1980s. In reality, vertical integration and the elimination of exclusive territories can both be seen as solutions to the rigidities of the original bottling system that was being overtaken by technological and marketing changes by the 1970s.

As discussed in Chapter III, managements at Dr Pepper, RC, and especially Seven-Up appeared to have perceived the same imperatives to vertical integration as Coca-Cola and PepsiCo, but management transitions and debts from leveraged buyouts at the concentrate level reversed vertical integration by these firms and helped lead all three brand groups to completely divest their bottling assets. Only recently has Cadbury (which now owns Dr Pepper and Seven-

Up) changed its policy, and begun to acquire sizeable equity interests in many of its third bottlers.

In addition to assembling the indicia of technical and structural change in the CSD bottling industry presented in Chapter III, this study has sought to reexamine the policy conclusions reached during the 1980s and early 1990s, a time of transition for the CSD bottling industry. In retrospect, the econometric results presented above have implications for two antitrust policy conclusions of that era.

> First, the results strongly support government decisions to challenge large 7UP and Dr Pepper franchise acquisitions by Coca-Cola and Pepsi-Cola bottlers. The empirical results show these acquisitions to be generally associated with higher prices and lower per capita volumes.
>
> Second, the results are consistent with the government's decisions not to challenge Coca-Cola Company and PepsiCo acquisitions of their respective bottlers. The findings show vertical integration, in one form or another, to be generally associated with lower prices. The primary cautionary notes here are the mixed per capita volume regression results, and apparent sensitivity of those results to changes in the definition of what constitutes vertical integration.

Our empirical work provides some confirmation for the policy of allowing consolidations of third bottler franchises. The generally lower prices and higher per capita volume results for larger consolidations of third bottler franchises are consistent with this policy; however, our results for smaller consolidations may warrant further study. Our results for small horizontal Dr Pepper/7UP franchise transfers and our per capita volume regression results for our vertical integration variable also may warrant further study.

Finally, since our results occasionally vary considerably across data sets, they should give added impetus to the admonition to periodically "revisit" industries to update our understanding of the structures, institutions, and practices of the industry.

References

_____. *Ad $ Summary*. New York, NY: Leading National Advertisers, 1981-1992.

Adelman, E. and Ardolini, C. "Productivity in the Soft Drinks Industry." *Monthly Labor Review*, December 1970, *93*(12), pp. 28-30.

_____. *America's Corporate Families.* Parsippany, NJ: Dun's Marketing Services, 1986.

Baker, J., and P. Woodward, "Market Power and the Cross-Industry Behavior of Prices Around a Business Cycle Trough." unpublished working paper, 1994.

Bernheim, Douglas B. and Whinston, Michael D. "Common Marketing Agency as a Device for Facilitating Collusion." *RAND Journal of Economics*, Summer 1985, *16*(2), pp. 269-81.

_____. *Beverage Digest*. Bedford Hills, NY: Beverage Digest Company, Various Issues.

_____. *Beverage Digest Fact Book*. Bedford Hills, NY: Beverage Digest Company, 1999.

_____. *Beverage Industry*. Northbrook, IL: Stagnito Communications Inc., Various Issues.

_____. *Beverage Industry Annual Manual*. Northbrook, IL: Stagnito Communications Inc., Various Issues.

_____. *Beverage World*. New York, NY: Strategic Business Communications, Various Issues.

Bhargava, A.; Franzini, L. and Narendranathan, W. "Serial Correlation and the Fixed Effects Model." *Review of Economics and Statistics*, October 1982, *49*(4), pp. 533-49.

Blair R. and Kaserman D. *Economics of Vertical Integration and Control*. New York, NY: Academic Press, 1983.

_____. Boston Consulting Group. *The Future of the Soft Drink Industry, 1985-90*, 1985.

Bresnahan, Timothy F. and Reiss, Peter C. "Entry and Competition in Concentrated Markets." *Journal of Political Economy*, October 1991, *99*(5), pp. 977-1009.

Bumpass, Donald L. "The Trade-off between Market Power Increases and Efficiencies in Horizontal Mergers." *Atlantic Economic Journal*, December 1987, *15*(4), pp. 70-75.

_____. *Coca-Cola Bottling Co. of the Southwest*, 118 F.T.C. 452, 1994.

_____. *Coca-Cola Bottling Co. of the Southwest v. FTC*, 85 F.3d 1139 (5th Cir., 1996).

Dickson, V.A. "Efficiencies, Market Power and Horizontal Mergers," *Review of Industrial Organization*, 1986, *3*(1), pp. 10-24.

_____. *Dr Pepper/Seven-Up Cos., Inc., et al. v. FTC*, Civ. Action No. 91-2712 (D.D.C. Feb. 3, 1994).

_____. *Dr Pepper/Seven-Up Cos., Inc. and Harold Honickman v. FTC*, 798 F.Supp. 762 (D.D.C. 1992), aff'd in part and rev'd in part 991 F.2d 859 (D.C. Cir. 1993).

_____. *Effective Buying Index. Market Statistics.* New York, NY: Bill Communications Inc. Diskette, 1983-1991.

_____. Federal Trade Commission Staff Report to the Congressional Task Force on Tobacco and Health, *Competition and the Financial Impact of the Proposed Tobacco Industry Settlement*. September 1997.

Fisher, Alan A.; Johnson, Frederick I. and Lande, Robert H. "Mergers, Market Power, and Property Rights: When Will Efficiencies Prevent Price Increases?," *California Law Review*, July 1988, *77*(4), p. 777-827.

Gasmi, F.; Laffont, J. and Vuong, Q. "Econometric Analysis of Collusive Behavior in a Soft-Drink Market." *Journal of Economics and Management Strategy*, Summer 1992, 1(2), pp. 277-311.

Greene, William H. *Econometric Analysis*. New York, NY: Macmillan Publishing Company, 1990.

Greer, Douglas Frederick. *Advertising and Competition.* Ph.D. Dissertation, Cornell University, September 1968.

Hart, Oliver; Tirole, Jean; Carlton, Denis W. and Williamson, Oliver E. "Vertical Integration and Market Foreclosure; Comments and Discussion." *Brookings Papers on Economic Activity*, 1990, Special Issue, pp. 205-86.

Higgins, Richard S.; Kaplan David P.; McDonald, Michael J. and Tollison, Robert D. "Residual Demand Analysis of the Carbonated Soft Drink Industry." 1995, *Empirica 22*(2), pp. 115-26.

_____. *In the Matter of Coca-Cola Bottling Co. of the Southwest*, Complaint Counsel's Proposed Findings of Fact, Conclusions of Law, and Order, Volume l, FTC Docket No. 9215, February 11, 1991.

_____. *In the Matter of Coca-Cola Bottling Co. of the Southwest*, FTC's Complaint, FTC Docket No. 9215, July 29, 1988.

_____. *In the Matter of Coca-Cola Bottling Co. of the Southwest*, FTC's Opinion, FTC Docket No. 9215, August 31, 1994.

_____. *In the Matter of Coca-Cola Bottling Co. of the Southwest*, FTC's Order Returning Matter to Adjudication and Dismissing Complaint, Docket No. 9215, September 9, 1996.

_____. *In the Matter of Coca-Cola Bottling Co. of the Southwest*, Initial Decision, FTC Docket No. 9215, June 14, 1991.

_____. *In the Matter of The Coca-Cola Company*, Complaint Counsel's Proposed Findings of Fact, Conclusions of Law, and Order, Volumes l and ll, FTC Docket No. 9207, August 6, 1990.

_____. *In the Matter of The Coca-Cola Company*, FTC's Denial of Petition to Reopen, FTC Docket No. 9207, January 26, 1996.

_____. *In the Matter of The Coca-Cola Company*, FTC's Opinion, FTC Docket No. 9207, June 13, 1994.

_____. *In the Matter of The Coca-Cola Company*, Initial Decision, FTC Docket No. 9207, November 30, 1990.

_____. *In the Matter of The Coca-Cola Company, et al.*, FTC's Opinion, FTC Docket No. 8855, April 7, 1978.

_____. *In the Matter of PepsiCo Inc.*, FTC Docket No. C-3347, October 15, 1991.

_____. *In the Matter of PepsiCo Inc., et al.*, FTC Docket No. C-3262, June 29, 1989.

_____. *Jesse Meyers' Beverage Digest.* Stanford, CT: Tomac & Co. Inc., Various Issues.

Judge, George G. *et al. The Theory and Practice of Econometrics.* New York, NY: John Wiley & Sons, Inc., 1980.

Kmenta, Jan. *Elements of Econometrics.* Second Edition, New York, NY: Macmillan Publishing Company, 1986.

Krattenmaker, Thomas G. and Salop, Steven C. "Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power Over Price." *Yale Law Journal*, December 1986, *96*(2), pp. 209-93.

Kwoka, John E. "The Effect of Market Share Distribution on Industry Performance." *Review of*

Economics and Statistics, February 1979, *61*(1), pp. 101-09.

Kwoka, John E. and Ravenscraft, David J. "Cooperation vs. Rivalry: Price-Cost Margins by Line of Business." *Economica*, August 1986, *53*(211), pp. 351-63.

Machup, Fritz and Taber, M. "Bilateral Monopoly, Successive Monopoly, and Vertical Integration." *Economica*, May 1960, *27*, pp. 101-19.

Maddala, G.S. *Introduction to Econometrics*. New York, NY: Macmillan Publishing Company, 1988.

Maxwell, John C. Jr. *Historical Sales Trend in the Soft Drink Industry.* Richmond, VA: Wheat First Securities, Inc., March, 1994.

McMahon, Walter W. "Geographic Cost of Living Differences: An Update." *AREUEA Journal*, 19(3), 1991.

_____. *Mergers and Acquisitions Sourcebook.* Santa Barbara, CA: Quality Services Co., Various Issues.

_____. *Moody's Industrial Manual*. New York, NY: Moody's Investors Service, 1978-1987.

Muris, Timothy J.; Scheffman, David T. and Spiller, Pablo T. "Strategy and Transactions Costs: The Organization of Distribution in the Carbonated Soft Drink Industry." *Journal of Economics and Management Strategy*, Spring 1992, *1*(1), pp. 83-128.

Muris, Timothy J.; Scheffman, David T. and Spiller, Pablo T. *Strategy, Structure, and Antitrust in the Carbonated Soft-Drink Industry*. Westport, Conn.: Quorum Books, 1993.

_____. *National Beverage Marketing Directory.* Mingo Junction, OH: Beverage Marketing Corp., 1980-1981, 1982-1983.

National Soft Drink Association. *Sales Surveys of the Soft Drink Industry, 1970-1985*, reprinted in NSDA, *Statistical Profile*, 1986.

Nelson, Philip B., and Hilke, John C. "Retail Featuring as a Strategic Entry or Mobility Barrier in Manufacturing," *International Journal of Industrial Organization*, 1991, *9*(4), pp. 533-44.

Nelson, Richard "Increased Rents from Increased Costs: A Paradox of Value Theory." *Journal of Political Economy*, October 1957, *65*(5), pp. 387-93.

_____. *Nielsen Expanded Grocery Index (NEGI).* Stamford, CN: A.C. Nielsen Company, 1981-1985.

_____. *Nielsen Scantrack*. Stamford, CN: A.C. Nielsen Company, 1987-1991.

Oliver, Daniel. Speech Before the New England Antitrust Conference, Cambridge, MA, October 28, 1988.

Ordover, Janusz; Saloner, Garth and Salop, Steven. "Equilibrium Vertical Foreclosure." *American Economic Review*, March 1990, *80*(1), pp. 127-42.

Pendergrast, Mark. *For God, Country and Coca-Cola*. New York, NY: Charles Scribner's Sons, 1993.

_____. *PepsiCo Inc. v. Coca-Cola* Co., No. 98 Civ. 3282 (S.D.N.Y., Aug. 27, 1998).

_____. *Progressive Grocer's Market Scope*. Stamford, CT: Maclean Hunter Media Inc., 1984-1992.

Reiffen, David. "Equilibrium Vertical Foreclosure: A Comment." *American Economic Review*, June 1992, *82*(3), pp. 694-97.

Reiffen, David and Vita, Michael. "Comment: Is There New Thinking on Vertical Mergers?" *Antitrust Law Journal*, Spring 1995, *63*(3), pp. 917-41.

Riley, John J. *A History of the American Soft Drink Industry*. Washington, D.C.: American Bottlers of Carbonated Beverages, 1958.

Salinger, Michael A. "Vertical Mergers and Market Foreclosure." *Quarterly Journal of Economics*, May 1988, *103*(2), pp. 345-56.

Salop, Steven C. and Scheffman, David T. "Cost-Raising Strategies." *Journal of Industrial Economics*, September 1987, *36*(1), pp. 19-34.

Salop, Steven C. and Scheffman, David T. "Raising Rivals' Costs." *American Economic Review*, May 1983, *73*(2), pp. 267-71.

_____. *Seven-Up Company v. Coca-Cola Company*, 86 F.3d 1379 (5th Cir., 1996).

_____. *60 Minutes, CBS Television Network*. Washington, DC: Radio Monitoring Service, Inc., October 25, 1987.

_____. *SN Distribution Study of Grocery Store Sales*. New York: Fairchild Publications, 1984, 1988, 1990.

_____. *Soft Drink Interbrand Competition Act*, 15 U.S.C. § 3501, 1-5, 96 Stat. 939, 1980.

_____. *Soft Drink Interbrand Competition Act: Hearings on S. 598 Before the Subcommittee on Antitrust, Monopoly and Business Rights of the Senate Committee on the Judiciary*, Serial No. 96-46, 96th Cong., 1st Session, Washington, DC: U.S. Government Printing Office, September 26, 1979, pp. 89-135.

Spengler, Joseph J., "Vertical Integration and Anti-trust Policy." *Journal of Political Economy*, August 1950, *58*, pp. 347-52.

_____. *Standard & Poor's Industry Survey.* New York, NY: Standard & Poor's Corp., a Division of McGraw Hill Companies, Various Issues.

_____. *Standard Corporation Descriptions*. New York, NY: Standard and Poor's Corporation. Vol. 47, No. 20, 1986.

_____. *Sun-Drop Bottling Company, Inc. et al. v. Coca-Cola Bottling Co. Consolidated*, 604 F. Supp. 1197, W.D.N.C., 1985.

_____. *Survey of Buying Power*. *Sales and Marketing Management.* New York, NY: Bill Communications Inc., 1982,1983.

Sutton, John. *Sunk Costs and Market Structure*. Cambridge, Massachusetts: MIT Press, 1992.

Tedlow, R. *New and Improved: The Story of Mass Marketing in America*. New York, NY: Basic Books, 1990.

_____. *The Beverage Bureau Book*. Louisville, KY: The Beverage Bureau, Inc., 1985-1992.

_____. *The Coca-Cola Company, An Illustrated Profile*. Atlanta, Georgia: The Coca-Cola Company, 1974.

_____. *The New York Times.* New York, NY: The New York Times Company, Various Issues.

_____. *The Wall Street Journal*. New York, NY: Dow Jones & Company, Inc., Various Issues.

_____. *The Washington Post*. Washington, DC: The Washington Post Company, Various Issues.

Theil, Henri. *Principles of Econometrics*. New York, NY: John Wiley & Sons, Inc., 1971.

Tirole, J. *The Theory of Industrial Organization*. Cambridge, MA: MIT Press, 1988.

Tollison, Robert D.; Kaplan, David P. and Higgins, Richard, S. *Competition and Concentration, The Economics of the Carbonated Soft Drink Industry.* Lexington, Massachusetts: Lexington Books, 1991.

_____. *United States v. Akron Coca-Cola Bottling Co.*, No. CR 88-044 (N.D. Ohio, Mar. 15, 1988).

_____. *United States v. All-American Bottling Corp.*, No. 88-00038 (W.D. Va., Apr. 12, 1988).

_____. *United States v. Allegheny Bottling Co.*, 695 F. Supp. 856 (E.D. Va., 1988), aff'd, 870 F.2d 656 (4th Cir. 1989).

_____. *United States v. Atlantic Soft Drink Co., Inc*., No. CR 3-88-77 (E.D. Tenn., Dec. 1, 1988).

_____. *United States v. Atlantic Soft Drink Co., Inc.*, No. 88-450 (D.S.C., Dec. 2, 1988).

_____. *United States v. Beach et. al.*, No. 88-00051 (W.D. Va., Apr. 26, 1988).

_____. *United States v. Beverage South, Inc.*, No. 88-451 (D.S.C., Dec. 2, 1988).

_____. *United States v. Blue Mountain Bottling Co. of Walla Walla*, No. CR-89-392-01 (E.D. Wash., Jan. 16, 1990), aff'd, 929 F.2d 526 (9th Cir., 1991).

_____. *United States v. Coca-Cola Bottling Co. of Anderson, S.C.*, No. 88-280 (D.S.C., Aug. 31, 1988)

_____. *United States v. Coca-Cola Bottling Co. of Johnson City*, No. CR2-91-38 (E.D. Tenn., Aug. 28, 1991).

_____. *United States v. Coca-Cola Bottling Co. of Miami, Inc.*, No. CR 89-6097 (S.D. Fla., May 8, 1989).

_____. *United States v. Coca-Cola Bottling Co. of Roanoke, Va.*, No. 88-39 (W.D. Va., Apr. 12, 1988).

_____. *United States v. Coca-Cola Bottling Co., Yakima & Tri-Cities*, No. CR-89-372-01 (E.D. Wash., Jan. 16, 1990).

_____. *United States v. Dr Pepper Bottling Co. of West Jefferson, North Carolina Inc.*, No. A-CR-89-166 (W.D. N.C., Dec. 18, 1989).

_____. *United States v. General Cinema Beverages of Washington, D.C.*, No. CR 86-0352 (D.D.C., Oct. 15, 1986).

_____. *United States v. Gregory*, No. 6: 89-00056 (D.S.C., Mar. 23, 1989).

_____. *United States v. Honickman*, 1992-2 Trade Cas. (CCH) ¶ 70,018 (D.D.C. Nov. 2, 1992)

_____. *United States v. Holbrook*, No. 88-06G (N.D. Ga., Jul. 13, 1988).

_____. *United States v. Nash*, No. B-CR-88-187 (W.D.N.C., Aug. 1, 1988).

_____. *United States v. NEG Holding Co.*, No. CR 87-16G (N.D. Ga., Oct. 14, 1987).

_____. *United States v. Palmetto Bottling Co.*, No. 89-444 (D.S.C., Dec. 28, 1989).

_____. *United States v. Pemberton*, No. 90-7-N (E.D. Va., Jan. 23, 1990).

_____. *United States v. Pepsi-Cola Bottling Co. of Ft. Lauderdale-Palm Beach, Inc.*, No. CR 88-6183 (S.D. Fla., Dec. 16, 1988).

_____. *United States v. Pepsi-Cola Bottling Co. of Walla Walla*, No. CR-89-394-01 (E.D. Wash., Jan. 10, 1990).

_____. *United States v. Pepsi-Cola Bottling of Petersburg, Inc.*, No. 89-00062-R (E.D. Va., Oct. 11, 1989).

_____. *United States v. Rice Bottling Enterprises, Inc.*, No. 3-89-72 (E.D. Tenn., Oct. 16, 1989).

_____. *United States v. Seven-Up Dr Pepper Bottling Co., Beckley, W. Va.*, No. 88-00012 (W.D. Va., Feb. 1, 1988).

_____. *United States v. The Mid Atlantic Coca-Cola Bottling Co.*, No. 87-0420 (D.D.C., Oct. 14, 1987).

_____. *United States v. The Mid-Atlantic Coca-Cola Bottling Co.*, No. 90-27-N (E.D. Va., Feb. 22, 1990).

_____. *United States v. The Mid Atlantic Coca-Cola Bottling Co.*, No. 87-122-N (E.D. Va., Oct. 14, 1987).

U.S. Department of Commerce. Bureau of the Census. *County Estimates by Age, Sex, and Race.* Magnetic tape, 1980-1991.

U.S. Department of Commerce. National Climactic Data Center. *Monthly Surface Data Element*. Diskette, 1980-1991.

U.S. Department of Justice. *Merger Guidelines*. June 14, 1984.

U.S. Department of Justice and the Federal Trade Commission. *Horizontal Merger Guidelines*. Issued April 2, 1992, Revised April 8, 1997.

U.S. Department of Labor. Bureau of Labor Statistics. *Covered Employment and Wages.* Data Tape, 1980-1991.

U.S. Department of Labor. Bureau of Labor Statistics. *Employment and Wages Annual Averages,* 1980-1992.

U.S. Department of Labor. Bureau of Labor Statistics. *Producer Price Index,* 1980-1991.

U.S. Securities and Exchange Commission. *The Coca-Cola Company Form 10K*, 1979-1985.

White, H. "A Heteroscedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroscedasticity." *Econometrica*, May 1980, *48,* pp. 817-38.

White, L. "Application of the Merger Guidelines: The Proposed Merger of Coca-Cola and Dr Pepper." in Kwoka, J. and White L., editors, *The Antitrust Revolution*. Glenview, Ill.: Scott, Foresman, 1989.

_____. *Yearbook on Corporate Mergers, Joint Ventures and Corporate Policy*. Boston, MA: Cambridge Corp., Various Issues.

Appendix A

Table of Collusion Cases

Table A.1: DOJ Carbonated Soft Drink Bottler Price-Fixing Cases With Guilty Outcomes

City, State Bottler Brands[186]	Bottler or Officer Guilty of Price-Fixing	Date DOJ Filed	Date of Recent Manag. Chng [187]	Share of Sales[188]	Time of Price-fixing	Conspired Products[189]	No. of Other Corp. Consp.[190]	Outcome	Fine
Washington, D.C.									
(I) Coca-Cola	Mid-Atlantic Coca-Cola	10/14/87	6/80	46.1%	10/84-8/31/85	CC & PC Colas	1	Guilty Plea	$1,000,000
(I) Pepsi	General Cinema	10/15/86	5/77	32.9%	10/84-8/31/85	CC & PC Colas	1	Guilty Plea	$1,000,000
7UP/DP			11/84	9.2%					
RC			2/82	11.8%					

[186] Cities are listed chronologically, based on when the DOJ filed suit. Those bottlers whose brands are preceded by an "(I)" were the ones charged by the DOJ in "Indictments" or "Informations." Those preceded by ( ) were mentioned as co-conspirators, even though there was no separate Indictment or Information against them. For more information about these cases, see the citations in the Reference section that precedes this appendix.

[187] The dates of management changes come from the 1985 and 1986 Beverage Bureau Book (BBB).

[188] Unless noted otherwise, these figures are rough approximations based on data from the 1986 National Beverage Marketing Directory (NBMD). Since the NBMD's data may apply to areas that are larger than the areas where the DOJ price-fixing took place, they do not necessarily accurately reflect the true distribution of sales in those areas. In some instances, where our experience in the soft drink industry has led us to believe this to be the case, we have identified the direction of the expected bias.

[189] Those instances where specific types of soft drinks are identified may, nevertheless, have involved a broader group of soft drinks. The DOJ may have limited the subject of the price-fixing in an Information to specific types of soft drinks as part of its plea agreement with a bottler (perhaps the best evidence it had was for those types of soft drinks). "CC" refers to Coca-Cola, "PC" to Pepsi-Cola.

[190] Based on whether the DOJ Information referred to other corporate co-conspirators in the singular or plural. Sometimes an Information characterized the conspiracy as involving only two bottlers. In at least one case (Columbia, SC), it appears that another corporate co-conspirator was an affiliate of the bottler charged with price-fixing. This may be true elsewhere too.

Table A.1: DOJ Carbonated Soft Drink Bottler Price-Fixing Cases With Guilty Outcomes (continued)

City, State Bottler Brands	Bottler or Officer Guilty of Price-Fixing	Date DOJ Filed	Date of Recent Manag. Chng	Share of Sales	Time of Price-fixing	Conspired Products	No. of Other Corp. Consp.	Outcome	Fine
Richmond, VA									
(I) Coca-Cola	Mid-Atlantic Coca-Cola	10/14/87	6/80	42.9%	2/83-3Q84	Soft Drinks	1	Guilty Plea	$1,000,000[191]
(I) Pepsi/DP	Allegheny Pepsi	10/14/87	4/69	33.3%[192]	2/83-4Q84	Soft Drinks	1	Guilty-Trial	$1,000,000[193]
7UP			2/77	16.7%					
RC			1/84	7.1%					
Norfolk, VA									
(I) Coca-Cola	Mid-Atlantic Coca-Cola	10/14/87	6/80	31.8%[194]	2/83-3Q84	Soft Drinks	1	Guilty Plea	see Richmnd
(I) Pepsi/DP	Allegheny Pepsi	10/14/87	1/62	31.8%	1982-1/85	Soft Drinks	1	Guilty-Trial	see Richmnd
7UP			11/84	20.5%					
RC			1/84	15.9%					
Athens, GA									
(I) Coca-Cola	Athens Coca-Cola	10/14/87	1903	62.5%[195]	12/78-12/84	Soft Drinks	>1	Guilty Plea	$275,000
Pepsi/7UP/DP			6/69	25.0%					
RC			10/72	12.5%					

[191] The $1,000,000 fine for Richmond, VA also applied to Norfolk, VA.

[192] The Pepsi bottler's share appears to be understated, while the 7UP bottler's share appears to be overstated.

[193] The $1,000,000 fine for Richmond, VA also applied to Norfolk, VA and to Baltimore, MD.

[194] The Coke and Pepsi bottler shares appear to be understated, while the 7UP and RC bottler shares appear to be overstated.

[195] These share figures are based on 1986 NBMD data for Atlanta, GA. The RC bottler's share appears to be overstated.

Table A.1: DOJ Carbonated Soft Drink Bottler Price-Fixing Cases With Guilty Outcomes (continued)

City, State Bottler Brands	Bottler or Officer Guilty of Price-Fixing	Date DOJ Filed	Date of Recent Manag. Chng	Share of Sales	Time of Price-fixing	Conspired Products	No. of Other Corp. Consp.	Outcome	Fine
Toccoa, GA									
(I) Coca-Cola	Athens Coca-Cola	10/14/87	1919	62.5%[196]	1/82-4/85	Soft Drink Pkg.	>1	Guilty Plea	$125,000
Pepsi/7UP/DP			12/69	25.0%					
RC			10/72[197]	12.5%					
Beckley, WV									
(I) Coca-Cola	Roanoke Coca-Cola	4/12/88	4/84	42.2%	1982-2/85	Soft Drinks	>1	Nolo Cont.	$350,000
Pepsi			4/81	42.2%					
(I) 7UP/DP	7UP/DP of Beckley	2/1/88	2/82	9.6%	1976-11/85	Soft Drinks	>1	Guilty Plea	$250,000
(I) RC	All American	4/12/88	7/82	6.0%	1982-11/85	Soft Drinks	>1	Guilty Plea	$300,000
Elyria, OH									
(I) Coca-Cola	Akron Coca-Cola	2/24/88	12/70	24.8%[198]	1/80-1Q83	2L (two liter)	1	Guilty Plea	$600,000
Pepsi/DP			1/69	38.6%					
7UP			1/83	17.6%					
RC			8/47	19.0%					

[196] These share figures are based on 1986 NBMD data for Atlanta, GA. The RC bottler's share appears to be overstated.

[197] The BBB does not list an RC bottler in Toccoa, GA, so this information applies to Southeast Atlantic, the RC bottler in Athens, GA.

[198] These share figures are based on 1986 NBMD data for Cleveland, OH; Elyria, OH; and Akron, OH. The Pepsi bottler's share appears to be understated, while the RC bottler's share appears to be overstated.

Table A.1: DOJ Carbonated Soft Drink Bottler Price-Fixing Cases With Guilty Outcomes (continued)

City, State Bottler Brands	Bottler or Officer Guilty of Price-Fixing	Date DOJ Filed	Date of Recent Manag. Chng	Share of Sales	Time of Price-fixing	Conspired Products	No. of Other Corp. Consp.	Outcome	Fine
Roanoke, VA									
(I) Coca-Cola	Coca-Cola of Roanoke	4/12/88	4/84	45.2%	1977-11/85	Soft Drinks[199]	>1	Guilty Plea	$750,000
( ) Pepsi/DP	General Cinema		10/73	45.2%					
7UP/RC			8/57	9.7%					
Bryson City, NC									
(I) Coca-Cola	Coke of Asheville (CEO)	8/1/88	1905	32.6%[200]	1/84-11/84	Soft Drinks	>1	Guilty Plea	$100,000[201]
Pepsi/DP			1980	32.6%					
7UP			1937	17.4%					
RC			1973	17.4%					
Anderson, SC									
(I) Coca-Cola/DP	Coca-Cola of Anderson	8/31/88	1925	~50.0%	5/83-12/1/84	2L (two liter)	>1	Guilty Plea	$900,000
(I) Pepsi/7UP	Atlantic Soft Drink Co.	12/2/88	3/79	~50.0%	5/83-12/1/84	Soft Drink Pkg.	>1	Guilty Plea	$750,000
RC			3/51	*[202]					

[199] The Information against the VP/Director of Sales, who pleaded guilty, refers to 16 oz. cola.

[200] These share figures are based on 1986 NBMD data for Asheville, NC and Hickory, NC. The Coke and Pepsi bottler shares appear to be understated, while the 7UP and RC bottler shares appear to be overstated.

[201] The fine and charge were against the President and CEO of Asheville Coca-Cola.

[202] We do not have an estimate for the RC bottler's share in Anderson, SC, but it appears to have been very, very small. Later asterisks similarly indicate that we do not have an estimate for the RC bottler's share, but that it appears to have been very, very small.

Table A.1: DOJ Carbonated Soft Drink Bottler Price-Fixing Cases With Guilty Outcomes (continued)

City, State Bottler Brands	Bottler or Officer Guilty of Price-Fixing	Date DOJ Filed	Date of Recent Manag. Chng	Share of Sales	Time of Price-fixing	Conspired Products	No. of Other Corp. Consp.	Outcome	Fine
Knoxville, TN									
Coca-Cola/DP			3/79	45.2%					
(I) Pepsi/7UP	Atlantic Soft Drink Co.	12/1/88	1902	45.2%	7/83-12/31/83	6 pk 12 oz. can	>1	Guilty Plea	$1,000,000
RC			1938	9.7%					
Columbia, SC									
(I) Coca-Cola	Columbia Coca-Cola	12/28/89	4/67	28.6%[203]	1/83-12/84	Soft Drinks	1	Guilty Plea	$875,000
(I) Pepsi/7UP/DP	Atlantic Soft Drink Co.	12/2/88	3/79	71.4%	1/83-12/84	Soft Drink Pkg.	>1	Guilty Plea	$1,000,000
RC			3/51	*					
Greenville, SC									
Coca-Cola/DP			10/82	36.8%[204]					
(I) Pepsi/7UP	Beverage South	12/2/88	6/82	36.8%	7/82-1/86	Soft Drinks	1	Guilty Plea	$475,000
RC			3/51	26.3%					
Ft. Lauderdale, FL									
(I) Coca-Cola	Coca-Cola of Miami	5/8/89	5/83	46.2%[205]	12/83-5/85	12 & 16 oz, 2L	1	Guilty Plea	$1,800,000
(I) Pepsi	Pepsi of Ft. Lauderdale	12/16/88	8/66	35.9%	12/83-5/85	Soft Drinks	1	Nolo Cont.	$1,000,000
7UP/DP/RC			1957	17.9%					

[203] The Coke bottler's share appears to be understated, while the Pepsi bottler's share appears to be overstated.

[204] The Coke and Pepsi bottler shares appear to be understated, while the RC bottler's share appears to be overstated.

[205] These share figures are based on 1986 NBMD data for Riviera Beach, FL and Hollywood, FL.

Table A.1: DOJ Carbonated Soft Drink Bottler Price-Fixing Cases With Guilty Outcomes (continued)

City, State Bottler Brands	Bottler or Officer Guilty of Price-Fixing	Date DOJ Filed	Date of Recent Manag. Chng	Share of Sales	Time of Price-fixing	Conspired Products	No. of Other Corp. Consp.	Outcome	Fine
Johnson City, TN									
(I) Coca-Cola	Coke of Johnson City	8/28/91	1901	37.5%	12/85-9/86	Post Mix[206]	>1	Guilty Plea	$900,000
(I) Pepsi/7UP/DP	Rice Bottling	9/29/89	3/41	58.3%	12/85-mid86	Post Mix	>1	Guilty Plea	$500,000
RC			5/73	4.2%					
Pasco, WA									
(I) Coca-Cola	Coke Yakima/Tri-Cities	10/4/89	6/75	38.9%[207]	1/85-9/85	Soft Drinks	>1	Guilty Plea	$300,000
(I) Pepsi	Pepsi of Pasco	10/16/89	5/53	38.9%	1/85-9/85	Soft Drinks	>1	Guilty Plea	$440,000
(I) 7UP/DP	7UP of Walla Walla	10/12/89	1/57	16.7%	1/85-9/85	Soft Drinks	>1	Guilty Plea	$150,000
RC			4/84	5.6%					

[206] Post mix is soft drink syrup, which is mixed with carbonated water at the point of sales. It is sold primarily to restaurants and convenience stores (i.e., fountain accounts).

[207] These share figures are based on 1982-83 NBMD data for Seattle, WA. The Coke bottler's share appears to be understated.

Table A.1: DOJ Carbonated Soft Drink Bottler Price-Fixing Cases With Guilty Outcomes (continued)

City, State Bottler Brands	Bottler or Officer Guilty of Price-Fixing	Date DOJ Filed	Date of Recent Manag. Chng	Share of Sales	Time of Price-fixing	Conspired Products	No. of Other Corp. Consp.	Outcome	Fine
Petersburg, VA									
( ) Coca-Cola	Mid-Atlantic Coca-Cola		4/42	42.9%[208]					
(I) Pepsi/DP	Pepsi of Petersburg	10/10/89	6/80	33.3%	6/82-11/84	2L,12&16oz.[209]	1	Guilty Plea	$1,000,000
7UP			2/77[210]	16.7%					
RC			1/84	7.1%					
Walla Walla, WA									
(I) Coke/7UP/DP[211]	Coke/7UP of Walla Walla	10/12/89	5/60	~ 62.5%	1/85-11/85	Soft Drinks	>1	Guilty Plea	$215,000
(I) Pepsi	Pepsi of Walla Walla	10/16/89	1/57	~ 37.5%	1/85-11/85	Soft Drinks	>1	Guilty Plea	$235,000
RC			4/84	*					

[208] These share figures are based on 1986 NBMD data for Richmond.

[209] The Information alleges that the price-fixing involved "national brand" Coca-Cola and Pepsi-Cola soft drinks in these three packages.

[210] These BBB data apply to Richmond 7UP and Richmond RC, since there is no BBB entry for Petersburg, VA.

[211] The DOJ's Information was against 7UP of Walla Walla, not against Coca-Cola of Walla Walla. But the Coca-Cola and 7UP bottlers in Walla Walla, WA had the same president and manager (and presumably the same owner) at the time of the price-fixing, according to the 1986 BBB. These share figures are based on 1982-83 NBMD data for Walla Walla, WA.

Table A.1: DOJ Carbonated Soft Drink Bottler Price-Fixing Cases With Guilty Outcomes (continued)

City, State Bottler Brands	Bottler or Officer Guilty of Price-Fixing	Date DOJ Filed	Date of Recent Manag. Chng	Share of Sales	Time of Price-fixing	Conspired Products	No. of Other Corp. Consp.	Outcome	Fine
Boone, NC									
Coca-Cola			1962	32.6%[212]					
Pepsi			1905	32.6%					
(I) DP/7UP/RC	Dr Pepper of W. Jefferson	12/18/89	1925	34.8%	2/83-12/84	Soft Drinks	>1	Guilty Plea	$20,000
Baltimore, MD									
(I) Coca-Cola	Mid-Atlantic Coke (Pres.)	1/23/90	6/80	47.2%[213]	1982-1/85	Soft Drinks	1	Guilty Plea	$50,000[214]
(I) Pepsi/DP	Allegheny Pepsi	10/14/87	4/60	26.4%	1982-1/85	Soft Drinks	1		see Richmnd
7UP			1936	13.2%					
RC			8/79	13.2%					

[212] These share figures are based on 1986 NBMD data for Asheville, NC and Hickory, NC. The Coke and Pepsi bottler shares appear to be understated, while the RC bottler's share appears to be overstated.

[213] The Pepsi bottler's share appears to be understated, while the 7UP and RC bottler shares appear to be overstated.

[214] The fine and charge were against an individual who was a Vice President, and for a time President, of Mid-Atlantic Coca-Cola.

Appendix B

Descriptions and Sources of the Regression Variables

The empirical estimation work for this project was conducted using three separate data sets.[215] Each data set contains pooled time series and cross sectional data for several periods in several geographic areas. There is a substantial but incomplete overlap in the geographic areas included in the three data sets and two of the data sets overlap briefly in time. The number of areas covered by the data sets varies from 25 to 47. Overall, the three data sets cover, respectively, December 1980 to November 1985 (1122 bimonthly observations), various initial dates in 1987 and 1988 to December 1988 or May 1989 (630 four-week observations), and January 1989 to May 1991 (1410 four-week observations).

A. Dependent Variables

The dependent variables for the regressions are price (FP) and volume (FV). Price is average (nominal) retail price during each observation period for each area.[216] We use 100 ounces as the unit of measure. Volume is average consumption per capita for each observation

[215] We do not pool the three data sets. Where the Scantrack 1 and Scantrack 2 data sets overlap in time, the volume and price observations do not necessarily match for the same local areas, indicating that the exact contours of the area definitions differ between the data sets (or that there may be mismeasurement in one or both data sets for some areas).

[216] Although this dependent variable uses nominal price, some of the model's independent variables capture the effects of inflation.

period in each area.[217] The regression work in this study involves price and quantity observations aggregated across each of the five major CSD brand groups. The five major brand groups are: Coca-Cola Company franchised products (including, for example, Coca-Cola brands, Sprite, and Mr. PiBB), PepsiCo franchised products (including, for example, Pepsi-Cola brands, Mountain Dew, and Slice), Dr Pepper franchised products (principally Dr Pepper brands), Seven-Up franchised products (including, for example, 7UP brands and Like Cola), and Royal Crown franchised products (including, for example, RC brands, Nehi, and Diet Rite). Dr Pepper and Seven-Up brands are treated separately although these firms have been under common management since 1986.

There are three data sets for our price and volume observations. Other than one brief overlap in time between two of the data sets, the data sets each cover different time periods. There are more substantial overlaps in the geographic areas covered by the data sets, but data for many areas are available in only one or two of the data sets. In the regression work, each data set is used separately. The locations and time periods covered by the price and volume data sets were the limiting factors in the other data obtained.

We term the three data sets the NEGI (Nielsen Expanded Grocery Index), Scantrack 1, and Scantrack 2 data sets. In chronological order, they are:

1. **"NEGI"** - Bimonthly bottle and can volume and price in each of thirty-eight local areas. These areas are listed in Table B.1. Price for each area in each observation period is

[217] Significant differences exist, particularly in CSD volume, across the local areas in our samples. If these differences are not fully explained by a model of absolute volume, heteroscedasticity could arise. Therefore, volume is expressed on a per capita basis as an initial effort to reduce heteroscedasticity.

Table B.1

Geographic Areas Included in the NEGI Data Set

ALBANY, NY
ATLANTA, GA
BIRMINGHAM, AL
BOSTON, MA
BUFFALO, NY
CHARLOTTE, NC
CHICAGO, IL
CINCINNATI, OH
CLEVELAND, OH
DALLAS/FT. WORTH, TX
DENVER, CO
DETROIT, MI
GRAND RAPIDS, MI
HOUSTON, TX
INDIANAPOLIS, IN
JACKSONVILLE, FL
KANSAS CITY, MO
LOS ANGELES, CA
LOUISVILLE, KY
MEMPHIS, TN
MIAMI, FL
MILWAUKEE, WI
MINNEAPOLIS/ST. PAUL, MN
NASHVILLE, TN
NEW YORK, NY
OKLAHOMA CITY, OK
OMAHA, NE
PHILADELPHIA, PA
PHOENIX, AZ
PITTSBURGH, PA
PORTLAND, OR
ROCHESTER, NY
SACRAMENTO, CA
SAN ANTONIO, TX
SAN FRANCISCO, CA
SEATTLE/TACOMA, WA
ST. LOUIS, MO
WASHINGTON, DC/BALTIMORE, MD

obtained by dividing the relevant dollar sales figure for the whole observation period (aggregated across the five brand groups) by the comparably aggregated volume figure for the observation period.[218] The NEGI data were generated through a process of in-store price and volume assessments in sampled stores and extrapolations to an area-wide basis of the results from the sampled stores. The thirty-eight NEGI areas generally correspond to areas of media coverage, grocery distribution, and commuting.[219]

Years: December 1980 through November 1985, on a bimonthly basis, for each area except Cleveland, OH; Memphis, TN; and Nashville, TN. Data for these three areas cover the December 1981 through November 1985 time period.

Source: These data were derived from Nielsen information previously received in disaggregated form.

2. **"Scantrack 1"** - Volume and price in each local area measured every four weeks. Prices are obtained by dividing the dollar sales figures for the whole observation period

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[218] Price is measured as dollars per 100 oz. equivalent case. Equivalent cases are used as the output measure because the alternative measure, cases, differs with each container size. Equivalent cases provides a measure that brings all case measures to a common denominator. Packaging mix varies from area to area and packaging, along with various other factors, are expected to influence prices. Our experience in various antitrust investigations indicates that bottlers determine the packaging mix they will use as part of their overall pricing strategy. We include packaging mix and packaging cost variables in our regression equation to control for packaging cost effects. Chapter III discusses trends in packaging which are nation-wide in scope, although some differences remain between areas.

[219] The correspondence between definitions of each specific area using different measures was at issue in the Coke Southwest case where the FTC determined that the area around San Antonio was a relevant geographic market separate from other Texas metropolitan areas (See, *In the Matter of Coca-Cola Bottling Co. of the Southwest*, 118 F.T.C. 452, 574-84 (1994). A useful document in considering this question is a Coca-Cola assessment from the early 1980s of how to realign bottling territories to better reflect the area-by-area media, retail, and marketing cooperation patterns [CX 1684]. This review highlighted the overlap between geographic areas defined on different bases.

(aggregated across the five major brand groups) by the similarly aggregated case sales figures (100 oz. cases). These data are derived from in-store scanners in participating food stores and extrapolated by Nielsen to form area-wide estimates. The areas are Nielsen Scantrack areas.[220]

Years: Scantrack 1 data primarily start at different four-week periods in 1987 and, except for two instances, go through the four-week period ending May 20, 1989. Due to missing observations, continuous series of observations of at least one year are limited to twenty-five areas. Table B.2 lists the areas and observation periods in the Scantrack 1 data set.

Source: These data were derived from Nielsen information previously received in disaggregated form.

[220] Maps and county listing of the Scantrack areas are available in *Market Scope* editions from the mid 1980s forward.

Table B.2

Geographic Areas Included in the Scantrack 1 Data Set

	Start Date	End Date
ALBANY, NY	06/18/88	05/20/89
ATLANTA, GA	03/28/87	"
BALTIMORE, MD	12/05/87	"
BIRMINGHAM, AL	06/20/87	"
BOSTON, MA	03/28/87	"
BUFFALO/ROCHESTER, NY	06/20/87	"
CHARLOTTE, NC	06/18/88	"
CHICAGO, IL	03/28/87	"
CINCINNATI, OH	03/28/87	"
CLEVELAND, OH	02/28/87	"
COLUMBUS, OH	09/12/87	"
DALLAS/FT. WORTH, TX	02/28/87	"
DENVER, CO	01/03/87	"
HARTFORD/NEW HAVEN, CN	06/20/87	"
HOUSTON, TX	01/03/87	"
INDIANAPOLIS, IN	12/05/87	"
LITTLE ROCK, AR	01/30/88	12/31/88
MILWAUKEE, WI	06/20/87	05/20/89
MINNEAPOLIS, MN	01/03/87	"
NASHVILLE, TN	01/03/87	"
SACRAMENTO, CA	06/18/88	"
SEATTLE/TACOMA, WA	01/31/87	"
ST. LOUIS, MO	02/28/87	12/31/88
TAMPA, FL	01/31/87	05/20/89
WASHINGTON, DC	12/05/87	"

3. **"Scantrack 2" -** Volume and price in each of forty-seven local areas measured every four weeks. Prices are obtained by dividing the dollar sales figures for the entire observation period (aggregated across the five major brand groups) by the similarly aggregated case sales figures (100 oz. cases). The areas are listed in Table B.3. These data are derived from in-store scanners in participating food stores and extrapolated to area-wide estimates by Nielsen. The areas are Nielsen Scantrack areas.[221]

Years: Continuously for each area, starting with the four-week period ending February 25, 1989, and finishing with the four-week period ending May 18, 1991.

Source: These data were derived from Nielsen information previously received in disaggregated form.

B. Independent Variables

The regression analyses in the study are conducted with three sets of explanatory variables. The three sets of variables are entitled event/policy variables, demand and supply variables, and structural variables. Each of these groups of variables is described below.

1. Event/Policy Variables

The event variables were developed from several sources including documents from FTC Docket Nos. 9207 (Coca-Cola's attempted acquisition of Dr Pepper) and 9215 (Coca-Cola Bottling Co. of the Southwest), SEC filings of the Coca-Cola Company, and various editions of the *Wall Street Journal, Moody's, Standard & Poor's, Mergers and Acquisitions Sourcebook,*

[221] Maps and county listing of the Scantrack areas are available in *Market Scope* editions from the mid 1980s forward.

Table B.3
Geographic Areas Included in the Scantrack 2 Data Set

AKRON, OH
ATLANTA, GA
BALTIMORE, MD
CHARLOTTE, NC
CHEVERLY MD (WASHINGTON, DC area)
CHICAGO, IL
CINCINNATI, OH
CLEVELAND, OH
COLUMBIA, SC
COLUMBUS, OH
DALLAS/FT. WORTH, TX
DENVER, CO
DES MOINES, IO
DETROIT, MI
HAZELWOOD, MO (ST. LOUIS, MO area)
HOLLAND, MI (GRAND RAPIDS, MI area)
HOUSTON, TX
INDIANAPOLIS, IN
JACKSONVILLE, FL
KANSAS CITY, MO
LITTLE ROCK, AR
LOS ANGELES, CA
LOUISVILLE, KY
MEMPHIS, TN
MERIDEN, CT (HARTFORD/NEW HAVEN, CT area)
MILWAUKEE, WI
MINNEAPOLIS/ST. PAUL, MN
NASHVILLE, TN
NEEDHAM HEIGHTS, MA (BOSTON, MA area)
NEW ORLEANS, LA/MOBILE, AL
NORFOLK, VA
OKLAHOMA CITY/TULSA, OK
OMAHA, NE
ORLANDO, FL
PHILADELPHIA, PA
PHOENIX/TUCSON, AZ
PITTSBURGH, PA
PORTLAND, OR
RICHMOND, VA
SAN ANTONIO, TX
SAN DIEGO, CA
SAN FRANCISCO, CA
SEATTLE/TACOMA, WA
SYRACUSE, NY
TAMPA, FL
WEST SACRAMENTO, CA (SACRAMENTO, CA area)
WINSTON-SALEM/RALEIGH-DURHAM, NC

National Beverage Marketing Directory, Beverage Bureau Book, Beverage Digest, and Yearbook on Corporate Mergers, Joint Ventures and Corporate Policy.

"T" (transfer) Events -- A dummy variable that converts from zero to one starting on the date of an acquisition of a Dr Pepper or 7UP franchise (in all or at least a significant portion (greater than 5%) of an area) by a Coca-Cola or Pepsi-Cola bottler in that area during any of the observation periods in the data set. Once the dummy switches to one, it remains at one in that data set unless the franchise is divested back to a third bottler. T events in which the acquired Dr Pepper or 7UP franchise had a market share average of at least five percent are designated with a separate dummy variable (TB). T events involving smaller franchises are covered by the TS variable.

There are three TB events in the NEGI data set, one TB event in the Scantrack 1 data set, and no TB events in the Scantrack 2 data set. There are three TS events in the NEGI data set, three TS events in the Scantrack 1 data set, and three TS events in the Scantrack 2 data set.

"V" (vertical) Events -- A dummy variable that is set equal to one when parent Coca-Cola Company and/or PepsiCo (i.e., the concentrate companies) own(s) their/its bottler(s) in an area. Four different vertical integration variables are used, reflecting whether <u>both</u> parent companies own their bottlers (as opposed to just one of them) in a given area, and whether that ownership reflects parent company <u>control</u> of those bottlers (or just a relatively small equity interest without control).

The purest and most complete measure of vertical integration, VX, reflects ownership <u>control by both</u> Coca-Cola and PepsiCo parent companies of their respective bottlers. The three remaining measures of vertical integration relax one or both of these conditions. VZ still

requires ownership control, but includes situations when only one of the two parent companies controls its bottler. VAX, on the other hand, requires parent-ownership by both Coca-Cola and PepsiCo, but includes situations when that ownership interest does not reflect control. Finally, VAZ relaxes both conditions, including situations when either Coca-Cola or PepsiCo has only a partial equity interest in its local bottler (without control). As explained in Chapter IV, which discusses these variables further, we consider ownership of a local Coca-Cola bottler by CCE as control by the Coca-Cola Company.

In a given area, the vertical event variable converts from zero to one starting on the date that the vertical integration variable definition is met. If the vertical integration variable definition is met before the start of the data set, then the vertical integration variable is set equal to one for all of the observation periods in the data set. If either concentrate firm divests its local bottler, the vertical event variable reverts to zero if the divestiture results in the vertical event variable's definition no longer being met.

There are four VX events in the NEGI data set, eight VX events in the Scantrack 1 data set, and eighteen VX events in the Scantrack 2 data set. There are seventeen VZ events in the NEGI data set, seventeen VZ events in the Scantrack 1 data set, and thirty seven VZ events in the Scantrack 2 data set. There are seven VAX events in the NEGI data set, seventeen VAX events in the Scantrack 1 data set, and thirty seven VAX events in the Scantrack 2 data set. There are nineteen VAZ events in the NEGI data set, twenty three VAZ events in the Scantrack 1 data set, and forty seven VAZ events in the Scantrack 2 data set.

"**C" (consolidation) Events** -- A dummy variable that converts from zero to one in the event of an acquisition (during the observation periods in the data set) of one of the area's

principal RC, 7UP, or Dr Pepper franchises by a third bottler in the area. The C dummy variable reverts to zero if such a consolidation is subsequently dissolved. C events in which the smaller of the joining franchises has a share that on average equals or exceeds 3.5% are coded in the variable CB, while those involving smaller franchises are coded in the variable CS.

There are six CB events in the NEGI data set, two CB events in the Scantrack 1 data set, and three CB events in the Scantrack 2 data set. There are five CS events in the NEGI data set, two CS events in the Scantrack 1 data set, and two CS events in the Scantrack 2 data set.

MNG (management) Events -- A dummy variable that converts from zero to one in the event of a change in managers at an area bottler (during the observation periods in the data set) that is not associated with one of the previously named events.

There are twenty-three MNG events in the NEGI data set, eleven MNG events in the Scantrack 1 data set, and ten MNG events in the Scantrack 2 data set.

FIX (price fixing) Events -- A dummy variable that converts from zero to one during the duration of explicit collusion subsequently detected and successfully prosecuted by the Department of Justice. There have been periods of explicit collusion detected in many areas in different parts of the country, but only two of our areas (Miami and Washington, D.C./Baltimore) had collusion affecting a large portion of the area's population during the observation periods of any of our data sets. The explicit collusion episodes all occurred in the observation period of the NEGI data set.

Source: U.S. Department of Justice Informations and Indictments.

2. Demand and Supply Variables

There are four types of demand and supply variables added in the second set of

explanatory variables: 1) short-term demand shifters, 2) local macroeconomic demand indicators, 3) cost indicia, and 4) product differentiation factors.

a. Short-term Demand Shifters

TEMP (temperature) -- The average (bimonthly or four-week) high temperature in the area.

Years: 1981 through 1991 on a monthly basis. In order to convert the monthly observations to four-week and bimonthly observations, the temperature data were converted to average daily observations and then averaged over the appropriate observation period.

Source: *National Climatic Data*, U.S. Department of Commerce, National Oceanic and Atmospheric Administration.

TEMPA -- The average (bimonthly or four-week) high temperature of the area minus the average yearly high temperature for that area as long as the resulting figure is positive. TEMPA is set at zero otherwise. This measure of temperature emphasizes temperatures that are high for the area rather than high in an absolute sense.

Years: 1981 through 1991 on a monthly basis. In order to convert the monthly observations to four-week and bimonthly observations, the temperature data were converted to average daily observations and then averaged over the appropriate observation period.

Source: *National Climatic Data*, U.S. Department of Commerce, National Oceanic and Atmospheric Administration.

TIME -- A control for time trends, the control variable is assigned a value of one for the first period observation in each data set. A value of two is assigned to the second period and so forth until the last period in the data set.

TIMESQR -- The square of the TIME observations.

C, **E**, **M**, **J**, **L**, **T (holidays**) -- A series of dummy variables which convert to one for the observation period in which a particular holiday takes place. Separate dummies are used for **C**hristmas, **E**aster, **M**emorial Day, **J**uly 4th, **L**abor Day, and **T**hanksgiving.[222]

b. Local Macroeconomic Demand Indicators

INCOME -- Effective annual buying income (EBI) per capita by local Scantrack and NEGI area. EBI is a commercially developed income estimate similar to disposable income, but eliminating wages paid to military and diplomatic personnel stationed overseas. EBI is available by county for 1983 to 1991. For these years, we aggregated across counties in our NEGI and Scantrack areas. Individual bimonthly and four-week observations for each area are calculated using moving averages of the yearly data. Variations in monthly area employment data (obtained from the U.S. Department of Labor, Bureau of Labor Statistics) were used to adjust the EBI data to account for short-term income variations. The final INCOME observations were obtained by dividing the aggregated income figures by our population variable. State data were used to proxy area observations for 1981 and 1982.

Years: 1981 through 1991.

Source: *Survey of Buying Power Demographics USA, Sales & Marketing Management* and U.S. Department of Labor, Bureau of Labor Statistics.

COL (cost of living) -- A measure of cross-sectional differences in cost of living in which each area is compared to the U.S. in each period. The observations are derived from an

[222] Easter and Memorial Day occur within the same bimonthly periods during the NEGI data set (December 1980 to November 1985). Consequently, there is no Easter variable in the NEGI regressions.

econometric model of state-by-state cost of living differences. Daily data were created by interpolating from the yearly data. The daily observations were averaged to create the bimonthly and four-week observations.

Source: Walter W. McMahon, "Geographic Cost of Living Differences: An Update," *AREUEA Journal*, Vol. 19, No. 3, 1991.

Years: 1981 through 1990. Data for other periods in our data sets were obtained by extending our interpolations.

POP (population) -- Total local population in the respective NEGI or Scantrack areas.

Years: 1981 through 1991. Annual population figures by county pertain to July of each non-census year and to April of each census year. We aggregated these county data to obtain population figures for each of our NEGI and Scantrack areas. Linear population growth (or decline) using daily observations was assumed between observation points. The daily "observations" were then averaged for the appropriate bimonthly or four-week observation periods.

Source: *County Estimates by Age, Sex and Race*, U.S. Department of Commerce, Bureau of the Census.

c. Cost Indicia

WAGE (wages for bottling plant workers) -- Wage rates for CSD manufacturing and distribution in each area. Yearly data by state for 1982 to 1991 were used as a proxy for the wage rates in our areas within the respective states. When an area included more than one state, a weighted average of the state observations was used. 1981 observations were estimated from more aggregated employment classifications. The data were interpolated to get bimonthly and

four-week observations by using annualized moving averages of the yearly data.

Years: 1981-1991.

Source: *Employment and Wages*, U.S. Department of Labor, Bureau of Labor Statistics.

DCOST (distribution economies) -- Proxied as average population served per grocery and quick-shop retailer in an area compared to the same ratio for the U.S. as a whole. *Market Scope* provides the percentage of U.S. population, supermarkets, and convenience stores in the local areas in addition to reporting the proportion of food store sales that occur in supermarkets in the local areas. From this, we calculate the average population served per store. Values for supermarkets and convenience stores are weighted by the proportion of sales of each store type in creating the average.[223] The yearly data were interpolated to obtain bimonthly and four-week observations by using moving averages of the yearly data.

Years: Annual data covering 1983 to 1991. 1983 figures were also used for the 1980, 1981, and 1982 observations.

Source: 1984-1992 *Market Scope.*

PLASTICS -- The percent of total CSD packaged volume sold in plastic containers in the area. For the 1981 to 1986 time period (i.e., covering the entire NEGI time period), yearly data on the percent of CSDs sold in plastic containers in each of seven regions in the U.S. were used as proxies for the percent of CSDs sold in plastic containers in each area. Each area was assumed to have the same package mix breakdown as the region it was part of. Daily data were

[223] For example, Atlanta, in 1988, accounted by 1.54% of the U.S. population and had 1.66% of the U.S. supermarkets and 2.16% of the U.S. convenience stores, with supermarkets representing 82.4% of Atlanta's food store sales. The DCOST observation for Atlanta is then [(.824) x (1.54/1.66)] + [1 - .824 x (1.54/2.16)] = .88992.

created by interpolating from the yearly data. The daily figures were averaged to create the bimonthly NEGI observations.

For the 1987 to 1991 time period, yearly data on the percent of CSDs sold in plastic containers for the U.S. as a whole were used to calculate the percentage change for each package type from year to year. Those percentage changes were applied to the figures calculated previously in each area for the earlier years. Daily data were created by interpolating from the yearly data, and the daily figures were averaged to create the four-week Scantrack observations.

Source: 1981-1986 *NSDA (National Soft Drink Association) Sales Surveys of the Soft Drink Industry* and *Beverage Industry, Annual Manual*, various editions.

P-SYRUP, P-CORN, P-PLASTIC, P-ALUM, and P-PET -- Each of these variables is a producer price index series intended to capture variation in material input prices. They are, respectively, price indices for CSD syrup base, corn syrup sweetener, plastic containers, aluminum cans, and petroleum products.

Source: *Producer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics.

d. Product Differentiation Factors

AD (national advertising) -- Total annual national media advertising by the five major CSD brand groups. For a given year, the same annual advertising figure was used for each area and time period in a given data set. Thus, this variable changes in the time series, but not in the cross section.

Source: *Leading National Advertisers*, various editions.

NCOKE -- A dummy variable set to one for all local areas in the NEGI data set only, following the introduction of the new formulation of brand Coca-Cola. This new formulation

was announced on April 11, 1985, but original Coca-Cola was re-introduced in August of the same year. As a result, NCOKE takes on a value of 1 for the April/May and June/July, 1985 time periods in the NEGI data, and assumes a value of zero otherwise.

C-HEART, **P-HEART**, **SV-HEART**, **DP-HEART**, **RC-HEART (brand group heartlands)** -- Dummy variables set to one in areas where a particular brand group has historically had an unusually strong following. Separate dummy variables are assigned to each brand group. For example, C-HEART represents the heartland for Coca-Cola brands. Table B.4 shows the area assignments for the Coca-Cola and Dr Pepper heartland variables. These variable were defined on the basis of public findings from the Coca-Cola/Dr Pepper merger case, FTC Docket No. 9207. The Pepsi-Cola, 7UP, and RC heartland variable definitions were based on nonpublic information, so area assignments are not provided for those variables. Pepsi-Cola's heartland was defined to include areas where the shares of the PepsiCo brand group exceed those of the Coca-Cola brand group by at least 10% points in all of the data sets that include that area. The 7UP and Royal Crown heartlands were defined to include areas where the brand groups had shares exceeding ten percent and five percent, respectively, in all of the data sets that include that area.

Source: FTC Docket No. 9207, NEGI, Scantrack 1, and Scantrack 2 data sets.

3. Market Structure Variables

The structure variables are based on bottler shares or volume as defined in our dependent variables. The information needed to assign brand group shares to the bottlers in an area was gathered into a franchise alignment code. The sources for the bottler franchise alignment

Table B.4

HEARTLAND AREAS

NEGI Data Set

Coca-Cola: Atlanta, Birmingham, Dallas/Ft. Worth, Houston, Memphis, Nashville, Oklahoma City, San Antonio
Pepsi-Cola: These areas are not identified because they are based on nonpublic information for which aggregation is not applicable.
7UP: These areas are not identified because they are based on nonpublic information for which aggregation is not applicable.
Dr Pepper: Dallas/Ft. Worth, Houston, Oklahoma City, San Antonio
RC: These areas are not identified because they are based on nonpublic information for which aggregation is not applicable.

Scantrack 1 Data Set

Coca-Cola: Atlanta, Birmingham, Dallas/Ft. Worth, Houston, Little Rock, Nashville
Pepsi-Cola: These areas are not identified because they are based on nonpublic information for which aggregation is not applicable.
7UP: These areas are not identified because they are based on nonpublic information for which aggregation is not applicable.
Dr Pepper: Dallas/Ft. Worth, Houston
RC: These areas are not identified because they are based on nonpublic information for which aggregation is not applicable.

Scantrack 2 Data Set

Coca-Cola: Atlanta, Dallas/Ft. Worth, Houston, Little Rock, Memphis, Nashville, New Orleans/Mobile, Oklahoma City/Tulsa, San Antonio
Pepsi-Cola: These areas are not identified because they are based on nonpublic information for which aggregation is not applicable.
7UP: These areas are not identified because they are based on nonpublic information for which aggregation is not applicable.
Dr Pepper: Dallas/Ft. Worth, Houston, Little Rock, New Orleans/Mobile, Oklahoma City/Tulsa, San Antonio
RC: These areas are not identified because they are based on nonpublic information for which aggregation is not applicable.

information were the same as those for the event variables.

RDUMMY (regional brands) -- A dummy variable set at one in areas during periods when historically there has been a significant local or regional CSD brand in the area. Case documents, testimony, and published estimates of sales, employees, and delivery trucks were used to generate the data for the variable. Significant brands of this type include, for example, "BIG RED" in San Antonio, "Vess" in St. Louis, "Faygo" in Detroit, "Franks" in Philadelphia, and "Canfields" in Chicago.

B-THIRD (large third bottlers) and S-THIRD (smaller third bottlers) -- B-THIRD is a dummy variable that is assigned a value of one when the share of a third bottler in an area regularly equals or exceeds 15%. S-THIRD is a dummy variable that is assigned a value of one when the share of a third bottler in an area is between five percent and fifteen percent at least half of the time in a data set.

Source: Based on NEGI or Scantrack shares (relative to the aggregate of the five major brand groups). This and other measures of bottler size require determining the brand group alignment among bottlers in each area before and during the observation periods of the data set. For example, the third bottler in an area might have any combination of the Dr Pepper, 7UP, and RC brand groups.

BIG-3RDC and BIG-3RDCS (third bottler capacity and capacity share distribution) -- The structure of third bottlers in each area is measured in two ways, absolute size (capacity) and capacity share distribution.

The capacity of the largest third bottler (**BIG-3RDC**) is proxied as the greater of the highest sales volume in any observation period in the current year or the previous year's capacity

of the largest third bottler.

The capacity share distribution among third bottlers (**BIG-3RDCS**) is measured as capacity of the largest third bottler divided by the total capacity of all third bottlers in the area. The capacity of each third bottler is defined the same way as we defined BIG-3RDC.

BIG-BTC and BIG-BTCS (Largest bottler capacity and share of capacity) -- The largest bottler in each area is measured in two ways, absolute capacity of the largest bottler and capacity share of the largest bottler.

The largest bottler's capacity (**BIG-BTC**) is measured as the combined capacity of the brand groups controlled by the largest bottler in a given year.

The largest bottler's capacity share **(BIG-BTCS)** is measured as the largest bottler's capacity divided by the total capacity in the area. Total capacity is computed by adding the capacity levels of the individual bottlers.

FHHI (food retail concentration) -- Concentration among grocery retailers in the area is measured by the grocery store Herfindahl-Hirschman Index ("HHI") in each area. This HHI is calculated as the sum of the squares of the shares of total grocery store sales accounted for by the four largest grocery retailers in each area. Data were obtained for one year in each of our three data sets and assigned to all years within the respective data sets. 1984 was used for the NEGI data set. 1988 was used for the Scantrack 1 data set. 1990 was used for the Scantrack 2 data set.

Years: 1984, 1988, 1990.

Sources: *SN Distribution Study of Grocery Store Sales*.

Appendix C

Regression Variables and Their Expected Signs

As discussed in Chapter IV, the econometric model reproduced in (C.1) and (C.2) below uses three vectors of variables to explain CSD prices and per capita volumes.

(C.1) FP = Ea1 + DSß1 + MS?1 + e1

and

(C.2) FV = Ea2 + DSß2 + MS?2 + e2.[224]

The first vector of variables (E) contains the key horizontal and vertical events that were the focus of the analysis in Chapter IV. Although we review some of that analysis here, most of this appendix deals with the management change (MNG) and price-fixing (FIX) event variables that were not discussed in detail in Chapter IV, the demand and supply variables (DS) that comprise the second vector of explanatory variables, and the structural variables (MS) that comprise the third vector of explanatory variables used in our regression equations. The rationale behind including these variables in our model, and the signs we expect these variables to have, are explained below.[225]

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[224] See Chapter IV for the definitions of all of the terms used in these equations. See, also, Table IV.1 for the specific coefficients, referred to below, that correspond to the variables included in the model.

[225] The variables, themselves, are described further in Appendix B, which also identifies the sources used to obtain data for these variables. The regression results for the key event variables are provided in Chapter VI, while those for the model's other variables are given in Appendix D.

A. Event Variables

As explained in Chapter IV, the key purpose of the econometric model is to examine the competitive effects of the horizontal and vertical consolidation in the CSD industry on CSD price and per capita volume levels. In addition to traditional tests of statistical significance, we make several comparisons of the estimated effects of different categories of events.

The model differentiates between large (TB) and small (TS) horizontal transfers of Dr Pepper and 7UP franchises to Coca-Cola and Pepsi-Cola bottlers. Although, qualitatively, we expect both types of CSD franchise transfers to have anticompetitive effects, other factors equal, we hypothesize that larger size franchise acquisitions may have bigger competitive effects than smaller ones. Thus, we first examine whether within equation (C.1) $a1_1$ and $a1_2 > 0$, and whether within equation (C.2) $a2_1$ and $a2_2 < 0$. Second, to evaluate whether the impacts of horizontal transfers decline with the size of the transferring franchise, we also examine whether $a1_1 > a1_2$ and $a2_1 < a2_2$. Third, we test whether $a1_2$ and $a2_2 = 0$ to evaluate whether small franchise transfers have no effect on CSD price and per capita volume levels.

The model considers four different vertical integration variables (VX, VZ, VAX, and VAZ), reflecting four different levels or extents of vertical integration, because we expect that the ability of parent companies to influence bottler prices and per capita volume levels may depend on whether <u>both</u> Coca-Cola and PepsiCo own their bottlers in a given area (as opposed to just one of them), and on whether that ownership reflects parent company <u>control</u> of those bottlers (or just a relatively small equity interest without control). In all four cases, we hypothesize that vertical integration by Coca-Cola and PepsiCo into downstream bottling operations results in efficiencies that reduce CSD prices and raise CSD per capita volume levels.

Therefore, we expect that $a1_3 < 0$, and $a2_3 > 0$.

The model differentiates between large (CB) and small (CS) third bottler consolidations because we hypothesize that larger size franchise transfers may have bigger competitive effects. Nevertheless, qualitatively, we expect both types of third bottler CSD franchise consolidations to have procompetitive effects, other factors equal. Therefore, we examine whether (1) $a1_4$ and $a1_5 < 0$, while $a2_4$ and $a2_5 > 0$, and (2) $a1_5 > a1_4$, while $a2_4 > a2_5$ within (C.1) and (C.2).

The empirical model contains two additional event variables, MNG and FIX. MNG accounts for managerial changes at bottling operations that could alter the strategic conduct of bottlers, and, in turn, affect CSD price and per capita volume levels, but which are not accounted for by the other event variables. FIX accounts for the presence of ongoing price-fixing found by the DOJ in the Washington/Baltimore and Miami areas during portions of the NEGI sample period.[226] Although the competitive effects of managerial changes are ambiguous, partly because of the variety of management changes at issue and the variety of circumstances under which these changes take place,[227] successful price-fixing is likely to lead to higher CSD prices and lower per capita volume levels, other variables constant.[228] Consequently, we examine whether within (C.1) $a1_7 > 0$ and within (C.2) $a2_7 < 0$.

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[226] The FIX variable takes on a value of 1 during the periods of price-fixing, and is 0 otherwise.

[227] Presumably, these management changes are undertaken to improve the profitability of CSD bottlers. How this intent might translate into CSD price or per capita volume changes, however, is not clear.

[228] Some historical studies of collusion, however, suggest that collusion may be more likely to occur in markets where profits are unusually depressed. If so, the price and per capita volume effects of collusion may be confounded, for example, with effects of exogenous declines in demand.

B. Demand and Supply Variables

1. Demand Side of the Model

The demand side factors influencing CSD price and per capita volume levels are TEMP, TEMPA, TIME, TIMESQR, and a series of qualitative holiday variables. In this model, TEMP is average high temperature in the local area, while TEMPA measures positive deviations in average high temperatures. Higher temperatures, other factors equal, are likely to increase the demand for CSD products.[229] We, therefore, hypothesize that each of the coefficients associated with TEMP and TEMPA is positive, other factors equal.

To capture overall trends in CSD consumption caused by factors that include habit formation, TIME and TIMESQR were added to this model. Other factors equal, we expect CSD prices to decline and CSD per capita volume to rise over time. A combination of factors that include possible long term substitution of CSD products for other beverages on the demand-side and technological change on the supply side (e.g., faster production lines) is consistent with this hypothesis. As a result, the variation captured by TIME suggests that within (C.1), $ß1_3 < 0$, while within (C.2), $ß2_3 > 0$.[230]

The final demand-side variables incorporated into the model are separate qualitative

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[229] TEMPA was used in addition to absolute temperature levels to capture the CSD price and per capita volume effects of temperature changes that deviated from typical seasonal changes within any given local area. Our concern is that an 80 degree high in Minneapolis may have much different implications for local CSD consumption than an 80 degree high in Miami. We expect that positive deviations in temperature, like TEMP itself, would increase CSD per capita output and price levels as consumers react to abnormally high temperatures for the area by consuming additional beverages, including CSD products.

[230] Although trend variation in CSD price and per capita volume levels could be nonlinear, we have no prior expectations about this relationship over the sample period. Therefore, the signs of the coefficients of TIMESQR are ambiguous.

variables for the following six major holidays: Christmas (C), Easter (E), Memorial Day (M), July 4th (J), Labor Day (L), and Thanksgiving (T). We incorporated these variables into the model to capture possible increased CSD demand associated with these social occasions, and the importance of promotions and features of CSD products during holiday seasons.[231] Bottlers and grocery chains, in anticipation of holiday seasons, heavily promote CSDs products during these periods. CSD features consist of the combination of newspaper advertisements, discount prices, and bulk in-store displays of the CSD products of particular bottlers. In light of this, we hypothesize that CSD prices fall and sales increase during these holiday periods, other variables constant.[232] This means that within (C.1), $ß1_{16}$, $ß1_{17}$, $ß1_{18}$, $ß1_{19}$, $ß1_{20}$, and $ß1_{21} < 0$, while within (C.2), $ß2_{16}$, $ß2_{17}$, $ß2_{18}$, $ß2_{19}$, $ß2_{20}$, and $ß2_{21} > 0$.

2. Local Macroeconomic Variables

To account for variations in local macroeconomic conditions, the model incorporates measures of local area population, income, and cost of living. We would ordinarily expect that areas with higher population (POP) would experience higher demand for soft drink products, raising CSD prices, other variables constant. This would mean that within (C.1) $ß1_5 > 0$.[233] However, given our imperfect efforts to incorporate a proxy for measuring scale of operation,

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[231] For a discussion of the economic significance of retail feature activity, see, Nelson and Hilke (1991).

[232] Although we recognize that branded CSD demand, in particular, is likely to increase during holiday periods, suggesting higher prices during these time periods, we hypothesize that the growing emphasis on holiday promotion and feature activity in this industry suggests that holidays are probably associated with lower CSD prices and higher levels of CSD consumption.

[233] Because the per capita volume variable is expressed on a per capita basis, the impact of variations in POP on CSD per capita volume seems ambiguous.

increases in population could enable bottlers to achieve additional economies of scale that lead to lower costs. In particular, distribution costs could decline in a non-linear manner, comparing large to small cities. Alternatively, because large cities probably contain more ethnic diversity than small cities or towns, this could give rise to more niche CSDs in large population centers. These niche beverages may represent additional alternatives to brand name CSDs. As a result, competition from additional niche beverages may put downward pressure on the prices of brand name CSDs. Some of the effects of niche brands may be captured by the RDUMMY variable (discussed below), but it seems doubtful that RDUMMY would capture all of these affects. This raises the possibility that $ß1_5 < 0$. Depending on whether these niche brands, on balance, capture sales from the branded CSDs or their added competition stimulates them to sell more, per capita branded volume may rise or fall. Thus, both the price and per capita volume impacts of higher population on branded CSDs are indeterminant.

Other variables constant, we expect that changes in INCOME, which is effective buying income (a measure similar to disposable income), will increase demand for CSD products, raising price and per capita volume levels. This means that within (C.1), $ß1_6 > 0$, while within (C.2), $ß2_6 > 0$.

The model also incorporates COL in an effort to measure the impacts on CSD markets of cross-sectional differences in the cost of living in the various local areas. Other factors equal, higher costs of living could include higher CSD prices, implying that within (C.1), $ß1_7 > 0$. This could reduce the market per capita volume of CSDs, suggesting that within (C.2), $ß2_7 < 0$.

3. Supply Side of the Model

Supply side factors impact CSD price and per capita volume levels by altering the costs

of supplying these products, particularly through variation in production and distribution costs. The model incorporates several variables to account for these changes. First, WAGE measures the local employment costs facing CSD bottlers at the production and distribution levels of the bottling industry. This variable was derived from average salary and wage data for production and distribution labor employed by CSD bottling plants in different areas. Other factors equal, we expect that higher WAGE levels will lead to higher costs and CSD prices, reducing the per capita volume of CSD products. We, therefore, hypothesize that within (C.1) $ß1_8 > 0$, while within (C.2) $ß2_8 < 0$.

Second, in order to account for other expenses such as delivery costs, the model includes a proxy variable for measuring route delivery expenses. In particular, DCOST attempts to proxy variations in delivery costs associated with different numbers of both consumers and retail outlets. It is defined as the number of people per grocery and convenience store outlet in each of the local areas within the three data sets. We anticipate that as the population increases relative to the number of retail outlets for a given geographic area, delivery costs fall, making route deliveries more efficient as a result. Other factors constant, lower delivery and distribution costs generate lower CSD prices, increasing the per capita volume of CSD products. Consequently, we hypothesize that within (C.1) $ß1_{15} < 0$ and within (C.2) $ß2_{15} > 0$.

Third, the model includes PLASTICS to account for CSD cost differences likely to be associated with the different packages bottlers use to produce CSDs – plastic, cans, and glass. PLASTICS represents the percent of total CSD packaged volume sold in PET plastic containers. Since CSDs sold in plastic containers (mostly two and three liter package sizes) tend to be larger than those sold in cans and glass, we expect CSD costs to be lower per unit when the percent of

CSD volume using plastic rises, other things equal. These lower costs would yield lower CSD prices and greater per capita volumes. Therefore, we hypothesize that within (C.1) $ß1_9 < 0$ and within (C.2) $ß2_9 > 0$.

Fourth, the model includes five variables that account for other production costs incurred by CSD bottlers: (1) P-SYRUP to capture variations in the prices of the beverage bases used by bottlers in the production of CSDs; (2) P-CORN to account for changes in the price of corn syrup sweetener; (3) P-PLASTIC and (4) P-ALUM to account for variations in the prices of plastic and aluminum containers, respectively; and (5) P-PET to capture changes in the prices of fuels used by delivery vehicles to distribute CSDs to the various retail outlets. Other factors constant, increases in any of these input prices will raise CSD prices and lower CSD per capita volume levels.

4. Product Differentiation in the CSD Industry

The model also accounts for the overall product differentiation involving the brands of the five major CSD companies, and for variations in consumer tastes and experience across the geographic areas within the sample. The empirical specification includes AD, a measure of national advertising expenditures of the leading CSD parent companies, to account for the impacts of parent company brand development activities on local CSD prices and per capita volume levels. Although alternative measures might account for these brand development activities, including a national CSD price variable, national advertising is a chief way parent companies could influence local CSD demand. Arguably, AD is a more direct measure of the magnitude of brand development activities at the national level than indirect measures such as some national CSD price measure. Although local area advertising data are not available,

precluding us from modeling cross-sectional differences in advertising, we hypothesize that increases in AD will raise CSD price and per capita volume levels across all areas simultaneously. NCOKE was also added to the model to account for the new formulation of brand Coca-Cola and the temporary discontinuation of the traditional Coca-Cola formula (Classic) during the NEGI data period, but we have no prior expectations about the impacts of this introduction on overall CSD price and per capita volume levels.

Taste or perceived quality differences in local areas of the country where each leading brand group was historically the strongest is measured by a series of qualitative heartland variables represented by C-HEART, P-HEART, SV-HEART, DP-HEART, and RC-HEART in equations (C.1) and (C.2). First mover advantages, greater consumer experience, cumulative advertising effects, or local taste preferences might all result in different perceptions of brand quality in different areas and lead to different price and per capita volume relationships in different areas. These variables account for those differences. In the case of Coca-Cola and Dr Pepper brands, the heartlands were defined on the basis of descriptions made by representatives of these parent companies during the course of recent antitrust litigation. In the case of the other major brands, the heartlands were defined on the basis of historical local area market share or other historical information.[234]

In these heartland areas, other factors equal, we expect that at least some set of consumers prefer the heartland brands more than a corresponding set of consumers residing outside the

[234] For example, in the case of 7UP, a local area was generally included in the 7UP heartland if that brand's local area market share regularly exceeded 10 percent. Similar assumptions were made to define the RC heartland. The Pepsi heartland included local areas where the shares of the Pepsi brand group exceeded shares of the Coca-Cola brand group by at least 10 percent in all of the data sets that contained a given local area.

heartland area. This could mean that demand for the relevant brands within these heartlands has a lower price elasticity, and/or that demand for the heartland brands is relatively high in these areas. In any event, for at least some subset of consumers in a given heartland, the heartland brands are perceived to be of higher quality than the same brands in other areas. If so, other variables constant, higher price and per capita volume levels should emerge in heartland areas. As a result, we hypothesize that $ß1_{24}$, $ß1_{25}$, $ß1_{26}$, $ß1_{27}$, and $ß1_{28} > 0$ in (C.1), and that $ß2_{24}$, $ß2_{25}$, $ß2_{26}$, $ß2_{27}$, and $ß2_{28} > 0$ in (C.2).[235]

C. Market Structure and Other Variables

The model incorporates RDUMMY, to account for strong local or regional CSD brands. BIG RED, a popular CSD brand in San Antonio, TX, is an example of the type of CSD brand accounted for by this qualitative variable. Strong regional brands could enhance competition between and among the suppliers of the major national CSD brands, lowering their prices, other

[235] It is possible that, in addition to brand preference, these heartland variables capture any number of differences across and within the sets of local areas that define these heartlands. As a result, parameter estimates associated with these variables could be biased in ways that would make it difficult for us to separate out product differentiation effects econometrically.

variables constant. Consequently, we hypothesize that $?1_1 < 0$.[236]

The specification also incorporates a traditional measure of buyer concentration, but measures seller concentration in terms of the relative and absolute size of local area bottlers. This was done primarily to distinguish between bottler-level scale and market power effects, as we discuss further below.[237]

1. Third Bottler Variables

The specification, in addition to distinguishing concentration-related changes stemming from third bottlers versus other bottlers,[238] attempts to account for the impacts of (1) different classes of third bottlers, (2) variations in the distribution of sales among multiple third bottlers, and (3) possible scale economies involving third bottlers. First, the model includes B-THIRD

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[236] The literature on the competitive effects of additional rivals suggests that strong regional brands could, in local areas with only a few CSD bottlers, exert competitive pressure on the incumbent CSD bottlers, lowering their prices (See, for example, Bresnahan and Reiss (1991). However, since the per capita volume measure is aggregate per capita volume of the five major brand groups (i.e., without the regional brand), the effect of the presence of a major local brand on the aggregate per capita volume for that area, is indeterminant. On the one hand, increased competition (and lower prices) from the regional brand may result in more sales from the five major brand groups. On the other hand, this increased regional brand competition may capture sales from (and, therefore, reduce the per capita volumes of) the five major brand groups. With more complete data, per capita volume of the local brand would be included along with other national brands, so the presence of a regional brand would unambiguously expand per capita volume.

[237] A substantial literature exists on the trade-off between market power and efficiencies as they relate to horizontal mergers (See, for example, *Horizontal Merger Guidelines*, §2 and §4; Bumpass (1987); Dickson (1986); and Fisher, Johnson and Lande (1988). Since this study examines horizontal franchise transfers that could give rise to both market power and/or scale-related efficiencies, it is important to model these possibilities as part of our empirical work.

[238] The chief distinction made here between third bottlers and other area bottlers involves their relative sizes as measured by market shares. We examine whether or not third bottlers with relatively large market shares enhance competition in local areas, other factors equal. For both groups of bottlers, we also account for scale effects by incorporating absolute capacity measures into the model.

and S-THIRD to distinguish those third bottler size groupings that are more likely to serve as competitive constraints in local areas from those less likely to constrain competition.[239] Thus, the large third bottler variable (B-THIRD) has a lower limit of fifteen percent and the small third bottler variable (S-THIRD) has a cut off of five percent. This cut off distinguishes small from very small bottlers, and reduces multicollinearity problems in the model. While estimates of $?1_3$ and $?2_3$ within (C.1) and (C.2) might not be significantly different from zero, our experience in this industry indicates that large third bottlers tend to put downward pressure on CSD prices in local areas. Therefore, we would expect that within (C.1) $?1_2 < 0$, while within (C.2) $?2_2 > 0$.[240] We also examine whether larger third bottlers result in more significant price and per capita volume effects than smaller third bottlers.

The B-THIRD and S-THIRD dummy variables are based on the general share levels of the respective third bottlers over the whole period of each data set, as described in Appendix B. Hence, the values of the two variables are largely independent of the pricing and per capita volume decisions in the area during any individual period. Thus, the construction of these variables minimizes simultaneity issues.

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[239] Industry observers have suggested that third bottlers with market shares below some critical level, often stated as fifteen percent, are less significant competitive constraints on other area bottlers. For example, John Brock, former President of Cadbury Beverages, North America, was quoted as saying, "our brands do better with bottlers who have 15 or greater share in a given market" (see, *Beverage Digest* (June 28, 1994 p. 4). For a discussion of the issue of critical mass, see also, *In the Matter of Coca-Cola Bottling Co. of the Southwest*, 118 F.T.C. 452, 591-94 (1994).

[240] At the same time, small third bottlers might price aggressively in an effort to increase market share, or as part of a short run exit strategy that results in significant competition with other area bottlers. In this case, small third bottlers would act as a competitive constraint on other area bottlers and we may find $?1_3 < 0$ and $?2_3 > 0$. In addition, larger third bottlers may offer better levels of service in which case $?1_2$ may exceed 0, while we still would expect $?2_2 > 0$.

To account for concentration among third bottlers and possible scale and brand portfolio effects, the model contains BIG-3RDCS and BIG-3RDC, respectively. On the one hand, fragmentation of productive capacity among third bottlers could reduce the competitive significance of these bottlers for any number of reasons.[241] For example, fragmentation could limit their access to the grocery retail feature cycle, and thereby reduce their individual and overall competitive significance in local areas. It could also prevent third bottlers from realizing economies of scale in the production, distribution, and marketing of CSD products, and preclude any third bottler from offering a full line of well-recognized brands in each flavor category. At the same time, additional third bottlers could enhance competition in local areas.

On the other hand, systematic increases in third bottler capacity or capacity share could enhance the viability of the third bottler system, creating additional competition for Coca-Cola and Pepsi-Cola bottlers.[242] The combination of relatively large third bottler CSD capacity and high concentration of capacity among third bottlers (i.e., a bottler not characteristic of those captured by S-THIRD) increases the likelihood that the bottler could exploit economies of scale in production and distribution, and gain significant access to the retail grocery feature cycle. This implies that higher levels in either BIG-3RDC or BIG-3RDCS, other factors equal, could lead to lower CSD prices and higher CSD per capita volume levels. Consequently, we hypothesize that within (C.1), $?1_4$ and $?1_7$ are negative, while within (C.2), $?2_4$ and $?2_7$ are positive.

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[241] As mentioned previously, the literature addresses the issue of the competitive consequences of differences in the distribution of market shares. See, Kwoka (1979) and Kwoka and Ravenscraft (1986).

[242] Again, while small third bottlers might pursue an aggressive exit strategy, achieving the necessary critical mass is crucial to the long term survival of third bottlers.

BIG-3RDC and BIG-3RDCS and the large bottler variables described below are all based on estimated peak capacity rather than current share of capacity utilization. Consequently, these variables are largely independent of the price and per capita volume decisions of the individual observation periods, and their construction minimizes simultaneity issues.

2. Large Bottler Variables

The model contains BIG-BTCS and BIG-BTC in an effort to distinguish between market power and scale effects, respectively, for the largest bottler in each area. We evaluate possible market power effects by examining whether increases in BIG-BTCS lead to anticompetitive effects. Control over a relatively large share of market capacity could reflect the presence of a dominant or leading firm. This raises the potential for unilateral anticompetitive effects in local areas, and suggests that within (C.1), $?1_5 > 0$ and within (C.2), $?2_5 < 0$, other factors equal. We evaluate possible scale effects by examining whether increases in BIG-BTC enhance competition among CSD bottlers, implying that within (C.1), $?1_6 < 0$ and within (C.2), $?2_6 > 0$, other factors equal. The use of traditional measures of market concentration such as a capacity-based HHI itself would preclude any analysis of these separate competitive effects.

3. Buyer Concentration

The final structural variable, FHHI, measures concentration among grocery retail chain buyers at the local level. The inclusion of this variable is based upon several alternative hypotheses. First, increases in buyer concentration could result in the exercise of additional downstream market power by retail grocery chains. Since FP is a measure of <u>retail</u> CSD prices, additional market power in grocery retailing could lead to higher prices and lower per capita volume levels for any number of products, including soft drinks, through higher retail margins.

In this case, $?1_8 > 0$ and $?2_8 < 0$.

Second, increases in FHHI could create additional downstream market power that would be expressed by squeezing upstream margins, leading to lower CSD prices and higher CSD per capita volume levels, other variables constant. Finally, higher grocery concentration could result in less emphasis on store-wide price competition and more emphasis on price competition in specific items. Soft drinks might be a likely candidate for specialty promotions because of their wide recognition, quick turnover, and ubiquitous distribution in all types of retail outlets.[243] In this case, within (C.1), $?1_8 < 0$, while within (C.2), $?2_8 > 0$. Overall, these alternative hypotheses suggest that the signs of $?1_8$ and $?2_8$ are ambiguous.[244]

[243] See, Nelson and Hilke (1991).

[244] In addition to market power explanations, consolidation among grocery retailers could result in any number of efficiencies that reduce prices and raise per capita volume levels. This would also mean that $?1_8 < 0$ and $?2_8 > 0$. Alternatively, if variations in concentration among grocery retailers do not alter their conduct, then changes in FHHI would have no impact on CSD price or per capita volume levels. In this case, estimates of $?1_8$ and $?2_8$ would not be significantly different from zero.

Appendix D

Regression Results

A. Introduction and Summary

In addition to the key policy event variables that are the focus of our analysis, our econometric model includes a variety of other event, demand, supply, and structural variables as control variables to help explain CSD prices and per capita volume levels. This appendix reports the results of the regression analysis, indicating whether the included variables were significant and whether they had the expected signs. Emphasis is placed on the model's MNG, FIX, demand, supply, and structural variables because Chapter VI emphasizes the regression results for the model's key policy event variables. Appendix B describes each of the variables included in the model, while Appendix C indicates what signs these variables are expected to have.

As explained in Chapter VI, Wald tests were used to test whether the model's (1) event variables, (2) demand and supply variables, and (3) structural variables, each taken as a group had a statistically significant impact on the model's dependent variables. In each case, the group of explanatory variables was found to have a statistically significant impact on CSD prices and per capita volumes in all three data sets used.[245] Taken together, the set of all explanatory variables account for 53% to 70% of the variation in CSD prices, and 69% to 88% of the variation in CSD per capita volumes in the three data sets.

The most noteworthy findings among the individual variables that are included in the

[245] The Wald test results reject the null hypothesis that the variables collectively have no impact on CSD prices and per capita volumes in each of our three data sets.

regression analysis come from the model's key event variables, especially the horizontal franchise transfer variables. As explained in Chapter VI, the empirical results show that horizontal acquisitions of 7UP and Dr Pepper franchises by Coca-Cola or Pepsi-Cola bottlers lead to higher prices and lower per capita volume levels, as expected. These results apply to both large (TB) and small (TS) 7UP and Dr Pepper franchise acquisitions. The results for the vertical integration and third bottler consolidation variables were more mixed. Overall, they tend to be consistent with the current antitrust policy of not challenging such transactions, but some of these results (along with the TS results) seem to warrant further study.

Although many of the model's remaining variables, which do not have public policy implications, have mixed results, some of the structural variables that do have implications for antitrust enforcement tend to have consistent, significant results. For example, additional capacity at either the market's biggest bottler or largest third bottler tends to reduce CSD prices and raise per capita volume levels. Thus, increased capacity seems to be associated with procompetitive effects, regardless which bottler's capacity is increased. At the same time, increases in the capacity share of the biggest bottler tends to raise CSD prices and lower CSD per capita volumes, while increases in the biggest third bottler's share of total third bottler capacity tends to lower CSD prices and raise CSD per capita volumes. Thus, increased capacity share seems to be associated with anticompetitive effects when it relates to the area's biggest bottler. Procompetitive effects seem to predominate when third bottler capacity is concentrated in the area's biggest third bottler. This is consistent with our finding that big and small horizontal franchise transfers from third bottlers to Coca-Cola and Pepsi-Cola bottlers tend to raise prices and lower per capita volumes because such transactions may increase the biggest bottler's

capacity share at the same time that it may lower the biggest third bottler's share of third bottler capacity.

B. Overall Regression Results

Tables D.1 and D.2 summarize the specific price and per capita volume regression results, respectively, for each of the model's variables for each of the three data sets used. The first part of each table provides results for the event variables, followed by results for the demand and supply control variables, and then the results for the model's structural variables. For each variable, the table provides the estimated coefficient, shows the expected and actual signs of the coefficients, and gives the t-statistics in parentheses. The discussion below is based on the results shown in these two tables.

C. Regression Results for the Events Variables

Since detailed regression results for the key event variables are provided in Chapter VI, those results are summarized only briefly here. Of the three key types of events analyzed, the TB and TS horizontal franchise transfer variables had the strongest results. As seen in Tables D.1 and D.2 (which repeat the results shown in Table VI.2 of Chapter VI), these two variables, together, were significant and had the expected anticompetitive signs (positive in price and negative in per capita volume) in eight of the ten regressions. The four vertical integration variables showed CSD prices falling with more vertical integration into CSD bottling by the Coca-Cola Company and PepsiCo, as expected (eight of eleven regression results were negative, with seven of them statistically significant). The per capita volume regression results were

TABLE D.1

Price Regression Estimation Results

Regression Set/ Variable Name	Expec-ted Sign	NEGI Data Set	Scantrack 1 Data Set	Scantrack 2 Data Set
Summary Statistics		**N = 1122 R-sq. =.7032 Adj. R-sq. = .6916 F[42,1079] = 60.87**	**N = 630 R-sq. =.6410 Adj. R-sq. = .6160 F[41,588] = 25.61**	**N = 1410 R-sq. =.5326 Adj. R-sq. = .5190 F[40,1369] = 39.00**
The Policy Event Variables				
TB (Big Horizontal Transfers)	+	0.3835 (11.81)	0.1689 (3.06)	N/A
TS (Small Horizontal Transfers)	+	0.2120 (4.86)	-0.0619 (-2.95)	0.0866 (3.80)
VX (Vertical Integration)	-	-0.2358 (-11.33)	-0.0228 (-1.17)	-0.0264 (-3.10)
VAX (full or partial vertical integration of both major bottlers)	-	-0.1720 (-8.54)	0.0342 (2.08)	-0.0230 (-2.32)
VZ (full vertical integration of either or both major bottlers)	-	-0.0594 (-4.07)	0.2217 (6.48)	-0.0245 (-2.12)
VAZ (full or partial vertical integration of either or both major bottlers)	-	-0.1134 (-8.73)	0.0188 (0.87)	N/A
CB (Big 3rd Bottler Consolidations)	-	0.0869 (4.06)	-0.0981 (-4.12)	-0.0461 (-2.73)
CS (Small 3rd Bottler Consolidations)	-	0.2064 (6.49)	0.1188 (4.97)	0.0245 (1.20)
MNG (Other Management Changes)	+/-	0.0373 (2.74)	0.0109 (0.70)	-0.0100 (-0.91)
FIX (Incidents of Price-Fixing)	+	-0.1138 (-4.87)	N/A	N/A
Demand and Supply Variables				
TEMPA (Temperature Above Area Mean)	+	-0.0088 (- 5.73)	-0.0015 (-1.07)	0.0029 (2.19)

TABLE D.1 (continued)

Price Regression Estimation Results

Regression Set/ Variable Name	Expec-ted Sign	NEGI Data Set	Scantrack 1 Data Set	Scantrack 2 Data Set
Demand and Supply Variables (continued)				
TEMP (Temperature)	+	0.0118 (15.32)	0.0021 (1.81)	0.0024 (4.70)
TIME (Time Trend)	-	0.0038 (0.75)	-0.0218 (-4.51)	0.0131 (1.48)
TIMESQR (Time Trend Squared)	+/-	-0.0005 (-5.14)	0.0011 (3.68)	-0.0008 (-3.44)
C (Christmas)	-	0.0736 (4.24)	-0.1110 (-2.99)	-0.1820 (-7.82)
E (Easter)	-	N.A.	-0.0282 (-1.62)	-0.0081 (-0.61)
M (Memorial Day)	-	-0.0737 (-3.16)	-0.0464 (-2.30)	-0.0626 (-4.20)
J (July 4th)	-	-0.0995 (-2.49)	-0.0501 (-2.34)	-0.0834 (-4.89)
L (Labor Day)	-	-0.1063 (-2.85)	-0.0428 (-2.16)	-0.0754 (-4.68)
T (Thanksgiving)	-	-0.1165 (-5.86)	-0.0526 (-2.57)	-0.0382 (-2.30)
WAGE (Bottling Wage Costs)	+	0.0321 (10.10)	0.0133 (4.02)	-0.0035 (-2.73)
DCOST (Distribution Cost Economies)	-	-0.3472 (-9.80)	-0.1952 (-2.40)	-0.2136 (-6.84)
PLASTICS (Percent of volume sold in plastic containers)	-	0.00001 (0.27)	-0.0046 (-5.00)	-0.0003 (-0.43)
P-SYRUP (Concentrate Producer Price Index)	+	0.0079 (2.21)	-0.0114 (-1.69)	0.0345 (4.28)
P-CORN (Corn Syrup Producer Price Index)	+	0.0012 (2.00)	-0.0032 (-1.35)	-0.0058 (-5.61)
P-PLASTIC (Plastic Bottlers PPI)	+	-0.0029 (-0.61)	-0.0154 (-2.85)	-0.0108 (-2.55)

TABLE D.1 (continued)

Price Regression Estimation Results

Regression Set/ Variable Name	Expec-ted Sign	NEGI Data Set	Scantrack 1 Data Set	Scantrack 2 Data Set
Demand and Supply Variables (continued)				
P-ALUM (Aluminum Cans PPI)	+	-0.0077 (-2.98)	-0.0126 (-2.16)	-0.0276 (-2.67)
P-PET (Petroleum Refining PPI)	+	-0.0008 (-0.39)	-0.0054 (-1.83)	0.0009 (1.60)
AD (National CSD Advertising)	+	-0.0753 (-2.67)	-0.1116 (-0.78)	-0.0639 (-1.49)
NCOKE (Introduction of New Coca-Cola)	+/-	-0.0249 (-1.07)	N/A	N/A
C-HEART (Coca-Cola Heartland)	+	0.2237 (8.91)	0.0741 (2.74)	0.0423 (1.87)
P-HEART (Pepsi-Cola Heartland)	+	-0.0971 (-5.75)	0.0124 (0.56)	0.0975 (8.67)
SV-HEART (7UP Heartland)	+	-0.1194 (-6.21)	0.1441 (6.12)	0.0883 (7.10)
DP-HEART (Dr Pepper Heartland)	+	-0.2812 (-8.22)	-0.0519 (-1.42)	0.0278 (1.30)
RC-HEART (Royal Crown Heartland)	+	-0.0918 (-6.70)	-0.0280 (-1.18)	-0.0235 (-3.04)
INCOME	+	0.1204 (13.82)	0.0696 (8.25)	0.0719 (13.34)
COL (Cost of Living)	+	0.0035 (2.19)	0.0004 (0.28)	0.0029 (3.93)
POP (Population)	+/-	0.0074 (14.76)	-0.0048 (-3.94)	0.0005 (1.52)
Structural Variables				
RDUMMY (Regional Brand)	-	-0.2075 (-14.10)	0.1340 (5.90)	-0.0463 (-4.24)
B-THIRD (Big Third Bottler)	-	0.0664 (3.40)	0.1065 (2.58)	-0.1916 (-13.89)

TABLE D.1 (continued)

Price Regression Estimation Results

Regression Set/ Variable Name	Expec-ted Sign	NEGI Data Set	Scantrack 1 Data Set	Scantrack 2 Data Set
Structural Variables (continued)				
S-THIRD (Small Third Bottler)	+/-	0.1010 (5.37)	0.0951 (4.01)	0.0194 (2.31)
BIG-3RDC (Big Third Bottler Capacity)	-	-0.0001 (-6.81)	-0.0003 (- 4.54)	0.0001 (2.97)
BIG-BTCS (Largest Bottler's Share of Capacity)	+	-0.4543 (-2.38)	0.6529 (4.40)	0.2521 (2.08)
BIG-BTC (Largest Bottler's Capacity)	-	-0.00003 (-4.68)	0.00004 (2.01)	-0.00004 (-3.19)
BIG-3RDCS (Big 3rd Bottler's Share of 3rd Bottler Capacity)	-	-0.1706 (-3.83)	-0.3903 (-9.02)	0.0227 (0.83)
FHHI (Area Grocery Store Concentration)	+/-	-0.0289 (-3.92)	0.1140 (8.67)	-0.0495 (-7.94)

Notes - This table contains coefficient estimates stated in dollars per 100 ounce case for the price regressions, and t-statistics in parentheses. The t-statistics are adjusted for heteroscedasticity. N/A means not applicable. The expected signs of the coefficient estimates also are provided. Where we have no prior expectation about the impact of a variable, we enter +/- in the "expected sign" cell.

The entries for the vertical integration variables that do not assume control by both the Coca-Cola Company and PepsiCo (VAX, VZ, and VAZ) are indented to emphasize this point. The analysis of each vertical variable requires its own full set of regressions. Although estimates are provided for all four vertical integration variables, the estimates for all of the model's other variables apply to the regressions that contain VX, the purest form of vertical integration. However, regression results for variables other than the vertical variable are fairly stable across the different versions of the vertical variable. All of the key event variables (other than the vertical variable itself) have the same signs and levels of significance in each of the three data sets, regardless of which vertical variable is used. Regression results are not reported for the VAZ type of vertical integration event in the Scantrack 2 data set because nearly all of the observation periods in that data set have this type of event.

TABLE D.2

Per Capita Volume Regression Estimation Results

Regression Set/ Variable Name	Expec-ted Sign	NEGI Data Set	Scantrack 1 Data Set	Scantrack 2 Data Set
Summary Statistics		**N = 1122 R-sq. =.8691 Adj. R-sq. = .8641 F[42,1079] = 170.63**	**N = 630 R-sq. =.8803 Adj. R-sq. = .8719 F[41,588] = 105.42**	**N = 1410 R-sq. =.6915 Adj. R-sq. = .6825 F[40,1369] = 76.71**
The Policy Event Variables				
TB (Big Horizontal Transfers)	-	-0.3596 (-5.93)	-0.1226 (-3.82)	N/A
TS (Small Horizontal Transfers)	-	-0.2223 (-4.07)	0.0998 (6.03)	-0.5033 (-13.85)
VX (Vertical Integration)	+	-0.0397 (-0.89)	0.0001 (0.01)	-0.0998 (-4.96)
VAX (full or partial vertical integration of both major bottlers)	+	0.0153 (0.38)	0.0449 (4.09)	-0.2593 (-12.45)
VZ (full vertical integration of either or both major bottlers)	+	-0.0783 (-2.79)	-0.0535 (-2.59)	-0.0453 (-2.50)
VAZ (full or partial vertical integration of either or both major bottlers)	+	-0.0917 (-3.29)	0.0192 (1.23)	N/A
CB (Big 3rd Bottler Consolidations)	+	0.2102 (4.87)	0.1238 (4.86)	0.1890 (5.80)
CS (Small 3rd Bottler Consolidations)	+	-0.2330 (-5.50)	-0.0955 (-3.60)	-0.1846 (-4.97)
MNG (Other Management Changes)	+/-	-0.1088 (-3.68)	-0.0203 (-1.59)	-0.2182 (-9.21)
FIX (Incidents of Price-Fixing)	-	-0.0260 (-0.56)	N/A	N/A
Demand and Supply Variables				
TEMPA (Temperature Above Area Mean)	+	0.0124 (4.33)	0.0067 (5.94)	0.0112 (5.52)

TABLE D.2 (continued)

Per Capita Volume Regression Estimation Results

Regression Set/ Variable Name	Expec-ted Sign	NEGI Data Set	Scantrack 1 Data Set	Scantrack 2 Data Set
Demand and Supply Variables (continued)				
TEMP (Temperature)	+	0.0004 (0.27)	-0.0014 (-1.51)	-0.0074 (-8.34)
TIME (Time Trend)	+	-0.0062 (-0.60)	0.0003 (0.08)	-0.0210 (-1.23)
TIMESQR (Time Trend Squared)	+/-	0.0011 (4.83)	0.0001 (0.41)	0.0008 (1.82)
C (Christmas)	+	0.2096 (6.09)	0.2366 (7.96)	0.1979 (4.09)
E (Easter)	+	N.A.	0.0350 (2.55)	0.0307 (1.37)
M (Memorial Day)	+	0.0783 (1.82)	0.0190 (0.91)	0.0628 (2.39)
J (July 4th)	+	0.2108 (2.86)	0.0564 (2.96)	0.0845 (2.77)
L (Labor Day)	+	0.2218 (3.14)	0.0522 (3.09)	0.1063 (3.47)
T (Thanksgiving)	+	0.0742 (1.97)	0.1000 (5.96)	0.1093 (3.35)
WAGE (Bottling Wage Costs)	-	-0.0369 (-5.62)	-0.0121 (-5.17)	-0.0097 (-5.03)
DCOST (Distribution Cost Economies)	+	0.9035 (13.10)	0.7336 (11.84)	0.3711 (6.81)
PLASTICS (Percent of volume sold in plastic containers)	+	0.0001 (1.24)	0.0011 (1.52)	-0.0036 (-2.39)
P-SYRUP (Concentrate Producer Price Index)	-	0.0089 (1.20)	-0.0007 (-0.12)	-0.0142 (-0.97)
P-CORN (Corn Syrup Producer Price Index)	-	-0.0020 (-1.71)	-0.0038 (-2.10)	-0.0002 (-0.15)
P-PLASTIC (Plastic Bottlers PPI)	-	0.0316 (3.28)	-0.0004 (-0.08)	0.0205 (2.53)

TABLE D.2 (continued)

Per Capita Volume Regression Estimation Results

Regression Set/ Variable Name	Expec-ted Sign	NEGI Data Set	Scantrack 1 Data Set	Scantrack 2 Data Set
Demand and Supply Variables (continued)				
P-ALUM (Aluminum Cans PPI)	-	0.0181 (3.44)	-0.0097 (-1.97)	0.0336 (1.68)
P-PET (Petroleum Refining PPI)	-	-0.0067 (-1.61)	0.0046 (1.95)	-0.0006 (-0.66)
AD (National CSD Advertising)	+	0.0191 (0.36)	-0.1472 (-1.29)	0.1628 (1.89)
NCOKE	+/-	0 .0503 (1.09)	N/A	N/A
C-HEART (Coca-Cola Heartland)	+	-0.1927 (-3.63)	-0.0639 (-2.55)	-0.4917 (-8.45)
P-HEART (Pepsi-Cola Heartland)	+	-0.3151 (-10.53)	0.0061 (0.37)	-0.2585 (-13.17)
SV-HEART (7UP Heartland)	+	-0.0072 (-0.20)	-0.0453 (-2.68)	-0.1856 (-7.66)
DP-HEART (Dr Pepper Heartland)	+	0.3889 (5.67)	0.0450 (1.46)	-0.1955 (-5.62)
RC-HEART (Royal Crown Heartland)	+	0.0418 (1.56)	-0.0607 (-3.52)	-0.1439 (-10.09)
INCOME	+	-0.3302 (-20.48)	-0.0196 (-3.22)	-0.0331 (-4.28)
COL (Cost of Living)	-	-0.0136 (-4.76)	-0.0078 (-6.04)	-0.0020 (-1.48)
POP (Population)	+/-	-0.0334 (-29.74)	-0.0143 (-13.54)	-0.0242 (-23.33)
Structural Variables				
RDUMMY (Regional Brand)	+/-	-0.3545 (-10.54)	-0.1473 (-7.09)	0.1732 (9.53)
B-THIRD (Big Third Bottler)	+	-0.3364 (-9.72)	0.1281 (4.26)	0.2432 (6.76)

TABLE D.2 (continued)

Per Capita Volume Regression Estimation Results

Regression Set/ Variable Name	Expec-ted Sign	NEGI Data Set	Scantrack 1 Data Set	Scantrack 2 Data Set
Structural Variables (continued)				
S-THIRD (Small Third Bottler)	+/-	-0.0597 (-1.59)	-0.0684 (-3.74)	-0.1034 (-6.91)
BIG-3RDC (Big Third Bottler Capacity)	+	0.0001 (5.38)	-0.00004 (-1.15)	0.0003 (5.29)
BIG-BTCS (Largest Bottler's Share of Capacity)	-	-3.2519 (-8.82)	-1.1818 (-10.69)	0.3829 (1.79)
BIG-BTC (Largest Bottler's Capacity)	+	0.0002 (19.24)	0.0002 (15.52)	0.0003 (14.24)
BIG-3RDCS (Big 3rd Bottler's Share of 3rd Bottler Capacity)	+	0.8242 (9.55)	0.3729 (9.11)	-0.0801 (-1.57)
FHHI (Area Grocery Store Concentration)	+/-	-0.0064 (- 0.38)	-0.0258 (-2.67)	0.0326 (2.45)

Notes - This table contains coefficient estimates for the per capita volume regressions, and t-statistics in parentheses. The t-statistics are adjusted for heteroscedasticity. N/A means not applicable. Coefficient estimates are stated in ounces per capita for the observation period (bimonthly for the NEGI data set and 28 days for the other two data sets). The expected signs of the coefficient estimates also are provided. Where we have no prior expectation about the impact of a variable, we enter +/- in the "expected sign" cell.

The entries for the vertical integration variables that do not assume control by both the Coca-Cola Company and PepsiCo (VAX, VZ, and VAZ) are indented to emphasize this point. The analysis of each vertical variable requires its own full set of regressions. Although estimates are provided for all four vertical integration variables, the estimates for all of the model's other variables apply to the regressions that contain VX, the purest form of vertical integration. However, regression results for variables other than the vertical variable are fairly stable across the different versions of the vertical variable. All of the key event variables (other than the vertical variable itself) have the same signs and levels of significance in each of the three data sets, regardless of which vertical variable is used. Regression results are not reported for the VAZ type of vertical integration event in the Scantrack 2 data set because nearly all of the observation periods in that data set have this type of event.

mixed, however, depending on which of the four vertical integration variable definitions was used. The CB third bottler consolidation variable was significant and had the expected procompetitive sign in five of the six regressions, while the CS third bottler consolidation variable was significant and had unexpected anticompetitive signs in five of the six regressions.

Although the empirical model focuses on the horizontal and vertical events discussed above, it contains two additional event variables, MNG and FIX. MNG accounts for a variety of bottler level management changes that might impact CSD prices and per capita volume levels.[246] As seen in Tables D.1 and D.2, empirical results associated with this variable are mixed. With respect to CSD prices, management changes have a statistically significant positive impact on prices during the NEGI time period, but do not lead to significant price effects during the periods covered by either the Scantrack 1 or Scantrack 2 data sets. With regard to per capita CSD volume, management changes consistently reduced per capita volume levels, generally in a statistically significant manner. Since we had no prior expectations about the impacts of management changes, this mixture of results is not surprising. Indeed, the range of results stemming from the addition of MNG to the model is consistent with the variety of management changes captured by this variable.

The final event variable incorporated into the model, FIX, accounts for a few price fixing conspiracies that took place during the time period covered by the NEGI data set. The parameter estimates associated with FIX indicate that, while price-fixing agreements did not significantly

[246] It should be noted that, while MNG reflects changes in personnel at the bottling level, it does not include management changes brought about by either the horizontal or vertical transactions. The changes at issue here involve management changes at the bottling level, but do not involve structural changes to the relevant bottlers themselves.

affect CSD per capita volume levels, they were associated with lower CSD prices, other factors equal. This result is inconsistent with our prior expectations about the impact of FIX on CSD prices.[247] This could be the result of inaccurate information on the time periods associated with these conspiracies since available information is imprecise, as discussed in Chapter II. It also could be that FP (our five company price measure) does not accurately reflect the products/packages that were the subject of the price-fixing and/or the place where that price-fixing took place.[248] Alternatively, the results could also reflect reductions in demand for CSDs that stem from cutbacks in overall quality or levels of service from CSD bottlers that are part of the price coordination agreement.[249] In any event, additional information on the competitive effects of price-fixing in local CSD markets is probably necessary before reaching any definitive conclusions.

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[247] It should be noted that FIX captures price conspiracies in only the Miami and Washington/Baltimore areas. In addition to these two areas, the DOJ found price fixing in three other areas -- Atlanta, Georgia; Cleveland, Ohio; and Charlotte, North Carolina -- within the NEGI data set. We elected not to focus on empirical results that included these three areas because the price conspiracies there involved only small geographic portions of the NEGI areas.

[248] The DOJ, for example, identified Broward and Palm Beach Counties (where Fort Lauderdale and West Palm Beach are located) among its price-fixing areas. Although these counties represent a significant portion of the Miami NEGI area used for our price data, they do not include Dade county (where Miami is located), whose population is greater than the other two combined. Similarly, the DOJ Information in the Washington DC price-fixing matter only identified a subset of our five company CSDs as the subject of the price-fixing. See Appendix A.

[249] These results may also be consistent with the hypothesis that collusion is more likely in demand "slumps" when firms are more "desperate" to improve earnings. In this scenario, a local decline in CSD demand results in reduced prices and earnings. The fall in earnings then prompts collusion. The underlying assumptions are: 1) earnings below some critical level are particularly costly to all firms (or managers) in the market, 2) in order to avoid these costs, managers may have incentives to take more risk when earnings fall near or below this critical level, and 3) the increased risk may be in the form of colluding in violation of the antitrust laws. For a related discussion, see Baker and Woodward (1994).

Overall, the event variable results shown in Tables D.1 and D.2 support or are consistent with the enforcement approach taken by antitrust authorities for some bottler transactions, but suggest that further study of other types of bottler transactions may be warranted.

D. Regression Results for the Demand and Supply Variables

The demand and supply variables that comprise the second set of regression variables fall into four categories: 1) short-term demand shifters, 2) cost indicia, 3) product differentiation elements, and 4) local area macroeconomic conditions.

Among the short-term demand variables, the results for the holiday variables are the most consistent with expectations. As seen in Tables, D.1 and D.2, the holiday variables generally show statistically significant negative effects in price and statistically significant positive effects in per capita volume. This is consistent with the conventional wisdom that feature activity associated with holiday calendar marketing agreements (CMAs) has been of considerable importance to both the bottlers and supermarkets. The coefficients for the time trend variables suggest that nonlinearities exist with respect to price, though not with respect to per capita volume. The temperature variables have a combined positive relationship in all price and per capita volume regressions, as expected.

Of the several cost variables, the results for the economies of distribution cost variable (DCOST) are the most consistent with expectations. As seen in Tables D.1 and D.2, this variable has the expected negative relationship to price and positive relationship to per capita volume and is significant in all price and per capita volume regressions. The bottling wages variable, which we use as an indication of local bottling costs, also performs as expected. The price effects of

higher wage levels are significantly positive for two of the three regressions, and higher wages lower per capita CSD volume in a statistically significant manner in all three data sets. The other input cost variables tend to have mixed results.

There are two types of product differentiation variables included in Tables D.1 and D.2: (1) an advertising variable and (2) a group of heartland variables. It is difficult to draw conclusions about the impact of advertising on CSD prices and per capita volumes from the empirical results. The results suggest that the differentiation of leading brands in heartland areas is more complex than anticipated. Several interesting shifts in the direction and importance of the heartland variables are reported below.

As seen in Tables D.1 and D.2, the variables measuring local economic conditions, including income and cost of living, yield expected results, with the prominent exception of the income variable in the per capita volume regressions. The coefficients of both variables are all positive in the price regression, as expected, with five of the six estimates being statistically significant. Cost of living has the expected negative association with per capita volume. Income, however, has a statistically significant negative relationship to per capita volume in all three regressions. The remaining local conditions variable, population, has mixed signs on price, but is strongly negative in volume (with all three estimates statistically significant), indicating lower per capita sales in the largest metropolitan areas.

1. Short-term Demand Shift Variables

The temperature and time variables have mixed results. The holiday variables all perform generally as expected and are generally significant.

The **temperature above the local mean** variable (TEMPA) is positively associated with

per capita volume in all data sets which we attribute, in part, to increased demand. These results are all statistically significant. However, the variable's relationship to price shows mixed results. The other temperature variable (TEMP) is positive in price, and two of its price estimates are statistically significant. But only one of its per capita volume estimates is statistically significant, and that estimate is negative, contrary to our expectations. Some of the effects that otherwise would have been attributed to temperature are undoubtedly drawn off to the summer holiday variables of Memorial Day (M), July 4th (J), and Labor Day (L). As a result, the temperature variables are likely to be capturing temperature effects above and beyond the effects of higher temperatures associated with the summer holidays as well as some of the collinear relationships with the holiday variables. Because of this collinearity with the summer holidays and because the summer holidays are important featuring periods with lower retail prices, we suspect that the mixed price effects of temperature and temperature above the area mean are due to the overlap of the two concepts.

The results for the **time trend** variables (TIME and TIMESQR) suggest that price and per capita volume time trends are not always simple linear relationships. The relationships exhibit nonlinearities attested to by the significance of the time squared variable in all three of the price regressions. As discussed in Chapters II and III, these nonlinearities emerge within the context of retail prices that are falling over time due to technological improvements in production and distribution, and to input substitutions.

The results for the **holiday** variables (C, E, M, J, L, T) generally show strong negative effects in price and strong positive effects in per capita volume consistent with the conventional wisdom that feature activity associated with holiday calendar marketing agreements (CMAs) has

been important to both the bottlers and supermarkets. Coefficient estimates associated with the holiday variables are generally significant.[250]

2. Cost Variables

The economies of **distribution cost** variable (DCOST) has the expected negative relationship to price and positive relationship to per capita volume, and the coefficients are all significant.

The **local bottling wages** variable (WAGE) has the expected positive sign on price in the early years of our sample periods, and the anticipated negative sign on per capita volume in all regressions. In each case, the estimated coefficient is statistically significant. We suspect that rapid improvements in bottling technology, economies of scale in particular (see Table III.3), have either muddied or diminished the relationship between bottling wage levels and prices, explaining the negative effect of wages on price during the period of the Scantrack 2 data set. In part, the change may also reflect the greater shift to regional production from local production in many areas as scale effects facilitate consolidating production in more capital intensive plants that require a higher proportion of skilled labor (i.e., more high-wage computer personnel and fewer low-wage line operators and packers).[251] Canning production, in particular, entails significant economies of scale which has become more important as package type splits have increasingly favored cans in many areas.

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[250] Of the holiday variables, only the Easter variable delivered consistently weak results, particularly in the price regressions.

[251] The shift toward use of more skilled labor could, itself, correspond with increases in labor productivity and lower CSD prices during the period of the Scantrack 2 data set relative to the earlier data sets.

The **plastics** variable, which accounts for the percent of total CSD packaged volume sold in plastic containers, does not perform as expected. Although it is statistically significant and has the expected sign in one of the three price regressions, it is not statistically significant in the other two price regressions. In addition, the only statistically significant per capita volume regression result is negative, contrary to our expectations.

Five **input materials cost** variables (P-SYRUP, P-CORN, P-PLASTIC, P-ALUM, P-PET) are included. Although the expected signs are positive for price and negative for per capita volume, the results are generally mixed with different effects in different time periods. An example of a pronounced pattern in these mixed effects is a change for the coefficients of the corn syrup variable (P-CORN) from positive to negative over time in the price regressions. Relatively high correlations between and among some of these input price variables could account for this mixture of results, particularly since many of these coefficient estimates are statistically insignificant as would be the case in the presence of multicollinearity.

3. Product Differentiation Variables

The **advertising** variable (AD) has the expected positive coefficient in two of the per capita volume regressions, but neither of these coefficient estimates is statistically significant. In the price regressions, all of the coefficients for the advertising variable are negative rather than the expected positive, but only one of these estimates is significantly different from zero.[252]

[252] The coefficients may be weak for advertising because the variable is fairly highly correlated with the time trend variable. The correlation ranges from .90 in the earliest data set to .76 in the middle data set, and .74 in the most recent data set. In the earliest data set, advertising is also correlated at .60 with income (see Appendix E). As with some of the input price variables, a general trend toward insignificant advertising effects is suggestive of the presence of multicollinearity.

The results for **New Coke** (NCOKE) suggest that the introduction of the new formulation of Coca-Cola and the removal of the original Coca-Cola brand lowered CSD prices and raised per capita CSD volume levels. The parameter estimates, however, are not statistically significant. Since we had no prior expectations about the impacts of NCOKE, these results are not surprising.

The results for the third set of product differentiation variables, the **heartland** variables (C-HEART, P-HEART, SV-HEART, DP-HEART, RC-HEART), show quite different heartland effects for different brand groups. This suggests that the differentiation of leading brands in heartland areas is more complex than anticipated, perhaps reflecting widespread pricing strategy changes for different brands as the degree of vertical integration in bottling increased rapidly for both Coca-Cola and Pepsi-Cola bottling operations, while it disappeared for the other three brand groups.[253]

Among the individual brand group results, the Coca-Cola heartland variables are always positive in price and negative on per capita volume.[254] All of the Coca-Cola heartland coefficients are statistically significant, except for one. For PepsiCo brands, the price effect moves from negative to positive across the data sets with no corresponding shift in the usually

[253] Additional insight about the heartland variables may be available in regressions using individual brand group prices and volume levels. Such analysis represents a future research opportunity.

[254] Perhaps of importance here is the decline in the negative correlation between cost of living and the Coca-Cola heartland variable from -.51 and -.52 in the first two data sets to -.41 in the third data set (see Appendix E). The regression and correlation results, taken together, are consistent with greater exercise of market power over time in Coca-Cola heartland areas.

negative coefficients in the per capita volume regressions.[255]

The 7UP heartland variable is generally positive on price and negative on per capita volume in the later periods consistent with an ongoing effort to take advantage of differential demand for 7UP in its heartland. However, since 7UP is a relatively small brand even in its heartland areas, and since the dependent variables measure price and per capita volume for all five major brand groups, this explanation is more remote than it would be for the two market leaders.[256] The coefficients for Dr Pepper's heartland variable become increasingly positive in price and more negative and significant in per capita volume over the three data sets.[257]

Finally, all of the coefficients for the RC heartland variable are negative in the price regressions, with two of them statistically significant. Two of the RC heartland coefficients are negative in the per capita volume regressions, and both of them are significant. These relatively unique results (compared to at least mixed signs for the other major brand groups) accord with the common observation that the RC brand group is somewhat less successfully differentiated than the other major brand groups.

4. Local Macroeconomic Conditions Variables

Our **local macroeconomic conditions** variables, income (INCOME) and cost of living

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[255] This is consistent with a rising relative differentiation position for PepsiCo products over the three data sets, making the demand for these products less elastic over time.

[256] An alternative interpretation might be that where 7UP demand is sufficient to sustain higher prices, there is less competitive pressure to keep down price for the other major brands. Future research with individual regression runs for the 7UP brand group may be particularly salient here.

[257] This may be consistent with a growing effort to recognize the brand's differentiation advantage in its heartland areas. However, again, future research using the Dr Pepper brand group data may provide better insight.

(COL), yield expected positive and significant relationships with price.[258] For the per capita volume regressions, both variables have negative coefficients in all three data sets, with five of the six estimates statistically significant. This is an unexpected result for the income variable and it is particularly strong in the first data set.

The **population** variable (POP) has mixed signs in price, but the coefficients are strongly negative and significant in per capita volume, indicating lower per capita sales in the largest metropolitan areas.[259] We suspect that this may be associated with less homogeneous beverage tastes, the presence of additional local brands and bottlers not covered in our regional brand variable (RDUMMY), disproportionate taste for CSDs outside the big five, or distinct distribution cost elements. The fact that the price coefficients are not as strong or consistent suggests that a difference in the level of demand for the main branded CSDs, rather than cost effects, is in play.

E. Regression Results for the Structural Variables

The third set of regression variables includes a variety of bottler and retailer "structure" variables. Rather than use a single concentration measure (e.g., HHI) to reflect the market's overall bottling structure, we use both bottler capacity and capacity share variables to separate the

[258] Income and cost of living are correlated at .71 and .72 respectively in the two most recent data sets. Similarly, cost of living is also correlated with bottling wages at .58, .76, and .60 levels in the three respective data sets (see Appendix E).

[259] At an earlier stage, we ran additional regressions removing the largest cities from the data set and found that the coefficients for the population variable were smaller and less significant as a result. This suggests that people in larger cities may have access to alternative CSDs that are not available in smaller cities.

competitive effects of dominance from economies of scale effects that might otherwise be combined in an HHI variable.[260] We examine the effect that the market's largest bottler and largest third bottler have on CSD performance, and differentiate further between big and small size third bottlers because the competitive significance of third bottlers is thought to depend on their relative sizes. In addition, we consider the effects that significant regional brands (not owned by any of the five major soft drink companies) and the level of grocery store concentration have on CSD performance. We now discuss the empirical results from Tables D.1 and D.2 that are associated with these variables. In general, the findings support our expectations.

Regional (RDUMMY) is a dummy variable that is turned on when a significant regional CSD (not owned by any of the five major soft drink companies) is present in the market. As seen in Tables D.1 and D.2, the presence of a regional CSD is associated with lower CSD prices (as we expected) in two of our three data sets, and both of these findings are statistically significant. Similarly, per capita volumes decline with the presence of a regional CSD in two of our three data sets, and both of these findings are statistically significant. These lower per capita volumes suggest that, on balance, a regional brand capture sales from the five major brand groups rather than stimulating them to increase their per capita sales.

Big third bottler (B-THIRD) is a dummy variable that is turned on when the local area

[260] As discussed in Chapter VI, the use of bottler capacity and capacity share variables could raise a simultaneity issue if these variables are not independent of CSD price and per capita volume levels in local areas. We constructed the capacity variables on the basis of peak volume and market share data over relatively long periods of time (i.e., one year or more), in part, to minimize correlation with endogenous volume and market share measures. We ran the regressions without these capacity variables to examine the robustness of our model, and found the empirical results to be generally robust to the exclusion of these variables (see Section E of Chapter VI).

has a third bottler whose long-term average share of CSD sales is at least 15 percent. As seen in Tables D.1 and D.2, this variable performs contrary to expectations in the NEGI data set. It is positive and significant in the NEGI price regression, and negative and significant in the NEGI per capita volume regression. This would seem to suggest that the presence of a third bottler with a big share was anticompetitive, other things equal, or that large third bottlers have products and services perceived to be of higher quality, raising the average price and lowering average per capita volume. But B-THIRD's performance changes over time. In the Scantrack 1 data set, the coefficient on B-THIRD in the price regression is still positive and significant, but the coefficient in the per capita volume regression also is positive and significant. Therefore, the effect of a third bottler with a big share seems ambiguous during this time period. Most recently, B-THIRD performs as expected. In the Scantrack 2 data set, it is negative and highly significant in the price regression, and positive and significant in the per capita volume regression. Perhaps third bottlers with big shares seem to enhance competition more in recent years than in prior years because of the increased featuring of CSDs and the greater ease for bottlers with big shares to obtain features.

Small third bottler (S-THIRD) is a dummy variable that is turned on when the third bottler(s) in a local area has (have) a long-term average share of CSD sales that is at least 5%, but less than 15%.[261] Although we did not have prior expectations regarding this variable, S-THIRD performs consistently. Its sign is positive in all three price regressions, and negative in all three per capita volume regressions. Moreover, five of the six regression results are statistically

[261] We did not include a dummy variable for third bottlers with shares below five percent to avoid multicollinearity among third bottler share variables. Such bottlers seem the least likely to be competitively significant.

significant. Thus, other factors equal, prices seem to be higher and per capita volumes lower in local areas where third bottler shares are between 5% and 15%. Note, also, that the magnitudes of S-THIRD's price and per capita volume effects are smaller than the corresponding B-THIRD effects (in all cases, but one), as expected.

Big third bottler capacity (BIG-3RDC) is the capacity of the biggest third bottler in each local area.[262] As seen in Tables D.1 and D.2, BIG-3RDC tends to perform as expected. It has the anticipated negative sign in the price regressions in two of the three data sets, and also has the expected positive sign in the per capita volume regressions in two of the three data sets. All of these results are statistically significant. Moreover, one of the two unanticipated signs (in the Scantrack 1 per capita volume regression) is not significant. Thus, although the significant, positive price result in our Scantrack 2 data set is contrary to our expectations, the overall empirical results are consistent with the presumption that CSD competition is enhanced by increasing the capacity of the biggest third bottler, other variables equal.

Big bottler capacity share (BIG-BTCS) is the biggest bottler's share of the total capacity (of the five brand groups) in the area. As seen in Tables D.1 and D.2, BIG-BTCS tends to perform as expected. It has the anticipated positive sign in the price regressions in two of the three data sets, and also has the anticipated negative sign in the per capita volume regressions in two of the three data sets. In each of these cases, the result is statistically significant. Moreover, one of the two unanticipated signs is not significant. Thus, the empirical results support the presumption that CSD competition is lessened by increasing the biggest bottler's share of the

[262] We use capacity as our measure of size and, as mentioned earlier, attempt to formulate it so that it is independent of our endogenous per capita volume variable. See Appendix B for a detailed discussion of the construction of this variable.

total area's capacity.

Big bottler capacity (BIG-BTC) is the capacity of the biggest bottler in each local area. As seen in Tables D.1 and D.2, BIG-BTC performs as expected. It is negative in two of the price regressions, both of which are statistically significant. The results in the per capita volume regressions are particularly strong, as BIG-BTC is positive and highly significant (as expected) in all three data sets. Thus, although the significant, positive price result in the Scantrack 1 data set is contrary to our expectation, the overall results suggest that the larger the capacity of the biggest bottler, the more procompetitive the outcome, other variables equal.

Big third bottler's capacity share (BIG-3RDCS) is the biggest third bottler's share of the total third bottler capacity in each local area. As seen in Tables D.1 and D.2, BIG-3RDCS tends to perform as expected. It has the expected negative sign in the price regressions and expected positive sign in the per capita volume regressions in both the NEGI and Scantrack 1 data sets. In both cases, the coefficients are statistically significant. Only in the Scantrack 2 data set are BIG-3RDCS's signs contrary to our expectations, and neither of these estimates is statistically significant.

Food store concentration (FHHI) provides the estimated HHI (concentration of sales shares) among grocery stores in each local area. We did not have prior expectations about this variable, and the directional effects of FHHI are not consistent. It is negative in two of the three price regressions and in two of the three per capita volume regressions. All of these negative results are significant except for one. Moreover, although the directional effects are consistent (and significant) within each of the Scantrack 1 and Scantrack 2 data sets separately, the two data sets have completely opposite signs. Thus, the FHHI variable has conflicting results.

Appendix E

Table of Correlations Between the Regression Variables

Source: NEGI - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1122

	FV	FP	VX	VZ	VAX	VAZ	TB	TS	CB	CS	MNG	FIX
FV	1.00000	-0.16363	-0.04944	-0.07902	-0.10376	-0.06344	0.10734	0.01703	-0.14613	-0.12086	-0.00473	-0.09321
	0.0	0.0001	0.0979	0.0081	0.0005	0.0336	0.0003	0.5689	0.0001	0.0001	0.8743	0.0018
FP	-0.16363	1.00000	-0.16907	0.15003	-0.22516	0.06965	0.17802	0.12024	0.06877	0.18506	0.01325	0.00098
	0.0001	0.0	0.0001	0.0001	0.0001	0.0196	0.0001	0.0001	0.0212	0.0001	0.6574	0.9737
VX	-0.04944	-0.16907	1.00000	0.35307	0.66848	0.33401	-0.05470	-0.04023	0.21817	-0.05938	0.04862	-0.04551
	0.0979	0.0001	0.0	0.0001	0.0001	0.0001	0.0670	0.1781	0.0001	0.0468	0.1036	0.1276
VZ	-0.07902	0.15003	0.35307	1.00000	0.53640	0.82325	-0.06637	0.13264	-0.00006	0.14041	-0.08054	-0.06234
	0.0081	0.0001	0.0001	0.0	0.0001	0.0001	0.0262	0.0001	0.9984	0.0001	0.0070	0.0368
VAX	-0.10376	-0.22516	0.66848	0.53640	1.00000	0.50869	-0.07841	-0.05767	0.11386	-0.04197	0.09408	-0.03256
	0.0005	0.0001	0.0001	0.0001	0.0	0.0001	0.0086	0.0534	0.0001	0.1601	0.0016	0.2758
VAZ	-0.06344	0.06965	0.33401	0.82325	0.50869	1.00000	0.08224	0.12371	-0.01335	0.12543	-0.05060	-0.06972
	0.0336	0.0196	0.0001	0.0001	0.0001	0.0	0.0058	0.0001	0.6551	0.0001	0.0903	0.0195
TB	0.10734	0.17802	-0.05470	-0.06637	-0.07841	0.08224	1.00000	-0.02719	-0.04997	0.10940	-0.08757	-0.03076
	0.0003	0.0001	0.0670	0.0262	0.0086	0.0058	0.0	0.3628	0.0943	0.0002	0.0033	0.3033
TS	0.01703	0.12024	-0.04023	0.13264	-0.05767	0.12371	-0.02719	1.00000	-0.03676	-0.03648	-0.05509	-0.02262
	0.5689	0.0001	0.1781	0.0001	0.0534	0.0001	0.3628	0.0	0.2186	0.2221	0.0651	0.4490
CB	-0.14613	0.06877	0.21817	-0.00006	0.11386	-0.01335	-0.04997	-0.03676	1.00000	-0.06705	0.00560	-0.04158
	0.0001	0.0212	0.0001	0.9984	0.0001	0.6551	0.0943	0.2186	0.0	0.0247	0.8513	0.1640
CS	-0.12086	0.18506	-0.05938	0.14041	-0.04197	0.12543	0.10940	-0.03648	-0.06705	1.00000	-0.15183	-0.04127
	0.0001	0.0001	0.0468	0.0001	0.1601	0.0001	0.0002	0.2221	0.0247	0.0	0.0001	0.1672
MNG	-0.00473	0.01325	0.04862	-0.08054	0.09408	-0.05060	-0.08757	-0.05509	0.00560	-0.15183	1.00000	-0.06339
	0.8743	0.6574	0.1036	0.0070	0.0016	0.0903	0.0033	0.0651	0.8513	0.0001	0.0	0.0337
FIX	-0.09321	0.00098	-0.04551	-0.06234	-0.03256	-0.06972	-0.03076	-0.02262	-0.04158	-0.04127	-0.06339	1.00000
	0.0018	0.9737	0.1276	0.0368	0.2758	0.0195	0.3033	0.4490	0.1640	0.1672	0.0337	0.0
TEMPA	0.27838	0.07622	0.00639	-0.02117	0.02365	-0.00655	-0.00881	0.00338	0.02813	-0.00523	0.03260	-0.02363
	0.0001	0.0107	0.8307	0.4786	0.4286	0.8266	0.7683	0.9098	0.3466	0.8612	0.2753	0.4291
TEMP	0.37189	0.25983	-0.10651	-0.00739	-0.13057	-0.04699	0.06759	0.01602	0.00493	-0.00616	-0.02574	0.05726
	0.0001	0.0001	0.0004	0.8047	0.0001	0.1157	0.0236	0.5920	0.8690	0.8366	0.3890	0.0552
TIME	0.23999	0.19123	0.01492	0.00116	0.02767	0.08678	0.11437	0.14057	0.12016	0.13241	0.39425	0.08558
	0.0001	0.0001	0.6176	0.9691	0.3545	0.0036	0.0001	0.0001	0.0001	0.0001	0.0001	0.0041
TIMESQR	0.23076	0.17512	0.01491	-0.00004	0.02093	0.08370	0.11910	0.14890	0.11742	0.12528	0.36483	0.06810
	0.0001	0.0001	0.6178	0.9988	0.4837	0.0050	0.0001	0.0001	0.0001	0.0001	0.0001	0.0225

Source: NEGI - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1122

	FV	FP	VX	VZ	VAX	VAZ	TB	TS	CB	CS	MNG	FIX
POP	-0.42446	0.11711	0.08117	0.21088	0.34152	0.26336	-0.02528	-0.04637	0.02487	-0.12300	0.25207	0.09323
	0.0001	0.0001	0.0065	0.0001	0.0001	0.0001	0.3976	0.1206	0.4054	0.0001	0.0001	0.0018
INCOME	-0.23014	0.32995	0.04605	0.09941	0.08886	0.14736	0.03436	0.04758	0.09943	0.10722	0.36686	0.17392
	0.0001	0.0001	0.1232	0.0009	0.0029	0.0001	0.2502	0.1112	0.0009	0.0003	0.0001	0.0001
COL	-0.58217	0.10376	0.16484	-0.02101	0.17729	0.01806	-0.11149	-0.03835	0.14658	0.03683	0.11166	0.13377
	0.0001	0.0005	0.0001	0.4821	0.0001	0.5456	0.0002	0.1993	0.0001	0.2177	0.0002	0.0001
WAGE	-0.33734	0.19889	0.09911	0.15227	0.20781	0.18387	-0.13002	0.07282	0.13139	0.23227	0.22675	-0.05420
	0.0001	0.0001	0.0009	0.0001	0.0001	0.0001	0.0001	0.0147	0.0001	0.0001	0.0001	0.0696
DCOST	-0.55650	-0.00048	0.05439	0.14004	0.35583	0.16521	-0.12457	-0.09204	0.08515	0.01822	0.11160	0.04398
	0.0001	0.9871	0.0686	0.0001	0.0001	0.0001	0.0001	0.0020	0.0043	0.5420	0.0002	0.1409
NCOKE	0.12948	0.05292	0.00418	0.00118	0.01179	0.03099	0.06294	0.06420	0.04648	0.04778	0.13143	0.02509
	0.0001	0.0764	0.8888	0.9685	0.6933	0.2997	0.0350	0.0315	0.1197	0.1097	0.0001	0.4012
PLASTICS	-0.20962	0.01938	0.20458	0.06278	0.15449	0.10532	-0.04581	-0.08392	0.06253	0.09550	0.17991	0.16885
	0.0001	0.5166	0.0001	0.0355	0.0001	0.0004	0.1251	0.0049	0.0362	0.0014	0.0001	0.0001
P_SYRUP	0.20969	0.18310	0.01993	0.00219	0.02808	0.08231	0.10058	0.13941	0.10884	0.12445	0.37813	0.08497
	0.0001	0.0001	0.5048	0.9415	0.3474	0.0058	0.0007	0.0001	0.0003	0.0001	0.0001	0.0044
P_CORN	-0.13488	-0.12067	-0.01232	-0.00775	-0.03369	-0.07024	-0.10035	-0.09979	-0.09933	-0.10896	-0.35040	-0.06944
	0.0001	0.0001	0.6802	0.7954	0.2595	0.0186	0.0008	0.0008	0.0009	0.0003	0.0001	0.0200
PPLASTIC	0.20080	0.17611	0.00167	-0.00242	0.03013	0.06778	0.07600	0.08611	0.10352	0.11105	0.33534	0.09123
	0.0001	0.0001	0.9555	0.9355	0.3132	0.0232	0.0109	0.0039	0.0005	0.0002	0.0001	0.0022
P_ALUM	0.21759	0.15863	0.00784	0.00368	0.01485	0.07746	0.10506	0.10781	0.10282	0.11157	0.32031	0.07469
	0.0001	0.0001	0.7930	0.9019	0.6193	0.0094	0.0004	0.0003	0.0006	0.0002	0.0001	0.0123
P_PET	-0.19989	-0.16985	-0.01822	-0.00249	-0.02711	-0.07665	-0.09796	-0.12712	-0.10041	-0.11996	-0.37273	-0.08570
	0.0001	0.0001	0.5420	0.9335	0.3644	0.0102	0.0010	0.0001	0.0008	0.0001	0.0001	0.0041
C	-0.06248	-0.07468	0.00000	-0.00248	-0.00456	-0.02042	-0.00860	-0.02875	-0.01801	-0.02637	-0.04541	0.00511
	0.0364	0.0123	1.0000	0.9338	0.8787	0.4945	0.7736	0.3360	0.5468	0.3776	0.1285	0.8642
M	-0.00493	-0.01081	0.00000	0.00248	0.00228	-0.00572	-0.00860	0.00575	-0.00819	-0.00659	-0.00578	0.00511
	0.8690	0.7175	1.0000	0.9338	0.9392	0.8483	0.7736	0.8474	0.7842	0.8254	0.8467	0.8642
J	0.15525	0.05717	0.00000	-0.00248	0.00228	0.00898	-0.00860	0.00575	-0.00819	0.00330	0.00413	0.00511
	0.0001	0.0556	1.0000	0.9338	0.9392	0.7637	0.7736	0.8474	0.7842	0.9122	0.8901	0.8642
L	0.14118	0.08756	0.00000	-0.00248	0.00228	0.01388	0.01720	0.02300	0.01146	0.01318	0.01404	-0.01022
	0.0001	0.0033	1.0000	0.9338	0.9392	0.6422	0.5650	0.4415	0.7014	0.6591	0.6386	0.7324

Source: NEGI - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1122

	FV	FP	VX	VZ	VAX	VAZ	TB	TS	CB	CS	MNG	FIX
T	-0.06955	-0.01671	0.00000	0.00248	0.00228	0.01878	0.01720	0.02300	0.04093	0.02307	0.04376	-0.01022
	0.0198	0.5760	1.0000	0.9338	0.9392	0.5296	0.5650	0.4415	0.1707	0.4401	0.1430	0.7324
AD	0.20024	0.17216	0.01777	0.00097	0.03122	0.07307	0.09622	0.12541	0.09889	0.11894	0.37393	0.07989
	0.0001	0.0001	0.5521	0.9741	0.2961	0.0144	0.0013	0.0001	0.0009	0.0001	0.0001	0.0074
C_HEART	0.48811	0.16161	-0.14366	-0.00238	-0.20595	0.11252	0.30906	-0.07142	-0.13126	0.08036	-0.05199	-0.08079
	0.0001	0.0001	0.0001	0.9364	0.0001	0.0002	0.0001	0.0167	0.0001	0.0071	0.0817	0.0068
P_HEART	-0.26144	-0.17274	-0.15885	-0.12933	0.04385	-0.14414	-0.12251	-0.09011	0.18980	-0.12371	0.10250	-0.10194
	0.0001	0.0001	0.0001	0.0001	0.1421	0.0001	0.0001	0.0025	0.0001	0.0001	0.0006	0.0006
SV_HEART	-0.42440	0.13443	-0.17127	-0.06239	-0.16170	-0.07273	-0.06848	0.15297	-0.03467	0.14998	-0.12687	-0.10862
	0.0001	0.0001	0.0001	0.0367	0.0001	0.0148	0.0218	0.0001	0.2459	0.0001	0.0001	0.0003
DP_HEART	0.24865	0.16503	-0.09845	0.05413	-0.14113	0.13029	0.46228	-0.04894	-0.08995	0.18498	0.03354	-0.05536
	0.0001	0.0001	0.0010	0.0699	0.0001	0.0001	0.0001	0.1013	0.0026	0.0001	0.2616	0.0638
RC_HEART	0.11519	-0.21200	-0.20681	-0.45673	-0.30545	-0.49181	0.16145	-0.06046	-0.16296	-0.20642	0.24975	0.09451
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0429	0.0001	0.0001	0.0001	0.0015
RDUMMY	-0.26708	-0.20463	0.16394	0.02456	0.28285	0.01116	-0.05504	-0.04593	0.21875	0.24624	-0.03549	0.22534
	0.0001	0.0001	0.0001	0.4111	0.0001	0.7089	0.0653	0.1242	0.0001	0.0001	0.2350	0.0001
B_THIRD	-0.36865	0.09419	-0.00525	-0.02794	-0.02830	-0.03654	-0.06081	0.16266	0.18573	-0.16651	0.11321	-0.10327
	0.0001	0.0016	0.8607	0.3497	0.3436	0.2213	0.0417	0.0001	0.0001	0.0001	0.0001	0.0005
S_THIRD	0.01010	-0.10127	0.14641	-0.01390	0.12129	-0.14937	-0.16964	0.05503	0.11325	0.02801	0.18365	-0.02161
	0.7353	0.0007	0.0001	0.6418	0.0001	0.0001	0.0001	0.0654	0.0001	0.3486	0.0001	0.4696
BIG_3RDC	-0.24573	0.14320	-0.03835	0.06131	0.16687	0.09756	0.06043	0.01414	-0.00572	-0.14009	0.31960	-0.01272
	0.0001	0.0001	0.1993	0.0400	0.0001	0.0011	0.0430	0.6361	0.8482	0.0001	0.0001	0.6704
BIG_BTCS	0.35019	-0.16183	0.00088	0.09261	-0.00071	0.22121	0.03498	-0.06935	-0.18295	-0.06855	-0.05607	-0.05016
	0.0001	0.0001	0.9766	0.0019	0.9810	0.0001	0.2417	0.0202	0.0001	0.0217	0.0605	0.0931
BIG_BTC	-0.08466	0.06381	0.12060	0.30255	0.34731	0.37316	0.00457	-0.06009	-0.06185	-0.17456	0.31545	0.09004
	0.0045	0.0326	0.0001	0.0001	0.0001	0.0001	0.8784	0.0442	0.0383	0.0001	0.0001	0.0025
BIG3RDCS	0.35186	-0.22018	-0.03871	-0.17680	0.04044	-0.00568	0.06862	0.03572	-0.34904	-0.18816	-0.01328	-0.01973
	0.0001	0.0001	0.1951	0.0001	0.1759	0.8493	0.0215	0.2319	0.0001	0.0001	0.6567	0.5091
FHHI	-0.04805	-0.02916	-0.14924	-0.21962	-0.33710	-0.22125	-0.09231	-0.00152	-0.05088	0.36645	-0.03758	0.08431
	0.1077	0.3290	0.0001	0.0001	0.0001	0.0001	0.0020	0.9595	0.0885	0.0001	0.2085	0.0047

Source: NEGI - U.S. - ALL CITIES

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1122

	TEMPA	TEMP	TIME	TIMESQR	POP	INCOME	COL	WAGE	DCOST	NCOKE	PLASTICS	P_SYRUP
FV	0.27838	0.37189	0.23999	0.23076	-0.42446	-0.23014	-0.58217	-0.33734	-0.55650	0.12948	-0.20962	0.20969
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
FP	0.07622	0.25983	0.19123	0.17512	0.11711	0.32995	0.10376	0.19889	-0.00048	0.05292	0.01938	0.18310
	0.0107	0.0001	0.0001	0.0001	0.0001	0.0001	0.0005	0.0001	0.9871	0.0764	0.5166	0.0001
VX	0.00639	-0.10651	0.01492	0.01491	0.08117	0.04605	0.16484	0.09911	0.05439	0.00418	0.20458	0.01993
	0.8307	0.0004	0.6176	0.6178	0.0065	0.1232	0.0001	0.0009	0.0686	0.8888	0.0001	0.5048
VZ	-0.02117	-0.00739	0.00116	-0.00004	0.21088	0.09941	-0.02101	0.15227	0.14004	0.00118	0.06278	0.00219
	0.4786	0.8047	0.9691	0.9988	0.0001	0.0009	0.4821	0.0001	0.0001	0.9685	0.0355	0.9415
VAX	0.02365	-0.13057	0.02767	0.02093	0.34152	0.08886	0.17729	0.20781	0.35583	0.01179	0.15449	0.02808
	0.4286	0.0001	0.3545	0.4837	0.0001	0.0029	0.0001	0.0001	0.0001	0.6933	0.0001	0.3474
VAZ	-0.00655	-0.04699	0.08678	0.08370	0.26336	0.14736	0.01806	0.18387	0.16521	0.03099	0.10532	0.08231
	0.8266	0.1157	0.0036	0.0050	0.0001	0.0001	0.5456	0.0001	0.0001	0.2997	0.0004	0.0058
TB	-0.00881	0.06759	0.11437	0.11910	-0.02528	0.03436	-0.11149	-0.13002	-0.12457	0.06294	-0.04581	0.10058
	0.7683	0.0236	0.0001	0.0001	0.3976	0.2502	0.0002	0.0001	0.0001	0.0350	0.1251	0.0007
TS	0.00338	0.01602	0.14057	0.14890	-0.04637	0.04758	-0.03835	0.07282	-0.09204	0.06420	-0.08392	0.13941
	0.9098	0.5920	0.0001	0.0001	0.1206	0.1112	0.1993	0.0147	0.0020	0.0315	0.0049	0.0001
CB	0.02813	0.00493	0.12016	0.11742	0.02487	0.09943	0.14658	0.13139	0.08515	0.04648	0.06253	0.10884
	0.3466	0.8690	0.0001	0.0001	0.4054	0.0009	0.0001	0.0001	0.0043	0.1197	0.0362	0.0003
CS	-0.00523	-0.00616	0.13241	0.12528	-0.12300	0.10722	0.03683	0.23227	0.01822	0.04778	0.09550	0.12445
	0.8612	0.8366	0.0001	0.0001	0.0001	0.0003	0.2177	0.0001	0.5420	0.1097	0.0014	0.0001
MNG	0.03260	-0.02574	0.39425	0.36483	0.25207	0.36686	0.11166	0.22675	0.11160	0.13143	0.17991	0.37813
	0.2753	0.3890	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001
FIX	-0.02363	0.05726	0.08558	0.06810	0.09323	0.17392	0.13377	-0.05420	0.04398	0.02509	0.16885	0.08497
	0.4291	0.0552	0.0041	0.0225	0.0018	0.0001	0.0001	0.0696	0.1409	0.4012	0.0001	0.0044
TEMPA	1.00000	0.81809	0.10207	0.09761	-0.04537	0.04373	0.04761	0.06475	-0.01614	0.21758	0.01949	0.01659
	0.0	0.0001	0.0006	0.0011	0.1288	0.1432	0.1109	0.0301	0.5892	0.0001	0.5143	0.5788
TEMP	0.81809	1.00000	0.10268	0.09974	-0.04566	-0.01920	-0.18325	-0.16096	-0.16041	0.18938	-0.02001	0.02740
	0.0001	0.0	0.0006	0.0008	0.1264	0.5205	0.0001	0.0001	0.0001	0.0001	0.5031	0.3591
TIME	0.10207	0.10268	1.00000	0.97049	0.00714	0.69000	0.10122	0.54288	-0.03813	0.37067	0.28780	0.96109
	0.0006	0.0006	0.0	0.0001	0.8112	0.0001	0.0007	0.0001	0.2019	0.0001	0.0001	0.0001
TIMESQR	0.09761	0.09974	0.97049	1.00000	0.00818	0.68811	0.07458	0.52929	-0.03641	0.42618	0.27935	0.93404
	0.0011	0.0008	0.0001	0.0	0.7844	0.0001	0.0125	0.0001	0.2230	0.0001	0.0001	0.0001

Source: NEGI - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1122

	TEMPA	TEMP	TIME	TIMESQR	POP	INCOME	COL	WAGE	DCOST	NCOKE	PLASTICS	P_SYRUP
POP	-0.04537	-0.04566	0.00714	0.00818	1.00000	0.34297	0.44745	0.29134	0.82445	0.00383	0.19671	0.00722
	0.1288	0.1264	0.8112	0.7844	0.0	0.0001	0.0001	0.0001	0.0001	0.8981	0.0001	0.8090
INCOME	0.04373	-0.01920	0.69000	0.68811	0.34297	1.00000	0.46462	0.67624	0.37999	0.27828	0.18446	0.66184
	0.1432	0.5205	0.0001	0.0001	0.0001	0.0	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
COL	0.04761	-0.18325	0.10122	0.07458	0.44745	0.46462	1.00000	0.58457	0.60442	0.01998	0.23283	0.07339
	0.1109	0.0001	0.0007	0.0125	0.0001	0.0001	0.0	0.0001	0.0001	0.5037	0.0001	0.0139
WAGE	0.06475	-0.16096	0.54288	0.52929	0.29134	0.67624	0.58457	1.00000	0.50121	0.20397	0.21208	0.52277
	0.0301	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0	0.0001	0.0001	0.0001	0.0001
DCOST	-0.01614	-0.16041	-0.03813	-0.03641	0.82445	0.37999	0.60442	0.50121	1.00000	-0.01686	0.17478	-0.03485
	0.5892	0.0001	0.2019	0.2230	0.0001	0.0001	0.0001	0.0001	0.0	0.5727	0.0001	0.2434
NCOKE	0.21758	0.18938	0.37067	0.42618	0.00383	0.27828	0.01998	0.20397	-0.01686	1.00000	0.10962	0.28307
	0.0001	0.0001	0.0001	0.0001	0.8981	0.0001	0.5037	0.0001	0.5727	0.0	0.0002	0.0001
PLASTICS	0.01949	-0.02001	0.28780	0.27935	0.19671	0.18446	0.23283	0.21208	0.17478	0.10962	1.00000	0.29583
	0.5143	0.5031	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0	0.0001
P_SYRUP	0.01659	0.02740	0.96109	0.93404	0.00722	0.66184	0.07339	0.52277	-0.03485	0.28307	0.29583	1.00000
	0.5788	0.3591	0.0001	0.0001	0.8090	0.0001	0.0139	0.0001	0.2434	0.0001	0.0001	0.0
P_CORN	0.17288	0.11389	-0.81252	-0.74423	-0.00399	-0.53908	-0.10522	-0.43426	0.03445	-0.30846	-0.23175	-0.77156
	0.0001	0.0001	0.0001	0.0001	0.8938	0.0001	0.0004	0.0001	0.2490	0.0001	0.0001	0.0001
PPLASTIC	0.13446	0.12769	0.78632	0.64279	0.00335	0.50804	0.16564	0.42472	-0.03050	0.14459	0.22160	0.71683
	0.0001	0.0001	0.0001	0.0001	0.9107	0.0001	0.0001	0.0001	0.3074	0.0001	0.0001	0.0001
P_ALUM	0.18550	0.18191	0.83081	0.83525	0.00596	0.59034	0.08590	0.45003	-0.03432	0.34373	0.18099	0.72107
	0.0001	0.0001	0.0001	0.0001	0.8420	0.0001	0.0040	0.0001	0.2507	0.0001	0.0001	0.0001
P_PET	0.00993	0.00141	-0.90911	-0.86966	-0.00614	-0.62048	-0.05793	-0.49180	0.03455	-0.28086	-0.28732	-0.91893
	0.7397	0.9624	0.0001	0.0001	0.8373	0.0001	0.0524	0.0001	0.2476	0.0001	0.0001	0.0001
C	-0.47427	-0.55352	-0.13021	-0.12169	-0.00168	-0.08912	-0.05275	-0.07336	0.00245	-0.12055	-0.03547	-0.05809
	0.0001	0.0001	0.0001	0.0001	0.9551	0.0028	0.0774	0.0140	0.9346	0.0001	0.2352	0.0517
M	0.04438	0.10137	-0.02604	-0.02974	-0.00037	-0.01792	-0.00207	-0.01399	0.00020	0.24109	0.00709	-0.07215
	0.1373	0.0007	0.3835	0.3196	0.9901	0.5487	0.9447	0.6398	0.9947	0.0001	0.8124	0.0156
J	0.59231	0.46926	0.02604	0.02110	0.00030	0.01745	0.02326	0.01570	-0.00093	0.24109	0.00709	-0.04395
	0.0001	0.0001	0.3835	0.4802	0.9921	0.5593	0.4363	0.5994	0.9752	0.0001	0.8124	0.1412
L	0.50806	0.41269	0.07813	0.07518	0.00103	0.05341	0.02953	0.04385	-0.00140	-0.12055	0.00709	0.05739
	0.0001	0.0001	0.0088	0.0118	0.9725	0.0737	0.3230	0.1422	0.9627	0.0001	0.8124	0.0546

Source: NEGI - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1122

	TEMPA	TEMP	TIME	TIMESQR	POP	INCOME	COL	WAGE	DCOST	NCOKE	PLASTICS	P_SYRUP
T	-0.21592	-0.07424	0.13021	0.13249	0.00176	0.08959	0.02944	0.07148	-0.00165	-0.12055	0.00709	0.17202
	0.0001	0.0129	0.0001	0.0001	0.9530	0.0027	0.3244	0.0166	0.9561	0.0001	0.8124	0.0001
AD	0.00082	0.00406	0.89765	0.84057	0.00592	0.60379	0.08272	0.48652	-0.03350	0.32480	0.30451	0.91717
	0.9780	0.8919	0.0001	0.0001	0.8429	0.0001	0.0056	0.0001	0.2622	0.0001	0.0001	0.0001
C_HEART	-0.01184	0.22793	0.02582	0.02008	-0.17928	-0.23155	-0.51489	-0.40718	-0.38562	0.00490	0.03239	0.02323
	0.6921	0.0001	0.3875	0.5017	0.0001	0.0001	0.0001	0.0001	0.0001	0.8697	0.2783	0.4369
P_HEART	0.06449	-0.18434	0.00220	0.00171	-0.18972	0.00382	0.23491	0.22065	0.05935	0.00042	-0.06114	0.00198
	0.0308	0.0001	0.9412	0.9543	0.0001	0.8982	0.0001	0.0001	0.0468	0.9888	0.0406	0.9471
SV_HEART	-0.04162	-0.15683	0.00086	0.00067	0.30829	0.27889	0.46258	0.43682	0.44397	0.00016	-0.13613	0.00077
	0.1635	0.0001	0.9770	0.9822	0.0001	0.0001	0.0001	0.0001	0.0001	0.9956	0.0001	0.9793
DP_HEART	-0.01281	0.19853	-0.00776	-0.00603	-0.10040	0.00737	-0.34669	-0.28039	-0.28288	-0.00147	-0.04616	-0.00698
	0.6682	0.0001	0.7952	0.8400	0.0008	0.8053	0.0001	0.0001	0.0001	0.9607	0.1222	0.8153
RC_HEART	0.02560	-0.03487	0.01270	0.00987	-0.05328	-0.04957	-0.01210	-0.18793	-0.12413	0.00241	-0.14561	0.01142
	0.3917	0.2432	0.6709	0.7411	0.0744	0.0970	0.6855	0.0001	0.0001	0.9357	0.0001	0.7023
RDUMMY	-0.01942	0.02633	-0.04055	-0.03663	0.32014	0.06478	0.16175	0.08557	0.37774	-0.01104	0.31471	-0.03920
	0.5159	0.3782	0.1747	0.2202	0.0001	0.0300	0.0001	0.0041	0.0001	0.7119	0.0001	0.1894
B_THIRD	-0.02480	-0.07639	-0.01447	-0.01125	0.40862	0.23481	0.37940	0.23691	0.44478	-0.00275	-0.05772	-0.01302
	0.4066	0.0105	0.6282	0.7065	0.0001	0.0001	0.0001	0.0001	0.0001	0.9268	0.0532	0.6631
S_THIRD	0.05764	-0.03270	-0.00364	-0.00283	-0.11055	-0.06421	0.18423	0.16946	-0.11601	-0.00069	0.03640	-0.00327
	0.0536	0.2737	0.9032	0.9247	0.0002	0.0315	0.0001	0.0001	0.0001	0.9816	0.2231	0.9129
BIG_3RDC	-0.03609	-0.01587	0.09342	0.08708	0.83875	0.41258	0.36318	0.30513	0.66359	0.02885	-0.01357	0.09302
	0.2270	0.5953	0.0017	0.0035	0.0001	0.0001	0.0001	0.0001	0.0001	0.3343	0.6497	0.0018
BIG_BTCS	0.02635	0.06766	-0.11865	-0.10940	-0.25244	-0.39303	-0.31996	-0.30695	-0.36528	-0.03722	0.05346	-0.12200
	0.3780	0.0234	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.2128	0.0734	0.0001
BIG_BTC	-0.03449	0.01742	0.12222	0.12124	0.85300	0.32777	0.27240	0.18869	0.57602	0.05136	0.16789	0.11750
	0.2483	0.5600	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0855	0.0001	0.0001
BIG3RDCS	-0.00156	0.04055	-0.09806	-0.09249	-0.04792	-0.26560	-0.36865	-0.34007	-0.15503	-0.03537	-0.03535	-0.09770
	0.9584	0.1747	0.0010	0.0019	0.1087	0.0001	0.0001	0.0001	0.0001	0.2364	0.2368	0.0011
FHHI	0.01942	-0.02104	-0.00208	-0.00162	-0.37401	-0.07220	0.01796	0.11369	-0.13233	-0.00040	0.08758	-0.00187
	0.5157	0.4814	0.9444	0.9568	0.0001	0.0156	0.5479	0.0001	0.0001	0.9894	0.0033	0.9500

Source: NEGI - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1122

	P_CORN	PPLASTIC	P_ALUM	P_PET	C	M	J	L	T	AD	C_HEART	P_HEART
FV	-0.13488	0.20080	0.21759	-0.19989	-0.06248	-0.00493	0.15525	0.14118	-0.06955	0.20024	0.48811	-0.26144
	0.0001	0.0001	0.0001	0.0001	0.0364	0.8690	0.0001	0.0001	0.0198	0.0001	0.0001	0.0001
FP	-0.12067	0.17611	0.15863	-0.16985	-0.07468	-0.01081	0.05717	0.08756	-0.01671	0.17216	0.16161	-0.17274
	0.0001	0.0001	0.0001	0.0001	0.0123	0.7175	0.0556	0.0033	0.5760	0.0001	0.0001	0.0001
VX	-0.01232	0.00167	0.00784	-0.01822	0.00000	0.00000	0.00000	0.00000	0.00000	0.01777	-0.14366	-0.15885
	0.6802	0.9555	0.7930	0.5420	1.0000	1.0000	1.0000	1.0000	1.0000	0.5521	0.0001	0.0001
VZ	-0.00775	-0.00242	0.00368	-0.00249	-0.00248	0.00248	-0.00248	-0.00248	0.00248	0.00097	-0.00238	-0.12933
	0.7954	0.9355	0.9019	0.9335	0.9338	0.9338	0.9338	0.9338	0.9338	0.9741	0.9364	0.0001
VAX	-0.03369	0.03013	0.01485	-0.02711	-0.00456	0.00228	0.00228	0.00228	0.00228	0.03122	-0.20595	0.04385
	0.2595	0.3132	0.6193	0.3644	0.8787	0.9392	0.9392	0.9392	0.9392	0.2961	0.0001	0.1421
VAZ	-0.07024	0.06778	0.07746	-0.07665	-0.02042	-0.00572	0.00898	0.01388	0.01878	0.07307	0.11252	-0.14414
	0.0186	0.0232	0.0094	0.0102	0.4945	0.8483	0.7637	0.6422	0.5296	0.0144	0.0002	0.0001
TB	-0.10035	0.07600	0.10506	-0.09796	-0.00860	-0.00860	-0.00860	0.01720	0.01720	0.09622	0.30906	-0.12251
	0.0008	0.0109	0.0004	0.0010	0.7736	0.7736	0.7736	0.5650	0.5650	0.0013	0.0001	0.0001
TS	-0.09979	0.08611	0.10781	-0.12712	-0.02875	0.00575	0.00575	0.02300	0.02300	0.12541	-0.07142	-0.09011
	0.0008	0.0039	0.0003	0.0001	0.3360	0.8474	0.8474	0.4415	0.4415	0.0001	0.0167	0.0025
CB	-0.09933	0.10352	0.10282	-0.10041	-0.01801	-0.00819	-0.00819	0.01146	0.04093	0.09889	-0.13126	0.18980
	0.0009	0.0005	0.0006	0.0008	0.5468	0.7842	0.7842	0.7014	0.1707	0.0009	0.0001	0.0001
CS	-0.10896	0.11105	0.11157	-0.11996	-0.02637	-0.00659	0.00330	0.01318	0.02307	0.11894	0.08036	-0.12371
	0.0003	0.0002	0.0002	0.0001	0.3776	0.8254	0.9122	0.6591	0.4401	0.0001	0.0071	0.0001
MNG	-0.35040	0.33534	0.32031	-0.37273	-0.04541	-0.00578	0.00413	0.01404	0.04376	0.37393	-0.05199	0.10250
	0.0001	0.0001	0.0001	0.0001	0.1285	0.8467	0.8901	0.6386	0.1430	0.0001	0.0817	0.0006
FIX	-0.06944	0.09123	0.07469	-0.08570	0.00511	0.00511	0.00511	-0.01022	-0.01022	0.07989	-0.08079	-0.10194
	0.0200	0.0022	0.0123	0.0041	0.8642	0.8642	0.8642	0.7324	0.7324	0.0074	0.0068	0.0006
TEMPA	0.17288	0.13446	0.18550	0.00993	-0.47427	0.04438	0.59231	0.50806	-0.21592	0.00082	-0.01184	0.06449
	0.0001	0.0001	0.0001	0.7397	0.0001	0.1373	0.0001	0.0001	0.0001	0.9780	0.6921	0.0308
TEMP	0.11389	0.12769	0.18191	0.00141	-0.55352	0.10137	0.46926	0.41269	-0.07424	0.00406	0.22793	-0.18434
	0.0001	0.0001	0.0001	0.9624	0.0001	0.0007	0.0001	0.0001	0.0129	0.8919	0.0001	0.0001
TIME	-0.81252	0.78632	0.83081	-0.90911	-0.13021	-0.02604	0.02604	0.07813	0.13021	0.89765	0.02582	0.00220
	0.0001	0.0001	0.0001	0.0001	0.0001	0.3835	0.3835	0.0088	0.0001	0.0001	0.3875	0.9412
TIMESQR	-0.74423	0.64279	0.83525	-0.86966	-0.12169	-0.02974	0.02110	0.07518	0.13249	0.84057	0.02008	0.00171
	0.0001	0.0001	0.0001	0.0001	0.0001	0.3196	0.4802	0.0118	0.0001	0.0001	0.5017	0.9543

Source: NEGI - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1122

	P_CORN	PPLASTIC	P_ALUM	P_PET	C	M	J	L	T	AD	C_HEART	P_HEART
POP	-0.00399	0.00335	0.00596	-0.00614	-0.00168	-0.00037	0.00030	0.00103	0.00176	0.00592	-0.17928	-0.18972
	0.8938	0.9107	0.8420	0.8373	0.9551	0.9901	0.9921	0.9725	0.9530	0.8429	0.0001	0.0001
INCOME	-0.53908	0.50804	0.59034	-0.62048	-0.08912	-0.01792	0.01745	0.05341	0.08959	0.60379	-0.23155	0.00382
	0.0001	0.0001	0.0001	0.0001	0.0028	0.5487	0.5593	0.0737	0.0027	0.0001	0.0001	0.8982
COL	-0.10522	0.16564	0.08590	-0.05793	-0.05275	-0.00207	0.02326	0.02953	0.02944	0.08272	-0.51489	0.23491
	0.0004	0.0001	0.0040	0.0524	0.0774	0.9447	0.4363	0.3230	0.3244	0.0056	0.0001	0.0001
WAGE	-0.43426	0.42472	0.45003	-0.49180	-0.07336	-0.01399	0.01570	0.04385	0.07148	0.48652	-0.40718	0.22065
	0.0001	0.0001	0.0001	0.0001	0.0140	0.6398	0.5994	0.1422	0.0166	0.0001	0.0001	0.0001
DCOST	0.03445	-0.03050	-0.03432	0.03455	0.00245	0.00020	-0.00093	-0.00140	-0.00165	-0.03350	-0.38562	0.05935
	0.2490	0.3074	0.2507	0.2476	0.9346	0.9947	0.9752	0.9627	0.9561	0.2622	0.0001	0.0468
NCOKE	-0.30846	0.14459	0.34373	-0.28086	-0.12055	0.24109	0.24109	-0.12055	-0.12055	0.32480	0.00490	0.00042
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.8697	0.9888
PLASTICS	-0.23175	0.22160	0.18099	-0.28732	-0.03547	0.00709	0.00709	0.00709	0.00709	0.30451	0.03239	-0.06114
	0.0001	0.0001	0.0001	0.0001	0.2352	0.8124	0.8124	0.8124	0.8124	0.0001	0.2783	0.0406
P_SYRUP	-0.77156	0.71683	0.72107	-0.91893	-0.05809	-0.07215	-0.04395	0.05739	0.17202	0.91717	0.02323	0.00198
	0.0001	0.0001	0.0001	0.0001	0.0517	0.0156	0.1412	0.0546	0.0001	0.0001	0.4369	0.9471
P_CORN	1.00000	-0.68564	-0.56454	0.77457	0.01781	-0.06428	0.09978	0.15810	-0.16373	-0.82847	-0.02871	-0.00245
	0.0	0.0001	0.0001	0.0001	0.5512	0.0313	0.0008	0.0001	0.0001	0.0001	0.3366	0.9346
PPLASTIC	-0.68564	1.00000	0.62259	-0.67064	-0.18668	-0.00795	0.05575	0.08100	0.15542	0.71494	0.02917	0.00249
	0.0001	0.0	0.0001	0.0001	0.0001	0.7901	0.0620	0.0066	0.0001	0.0001	0.3289	0.9336
P_ALUM	-0.56454	0.62259	1.00000	-0.68279	-0.22669	0.05288	0.04874	0.11867	0.09431	0.54844	0.02151	0.00184
	0.0001	0.0001	0.0	0.0001	0.0001	0.0766	0.1027	0.0001	0.0016	0.0001	0.4717	0.9510
P_PET	0.77457	-0.67064	-0.68279	1.00000	0.04061	-0.03517	0.03122	-0.01088	-0.01941	-0.90680	-0.02494	-0.00213
	0.0001	0.0001	0.0001	0.0	0.1740	0.2392	0.2961	0.7158	0.5159	0.0001	0.4040	0.9432
C	0.01781	-0.18668	-0.22669	0.04061	1.00000	-0.20000	-0.20000	-0.20000	-0.20000	0.00000	0.00000	0.00000
	0.5512	0.0001	0.0001	0.1740	0.0	0.0001	0.0001	0.0001	0.0001	1.0000	1.0000	1.0000
M	-0.06428	-0.00795	0.05288	-0.03517	-0.20000	1.00000	-0.20000	-0.20000	-0.20000	0.00000	0.00000	0.00000
	0.0313	0.7901	0.0766	0.2392	0.0001	0.0	0.0001	0.0001	0.0001	1.0000	1.0000	1.0000
J	0.09978	0.05575	0.04874	0.03122	-0.20000	-0.20000	1.00000	-0.20000	-0.20000	0.00000	0.00000	0.00000
	0.0008	0.0620	0.1027	0.2961	0.0001	0.0001	0.0	0.0001	0.0001	1.0000	1.0000	1.0000
L	0.15810	0.08100	0.11867	-0.01088	-0.20000	-0.20000	-0.20000	1.00000	-0.20000	0.00000	0.00000	0.00000
	0.0001	0.0066	0.0001	0.7158	0.0001	0.0001	0.0001	0.0	0.0001	1.0000	1.0000	1.0000

Source: NEGI - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1122

	P_CORN	PPLASTIC	P_ALUM	P_PET	C	M	J	L	T	AD	C_HEART	P_HEART
T	-0.16373	0.15542	0.09431	-0.01941	-0.20000	-0.20000	-0.20000	-0.20000	1.00000	0.00000	0.00000	0.00000
	0.0001	0.0001	0.0016	0.5159	0.0001	0.0001	0.0001	0.0001	0.0	1.0000	1.0000	1.0000
AD	-0.82847	0.71494	0.54844	-0.90680	0.00000	0.00000	0.00000	0.00000	0.00000	1.00000	0.02508	0.00214
	0.0001	0.0001	0.0001	0.0001	1.0000	1.0000	1.0000	1.0000	1.0000	0.0	0.4013	0.9429
C_HEART	-0.02871	0.02917	0.02151	-0.02494	0.00000	0.00000	0.00000	0.00000	0.00000	0.02508	1.00000	-0.32179
	0.3366	0.3289	0.4717	0.4040	1.0000	1.0000	1.0000	1.0000	1.0000	0.4013	0.0	0.0001
P_HEART	-0.00245	0.00249	0.00184	-0.00213	0.00000	0.00000	0.00000	0.00000	0.00000	0.00214	-0.32179	1.00000
	0.9346	0.9336	0.9510	0.9432	1.0000	1.0000	1.0000	1.0000	1.0000	0.9429	0.0001	0.0
SV_HEART	-0.00096	0.00097	0.00072	-0.00083	0.00000	0.00000	0.00000	0.00000	0.00000	0.00084	-0.34286	0.04983
	0.9745	0.9741	0.9809	0.9778	1.0000	1.0000	1.0000	1.0000	1.0000	0.9777	0.0001	0.0952
DP_HEART	0.00863	-0.00877	-0.00646	0.00749	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00754	0.68526	-0.22051
	0.7728	0.7693	0.8288	0.8020	1.0000	1.0000	1.0000	1.0000	1.0000	0.8009	0.0001	0.0001
RC_HEART	-0.01412	0.01435	0.01058	-0.01226	0.00000	0.00000	0.00000	0.00000	0.00000	0.01233	-0.15894	-0.05032
	0.6366	0.6312	0.7234	0.6816	1.0000	1.0000	1.0000	1.0000	1.0000	0.6798	0.0001	0.0921
RDUMMY	0.03183	-0.03755	-0.03537	0.03748	0.00169	0.00169	0.00169	-0.00338	-0.00338	-0.03642	-0.21776	-0.20239
	0.2868	0.2088	0.2365	0.2097	0.9549	0.9549	0.9549	0.9100	0.9100	0.2228	0.0001	0.0001
B_THIRD	0.01609	-0.01635	-0.01205	0.01398	0.00000	0.00000	0.00000	0.00000	0.00000	-0.01406	-0.18015	0.10663
	0.5903	0.5843	0.6867	0.6400	1.0000	1.0000	1.0000	1.0000	1.0000	0.6381	0.0001	0.0003
S_THIRD	0.00404	-0.00411	-0.00303	0.00351	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00353	-0.27329	0.11135
	0.8924	0.8907	0.9193	0.9065	1.0000	1.0000	1.0000	1.0000	1.0000	0.9060	0.0001	0.0002
BIG_3RDC	-0.07876	0.07827	0.06924	-0.09111	0.00000	0.00000	0.00000	0.00000	0.00000	0.09228	-0.06298	-0.16463
	0.0083	0.0087	0.0204	0.0023	1.0000	1.0000	1.0000	1.0000	1.0000	0.0020	0.0349	0.0001
BIG_BTCS	0.10565	-0.09898	-0.07348	0.12030	0.00000	0.00000	0.00000	0.00000	0.00000	-0.13008	0.42179	-0.02009
	0.0004	0.0009	0.0138	0.0001	1.0000	1.0000	1.0000	1.0000	1.0000	0.0001	0.0001	0.5014
BIG_BTC	-0.10145	0.08866	0.10202	-0.11363	0.00000	0.00000	0.00000	0.00000	0.00000	0.11221	0.07882	-0.27240
	0.0007	0.0030	0.0006	0.0001	1.0000	1.0000	1.0000	1.0000	1.0000	0.0002	0.0083	0.0001
BIG3RDCS	0.08766	-0.07840	-0.06871	0.09625	0.00000	0.00000	0.00000	0.00000	0.00000	-0.10157	0.26427	-0.34844
	0.0033	0.0086	0.0214	0.0012	1.0000	1.0000	1.0000	1.0000	1.0000	0.0007	0.0001	0.0001
FHHI	0.00232	-0.00235	-0.00174	0.00201	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00202	-0.02533	0.11336
	0.9382	0.9372	0.9537	0.9463	1.0000	1.0000	1.0000	1.0000	1.0000	0.9460	0.3967	0.0001

Source: NEGI - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1122

	SV_HEART	DP_HEART	RC_HEART	RDUMMY	B_THIRD	S_THIRD	BIG_3RDC	BIG_BTCS	BIG_BTC	BIG3RDCS	FHHI
FV	-0.42440	0.24865	0.11519	-0.26708	-0.36865	0.01010	-0.24573	0.35019	-0.08466	0.35186	-0.04805
	0.0001	0.0001	0.0001	0.0001	0.0001	0.7353	0.0001	0.0001	0.0045	0.0001	0.1077
FP	0.13443	0.16503	-0.21200	-0.20463	0.09419	-0.10127	0.14320	-0.16183	0.06381	-0.22018	-0.02916
	0.0001	0.0001	0.0001	0.0001	0.0016	0.0007	0.0001	0.0001	0.0326	0.0001	0.3290
VX	-0.17127	-0.09845	-0.20681	0.16394	-0.00525	0.14641	-0.03835	0.00088	0.12060	-0.03871	-0.14924
	0.0001	0.0010	0.0001	0.0001	0.8607	0.0001	0.1993	0.9766	0.0001	0.1951	0.0001
VZ	-0.06239	0.05413	-0.45673	0.02456	-0.02794	-0.01390	0.06131	0.09261	0.30255	-0.17680	-0.21962
	0.0367	0.0699	0.0001	0.4111	0.3497	0.6418	0.0400	0.0019	0.0001	0.0001	0.0001
VAX	-0.16170	-0.14113	-0.30545	0.28285	-0.02830	0.12129	0.16687	-0.00071	0.34731	0.04044	-0.33710
	0.0001	0.0001	0.0001	0.0001	0.3436	0.0001	0.0001	0.9810	0.0001	0.1759	0.0001
VAZ	-0.07273	0.13029	-0.49181	0.01116	-0.03654	-0.14937	0.09756	0.22121	0.37316	-0.00568	-0.22125
	0.0148	0.0001	0.0001	0.7089	0.2213	0.0001	0.0011	0.0001	0.0001	0.8493	0.0001
TB	-0.06848	0.46228	0.16145	-0.05504	-0.06081	-0.16964	0.06043	0.03498	0.00457	0.06862	-0.09231
	0.0218	0.0001	0.0001	0.0653	0.0417	0.0001	0.0430	0.2417	0.8784	0.0215	0.0020
TS	0.15297	-0.04894	-0.06046	-0.04593	0.16266	0.05503	0.01414	-0.06935	-0.06009	0.03572	-0.00152
	0.0001	0.1013	0.0429	0.1242	0.0001	0.0654	0.6361	0.0202	0.0442	0.2319	0.9595
CB	-0.03467	-0.08995	-0.16296	0.21875	0.18573	0.11325	-0.00572	-0.18295	-0.06185	-0.34904	-0.05088
	0.2459	0.0026	0.0001	0.0001	0.0001	0.0001	0.8482	0.0001	0.0383	0.0001	0.0885
CS	0.14998	0.18498	-0.20642	0.24624	-0.16651	0.02801	-0.14009	-0.06855	-0.17456	-0.18816	0.36645
	0.0001	0.0001	0.0001	0.0001	0.0001	0.3486	0.0001	0.0217	0.0001	0.0001	0.0001
MNG	-0.12687	0.03354	0.24975	-0.03549	0.11321	0.18365	0.31960	-0.05607	0.31545	-0.01328	-0.03758
	0.0001	0.2616	0.0001	0.2350	0.0001	0.0001	0.0001	0.0605	0.0001	0.6567	0.2085
FIX	-0.10862	-0.05536	0.09451	0.22534	-0.10327	-0.02161	-0.01272	-0.05016	0.09004	-0.01973	0.08431
	0.0003	0.0638	0.0015	0.0001	0.0005	0.4696	0.6704	0.0931	0.0025	0.5091	0.0047
TEMPA	-0.04162	-0.01281	0.02560	-0.01942	-0.02480	0.05764	-0.03609	0.02635	-0.03449	-0.00156	0.01942
	0.1635	0.6682	0.3917	0.5159	0.4066	0.0536	0.2270	0.3780	0.2483	0.9584	0.5157
TEMP	-0.15683	0.19853	-0.03487	0.02633	-0.07639	-0.03270	-0.01587	0.06766	0.01742	0.04055	-0.02104
	0.0001	0.0001	0.2432	0.3782	0.0105	0.2737	0.5953	0.0234	0.5600	0.1747	0.4814
TIME	0.00086	-0.00776	0.01270	-0.04055	-0.01447	-0.00364	0.09342	-0.11865	0.12222	-0.09806	-0.00208
	0.9770	0.7952	0.6709	0.1747	0.6282	0.9032	0.0017	0.0001	0.0001	0.0010	0.9444
TIMESQR	0.00067	-0.00603	0.00987	-0.03663	-0.01125	-0.00283	0.08708	-0.10940	0.12124	-0.09249	-0.00162
	0.9822	0.8400	0.7411	0.2202	0.7065	0.9247	0.0035	0.0002	0.0001	0.0019	0.9568

Source: NEGI - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1122

	SV_HEART	DP_HEART	RC_HEART	RDUMMY	B_THIRD	S_THIRD	BIG_3RDC	BIG_BTCS	BIG_BTC	BIG3RDCS	FHHI
POP	0.30829	-0.10040	-0.05328	0.32014	0.40862	-0.11055	0.83875	-0.25244	0.85300	-0.04792	-0.37401
	0.0001	0.0008	0.0744	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.1087	0.0001
INCOME	0.27889	0.00737	-0.04957	0.06478	0.23481	-0.06421	0.41258	-0.39303	0.32777	-0.26560	-0.07220
	0.0001	0.8053	0.0970	0.0300	0.0001	0.0315	0.0001	0.0001	0.0001	0.0001	0.0156
COL	0.46258	-0.34669	-0.01210	0.16175	0.37940	0.18423	0.36318	-0.31996	0.27240	-0.36865	0.01796
	0.0001	0.0001	0.6855	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.5479
WAGE	0.43682	-0.28039	-0.18793	0.08557	0.23691	0.16946	0.30513	-0.30695	0.18869	-0.34007	0.11369
	0.0001	0.0001	0.0001	0.0041	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
DCOST	0.44397	-0.28288	-0.12413	0.37774	0.44478	-0.11601	0.66359	-0.36528	0.57602	-0.15503	-0.13233
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
NCOKE	0.00016	-0.00147	0.00241	-0.01104	-0.00275	-0.00069	0.02885	-0.03722	0.05136	-0.03537	-0.00040
	0.9956	0.9607	0.9357	0.7119	0.9268	0.9816	0.3343	0.2128	0.0855	0.2364	0.9894
PLASTICS	-0.13613	-0.04616	-0.14561	0.31471	-0.05772	0.03640	-0.01357	0.05346	0.16789	-0.03535	0.08758
	0.0001	0.1222	0.0001	0.0001	0.0532	0.2231	0.6497	0.0734	0.0001	0.2368	0.0033
P_SYRUP	0.00077	-0.00698	0.01142	-0.03920	-0.01302	-0.00327	0.09302	-0.12200	0.11750	-0.09770	-0.00187
	0.9793	0.8153	0.7023	0.1894	0.6631	0.9129	0.0018	0.0001	0.0001	0.0011	0.9500
P_CORN	-0.00096	0.00863	-0.01412	0.03183	0.01609	0.00404	-0.07876	0.10565	-0.10145	0.08766	0.00232
	0.9745	0.7728	0.6366	0.2868	0.5903	0.8924	0.0083	0.0004	0.0007	0.0033	0.9382
PPLASTIC	0.00097	-0.00877	0.01435	-0.03755	-0.01635	-0.00411	0.07827	-0.09898	0.08866	-0.07840	-0.00235
	0.9741	0.7693	0.6312	0.2088	0.5843	0.8907	0.0087	0.0009	0.0030	0.0086	0.9372
P_ALUM	0.00072	-0.00646	0.01058	-0.03537	-0.01205	-0.00303	0.06924	-0.07348	0.10202	-0.06871	-0.00174
	0.9809	0.8288	0.7234	0.2365	0.6867	0.9193	0.0204	0.0138	0.0006	0.0214	0.9537
P_PET	-0.00083	0.00749	-0.01226	0.03748	0.01398	0.00351	-0.09111	0.12030	-0.11363	0.09625	0.00201
	0.9778	0.8020	0.6816	0.2097	0.6400	0.9065	0.0023	0.0001	0.0001	0.0012	0.9463
C	0.00000	0.00000	0.00000	0.00169	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	1.0000	1.0000	1.0000	0.9549	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
M	0.00000	0.00000	0.00000	0.00169	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	1.0000	1.0000	1.0000	0.9549	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
J	0.00000	0.00000	0.00000	0.00169	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	1.0000	1.0000	1.0000	0.9549	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
L	0.00000	0.00000	0.00000	-0.00338	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	1.0000	1.0000	1.0000	0.9100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Source: NEGI - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1122

	SV_HEART	DP_HEART	RC_HEART	RDUMMY	B_THIRD	S_THIRD	BIG_3RDC	BIG_BTCS	BIG_BTC	BIG3RDCS	FHHI
T	0.00000	0.00000	0.00000	-0.00338	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	1.0000	1.0000	1.0000	0.9100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
AD	0.00084	-0.00754	0.01233	-0.03642	-0.01406	-0.00353	0.09228	-0.13008	0.11221	-0.10157	-0.00202
	0.9777	0.8009	0.6798	0.2228	0.6381	0.9060	0.0020	0.0001	0.0002	0.0007	0.9460
C_HEART	-0.34286	0.68526	-0.15894	-0.21776	-0.18015	-0.27329	-0.06298	0.42179	0.07882	0.26427	-0.02533
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0349	0.0001	0.0083	0.0001	0.3967
P_HEART	0.04983	-0.22051	-0.05032	-0.20239	0.10663	0.11135	-0.16463	-0.02009	-0.27240	-0.34844	0.11336
	0.0952	0.0001	0.0921	0.0001	0.0003	0.0002	0.0001	0.5014	0.0001	0.0001	0.0001
SV_HEART	1.00000	-0.23495	0.14077	-0.11633	0.57194	-0.11881	0.38206	-0.44715	0.06577	-0.26741	-0.05827
	0.0	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0276	0.0001	0.0510
DP_HEART	-0.23495	1.00000	-0.09958	-0.06240	-0.03351	0.00947	0.14793	0.12029	0.05139	-0.04215	-0.01381
	0.0001	0.0	0.0008	0.0366	0.2621	0.7514	0.0001	0.0001	0.0853	0.1583	0.6439
RC_HEART	0.14077	-0.09958	1.00000	-0.15784	0.08491	0.10291	0.07372	-0.17409	-0.08750	0.03110	-0.08210
	0.0001	0.0008	0.0	0.0001	0.0044	0.0006	0.0135	0.0001	0.0034	0.2979	0.0059
RDUMMY	-0.11633	-0.06240	-0.15784	1.00000	-0.08532	0.16541	0.12531	-0.13763	0.24014	-0.05703	0.08304
	0.0001	0.0366	0.0001	0.0	0.0042	0.0001	0.0001	0.0001	0.0001	0.0562	0.0054
B_THIRD	0.57194	-0.03351	0.08491	-0.08532	1.00000	-0.14915	0.58177	-0.55081	0.17193	-0.23961	-0.15871
	0.0001	0.2621	0.0044	0.0042	0.0	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
S_THIRD	-0.11881	0.00947	0.10291	0.16541	-0.14915	1.00000	0.04558	-0.09689	-0.06542	-0.36777	0.21390
	0.0001	0.7514	0.0006	0.0001	0.0001	0.0	0.1270	0.0012	0.0284	0.0001	0.0001
BIG_3RDC	0.38206	0.14793	0.07372	0.12531	0.58177	0.04558	1.00000	-0.47184	0.72269	-0.14404	-0.33538
	0.0001	0.0001	0.0135	0.0001	0.0001	0.1270	0.0	0.0001	0.0001	0.0001	0.0001
BIG_BTCS	-0.44715	0.12029	-0.17409	-0.13763	-0.55081	-0.09689	-0.47184	1.00000	0.10159	0.45035	-0.01432
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0012	0.0001	0.0	0.0007	0.0001	0.6319
BIG_BTC	0.06577	0.05139	-0.08750	0.24014	0.17193	-0.06542	0.72269	0.10159	1.00000	0.05053	-0.43167
	0.0276	0.0853	0.0034	0.0001	0.0001	0.0284	0.0001	0.0007	0.0	0.0907	0.0001
BIG3RDCS	-0.26741	-0.04215	0.03110	-0.05703	-0.23961	-0.36777	-0.14404	0.45035	0.05053	1.00000	-0.09729
	0.0001	0.1583	0.2979	0.0562	0.0001	0.0001	0.0001	0.0001	0.0907	0.0	0.0011
FHHI	-0.05827	-0.01381	-0.08210	0.08304	-0.15871	0.21390	-0.33538	-0.01432	-0.43167	-0.09729	1.00000
	0.0510	0.6439	0.0059	0.0054	0.0001	0.0001	0.0001	0.6319	0.0001	0.0011	0.0

Source: SCANTRACK 1 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 630

	FV	FP	VX	VZ	VAX	VAZ	TB	TS	CB	CS	MNG	TEMPA
FV	1.00000	-0.41035	0.31472	0.27235	0.39157	0.20830	-0.21318	-0.27858	0.31997	0.06809	0.21807	0.17770
	0.0	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0877	0.0001	0.0001
FP	-0.41035	1.00000	-0.19751	-0.07830	-0.23053	-0.12244	0.22209	0.07264	0.06190	-0.09904	-0.15623	-0.01478
	0.0001	0.0	0.0001	0.0495	0.0001	0.0021	0.0001	0.0684	0.1207	0.0129	0.0001	0.7112
VX	0.31472	-0.19751	1.00000	0.42128	0.51571	0.24064	-0.08501	-0.05919	0.00963	0.01598	0.01613	-0.07746
	0.0001	0.0001	0.0	0.0001	0.0001	0.0001	0.0329	0.1378	0.8093	0.6890	0.6862	0.0520
VZ	0.27235	-0.07830	0.42128	1.00000	0.42936	0.57122	-0.20179	0.14758	0.20419	0.17607	0.12930	-0.02892
	0.0001	0.0495	0.0001	0.0	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0011	0.4687
VAX	0.39157	-0.23053	0.51571	0.42936	1.00000	0.30329	-0.12314	-0.05068	0.12107	0.21553	0.09612	-0.05123
	0.0001	0.0001	0.0001	0.0001	0.0	0.0001	0.0020	0.2040	0.0023	0.0001	0.0158	0.1991
VAZ	0.20830	-0.12244	0.24064	0.57122	0.30329	1.00000	0.06904	0.09355	0.11664	0.10057	0.15548	0.02045
	0.0001	0.0021	0.0001	0.0001	0.0001	0.0	0.0833	0.0188	0.0034	0.0115	0.0001	0.6085
TB	-0.21318	0.22209	-0.08501	-0.20179	-0.12314	0.06904	1.00000	-0.03305	-0.04120	-0.03553	-0.08366	-0.00228
	0.0001	0.0001	0.0329	0.0001	0.0020	0.0833	0.0	0.4076	0.3018	0.3733	0.0358	0.9545
TS	-0.27858	0.07264	-0.05919	0.14758	-0.05068	0.09355	-0.03305	1.00000	-0.05583	-0.04814	-0.17106	-0.07206
	0.0001	0.0684	0.1378	0.0002	0.2040	0.0188	0.4076	0.0	0.1616	0.2276	0.0001	0.0707
CB	0.31997	0.06190	0.00963	0.20419	0.12107	0.11664	-0.04120	-0.05583	1.00000	-0.06002	0.32636	-0.02047
	0.0001	0.1207	0.8093	0.0001	0.0023	0.0034	0.3018	0.1616	0.0	0.1324	0.0001	0.6081
CS	0.06809	-0.09904	0.01598	0.17607	0.21553	0.10057	-0.03553	-0.04814	-0.06002	1.00000	-0.18391	0.02180
	0.0877	0.0129	0.6890	0.0001	0.0001	0.0115	0.3733	0.2276	0.1324	0.0	0.0001	0.5850
MNG	0.21807	-0.15623	0.01613	0.12930	0.09612	0.15548	-0.08366	-0.17106	0.32636	-0.18391	1.00000	0.00886
	0.0001	0.0001	0.6862	0.0011	0.0158	0.0001	0.0358	0.0001	0.0001	0.0001	0.0	0.8244
TEMPA	0.17770	-0.01478	-0.07746	-0.02892	-0.05123	0.02045	-0.00228	-0.07206	-0.02047	0.02180	0.00886	1.00000
	0.0001	0.7112	0.0520	0.4687	0.1991	0.6085	0.9545	0.0707	0.6081	0.5850	0.8244	0.0
TEMP	0.17927	-0.03701	0.14820	0.00940	-0.08929	0.00951	-0.07395	-0.06814	-0.13902	0.05172	0.01767	0.84465
	0.0001	0.3537	0.0002	0.8138	0.0250	0.8117	0.0636	0.0875	0.0005	0.1948	0.6580	0.0001
TIME	0.00124	-0.12291	0.08639	0.01157	0.15332	0.08417	0.11656	0.16544	0.10976	0.01235	0.08114	-0.15356
	0.9753	0.0020	0.0301	0.7720	0.0001	0.0347	0.0034	0.0001	0.0058	0.7571	0.0418	0.0001
TIMESQR	-0.01944	-0.08975	0.09823	0.01774	0.14883	0.07629	0.11338	0.16929	0.09318	0.00858	0.07474	-0.19546
	0.6263	0.0243	0.0136	0.6567	0.0002	0.0556	0.0044	0.0001	0.0193	0.8298	0.0608	0.0001
POP	0.02218	-0.12986	0.33190	0.01637	0.24782	0.05102	-0.07742	0.14109	-0.17126	-0.00728	-0.18325	-0.03515
	0.5785	0.0011	0.0001	0.6816	0.0001	0.2009	0.0521	0.0004	0.0001	0.8553	0.0001	0.3784

Source: SCANTRACK 1 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 630

	FV	FP	VX	VZ	VAX	VAZ	TB	TS	CB	CS	MNG	TEMPA
INCOME	-0.12155	0.17511	0.20877	0.35092	0.39316	0.20102	-0.08233	0.40369	0.03166	-0.01790	-0.26361	-0.04903
	0.0022	0.0001	0.0001	0.0001	0.0001	0.0001	0.0388	0.0001	0.4276	0.6539	0.0001	0.2191
COL	-0.38055	0.15207	0.03391	0.19883	0.15177	0.18223	0.17830	0.35206	-0.07272	-0.05878	-0.37064	-0.00013
	0.0001	0.0001	0.3955	0.0001	0.0001	0.0001	0.0001	0.0001	0.0682	0.1406	0.0001	0.9974
WAGE	-0.18928	0.14116	-0.08801	0.16017	0.24508	0.14443	0.21373	0.19153	-0.07182	0.01568	-0.31721	0.00561
	0.0001	0.0004	0.0272	0.0001	0.0001	0.0003	0.0001	0.0001	0.0716	0.6945	0.0001	0.8882
DCOST	0.14741	-0.03924	0.07728	0.07127	0.27216	0.22888	0.07184	0.08970	0.05004	0.13892	-0.22952	0.02528
	0.0002	0.3255	0.0525	0.0738	0.0001	0.0001	0.0715	0.0243	0.2097	0.0005	0.0001	0.5265
PLASTICS	-0.40323	-0.05848	0.12006	0.02150	-0.10647	0.19307	0.23809	0.26010	-0.30211	-0.16488	-0.38201	-0.04112
	0.0001	0.1426	0.0025	0.5902	0.0075	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.3027
P_SYRUP	-0.00895	-0.07179	0.09482	0.02141	0.11420	0.06302	0.08290	0.14883	0.05734	0.01199	0.06121	-0.30744
	0.8226	0.0717	0.0173	0.5917	0.0041	0.1140	0.0375	0.0002	0.1506	0.7639	0.1249	0.0001
P_CORN	-0.00910	-0.06468	0.03799	0.01662	-0.00653	0.03339	0.00922	0.03028	-0.03404	0.01028	0.00652	0.12797
	0.8197	0.1048	0.3411	0.6771	0.8701	0.4029	0.8173	0.4481	0.3937	0.7968	0.8702	0.0013
PPLASTIC	-0.02659	-0.09358	0.09707	0.01357	0.13816	0.06688	0.11316	0.16112	0.08360	0.01017	0.06710	-0.17038
	0.5053	0.0188	0.0148	0.7339	0.0005	0.0935	0.0045	0.0001	0.0359	0.7989	0.0924	0.0001
P_ALUM	-0.03124	0.05484	-0.05346	-0.02756	-0.11793	-0.06672	-0.03971	-0.09859	-0.09184	0.00437	-0.07224	0.40229
	0.4338	0.1692	0.1802	0.4899	0.0030	0.0943	0.3197	0.0133	0.0211	0.9129	0.0700	0.0001
P_PET	0.05236	-0.02575	0.02980	0.02620	0.01051	0.05315	-0.00579	0.01300	-0.02013	0.00147	0.02480	0.27348
	0.1894	0.5188	0.4552	0.5116	0.7924	0.1828	0.8848	0.7446	0.6140	0.9707	0.5344	0.0001
C	0.15006	-0.21066	-0.00599	0.00886	0.01942	0.00277	-0.00734	-0.00414	0.01776	0.01465	0.00286	-0.29129
	0.0002	0.0001	0.8807	0.8244	0.6267	0.9446	0.8542	0.9174	0.6564	0.7136	0.9429	0.0001
E	-0.00955	0.05496	0.03586	0.01959	0.02678	0.02201	0.02229	0.01394	0.00502	0.00371	0.00086	-0.16458
	0.8109	0.1683	0.3689	0.6236	0.5023	0.5814	0.5765	0.7269	0.9000	0.9260	0.9829	0.0001
M	0.06398	0.01058	-0.02425	-0.01665	-0.02719	-0.01950	0.00000	-0.02513	-0.01892	-0.00196	-0.00781	0.29987
	0.1086	0.7911	0.5435	0.6765	0.4957	0.6252	1.0000	0.5289	0.6355	0.9608	0.8449	0.0001
J	0.11656	-0.02589	-0.02425	-0.01665	-0.02719	-0.00229	0.00000	-0.02513	-0.01892	-0.00196	-0.00781	0.40223
	0.0034	0.5165	0.5435	0.6765	0.4957	0.9542	1.0000	0.5289	0.6355	0.9608	0.8449	0.0001
L	0.07357	-0.07598	-0.01242	-0.01160	-0.02093	0.00051	-0.00098	-0.02619	-0.02037	-0.00337	-0.01281	0.34752
	0.0650	0.0566	0.7557	0.7714	0.6000	0.9897	0.9804	0.5117	0.6098	0.9327	0.7482	0.0001
T	-0.01609	-0.11247	-0.00747	0.00292	-0.01517	0.00859	-0.00381	0.00086	0.02489	0.02077	0.01022	-0.24279
	0.6868	0.0047	0.8515	0.9417	0.7040	0.8296	0.9239	0.9828	0.5329	0.6027	0.7979	0.0001

Source: SCANTRACK 1 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 630

	FV	FP	VX	VZ	VAX	VAZ	TB	TS	CB	CS	MNG	TEMPA
AD	0.03828	-0.10760	0.04832	0.00354	0.15253	0.06051	0.09565	0.12439	0.12562	0.00250	0.07192	-0.14595
	0.3374	0.0069	0.2258	0.9293	0.0001	0.1292	0.0163	0.0018	0.0016	0.9500	0.0713	0.0002
C_HEART	0.23295	-0.11454	0.24192	-0.07739	-0.14819	-0.08362	-0.09188	-0.12450	-0.15523	0.00048	-0.08935	-0.00757
	0.0001	0.0040	0.0001	0.0522	0.0002	0.0359	0.0211	0.0017	0.0001	0.9904	0.0249	0.8497
P_HEART	0.02271	0.06309	-0.30177	0.10403	-0.17991	-0.02732	0.22245	-0.14856	0.37580	0.19920	0.24019	0.05328
	0.5695	0.1136	0.0001	0.0090	0.0001	0.4936	0.0001	0.0002	0.0001	0.0001	0.0001	0.1817
SV_HEART	-0.10989	0.23704	-0.31094	-0.49444	-0.11576	-0.42512	0.27339	-0.12088	0.16305	-0.12995	-0.05474	0.01690
	0.0058	0.0001	0.0001	0.0001	0.0036	0.0001	0.0001	0.0024	0.0001	0.0011	0.1700	0.6720
DP_HEART	0.37296	-0.19298	0.52360	0.15286	0.22065	0.13601	-0.05741	-0.07779	-0.09699	0.09766	0.02363	-0.01459
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0006	0.1501	0.0510	0.0149	0.0142	0.5538	0.7147
RC_HEART	-0.19825	0.00511	-0.38063	-0.40481	-0.11320	0.02351	0.21026	0.13753	0.08634	-0.16898	0.23377	0.04063
	0.0001	0.8982	0.0001	0.0001	0.0044	0.5558	0.0001	0.0005	0.0303	0.0001	0.0001	0.3085
RDUMMY	-0.20547	-0.04026	0.13764	0.10131	0.11676	0.24389	-0.08616	0.23533	-0.14555	0.27356	-0.20802	-0.03199
	0.0001	0.3130	0.0005	0.0109	0.0033	0.0001	0.0306	0.0001	0.0002	0.0001	0.0001	0.4228
B_THIRD	0.39554	-0.15551	0.11697	0.02727	0.28110	0.17459	-0.06168	-0.08357	0.29136	0.08200	-0.07218	0.03117
	0.0001	0.0001	0.0033	0.4944	0.0001	0.0001	0.1220	0.0360	0.0001	0.0396	0.0702	0.4348
S_THIRD	-0.16658	0.01407	-0.19217	-0.28707	-0.06318	-0.20306	0.07925	0.10737	-0.20101	-0.03005	-0.04839	0.01145
	0.0001	0.7245	0.0001	0.0001	0.1131	0.0001	0.0468	0.0070	0.0001	0.4515	0.2252	0.7741
BIG_3RDC	0.36265	-0.23873	0.15976	0.00491	0.32297	0.20177	-0.02765	-0.00483	0.03786	0.31314	-0.04023	0.03257
	0.0001	0.0001	0.0001	0.9021	0.0001	0.0001	0.4884	0.9038	0.3427	0.0001	0.3134	0.4144
BIG_BTCS	-0.04477	0.14113	0.21508	0.09272	-0.14894	0.03266	0.01081	-0.02537	-0.23985	-0.37387	-0.03049	-0.05153
	0.2619	0.0004	0.0001	0.0199	0.0002	0.4131	0.7865	0.5249	0.0001	0.0001	0.4449	0.1965
BIG_BTC	0.42841	-0.17380	0.57788	0.22008	0.39797	0.18914	-0.10583	-0.05641	-0.06027	-0.00192	-0.04745	-0.04036
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0078	0.1573	0.1308	0.9617	0.2343	0.3118
BIG3RDCS	-0.22776	-0.04210	-0.07528	0.00975	-0.01716	-0.06268	-0.06639	0.16469	-0.42325	-0.20432	0.04533	-0.05415
	0.0001	0.2914	0.0590	0.8070	0.6672	0.1160	0.0959	0.0001	0.0001	0.0001	0.2559	0.1746
FHHI	-0.13319	0.13431	-0.29791	-0.38572	-0.47068	0.05983	0.10478	0.23114	0.03617	-0.16386	0.17146	-0.00520
	0.0008	0.0007	0.0001	0.0001	0.0001	0.1336	0.0085	0.0001	0.3647	0.0001	0.0001	0.8963

Source: SCANTRACK 1 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 630

	TEMP	TIME	TIMESQR	POP	INCOME	COL	WAGE	DCOST	PLASTICS	P_SYRUP	P_CORN	PPLASTIC
FV	0.17927	0.00124	-0.01944	0.02218	-0.12155	-0.38055	-0.18928	0.14741	-0.40323	-0.00895	-0.00910	-0.02659
	0.0001	0.9753	0.6263	0.5785	0.0022	0.0001	0.0001	0.0002	0.0001	0.8226	0.8197	0.5053
FP	-0.03701	-0.12291	-0.08975	-0.12986	0.17511	0.15207	0.14116	-0.03924	-0.05848	-0.07179	-0.06468	-0.09358
	0.3537	0.0020	0.0243	0.0011	0.0001	0.0001	0.0004	0.3255	0.1426	0.0717	0.1048	0.0188
VX	0.14820	0.08639	0.09823	0.33190	0.20877	0.03391	-0.08801	0.07728	0.12006	0.09482	0.03799	0.09707
	0.0002	0.0301	0.0136	0.0001	0.0001	0.3955	0.0272	0.0525	0.0025	0.0173	0.3411	0.0148
VZ	0.00940	0.01157	0.01774	0.01637	0.35092	0.19883	0.16017	0.07127	0.02150	0.02141	0.01662	0.01357
	0.8138	0.7720	0.6567	0.6816	0.0001	0.0001	0.0001	0.0738	0.5902	0.5917	0.6771	0.7339
VAX	-0.08929	0.15332	0.14883	0.24782	0.39316	0.15177	0.24508	0.27216	-0.10647	0.11420	-0.00653	0.13816
	0.0250	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0075	0.0041	0.8701	0.0005
VAZ	0.00951	0.08417	0.07629	0.05102	0.20102	0.18223	0.14443	0.22888	0.19307	0.06302	0.03339	0.06688
	0.8117	0.0347	0.0556	0.2009	0.0001	0.0001	0.0003	0.0001	0.0001	0.1140	0.4029	0.0935
TB	-0.07395	0.11656	0.11338	-0.07742	-0.08233	0.17830	0.21373	0.07184	0.23809	0.08290	0.00922	0.11316
	0.0636	0.0034	0.0044	0.0521	0.0388	0.0001	0.0001	0.0715	0.0001	0.0375	0.8173	0.0045
TS	-0.06814	0.16544	0.16929	0.14109	0.40369	0.35206	0.19153	0.08970	0.26010	0.14883	0.03028	0.16112
	0.0875	0.0001	0.0001	0.0004	0.0001	0.0001	0.0001	0.0243	0.0001	0.0002	0.4481	0.0001
CB	-0.13902	0.10976	0.09318	-0.17126	0.03166	-0.07272	-0.07182	0.05004	-0.30211	0.05734	-0.03404	0.08360
	0.0005	0.0058	0.0193	0.0001	0.4276	0.0682	0.0716	0.2097	0.0001	0.1506	0.3937	0.0359
CS	0.05172	0.01235	0.00858	-0.00728	-0.01790	-0.05878	0.01568	0.13892	-0.16488	0.01199	0.01028	0.01017
	0.1948	0.7571	0.8298	0.8553	0.6539	0.1406	0.6945	0.0005	0.0001	0.7639	0.7968	0.7989
MNG	0.01767	0.08114	0.07474	-0.18325	-0.26361	-0.37064	-0.31721	-0.22952	-0.38201	0.06121	0.00652	0.06710
	0.6580	0.0418	0.0608	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.1249	0.8702	0.0924
TEMPA	0.84465	-0.15356	-0.19546	-0.03515	-0.04903	-0.00013	0.00561	0.02528	-0.04112	-0.30744	0.12797	-0.17038
	0.0001	0.0001	0.0001	0.3784	0.2191	0.9974	0.8882	0.5265	0.3027	0.0001	0.0013	0.0001
TEMP	1.00000	-0.13707	-0.16510	-0.04954	-0.19953	-0.20702	-0.19756	-0.19947	-0.00299	-0.27594	0.15285	-0.13132
	0.0	0.0006	0.0001	0.2143	0.0001	0.0001	0.0001	0.0001	0.9404	0.0001	0.0001	0.0010
TIME	-0.13707	1.00000	0.97523	-0.07237	-0.04845	0.07818	0.14397	0.00598	0.09662	0.80349	0.22817	0.94315
	0.0006	0.0	0.0001	0.0695	0.2246	0.0498	0.0003	0.8809	0.0153	0.0001	0.0001	0.0001
TIMESQR	-0.16510	0.97523	1.00000	-0.06567	-0.02047	0.07242	0.13127	-0.00285	0.06534	0.88374	0.34116	0.97955
	0.0001	0.0001	0.0	0.0996	0.6081	0.0693	0.0010	0.9432	0.1013	0.0001	0.0001	0.0001
POP	-0.04954	-0.07237	-0.06567	1.00000	0.56927	0.27321	0.12107	0.61709	0.04356	-0.03137	-0.00287	-0.06502
	0.2143	0.0695	0.0996	0.0	0.0001	0.0001	0.0023	0.0001	0.2749	0.4318	0.9428	0.1030

Source: SCANTRACK 1 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 630

	TEMP	TIME	TIMESQR	POP	INCOME	COL	WAGE	DCOST	PLASTICS	P_SYRUP	P_CORN	PPLASTIC
INCOME	-0.19953	-0.04845	-0.02047	0.56927	1.00000	0.71279	0.55319	0.58055	0.10735	0.05102	0.11013	-0.02050
	0.0001	0.2246	0.6081	0.0001	0.0	0.0001	0.0001	0.0001	0.0070	0.2009	0.0057	0.6075
COL	-0.20702	0.07818	0.07242	0.27321	0.71279	1.00000	0.75869	0.50701	0.48636	0.06415	0.03336	0.06890
	0.0001	0.0498	0.0693	0.0001	0.0001	0.0	0.0001	0.0001	0.0001	0.1077	0.4032	0.0840
WAGE	-0.19756	0.14397	0.13127	0.12107	0.55319	0.75869	1.00000	0.44039	0.29631	0.10995	0.03893	0.12341
	0.0001	0.0003	0.0010	0.0023	0.0001	0.0001	0.0	0.0001	0.0001	0.0057	0.3293	0.0019
DCOST	-0.19947	0.00598	-0.00285	0.61709	0.58055	0.50701	0.44039	1.00000	0.02366	0.00435	-0.00444	-0.00813
	0.0001	0.8809	0.9432	0.0001	0.0001	0.0001	0.0001	0.0	0.5534	0.9131	0.9114	0.8385
PLASTICS	-0.00299	0.09662	0.06534	0.04356	0.10735	0.48636	0.29631	0.02366	1.00000	0.01943	-0.04513	0.05785
	0.9404	0.0153	0.1013	0.2749	0.0070	0.0001	0.0001	0.5534	0.0	0.6265	0.2580	0.1469
P_SYRUP	-0.27594	0.80349	0.88374	-0.03137	0.05102	0.06415	0.10995	0.00435	0.01943	1.00000	0.46513	0.84670
	0.0001	0.0001	0.0001	0.4318	0.2009	0.1077	0.0057	0.9131	0.6265	0.0	0.0001	0.0001
P_CORN	0.15285	0.22817	0.34116	-0.00287	0.11013	0.03336	0.03893	-0.00444	-0.04513	0.46513	1.00000	0.36335
	0.0001	0.0001	0.0001	0.9428	0.0057	0.4032	0.3293	0.9114	0.2580	0.0001	0.0	0.0001
PPLASTIC	-0.13132	0.94315	0.97955	-0.06502	-0.02050	0.06890	0.12341	-0.00813	0.05785	0.84670	0.36335	1.00000
	0.0010	0.0001	0.0001	0.1030	0.6075	0.0840	0.0019	0.8385	0.1469	0.0001	0.0001	0.0
P_ALUM	0.44097	-0.57557	-0.54916	0.02188	-0.01866	-0.05619	-0.09770	-0.02775	-0.05691	-0.63582	0.02793	-0.44357
	0.0001	0.0001	0.0001	0.5837	0.6401	0.1589	0.0142	0.4869	0.1537	0.0001	0.4841	0.0001
P_PET	0.27220	0.09726	0.16091	0.02856	0.11304	0.03045	0.03994	0.02701	-0.02126	0.32331	0.70148	0.08743
	0.0001	0.0146	0.0001	0.4743	0.0045	0.4455	0.3168	0.4986	0.5943	0.0001	0.0001	0.0282
C	-0.30921	0.02418	0.02391	-0.01255	0.00014	0.00041	-0.00225	-0.00062	0.00507	0.13879	-0.00016	0.02684
	0.0001	0.5447	0.5491	0.7533	0.9971	0.9917	0.9550	0.9877	0.8989	0.0005	0.9967	0.5013
E	-0.08934	0.04091	0.06609	0.02084	0.01619	-0.00455	-0.00034	0.00738	-0.01726	0.10285	-0.15663	0.06464
	0.0249	0.3053	0.0974	0.6017	0.6851	0.9092	0.9931	0.8533	0.6655	0.0098	0.0001	0.1050
M	0.25490	-0.12925	-0.14368	-0.00420	-0.01270	0.00549	-0.00826	-0.00053	0.01354	-0.13012	-0.18671	-0.16017
	0.0001	0.0011	0.0003	0.9163	0.7504	0.8907	0.8361	0.9893	0.7344	0.0011	0.0001	0.0001
J	0.32880	-0.09722	-0.11699	-0.00373	-0.01466	0.00499	-0.00258	-0.00102	0.01354	-0.13012	-0.01238	-0.10857
	0.0001	0.0146	0.0033	0.9255	0.7134	0.9006	0.9484	0.9795	0.7344	0.0011	0.7564	0.0064
L	0.28851	-0.03941	-0.06438	-0.00819	-0.01699	0.00247	0.00221	-0.00091	0.00978	-0.13061	0.14386	-0.03915
	0.0001	0.3233	0.1064	0.8375	0.6704	0.9506	0.9558	0.9817	0.8065	0.0010	0.0003	0.3266
T	-0.14161	0.04347	0.02069	-0.00675	-0.00000	0.00862	0.01286	0.00979	0.02396	-0.01922	0.12765	0.05276
	0.0004	0.2760	0.6042	0.8658	0.9999	0.8290	0.7474	0.8064	0.5482	0.6301	0.0013	0.1860

Source: SCANTRACK 1 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 630

	TEMP	TIME	TIMESQR	POP	INCOME	COL	WAGE	DCOST	PLASTICS	P_SYRUP	P_CORN	PPLASTIC
AD	-0.17354	0.75618	0.64928	-0.07560	-0.12610	0.04999	0.10473	0.00436	0.12512	0.34920	-0.37424	0.60668
	0.0001	0.0001	0.0001	0.0579	0.0015	0.2102	0.0085	0.9131	0.0017	0.0001	0.0001	0.0001
C_HEART	0.28638	-0.06888	-0.06383	-0.11807	-0.48145	-0.51586	-0.38112	-0.48624	0.04057	-0.05347	-0.01871	-0.06105
	0.0001	0.0841	0.1095	0.0030	0.0001	0.0001	0.0001	0.0001	0.3093	0.1801	0.6392	0.1258
P_HEART	-0.16025	0.05915	0.05085	-0.29849	-0.16245	0.06283	0.07325	0.14849	-0.26217	0.03222	0.01357	0.04822
	0.0001	0.1381	0.2024	0.0001	0.0001	0.1151	0.0662	0.0002	0.0001	0.4195	0.7339	0.2268
SV_HEART	-0.17189	0.00715	0.00667	0.19923	0.17394	0.07610	0.18890	0.30908	-0.18861	0.01697	0.02839	0.00581
	0.0001	0.8579	0.8673	0.0001	0.0001	0.0562	0.0001	0.0001	0.0001	0.6708	0.4768	0.8842
DP_HEART	0.23221	-0.04816	-0.04596	0.07465	-0.15526	-0.32508	-0.21313	-0.21948	-0.15132	-0.04956	-0.04022	-0.04239
	0.0001	0.2274	0.2493	0.0611	0.0001	0.0001	0.0001	0.0001	0.0001	0.2141	0.3135	0.2880
RC_HEART	-0.20086	-0.04617	-0.04216	0.15688	0.07013	0.00342	-0.09541	0.16758	-0.01391	-0.02205	0.00872	-0.04334
	0.0001	0.2472	0.2907	0.0001	0.0786	0.9318	0.0166	0.0001	0.7276	0.5807	0.8271	0.2774
RDUMMY	0.05285	-0.01153	-0.01307	0.58271	0.37685	0.22654	-0.04893	0.40029	0.22311	-0.01068	-0.01499	-0.00996
	0.1852	0.7727	0.7433	0.0001	0.0001	0.0001	0.2200	0.0001	0.0001	0.7891	0.7073	0.8030
B_THIRD	-0.01570	-0.02323	-0.02531	0.36371	0.18281	-0.14088	-0.01895	0.31724	-0.20048	-0.00933	0.00888	-0.02739
	0.6941	0.5607	0.5260	0.0001	0.0001	0.0004	0.6349	0.0001	0.0001	0.8152	0.8240	0.4926
S_THIRD	-0.20327	0.03193	0.03709	0.09386	0.15589	0.37384	0.22845	0.36276	-0.02438	0.03392	0.02721	0.03768
	0.0001	0.4237	0.3526	0.0185	0.0001	0.0001	0.0001	0.0001	0.5413	0.3954	0.4954	0.3450
BIG_3RDC	-0.00923	-0.04637	-0.04632	0.63806	0.28301	-0.00802	0.10277	0.65505	-0.29799	-0.02896	-0.01239	-0.04629
	0.8171	0.2451	0.2456	0.0001	0.0001	0.8407	0.0098	0.0001	0.0001	0.4681	0.7562	0.2460
BIG_BTCS	0.12761	0.00398	0.01338	-0.09545	-0.14854	-0.08357	-0.08941	-0.38448	0.25944	0.01007	0.00005	0.01620
	0.0013	0.9207	0.7375	0.0166	0.0002	0.0360	0.0248	0.0001	0.0001	0.8009	0.9990	0.6848
BIG_BTC	0.05354	-0.00320	0.00252	0.79315	0.37031	0.01967	0.02087	0.42795	-0.11563	0.01539	-0.01319	0.00132
	0.1795	0.9362	0.9497	0.0001	0.0001	0.6222	0.6010	0.0001	0.0037	0.6998	0.7411	0.9737
BIG3RDCS	0.05106	-0.03405	-0.02561	-0.08401	-0.01259	0.06736	0.00783	-0.36044	0.27848	-0.00547	0.02945	-0.02518
	0.2006	0.3935	0.5211	0.0350	0.7525	0.0911	0.8444	0.0001	0.0001	0.8911	0.4606	0.5281
FHHI	0.05526	0.00429	0.00237	0.02301	-0.25606	-0.26754	-0.38683	0.01565	-0.04371	-0.00202	-0.01536	-0.00031
	0.1659	0.9145	0.9526	0.5644	0.0001	0.0001	0.0001	0.6951	0.2733	0.9596	0.7004	0.9938

Source: SCANTRACK 1 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 630

	P_ALUM	P_PET	C	E	M	J	L	T	AD	C_HEART	P_HEART	SV_HEART
FV	-0.03124	0.05236	0.15006	-0.00955	0.06398	0.11656	0.07357	-0.01609	0.03828	0.23295	0.02271	-0.10989
	0.4338	0.1894	0.0002	0.8109	0.1086	0.0034	0.0650	0.6868	0.3374	0.0001	0.5695	0.0058
FP	0.05484	-0.02575	-0.21066	0.05496	0.01058	-0.02589	-0.07598	-0.11247	-0.10760	-0.11454	0.06309	0.23704
	0.1692	0.5188	0.0001	0.1683	0.7911	0.5165	0.0566	0.0047	0.0069	0.0040	0.1136	0.0001
VX	-0.05346	0.02980	-0.00599	0.03586	-0.02425	-0.02425	-0.01242	-0.00747	0.04832	0.24192	-0.30177	-0.31094
	0.1802	0.4552	0.8807	0.3689	0.5435	0.5435	0.7557	0.8515	0.2258	0.0001	0.0001	0.0001
VZ	-0.02756	0.02620	0.00886	0.01959	-0.01665	-0.01665	-0.01160	0.00292	0.00354	-0.07739	0.10403	-0.49444
	0.4899	0.5116	0.8244	0.6236	0.6765	0.6765	0.7714	0.9417	0.9293	0.0522	0.0090	0.0001
VAX	-0.11793	0.01051	0.01942	0.02678	-0.02719	-0.02719	-0.02093	-0.01517	0.15253	-0.14819	-0.17991	-0.11576
	0.0030	0.7924	0.6267	0.5023	0.4957	0.4957	0.6000	0.7040	0.0001	0.0002	0.0001	0.0036
VAZ	-0.06672	0.05315	0.00277	0.02201	-0.01950	-0.00229	0.00051	0.00859	0.06051	-0.08362	-0.02732	-0.42512
	0.0943	0.1828	0.9446	0.5814	0.6252	0.9542	0.9897	0.8296	0.1292	0.0359	0.4936	0.0001
TB	-0.03971	-0.00579	-0.00734	0.02229	0.00000	0.00000	-0.00098	-0.00381	0.09565	-0.09188	0.22245	0.27339
	0.3197	0.8848	0.8542	0.5765	1.0000	1.0000	0.9804	0.9239	0.0163	0.0211	0.0001	0.0001
TS	-0.09859	0.01300	-0.00414	0.01394	-0.02513	-0.02513	-0.02619	0.00086	0.12439	-0.12450	-0.14856	-0.12088
	0.0133	0.7446	0.9174	0.7269	0.5289	0.5289	0.5117	0.9828	0.0018	0.0017	0.0002	0.0024
CB	-0.09184	-0.02013	0.01776	0.00502	-0.01892	-0.01892	-0.02037	0.02489	0.12562	-0.15523	0.37580	0.16305
	0.0211	0.6140	0.6564	0.9000	0.6355	0.6355	0.6098	0.5329	0.0016	0.0001	0.0001	0.0001
CS	0.00437	0.00147	0.01465	0.00371	-0.00196	-0.00196	-0.00337	0.02077	0.00250	0.00048	0.19920	-0.12995
	0.9129	0.9707	0.7136	0.9260	0.9608	0.9608	0.9327	0.6027	0.9500	0.9904	0.0001	0.0011
MNG	-0.07224	0.02480	0.00286	0.00086	-0.00781	-0.00781	-0.01281	0.01022	0.07192	-0.08935	0.24019	-0.05474
	0.0700	0.5344	0.9429	0.9829	0.8449	0.8449	0.7482	0.7979	0.0713	0.0249	0.0001	0.1700
TEMPA	0.40229	0.27348	-0.29129	-0.16458	0.29987	0.40223	0.34752	-0.24279	-0.14595	-0.00757	0.05328	0.01690
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.8497	0.1817	0.6720
TEMP	0.44097	0.27220	-0.30921	-0.08934	0.25490	0.32880	0.28851	-0.14161	-0.17354	0.28638	-0.16025	-0.17189
	0.0001	0.0001	0.0001	0.0249	0.0001	0.0001	0.0001	0.0004	0.0001	0.0001	0.0001	0.0001
TIME	-0.57557	0.09726	0.02418	0.04091	-0.12925	-0.09722	-0.03941	0.04347	0.75618	-0.06888	0.05915	0.00715
	0.0001	0.0146	0.5447	0.3053	0.0011	0.0146	0.3233	0.2760	0.0001	0.0841	0.1381	0.8579
TIMESQR	-0.54916	0.16091	0.02391	0.06609	-0.14368	-0.11699	-0.06438	0.02069	0.64928	-0.06383	0.05085	0.00667
	0.0001	0.0001	0.5491	0.0974	0.0003	0.0033	0.1064	0.6042	0.0001	0.1095	0.2024	0.8673
POP	0.02188	0.02856	-0.01255	0.02084	-0.00420	-0.00373	-0.00819	-0.00675	-0.07560	-0.11807	-0.29849	0.19923
	0.5837	0.4743	0.7533	0.6017	0.9163	0.9255	0.8375	0.8658	0.0579	0.0030	0.0001	0.0001

Source: SCANTRACK 1 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 630

	P_ALUM	P_PET	C	E	M	J	L	T	AD	C_HEART	P_HEART	SV_HEART
INCOME	-0.01866	0.11304	0.00014	0.01619	-0.01270	-0.01466	-0.01699	-0.00000	-0.12610	-0.48145	-0.16245	0.17394
	0.6401	0.0045	0.9971	0.6851	0.7504	0.7134	0.6704	0.9999	0.0015	0.0001	0.0001	0.0001
COL	-0.05619	0.03045	0.00041	-0.00455	0.00549	0.00499	0.00247	0.00862	0.04999	-0.51586	0.06283	0.07610
	0.1589	0.4455	0.9917	0.9092	0.8907	0.9006	0.9506	0.8290	0.2102	0.0001	0.1151	0.0562
WAGE	-0.09770	0.03994	-0.00225	-0.00034	-0.00826	-0.00258	0.00221	0.01286	0.10473	-0.38112	0.07325	0.18890
	0.0142	0.3168	0.9550	0.9931	0.8361	0.9484	0.9558	0.7474	0.0085	0.0001	0.0662	0.0001
DCOST	-0.02775	0.02701	-0.00062	0.00738	-0.00053	-0.00102	-0.00091	0.00979	0.00436	-0.48624	0.14849	0.30908
	0.4869	0.4986	0.9877	0.8533	0.9893	0.9795	0.9817	0.8064	0.9131	0.0001	0.0002	0.0001
PLASTICS	-0.05691	-0.02126	0.00507	-0.01726	0.01354	0.01354	0.00978	0.02396	0.12512	0.04057	-0.26217	-0.18861
	0.1537	0.5943	0.8989	0.6655	0.7344	0.7344	0.8065	0.5482	0.0017	0.3093	0.0001	0.0001
P_SYRUP	-0.63582	0.32331	0.13879	0.10285	-0.13012	-0.13012	-0.13061	-0.01922	0.34920	-0.05347	0.03222	0.01697
	0.0001	0.0001	0.0005	0.0098	0.0011	0.0011	0.0010	0.6301	0.0001	0.1801	0.4195	0.6708
P_CORN	0.02793	0.70148	-0.00016	-0.15663	-0.18671	-0.01238	0.14386	0.12765	-0.37424	-0.01871	0.01357	0.02839
	0.4841	0.0001	0.9967	0.0001	0.0001	0.7564	0.0003	0.0013	0.0001	0.6392	0.7339	0.4768
PPLASTIC	-0.44357	0.08743	0.02684	0.06464	-0.16017	-0.10857	-0.03915	0.05276	0.60668	-0.06105	0.04822	0.00581
	0.0001	0.0282	0.5013	0.1050	0.0001	0.0064	0.3266	0.1860	0.0001	0.1258	0.2268	0.8842
P_ALUM	1.00000	-0.17210	-0.18692	-0.14480	0.11336	0.03059	0.20417	0.12814	-0.51692	0.04948	-0.02866	-0.01074
	0.0	0.0001	0.0001	0.0003	0.0044	0.4434	0.0001	0.0013	0.0001	0.2149	0.4727	0.7878
P_PET	-0.17210	1.00000	-0.16438	-0.05226	0.02826	0.05128	0.08717	0.00835	-0.32070	-0.01961	0.00583	0.03854
	0.0001	0.0	0.0001	0.1902	0.4788	0.1987	0.0287	0.8343	0.0001	0.6231	0.8839	0.3341
C	-0.18692	-0.16438	1.00000	-0.09349	-0.07847	-0.07847	-0.07947	-0.08240	0.15903	0.00192	0.00614	-0.01775
	0.0001	0.0001	0.0	0.0189	0.0490	0.0490	0.0462	0.0387	0.0001	0.9617	0.8777	0.6566
E	-0.14480	-0.05226	-0.09349	1.00000	-0.08510	-0.08510	-0.08618	-0.08937	0.02644	0.00108	-0.01342	-0.00344
	0.0003	0.1902	0.0189	0.0	0.0327	0.0327	0.0305	0.0249	0.5077	0.9785	0.7368	0.9313
M	0.11336	0.02826	-0.07847	-0.08510	1.00000	-0.07143	-0.07234	-0.07501	-0.05213	0.00291	0.00180	0.00985
	0.0044	0.4788	0.0490	0.0327	0.0	0.0732	0.0696	0.0599	0.1913	0.9419	0.9640	0.8051
J	0.03059	0.05128	-0.07847	-0.08510	-0.07143	1.00000	-0.07234	-0.07501	-0.05213	0.00291	0.00180	0.00985
	0.4434	0.1987	0.0490	0.0327	0.0732	0.0	0.0696	0.0599	0.1913	0.9419	0.9640	0.8051
L	0.20417	0.08717	-0.07947	-0.08618	-0.07234	-0.07234	1.00000	-0.07596	-0.06129	-0.00082	0.01075	0.00615
	0.0001	0.0287	0.0462	0.0305	0.0696	0.0696	0.0	0.0567	0.1244	0.9836	0.7877	0.8776
T	0.12814	0.00835	-0.08240	-0.08937	-0.07501	-0.07501	-0.07596	1.00000	-0.08769	-0.01157	0.01054	-0.00450
	0.0013	0.8343	0.0387	0.0249	0.0599	0.0599	0.0567	0.0	0.0277	0.7720	0.7917	0.9103

Source: SCANTRACK 1 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 630

	P_ALUM	P_PET	C	E	M	J	L	T	AD	C_HEART	P_HEART	SV_HEART
AD	-0.51692	-0.32070	0.15903	0.02644	-0.05213	-0.05213	-0.06129	-0.08769	1.00000	-0.04957	0.04940	-0.01655
	0.0001	0.0001	0.0001	0.5077	0.1913	0.1913	0.1244	0.0277	0.0	0.2141	0.2157	0.6784
C_HEART	0.04948	-0.01961	0.00192	0.00108	0.00291	0.00291	-0.00082	-0.01157	-0.04957	1.00000	-0.41306	-0.33609
	0.2149	0.6231	0.9617	0.9785	0.9419	0.9419	0.9836	0.7720	0.2141	0.0	0.0001	0.0001
P_HEART	-0.02866	0.00583	0.00614	-0.01342	0.00180	0.00180	0.01075	0.01054	0.04940	-0.41306	1.00000	0.34345
	0.4727	0.8839	0.8777	0.7368	0.9640	0.9640	0.7877	0.7917	0.2157	0.0001	0.0	0.0001
SV_HEART	-0.01074	0.03854	-0.01775	-0.00344	0.00985	0.00985	0.00615	-0.00450	-0.01655	-0.33609	0.34345	1.00000
	0.7878	0.3341	0.6566	0.9313	0.8051	0.8051	0.8776	0.9103	0.6784	0.0001	0.0001	0.0
DP_HEART	0.04634	-0.04144	0.00086	0.00161	0.00000	0.00000	-0.00231	-0.00897	-0.01729	0.62481	-0.25808	-0.20999
	0.2455	0.2991	0.9827	0.9677	1.0000	1.0000	0.9538	0.8222	0.6649	0.0001	0.0001	0.0001
RC_HEART	0.01058	0.01884	0.00273	0.00433	0.00089	0.00089	-0.00380	-0.00453	-0.04850	-0.19423	0.05672	0.43030
	0.7910	0.6370	0.9456	0.9136	0.9823	0.9823	0.9242	0.9096	0.2241	0.0001	0.1550	0.0001
RDUMMY	0.01279	-0.00179	-0.00926	0.00606	0.00301	0.00301	-0.00050	0.00385	-0.00680	-0.32458	-0.18780	-0.06245
	0.7487	0.9642	0.8166	0.8794	0.9399	0.9399	0.9901	0.9232	0.8648	0.0001	0.0001	0.1174
B_THIRD	0.00007	0.03263	-0.01282	0.00281	0.00621	0.00621	0.00366	-0.00369	-0.03266	0.08656	-0.02039	0.36772
	0.9986	0.4136	0.7480	0.9440	0.8764	0.8764	0.9270	0.9265	0.4131	0.0298	0.6095	0.0001
S_THIRD	-0.01839	0.00193	0.01802	-0.00168	-0.00631	-0.00631	-0.00305	0.00634	0.01610	-0.34946	0.13877	0.05241
	0.6450	0.9615	0.6517	0.9663	0.8744	0.8744	0.9392	0.8739	0.6867	0.0001	0.0005	0.1890
BIG_3RDC	0.01883	0.01397	-0.00575	0.01116	0.00043	0.00043	-0.00102	-0.00399	-0.04151	-0.03632	0.06891	0.29139
	0.6371	0.7264	0.8855	0.7797	0.9914	0.9914	0.9795	0.9203	0.2982	0.3628	0.0840	0.0001
BIG_BTCS	0.00730	-0.02622	0.01055	0.00842	-0.00887	-0.00887	-0.00942	-0.00669	0.00676	0.53232	-0.44232	-0.33286
	0.8549	0.5113	0.7916	0.8330	0.8242	0.8242	0.8134	0.8669	0.8655	0.0001	0.0001	0.0001
BIG_BTC	-0.01088	0.00156	-0.00255	0.02830	-0.01056	-0.01056	-0.01465	-0.01562	-0.00374	0.23806	-0.36511	-0.01976
	0.7851	0.9689	0.9490	0.4783	0.7914	0.7914	0.7137	0.6956	0.9253	0.0001	0.0001	0.6206
BIG3RDCS	0.00408	0.02409	0.00508	0.00110	-0.00655	-0.00655	-0.00158	0.00174	-0.04863	0.06763	-0.42757	-0.36621
	0.9187	0.5462	0.8988	0.9781	0.8696	0.8696	0.9683	0.9653	0.2229	0.0899	0.0001	0.0001
FHHI	-0.01105	-0.01297	0.00663	0.00489	-0.00877	-0.00877	-0.00454	0.00256	0.01599	0.02211	0.00038	-0.03844
	0.7818	0.7452	0.8680	0.9026	0.8262	0.8262	0.9094	0.9489	0.6886	0.5796	0.9925	0.3354

Source: SCANTRACK 1 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 630

	DP_HEART	RC_HEART	RDUMMY	B_THIRD	S_THIRD	BIG_3RDC	BIG_BTCS	BIG_BTC	BIG3RDCS	FHHI
FV	0.37296	-0.19825	-0.20547	0.39554	-0.16658	0.36265	-0.04477	0.42841	-0.22776	-0.13319
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.2619	0.0001	0.0001	0.0008
FP	-0.19298	0.00511	-0.04026	-0.15551	0.01407	-0.23873	0.14113	-0.17380	-0.04210	0.13431
	0.0001	0.8982	0.3130	0.0001	0.7245	0.0001	0.0004	0.0001	0.2914	0.0007
VX	0.52360	-0.38063	0.13764	0.11697	-0.19217	0.15976	0.21508	0.57788	-0.07528	-0.29791
	0.0001	0.0001	0.0005	0.0033	0.0001	0.0001	0.0001	0.0001	0.0590	0.0001
VZ	0.15286	-0.40481	0.10131	0.02727	-0.28707	0.00491	0.09272	0.22008	0.00975	-0.38572
	0.0001	0.0001	0.0109	0.4944	0.0001	0.9021	0.0199	0.0001	0.8070	0.0001
VAX	0.22065	-0.11320	0.11676	0.28110	-0.06318	0.32297	-0.14894	0.39797	-0.01716	-0.47068
	0.0001	0.0044	0.0033	0.0001	0.1131	0.0001	0.0002	0.0001	0.6672	0.0001
VAZ	0.13601	0.02351	0.24389	0.17459	-0.20306	0.20177	0.03266	0.18914	-0.06268	0.05983
	0.0006	0.5558	0.0001	0.0001	0.0001	0.0001	0.4131	0.0001	0.1160	0.1336
TB	-0.05741	0.21026	-0.08616	-0.06168	0.07925	-0.02765	0.01081	-0.10583	-0.06639	0.10478
	0.1501	0.0001	0.0306	0.1220	0.0468	0.4884	0.7865	0.0078	0.0959	0.0085
TS	-0.07779	0.13753	0.23533	-0.08357	0.10737	-0.00483	-0.02537	-0.05641	0.16469	0.23114
	0.0510	0.0005	0.0001	0.0360	0.0070	0.9038	0.5249	0.1573	0.0001	0.0001
CB	-0.09699	0.08634	-0.14555	0.29136	-0.20101	0.03786	-0.23985	-0.06027	-0.42325	0.03617
	0.0149	0.0303	0.0002	0.0001	0.0001	0.3427	0.0001	0.1308	0.0001	0.3647
CS	0.09766	-0.16898	0.27356	0.08200	-0.03005	0.31314	-0.37387	-0.00192	-0.20432	-0.16386
	0.0142	0.0001	0.0001	0.0396	0.4515	0.0001	0.0001	0.9617	0.0001	0.0001
MNG	0.02363	0.23377	-0.20802	-0.07218	-0.04839	-0.04023	-0.03049	-0.04745	0.04533	0.17146
	0.5538	0.0001	0.0001	0.0702	0.2252	0.3134	0.4449	0.2343	0.2559	0.0001
TEMPA	-0.01459	0.04063	-0.03199	0.03117	0.01145	0.03257	-0.05153	-0.04036	-0.05415	-0.00520
	0.7147	0.3085	0.4228	0.4348	0.7741	0.4144	0.1965	0.3118	0.1746	0.8963
TEMP	0.23221	-0.20086	0.05285	-0.01570	-0.20327	-0.00923	0.12761	0.05354	0.05106	0.05526
	0.0001	0.0001	0.1852	0.6941	0.0001	0.8171	0.0013	0.1795	0.2006	0.1659
TIME	-0.04816	-0.04617	-0.01153	-0.02323	0.03193	-0.04637	0.00398	-0.00320	-0.03405	0.00429
	0.2274	0.2472	0.7727	0.5607	0.4237	0.2451	0.9207	0.9362	0.3935	0.9145
TIMESQR	-0.04596	-0.04216	-0.01307	-0.02531	0.03709	-0.04632	0.01338	0.00252	-0.02561	0.00237
	0.2493	0.2907	0.7433	0.5260	0.3526	0.2456	0.7375	0.9497	0.5211	0.9526
POP	0.07465	0.15688	0.58271	0.36371	0.09386	0.63806	-0.09545	0.79315	-0.08401	0.02301
	0.0611	0.0001	0.0001	0.0001	0.0185	0.0001	0.0166	0.0001	0.0350	0.5644

Source: SCANTRACK 1 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 630

	DP_HEART	RC_HEART	RDUMMY	B_THIRD	S_THIRD	BIG_3RDC	BIG_BTCS	BIG_BTC	BIG3RDCS	FHHI
INCOME	-0.15526	0.07013	0.37685	0.18281	0.15589	0.28301	-0.14854	0.37031	-0.01259	-0.25606
	0.0001	0.0786	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.7525	0.0001
COL	-0.32508	0.00342	0.22654	-0.14088	0.37384	-0.00802	-0.08357	0.01967	0.06736	-0.26754
	0.0001	0.9318	0.0001	0.0004	0.0001	0.8407	0.0360	0.6222	0.0911	0.0001
WAGE	-0.21313	-0.09541	-0.04893	-0.01895	0.22845	0.10277	-0.08941	0.02087	0.00783	-0.38683
	0.0001	0.0166	0.2200	0.6349	0.0001	0.0098	0.0248	0.6010	0.8444	0.0001
DCOST	-0.21948	0.16758	0.40029	0.31724	0.36276	0.65505	-0.38448	0.42795	-0.36044	0.01565
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.6951
PLASTICS	-0.15132	-0.01391	0.22311	-0.20048	-0.02438	-0.29799	0.25944	-0.11563	0.27848	-0.04371
	0.0001	0.7276	0.0001	0.0001	0.5413	0.0001	0.0001	0.0037	0.0001	0.2733
P_SYRUP	-0.04956	-0.02205	-0.01068	-0.00933	0.03392	-0.02896	0.01007	0.01539	-0.00547	-0.00202
	0.2141	0.5807	0.7891	0.8152	0.3954	0.4681	0.8009	0.6998	0.8911	0.9596
P_CORN	-0.04022	0.00872	-0.01499	0.00888	0.02721	-0.01239	0.00005	-0.01319	0.02945	-0.01536
	0.3135	0.8271	0.7073	0.8240	0.4954	0.7562	0.9990	0.7411	0.4606	0.7004
PPLASTIC	-0.04239	-0.04334	-0.00996	-0.02739	0.03768	-0.04629	0.01620	0.00132	-0.02518	-0.00031
	0.2880	0.2774	0.8030	0.4926	0.3450	0.2460	0.6848	0.9737	0.5281	0.9938
P_ALUM	0.04634	0.01058	0.01279	0.00007	-0.01839	0.01883	0.00730	-0.01088	0.00408	-0.01105
	0.2455	0.7910	0.7487	0.9986	0.6450	0.6371	0.8549	0.7851	0.9187	0.7818
P_PET	-0.04144	0.01884	-0.00179	0.03263	0.00193	0.01397	-0.02622	0.00156	0.02409	-0.01297
	0.2991	0.6370	0.9642	0.4136	0.9615	0.7264	0.5113	0.9689	0.5462	0.7452
C	0.00086	0.00273	-0.00926	-0.01282	0.01802	-0.00575	0.01055	-0.00255	0.00508	0.00663
	0.9827	0.9456	0.8166	0.7480	0.6517	0.8855	0.7916	0.9490	0.8988	0.8680
E	0.00161	0.00433	0.00606	0.00281	-0.00168	0.01116	0.00842	0.02830	0.00110	0.00489
	0.9677	0.9136	0.8794	0.9440	0.9663	0.7797	0.8330	0.4783	0.9781	0.9026
M	0.00000	0.00089	0.00301	0.00621	-0.00631	0.00043	-0.00887	-0.01056	-0.00655	-0.00877
	1.0000	0.9823	0.9399	0.8764	0.8744	0.9914	0.8242	0.7914	0.8696	0.8262
J	0.00000	0.00089	0.00301	0.00621	-0.00631	0.00043	-0.00887	-0.01056	-0.00655	-0.00877
	1.0000	0.9823	0.9399	0.8764	0.8744	0.9914	0.8242	0.7914	0.8696	0.8262
L	-0.00231	-0.00380	-0.00050	0.00366	-0.00305	-0.00102	-0.00942	-0.01465	-0.00158	-0.00454
	0.9538	0.9242	0.9901	0.9270	0.9392	0.9795	0.8134	0.7137	0.9683	0.9094
T	-0.00897	-0.00453	0.00385	-0.00369	0.00634	-0.00399	-0.00669	-0.01562	0.00174	0.00256
	0.8222	0.9096	0.9232	0.9265	0.8739	0.9203	0.8669	0.6956	0.9653	0.9489

Source: SCANTRACK 1 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 630

	DP_HEART	RC_HEART	RDUMMY	B_THIRD	S_THIRD	BIG_3RDC	BIG_BTCS	BIG_BTC	BIG3RDCS	FHHI
AD	-0.01729	-0.04850	-0.00680	-0.03266	0.01610	-0.04151	0.00676	-0.00374	-0.04863	0.01599
	0.6649	0.2241	0.8648	0.4131	0.6867	0.2982	0.8655	0.9253	0.2229	0.6886
C_HEART	0.62481	-0.19423	-0.32458	0.08656	-0.34946	-0.03632	0.53232	0.23806	0.06763	0.02211
	0.0001	0.0001	0.0001	0.0298	0.0001	0.3628	0.0001	0.0001	0.0899	0.5796
P_HEART	-0.25808	0.05672	-0.18780	-0.02039	0.13877	0.06891	-0.44232	-0.36511	-0.42757	0.00038
	0.0001	0.1550	0.0001	0.6095	0.0005	0.0840	0.0001	0.0001	0.0001	0.9925
SV_HEART	-0.20999	0.43030	-0.06245	0.36772	0.05241	0.29139	-0.33286	-0.01976	-0.36621	-0.03844
	0.0001	0.0001	0.1174	0.0001	0.1890	0.0001	0.0001	0.6206	0.0001	0.3354
DP_HEART	1.00000	-0.27305	-0.20280	0.28523	-0.33576	0.30984	0.21825	0.42737	-0.24060	-0.20226
	0.0	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
RC_HEART	-0.27305	1.00000	-0.02561	0.24050	0.16325	0.20849	-0.20487	-0.09560	-0.09250	0.35667
	0.0001	0.0	0.5211	0.0001	0.0001	0.0001	0.0001	0.0164	0.0202	0.0001
RDUMMY	-0.20280	-0.02561	1.00000	0.10070	-0.00837	0.32250	-0.24048	0.28951	0.08521	0.20508
	0.0001	0.5211	0.0	0.0114	0.8339	0.0001	0.0001	0.0001	0.0325	0.0001
B_THIRD	0.28523	0.24050	0.10070	1.00000	-0.44438	0.69252	-0.44107	0.35492	-0.58376	-0.02945
	0.0001	0.0001	0.0114	0.0	0.0001	0.0001	0.0001	0.0001	0.0001	0.4606
S_THIRD	-0.33576	0.16325	-0.00837	-0.44438	1.00000	0.03534	-0.10153	-0.04464	0.25669	0.10925
	0.0001	0.0001	0.8339	0.0001	0.0	0.3758	0.0108	0.2633	0.0001	0.0061
BIG_3RDC	0.30984	0.20849	0.32250	0.69252	0.03534	1.00000	-0.48572	0.59381	-0.48259	0.08268
	0.0001	0.0001	0.0001	0.0001	0.3758	0.0	0.0001	0.0001	0.0001	0.0380
BIG_BTCS	0.21825	-0.20487	-0.24048	-0.44107	-0.10153	-0.48572	1.00000	0.22407	0.48825	-0.11821
	0.0001	0.0001	0.0001	0.0001	0.0108	0.0001	0.0	0.0001	0.0001	0.0030
BIG_BTC	0.42737	-0.09560	0.28951	0.35492	-0.04464	0.59381	0.22407	1.00000	-0.05296	-0.14473
	0.0001	0.0164	0.0001	0.0001	0.2633	0.0001	0.0001	0.0	0.1843	0.0003
BIG3RDCS	-0.24060	-0.09250	0.08521	-0.58376	0.25669	-0.48259	0.48825	-0.05296	1.00000	0.00467
	0.0001	0.0202	0.0325	0.0001	0.0001	0.0001	0.0001	0.1843	0.0	0.9070
FHHI	-0.20226	0.35667	0.20508	-0.02945	0.10925	0.08268	-0.11821	-0.14473	0.00467	1.00000
	0.0001	0.0001	0.0001	0.4606	0.0061	0.0380	0.0030	0.0003	0.9070	0.0

Source: SCANTRACK 2 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1410

	FV	FP	VX	VZ	VAX	VAZ	TS	CB	CS	MNG	TEMPA	TEMP
FV	1.00000	-0.25228	0.14095	0.03650	-0.11649	0.01258	-0.11548	0.11053	-0.09178	0.04771	0.06956	0.09368
	0.0	0.0001	0.0001	0.1707	0.0001	0.6368	0.0001	0.0001	0.0006	0.0733	0.0090	0.0004
FP	-0.25228	1.00000	0.01017	0.08756	0.01826	-0.01781	-0.02066	-0.05645	-0.07347	-0.05755	-0.04725	-0.07686
	0.0001	0.0	0.7027	0.0010	0.4933	0.5041	0.4383	0.0340	0.0058	0.0307	0.0761	0.0039
VX	0.14095	0.01017	1.00000	0.40830	0.42069	0.02846	-0.16733	0.08807	-0.12395	-0.10554	-0.01377	0.15437
	0.0001	0.7027	0.0	0.0001	0.0001	0.2856	0.0001	0.0009	0.0001	0.0001	0.6055	0.0001
VZ	0.03650	0.08756	0.40830	1.00000	0.25690	0.06970	-0.30549	0.08627	-0.03848	-0.12905	-0.03791	0.04913
	0.1707	0.0010	0.0001	0.0	0.0001	0.0088	0.0001	0.0012	0.1487	0.0001	0.1548	0.0651
VAX	-0.11649	0.01826	0.42069	0.25690	1.00000	0.06765	-0.08976	0.08889	-0.17986	0.12374	-0.02778	-0.03428
	0.0001	0.4933	0.0001	0.0001	0.0	0.0111	0.0007	0.0008	0.0001	0.0001	0.2972	0.1983
VAZ	0.01258	-0.01781	0.02846	0.06970	0.06765	1.00000	0.00835	0.00601	0.00619	0.01310	0.04237	0.05097
	0.6368	0.5041	0.2856	0.0088	0.0111	0.0	0.7540	0.8215	0.8164	0.6231	0.1118	0.0557
TS	-0.11548	-0.02066	-0.16733	-0.30549	-0.08976	0.00835	1.00000	-0.03536	-0.03638	-0.07703	0.03370	0.01245
	0.0001	0.4383	0.0001	0.0001	0.0007	0.7540	0.0	0.1846	0.1722	0.0038	0.2060	0.6404
CB	0.11053	-0.05645	0.08807	0.08627	0.08889	0.00601	-0.03536	1.00000	-0.02619	0.17972	-0.00473	0.02658
	0.0001	0.0340	0.0009	0.0012	0.0008	0.8215	0.1846	0.0	0.3257	0.0001	0.8592	0.3186
CS	-0.09178	-0.07347	-0.12395	-0.03848	-0.17986	0.00619	-0.03638	-0.02619	1.00000	-0.05706	0.00686	0.01071
	0.0006	0.0058	0.0001	0.1487	0.0001	0.8164	0.1722	0.3257	0.0	0.0322	0.7970	0.6878
MNG	0.04771	-0.05755	-0.10554	-0.12905	0.12374	0.01310	-0.07703	0.17972	-0.05706	1.00000	-0.01002	0.00356
	0.0733	0.0307	0.0001	0.0001	0.0001	0.6231	0.0038	0.0001	0.0322	0.0	0.7070	0.8936
TEMPA	0.06956	-0.04725	-0.01377	-0.03791	-0.02778	0.04237	0.03370	-0.00473	0.00686	-0.01002	1.00000	0.81434
	0.0090	0.0761	0.6055	0.1548	0.2972	0.1118	0.2060	0.8592	0.7970	0.7070	0.0	0.0001
TEMP	0.09368	-0.07686	0.15437	0.04913	-0.03428	0.05097	0.01245	0.02658	0.01071	0.00356	0.81434	1.00000
	0.0004	0.0039	0.0001	0.0651	0.1983	0.0557	0.6404	0.3186	0.6878	0.8936	0.0001	0.0
TIME	0.06307	-0.01827	-0.02675	-0.00421	-0.01311	0.06314	0.07875	0.13719	0.09867	0.22220	-0.08968	-0.05552
	0.0179	0.4931	0.3155	0.8745	0.6229	0.0177	0.0031	0.0001	0.0002	0.0001	0.0007	0.0371
TIMESQR	0.05729	-0.01777	-0.03112	-0.00889	-0.02239	0.04282	0.06963	0.13613	0.09005	0.22702	-0.13392	-0.09218
	0.0315	0.5049	0.2430	0.7388	0.4009	0.1080	0.0089	0.0001	0.0007	0.0001	0.0001	0.0005
POP	-0.19206	0.18984	0.26860	0.13870	0.23882	0.01054	-0.12657	0.00842	-0.05975	0.01418	-0.06464	-0.04079
	0.0001	0.0001	0.0001	0.0001	0.0001	0.6925	0.0001	0.7521	0.0249	0.5947	0.0152	0.1258
INCOME	-0.07609	0.44016	0.27144	0.11727	0.31942	0.00877	-0.15150	0.02268	-0.16730	0.02734	-0.08416	-0.16449
	0.0043	0.0001	0.0001	0.0001	0.0001	0.7423	0.0001	0.3948	0.0001	0.3050	0.0016	0.0001

Source: SCANTRACK 2 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1410

	FV	FP	VX	VZ	VAX	VAZ	TS	CB	CS	MNG	TEMPA	TEMP
COL	-0.11976	0.47076	0.16498	0.12639	0.16165	-0.02528	-0.04956	-0.08324	-0.12029	-0.00933	-0.08798	-0.15784
	0.0001	0.0001	0.0001	0.0001	0.0001	0.3429	0.0628	0.0018	0.0001	0.7263	0.0009	0.0001
WAGE	-0.03950	0.27244	-0.05225	0.07953	0.19097	-0.00058	-0.06307	0.00264	-0.08778	-0.04466	-0.04835	-0.21713
	0.1382	0.0001	0.0498	0.0028	0.0001	0.9826	0.0179	0.9211	0.0010	0.0937	0.0695	0.0001
DCOST	-0.02718	0.32232	0.14811	0.14774	0.21508	-0.01114	-0.18097	-0.06137	-0.05995	0.01857	-0.05832	-0.13820
	0.3078	0.0001	0.0001	0.0001	0.0001	0.6760	0.0001	0.0212	0.0244	0.4860	0.0285	0.0001
PLASTICS	-0.27179	-0.09134	0.03562	0.09702	-0.02617	0.02984	0.11824	-0.07117	0.17359	-0.18459	-0.00227	0.00590
	0.0001	0.0006	0.1813	0.0003	0.3261	0.2629	0.0001	0.0075	0.0001	0.0001	0.9320	0.8248
P_SYRUP	0.06398	-0.00741	-0.02498	-0.00476	-0.01362	0.05382	0.06918	0.13239	0.08849	0.21066	-0.21013	-0.17556
	0.0163	0.7809	0.3486	0.8582	0.6094	0.0433	0.0094	0.0001	0.0009	0.0001	0.0001	0.0001
P_CORN	0.08339	-0.10415	0.00057	0.00055	0.00778	0.06597	0.03998	0.01973	0.02284	0.02503	0.86613	0.70810
	0.0017	0.0001	0.9828	0.9837	0.7704	0.0132	0.1335	0.4592	0.3915	0.3476	0.0001	0.0001
PPLASTIC	-0.03258	0.04460	0.01509	-0.00165	0.00645	0.00482	-0.04143	-0.04482	-0.05580	-0.06464	-0.08928	-0.03990
	0.2215	0.0941	0.5712	0.9506	0.8089	0.8564	0.1199	0.0925	0.0362	0.0152	0.0008	0.1343
P_ALUM	0.06294	-0.04178	-0.00641	0.00897	0.01553	0.10016	0.08338	0.09055	0.08643	0.13819	0.15903	0.14484
	0.0181	0.1168	0.8098	0.7365	0.5602	0.0002	0.0017	0.0007	0.0012	0.0001	0.0001	0.0001
P_PET	0.02199	-0.06389	-0.02026	-0.00743	-0.01520	0.04892	0.05043	0.06996	0.05808	0.16320	-0.05702	-0.03187
	0.4092	0.0164	0.4472	0.7806	0.5685	0.0663	0.0583	0.0086	0.0292	0.0001	0.0323	0.2317
C	0.07093	-0.20128	-0.00079	0.00181	0.00178	0.01007	0.00808	-0.00609	0.00949	0.01711	-0.29050	-0.35054
	0.0077	0.0001	0.9764	0.9458	0.9467	0.7055	0.7619	0.8192	0.7219	0.5208	0.0001	0.0001
E	-0.00838	0.04938	0.00393	-0.00057	0.00222	0.01256	-0.01791	0.00760	-0.01035	-0.00152	-0.17334	-0.08821
	0.7531	0.0638	0.8827	0.9831	0.9335	0.6374	0.5017	0.7756	0.6977	0.9544	0.0001	0.0009
M	0.03702	-0.01581	0.00512	0.00181	0.00847	0.01007	0.00808	-0.00609	-0.00830	-0.01956	0.24424	0.20031
	0.1648	0.5530	0.8476	0.9458	0.7506	0.7055	0.7619	0.8192	0.7555	0.4631	0.0001	0.0001
J	0.07037	-0.07354	0.00512	-0.00498	0.00178	0.01007	0.00808	-0.00609	-0.00830	-0.01956	0.37473	0.28896
	0.0082	0.0057	0.8476	0.8517	0.9467	0.7055	0.7619	0.8192	0.7555	0.4631	0.0001	0.0001
L	0.05013	-0.09297	-0.00079	0.00181	0.00178	0.01007	0.00808	-0.00609	0.00949	-0.01956	0.34153	0.26640
	0.0598	0.0005	0.9764	0.9458	0.9467	0.7055	0.7619	0.8192	0.7219	0.4631	0.0001	0.0001
T	0.00257	-0.10839	-0.00079	0.00181	0.00178	0.01007	0.00808	-0.00609	0.00949	0.01711	-0.20584	-0.11711
	0.9231	0.0001	0.9764	0.9458	0.9467	0.7055	0.7619	0.8192	0.7219	0.5208	0.0001	0.0001
AD	0.04250	0.07488	-0.01783	-0.00015	-0.00462	0.04492	0.05960	0.11686	0.08310	0.15518	-0.03899	0.00838
	0.1107	0.0049	0.5035	0.9956	0.8624	0.0918	0.0252	0.0001	0.0018	0.0001	0.1433	0.7534

Source: SCANTRACK 2 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1410

	FV	FP	VX	VZ	VAX	VAZ	TS	CB	CS	MNG	TEMPA	TEMP
C_HEART	-0.06610	-0.20566	-0.03389	0.05637	-0.19095	0.01834	-0.10785	0.13089	0.17945	-0.12267	-0.00641	0.21291
	0.0130	0.0001	0.2034	0.0343	0.0001	0.4913	0.0001	0.0001	0.0001	0.0001	0.8100	0.0001
P_HEART	0.01146	0.09301	-0.21634	-0.01048	-0.21859	-0.06095	-0.03945	0.04401	0.03735	0.08669	0.04635	-0.23564
	0.6671	0.0005	0.0001	0.6941	0.0001	0.0221	0.1387	0.0985	0.1610	0.0011	0.0819	0.0001
SV_HEART	-0.06313	0.33498	-0.15267	-0.18553	0.06765	-0.06818	-0.12249	0.06254	-0.09074	0.13733	-0.07275	-0.13618
	0.0178	0.0001	0.0001	0.0001	0.0111	0.0104	0.0001	0.0189	0.0006	0.0001	0.0063	0.0001
DP_HEART	0.01009	-0.17454	-0.02370	0.11542	-0.17676	0.01442	-0.08477	0.18484	0.24299	-0.07815	-0.01287	0.20009
	0.7052	0.0001	0.3740	0.0001	0.0001	0.5886	0.0014	0.0001	0.0001	0.0033	0.6291	0.0001
RC_HEART	-0.06205	-0.10310	-0.03970	-0.30975	-0.02088	-0.00907	0.00500	0.03372	-0.12933	0.01311	0.02786	-0.07511
	0.0198	0.0001	0.1362	0.0001	0.4334	0.7336	0.8513	0.2057	0.0001	0.6228	0.2958	0.0048
RDUMMY	-0.26078	-0.01202	0.05981	0.05869	0.02037	0.02083	0.09162	-0.08819	-0.09074	-0.05171	-0.00638	0.07523
	0.0001	0.6521	0.0247	0.0275	0.4447	0.4344	0.0006	0.0009	0.0006	0.0522	0.8108	0.0047
B_THIRD	0.28493	-0.15042	0.02646	-0.30822	0.02993	0.01300	-0.07646	0.21107	-0.05664	0.10258	0.00163	-0.01601
	0.0001	0.0001	0.3208	0.0001	0.2614	0.6256	0.0041	0.0001	0.0334	0.0001	0.9514	0.5481
S_THIRD	-0.08538	0.10624	-0.06302	0.11058	0.09404	-0.03244	-0.08091	-0.02864	-0.19074	-0.01073	0.00219	-0.06198
	0.0013	0.0001	0.0179	0.0001	0.0004	0.2235	0.0024	0.2825	0.0001	0.6874	0.9345	0.0199
BIG_3RDC	0.20821	0.08737	0.28236	0.06450	0.20050	0.00369	-0.12678	0.18342	-0.10450	0.08892	-0.06728	-0.00095
	0.0001	0.0010	0.0001	0.0154	0.0001	0.8898	0.0001	0.0001	0.0001	0.0008	0.0115	0.9716
BIG_BTCS	-0.11687	-0.14683	-0.07206	0.12184	-0.24177	0.00072	0.05171	-0.04252	0.28484	-0.16050	0.00496	0.16789
	0.0001	0.0001	0.0068	0.0001	0.0001	0.9783	0.0522	0.1105	0.0001	0.0001	0.8524	0.0001
BIG_BTC	0.20387	0.06422	0.37056	0.18949	0.21587	0.00924	-0.12565	0.10428	-0.05407	0.09377	-0.06279	0.07569
	0.0001	0.0159	0.0001	0.0001	0.0001	0.7289	0.0001	0.0001	0.0424	0.0004	0.0184	0.0045
BIG3RDCS	0.02964	0.03728	-0.18051	-0.02129	0.04899	0.04785	0.12677	-0.14389	-0.24196	0.07791	-0.02604	-0.06512
	0.2660	0.1618	0.0001	0.4244	0.0659	0.0725	0.0001	0.0001	0.0001	0.0034	0.3286	0.0145
FHHI	-0.08441	-0.12541	-0.10589	-0.16987	-0.10438	-0.01006	0.10079	-0.01863	0.11384	-0.07222	-0.00256	0.01368
	0.0015	0.0001	0.0001	0.0001	0.0001	0.7058	0.0002	0.4845	0.0001	0.0067	0.9234	0.6079

Source: SCANTRACK 2 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1410

	TIME	TIMESQR	POP	INCOME	COL	WAGE	DCOST	PLASTICS	P_SYRUP	P_CORN	PPLASTIC	P_ALUM
FV	0.06307	0.05729	-0.19206	-0.07609	-0.11976	-0.03950	-0.02718	-0.27179	0.06398	0.08339	-0.03258	0.06294
	0.0179	0.0315	0.0001	0.0043	0.0001	0.1382	0.3078	0.0001	0.0163	0.0017	0.2215	0.0181
FP	-0.01827	-0.01777	0.18984	0.44016	0.47076	0.27244	0.32232	-0.09134	-0.00741	-0.10415	0.04460	-0.04178
	0.4931	0.5049	0.0001	0.0001	0.0001	0.0001	0.0001	0.0006	0.7809	0.0001	0.0941	0.1168
VX	-0.02675	-0.03112	0.26860	0.27144	0.16498	-0.05225	0.14811	0.03562	-0.02498	0.00057	0.01509	-0.00641
	0.3155	0.2430	0.0001	0.0001	0.0001	0.0498	0.0001	0.1813	0.3486	0.9828	0.5712	0.8098
VZ	-0.00421	-0.00889	0.13870	0.11727	0.12639	0.07953	0.14774	0.09702	-0.00476	0.00055	-0.00165	0.00897
	0.8745	0.7388	0.0001	0.0001	0.0001	0.0028	0.0001	0.0003	0.8582	0.9837	0.9506	0.7365
VAX	-0.01311	-0.02239	0.23882	0.31942	0.16165	0.19097	0.21508	-0.02617	-0.01362	0.00778	0.00645	0.01553
	0.6229	0.4009	0.0001	0.0001	0.0001	0.0001	0.0001	0.3261	0.6094	0.7704	0.8089	0.5602
VAZ	0.06314	0.04282	0.01054	0.00877	-0.02528	-0.00058	-0.01114	0.02984	0.05382	0.06597	0.00482	0.10016
	0.0177	0.1080	0.6925	0.7423	0.3429	0.9826	0.6760	0.2629	0.0433	0.0132	0.8564	0.0002
TS	0.07875	0.06963	-0.12657	-0.15150	-0.04956	-0.06307	-0.18097	0.11824	0.06918	0.03998	-0.04143	0.08338
	0.0031	0.0089	0.0001	0.0001	0.0628	0.0179	0.0001	0.0001	0.0094	0.1335	0.1199	0.0017
CB	0.13719	0.13613	0.00842	0.02268	-0.08324	0.00264	-0.06137	-0.07117	0.13239	0.01973	-0.04482	0.09055
	0.0001	0.0001	0.7521	0.3948	0.0018	0.9211	0.0212	0.0075	0.0001	0.4592	0.0925	0.0007
CS	0.09867	0.09005	-0.05975	-0.16730	-0.12029	-0.08778	-0.05995	0.17359	0.08849	0.02284	-0.05580	0.08643
	0.0002	0.0007	0.0249	0.0001	0.0001	0.0010	0.0244	0.0001	0.0009	0.3915	0.0362	0.0012
MNG	0.22220	0.22702	0.01418	0.02734	-0.00933	-0.04466	0.01857	-0.18459	0.21066	0.02503	-0.06464	0.13819
	0.0001	0.0001	0.5947	0.3050	0.7263	0.0937	0.4860	0.0001	0.0001	0.3476	0.0152	0.0001
TEMPA	-0.08968	-0.13392	-0.06464	-0.08416	-0.08798	-0.04835	-0.05832	-0.00227	-0.21013	0.86613	-0.08928	0.15903
	0.0007	0.0001	0.0152	0.0016	0.0009	0.0695	0.0285	0.9320	0.0001	0.0001	0.0008	0.0001
TEMP	-0.05552	-0.09218	-0.04079	-0.16449	-0.15784	-0.21713	-0.13820	0.00590	-0.17556	0.70810	-0.03990	0.14484
	0.0371	0.0005	0.1258	0.0001	0.0001	0.0001	0.0001	0.8248	0.0001	0.0001	0.1343	0.0001
TIME	1.00000	0.97030	0.01198	0.27548	0.08352	0.19219	-0.02666	0.03902	0.95449	0.11530	-0.34373	0.74606
	0.0	0.0001	0.6530	0.0001	0.0017	0.0001	0.3171	0.1430	0.0001	0.0001	0.0001	0.0001
TIMESQR	0.97030	1.00000	0.01161	0.26691	0.09676	0.19138	-0.02475	0.04480	0.95186	0.04477	-0.18980	0.57881
	0.0001	0.0	0.6630	0.0001	0.0003	0.0001	0.3530	0.0926	0.0001	0.0929	0.0001	0.0001
POP	0.01198	0.01161	1.00000	0.52632	0.40024	0.28592	0.72426	-0.03113	0.01144	0.00136	-0.00418	0.00896
	0.6530	0.6630	0.0	0.0001	0.0001	0.0001	0.0001	0.2427	0.6679	0.9594	0.8754	0.7368
INCOME	0.27548	0.26691	0.52632	1.00000	0.72113	0.56436	0.68342	-0.03888	0.26294	0.03225	-0.09516	0.20639
	0.0001	0.0001	0.0001	0.0	0.0001	0.0001	0.0001	0.1445	0.0001	0.2262	0.0003	0.0001

Source: SCANTRACK 2 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1410

	TIME	TIMESQR	POP	INCOME	COL	WAGE	DCOST	PLASTICS	P_SYRUP	P_CORN	PPLASTIC	P_ALUM
COL	0.08352	0.09676	0.40024	0.72113	1.00000	0.59646	0.63710	0.11168	0.08793	-0.01320	0.01973	0.02619
	0.0017	0.0003	0.0001	0.0001	0.0	0.0001	0.0001	0.0001	0.0009	0.6204	0.4591	0.3257
WAGE	0.19219	0.19138	0.28592	0.56436	0.59646	1.00000	0.50607	0.08981	0.18595	0.01290	-0.05544	0.13014
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0	0.0001	0.0007	0.0001	0.6285	0.0374	0.0001
DCOST	-0.02666	-0.02475	0.72426	0.68342	0.63710	0.50607	1.00000	-0.11322	-0.02479	-0.00334	0.01557	-0.02121
	0.3171	0.3530	0.0001	0.0001	0.0001	0.0001	0.0	0.0001	0.3523	0.9002	0.5592	0.4261
PLASTICS	0.03902	0.04480	-0.03113	-0.03888	0.11168	0.08981	-0.11322	1.00000	0.04343	-0.01056	0.01722	0.01275
	0.1430	0.0926	0.2427	0.1445	0.0001	0.0007	0.0001	0.0	0.1031	0.6919	0.5181	0.6324
P_SYRUP	0.95449	0.95186	0.01144	0.26294	0.08793	0.18595	-0.02479	0.04343	1.00000	-0.01865	-0.17332	0.61914
	0.0001	0.0001	0.6679	0.0001	0.0009	0.0001	0.3523	0.1031	0.0	0.4840	0.0001	0.0001
P_CORN	0.11530	0.04477	0.00136	0.03225	-0.01320	0.01290	-0.00334	-0.01056	-0.01865	1.00000	-0.24502	0.35273
	0.0001	0.0929	0.9594	0.2262	0.6204	0.6285	0.9002	0.6919	0.4840	0.0	0.0001	0.0001
PPLASTIC	-0.34373	-0.18980	-0.00418	-0.09516	0.01973	-0.05544	0.01557	0.01722	-0.17332	-0.24502	1.00000	-0.60967
	0.0001	0.0001	0.8754	0.0003	0.4591	0.0374	0.5592	0.5181	0.0001	0.0001	0.0	0.0001
P_ALUM	0.74606	0.57881	0.00896	0.20639	0.02619	0.13014	-0.02121	0.01275	0.61914	0.35273	-0.60967	1.00000
	0.0001	0.0001	0.7368	0.0001	0.3257	0.0001	0.4261	0.6324	0.0001	0.0001	0.0001	0.0
P_PET	0.55859	0.51192	0.00670	0.15367	0.03553	0.10539	-0.01675	0.00414	0.43397	0.18129	-0.58611	0.49982
	0.0001	0.0001	0.8017	0.0001	0.1824	0.0001	0.5298	0.8767	0.0001	0.0001	0.0001	0.0001
C	0.09263	0.06701	0.00111	0.02547	0.00606	0.01652	-0.00215	-0.00665	0.20348	-0.10356	-0.16428	0.08471
	0.0005	0.0118	0.9667	0.3393	0.8200	0.5353	0.9357	0.8031	0.0001	0.0001	0.0001	0.0015
E	0.00642	0.06248	0.00009	0.00176	0.01379	0.00709	-0.00024	0.00840	0.05654	-0.20278	0.28180	-0.24180
	0.8097	0.0190	0.9974	0.9474	0.6049	0.7903	0.9929	0.7525	0.0338	0.0001	0.0001	0.0001
M	-0.12351	-0.13595	-0.00148	-0.03371	-0.01789	-0.02564	0.00250	-0.00665	-0.10490	0.12967	0.07419	-0.00362
	0.0001	0.0001	0.9557	0.2059	0.5021	0.3360	0.9252	0.8031	0.0001	0.0001	0.0053	0.8919
J	-0.09263	-0.11276	-0.00112	-0.02499	-0.01816	-0.02133	0.00198	-0.00665	-0.10095	0.28371	0.03083	0.07112
	0.0005	0.0001	0.9664	0.3484	0.4957	0.4234	0.9409	0.8031	0.0001	0.0001	0.2473	0.0076
L	-0.03088	-0.06057	-0.00038	-0.00859	-0.01204	-0.00980	0.00067	-0.00665	-0.10095	0.44064	-0.12815	0.02355
	0.2466	0.0229	0.9887	0.7471	0.6515	0.7130	0.9800	0.8031	0.0001	0.0001	0.0001	0.3768
T	0.06176	0.03222	0.00074	0.01673	0.00136	0.00977	-0.00144	-0.00665	-0.08514	-0.08197	-0.27990	0.19342
	0.0204	0.2267	0.9779	0.5303	0.9593	0.7139	0.9569	0.8031	0.0014	0.0021	0.0001	0.0001
AD	0.74317	0.63126	0.00896	0.20561	0.02828	0.13713	-0.02522	0.01277	0.69499	0.10196	-0.59428	0.68317
	0.0001	0.0001	0.7366	0.0001	0.2886	0.0001	0.3439	0.6319	0.0001	0.0001	0.0001	0.0001

Source: SCANTRACK 2 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1410

	TIME	TIMESQR	POP	INCOME	COL	WAGE	DCOST	PLASTICS	P_SYRUP	P_CORN	PPLASTIC	P_ALUM
C_HEART	0.00000	0.00000	-0.07832	-0.39830	-0.40681	-0.24114	-0.29845	0.02120	0.00000	0.00000	0.00000	0.00000
	1.0000	1.0000	0.0033	0.0001	0.0001	0.0001	0.0001	0.4263	1.0000	1.0000	1.0000	1.0000
P_HEART	0.00000	0.00000	-0.18156	-0.08421	-0.00271	0.09467	0.06389	-0.17459	0.00000	0.00000	0.00000	0.00000
	1.0000	1.0000	0.0001	0.0016	0.9190	0.0004	0.0164	0.0001	1.0000	1.0000	1.0000	1.0000
SV_HEART	0.00000	0.00000	0.25442	0.36873	0.30817	0.19734	0.40708	-0.48355	0.00000	0.00000	0.00000	0.00000
	1.0000	1.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	1.0000	1.0000	1.0000	1.0000
DP_HEART	0.00000	0.00000	-0.02666	-0.30938	-0.32227	-0.21148	-0.22663	-0.09364	0.00000	0.00000	0.00000	0.00000
	1.0000	1.0000	0.3170	0.0001	0.0001	0.0001	0.0001	0.0004	1.0000	1.0000	1.0000	1.0000
RC_HEART	0.00000	0.00000	-0.01513	-0.01312	-0.07002	-0.23238	-0.12229	-0.17965	0.00000	0.00000	0.00000	0.00000
	1.0000	1.0000	0.5703	0.6225	0.0085	0.0001	0.0001	0.0001	1.0000	1.0000	1.0000	1.0000
RDUMMY	0.00000	0.00000	0.31138	0.15900	0.01049	0.05176	0.15656	0.28495	0.00000	0.00000	0.00000	0.00000
	1.0000	1.0000	0.0001	0.0001	0.6938	0.0520	0.0001	0.0001	1.0000	1.0000	1.0000	1.0000
B_THIRD	0.00000	0.00000	-0.07618	0.05735	-0.17857	-0.00298	-0.14450	-0.25005	0.00000	0.00000	0.00000	0.00000
	1.0000	1.0000	0.0042	0.0313	0.0001	0.9111	0.0001	0.0001	1.0000	1.0000	1.0000	1.0000
S_THIRD	0.00000	0.00000	0.05741	0.15987	0.09320	0.19974	0.24428	-0.28389	0.00000	0.00000	0.00000	0.00000
	1.0000	1.0000	0.0311	0.0001	0.0005	0.0001	0.0001	0.0001	1.0000	1.0000	1.0000	1.0000
BIG_3RDC	0.02421	0.02266	0.76283	0.36205	0.27878	0.22821	0.57940	-0.37394	0.02302	0.00311	-0.01109	0.01802
	0.3636	0.3952	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.3876	0.9070	0.6774	0.4989
BIG_BTCS	0.02839	0.02571	-0.14272	-0.37978	-0.31362	-0.21569	-0.27350	0.24684	0.02649	0.00491	-0.01656	0.02280
	0.2867	0.3346	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.3202	0.8538	0.5345	0.3922
BIG_BTC	0.05715	0.05340	0.80676	0.33665	0.25245	0.18146	0.60505	-0.28721	0.05430	0.00747	-0.02650	0.04270
	0.0319	0.0450	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0415	0.7793	0.3200	0.1090
BIG3RDCS	0.00266	0.00272	0.08903	0.10227	0.02374	0.20411	0.00471	-0.08227	0.00267	-0.00001	-0.00023	0.00152
	0.9205	0.9186	0.0008	0.0001	0.3731	0.0001	0.8598	0.0020	0.9203	0.9998	0.9930	0.9546
FHHI	0.00000	0.00000	-0.08898	-0.05126	-0.12948	-0.14696	-0.02947	0.07829	0.00000	0.00000	0.00000	0.00000
	1.0000	1.0000	0.0008	0.0543	0.0001	0.0001	0.2687	0.0033	1.0000	1.0000	1.0000	1.0000

Source: SCANTRACK 2 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1410

	P_PET	C	E	M	J	L	T	AD	C_HEART	P_HEART	SV_HEART	DP_HEART
FV	0.02199	0.07093	-0.00838	0.03702	0.07037	0.05013	0.00257	0.04250	-0.06610	0.01146	-0.06313	0.01009
	0.4092	0.0077	0.7531	0.1648	0.0082	0.0598	0.9231	0.1107	0.0130	0.6671	0.0178	0.7052
FP	-0.06389	-0.20128	0.04938	-0.01581	-0.07354	-0.09297	-0.10839	0.07488	-0.20566	0.09301	0.33498	-0.17454
	0.0164	0.0001	0.0638	0.5530	0.0057	0.0005	0.0001	0.0049	0.0001	0.0005	0.0001	0.0001
VX	-0.02026	-0.00079	0.00393	0.00512	0.00512	-0.00079	-0.00079	-0.01783	-0.03389	-0.21634	-0.15267	-0.02370
	0.4472	0.9764	0.8827	0.8476	0.8476	0.9764	0.9764	0.5035	0.2034	0.0001	0.0001	0.3740
VZ	-0.00743	0.00181	-0.00057	0.00181	-0.00498	0.00181	0.00181	-0.00015	0.05637	-0.01048	-0.18553	0.11542
	0.7806	0.9458	0.9831	0.9458	0.8517	0.9458	0.9458	0.9956	0.0343	0.6941	0.0001	0.0001
VAX	-0.01520	0.00178	0.00222	0.00847	0.00178	0.00178	0.00178	-0.00462	-0.19095	-0.21859	0.06765	-0.17676
	0.5685	0.9467	0.9335	0.7506	0.9467	0.9467	0.9467	0.8624	0.0001	0.0001	0.0111	0.0001
VAZ	0.04892	0.01007	0.01256	0.01007	0.01007	0.01007	0.01007	0.04492	0.01834	-0.06095	-0.06818	0.01442
	0.0663	0.7055	0.6374	0.7055	0.7055	0.7055	0.7055	0.0918	0.4913	0.0221	0.0104	0.5886
TS	0.05043	0.00808	-0.01791	0.00808	0.00808	0.00808	0.00808	0.05960	-0.10785	-0.03945	-0.12249	-0.08477
	0.0583	0.7619	0.5017	0.7619	0.7619	0.7619	0.7619	0.0252	0.0001	0.1387	0.0001	0.0014
CB	0.06996	-0.00609	0.00760	-0.00609	-0.00609	-0.00609	-0.00609	0.11686	0.13089	0.04401	0.06254	0.18484
	0.0086	0.8192	0.7756	0.8192	0.8192	0.8192	0.8192	0.0001	0.0001	0.0985	0.0189	0.0001
CS	0.05808	0.00949	-0.01035	-0.00830	-0.00830	0.00949	0.00949	0.08310	0.17945	0.03735	-0.09074	0.24299
	0.0292	0.7219	0.6977	0.7555	0.7555	0.7219	0.7219	0.0018	0.0001	0.1610	0.0006	0.0001
MNG	0.16320	0.01711	-0.00152	-0.01956	-0.01956	-0.01956	0.01711	0.15518	-0.12267	0.08669	0.13733	-0.07815
	0.0001	0.5208	0.9544	0.4631	0.4631	0.4631	0.5208	0.0001	0.0001	0.0011	0.0001	0.0033
TEMPA	-0.05702	-0.29050	-0.17334	0.24424	0.37473	0.34153	-0.20584	-0.03899	-0.00641	0.04635	-0.07275	-0.01287
	0.0323	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.1433	0.8100	0.0819	0.0063	0.6291
TEMP	-0.03187	-0.35054	-0.08821	0.20031	0.28896	0.26640	-0.11711	0.00838	0.21291	-0.23564	-0.13618	0.20009
	0.2317	0.0001	0.0009	0.0001	0.0001	0.0001	0.0001	0.7534	0.0001	0.0001	0.0001	0.0001
TIME	0.55859	0.09263	0.00642	-0.12351	-0.09263	-0.03088	0.06176	0.74317	0.00000	0.00000	0.00000	0.00000
	0.0001	0.0005	0.8097	0.0001	0.0005	0.2466	0.0204	0.0001	1.0000	1.0000	1.0000	1.0000
TIMESQR	0.51192	0.06701	0.06248	-0.13595	-0.11276	-0.06057	0.03222	0.63126	0.00000	0.00000	0.00000	0.00000
	0.0001	0.0118	0.0190	0.0001	0.0001	0.0229	0.2267	0.0001	1.0000	1.0000	1.0000	1.0000
POP	0.00670	0.00111	0.00009	-0.00148	-0.00112	-0.00038	0.00074	0.00896	-0.07832	-0.18156	0.25442	-0.02666
	0.8017	0.9667	0.9974	0.9557	0.9664	0.9887	0.9779	0.7366	0.0033	0.0001	0.0001	0.3170
INCOME	0.15367	0.02547	0.00176	-0.03371	-0.02499	-0.00859	0.01673	0.20561	-0.39830	-0.08421	0.36873	-0.30938
	0.0001	0.3393	0.9474	0.2059	0.3484	0.7471	0.5303	0.0001	0.0001	0.0016	0.0001	0.0001

Source: SCANTRACK 2 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1410

	P_PET	C	E	M	J	L	T	AD	C_HEART	P_HEART	SV_HEART	DP_HEART
COL	0.03553	0.00606	0.01379	-0.01789	-0.01816	-0.01204	0.00136	0.02828	-0.40681	-0.00271	0.30817	-0.32227
	0.1824	0.8200	0.6049	0.5021	0.4957	0.6515	0.9593	0.2886	0.0001	0.9190	0.0001	0.0001
WAGE	0.10539	0.01652	0.00709	-0.02564	-0.02133	-0.00980	0.00977	0.13713	-0.24114	0.09467	0.19734	-0.21148
	0.0001	0.5353	0.7903	0.3360	0.4234	0.7130	0.7139	0.0001	0.0001	0.0004	0.0001	0.0001
DCOST	-0.01675	-0.00215	-0.00024	0.00250	0.00198	0.00067	-0.00144	-0.02522	-0.29845	0.06389	0.40708	-0.22663
	0.5298	0.9357	0.9929	0.9252	0.9409	0.9800	0.9569	0.3439	0.0001	0.0164	0.0001	0.0001
PLASTICS	0.00414	-0.00665	0.00840	-0.00665	-0.00665	-0.00665	-0.00665	0.01277	0.02120	-0.17459	-0.48355	-0.09364
	0.8767	0.8031	0.7525	0.8031	0.8031	0.8031	0.8031	0.6319	0.4263	0.0001	0.0001	0.0004
P_SYRUP	0.43397	0.20348	0.05654	-0.10490	-0.10095	-0.10095	-0.08514	0.69499	0.00000	0.00000	0.00000	0.00000
	0.0001	0.0001	0.0338	0.0001	0.0001	0.0001	0.0014	0.0001	1.0000	1.0000	1.0000	1.0000
P_CORN	0.18129	-0.10356	-0.20278	0.12967	0.28371	0.44064	-0.08197	0.10196	0.00000	0.00000	0.00000	0.00000
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0021	0.0001	1.0000	1.0000	1.0000	1.0000
PPLASTIC	-0.58611	-0.16428	0.28180	0.07419	0.03083	-0.12815	-0.27990	-0.59428	0.00000	0.00000	0.00000	0.00000
	0.0001	0.0001	0.0001	0.0053	0.2473	0.0001	0.0001	0.0001	1.0000	1.0000	1.0000	1.0000
P_ALUM	0.49982	0.08471	-0.24180	-0.00362	0.07112	0.02355	0.19342	0.68317	0.00000	0.00000	0.00000	0.00000
	0.0001	0.0015	0.0001	0.8919	0.0076	0.3768	0.0001	0.0001	1.0000	1.0000	1.0000	1.0000
P_PET	1.00000	0.14514	-0.21712	-0.08138	-0.12542	0.00419	0.25588	0.55469	0.00000	0.00000	0.00000	0.00000
	0.0	0.0001	0.0001	0.0022	0.0001	0.8750	0.0001	0.0001	1.0000	1.0000	1.0000	1.0000
C	0.14514	1.00000	-0.08909	-0.07143	-0.07143	-0.07143	-0.07143	-0.02846	0.00000	0.00000	0.00000	0.00000
	0.0001	0.0	0.0008	0.0073	0.0073	0.0073	0.0073	0.2855	1.0000	1.0000	1.0000	1.0000
E	-0.21712	-0.08909	1.00000	-0.08909	-0.08909	-0.08909	-0.08909	0.01138	0.00000	0.00000	0.00000	0.00000
	0.0001	0.0008	0.0	0.0008	0.0008	0.0008	0.0008	0.6694	1.0000	1.0000	1.0000	1.0000
M	-0.08138	-0.07143	-0.08909	1.00000	-0.07143	-0.07143	-0.07143	-0.02846	0.00000	0.00000	0.00000	0.00000
	0.0022	0.0073	0.0008	0.0	0.0073	0.0073	0.0073	0.2855	1.0000	1.0000	1.0000	1.0000
J	-0.12542	-0.07143	-0.08909	-0.07143	1.00000	-0.07143	-0.07143	-0.02846	0.00000	0.00000	0.00000	0.00000
	0.0001	0.0073	0.0008	0.0073	0.0	0.0073	0.0073	0.2855	1.0000	1.0000	1.0000	1.0000
L	0.00419	-0.07143	-0.08909	-0.07143	-0.07143	1.00000	-0.07143	-0.02846	0.00000	0.00000	0.00000	0.00000
	0.8750	0.0073	0.0008	0.0073	0.0073	0.0	0.0073	0.2855	1.0000	1.0000	1.0000	1.0000
T	0.25588	-0.07143	-0.08909	-0.07143	-0.07143	-0.07143	1.00000	-0.02846	0.00000	0.00000	0.00000	0.00000
	0.0001	0.0073	0.0008	0.0073	0.0073	0.0073	0.0	0.2855	1.0000	1.0000	1.0000	1.0000
AD	0.55469	-0.02846	0.01138	-0.02846	-0.02846	-0.02846	-0.02846	1.00000	0.00000	0.00000	0.00000	0.00000
	0.0001	0.2855	0.6694	0.2855	0.2855	0.2855	0.2855	0.0	1.0000	1.0000	1.0000	1.0000

Source: SCANTRACK 2 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1410

	P_PET	C	E	M	J	L	T	AD	C_HEART	P_HEART	SV_HEART	DP_HEART
C_HEART	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	1.00000 0.0	-0.30093 0.0001	-0.26901 0.0001	0.78606 0.0001
P_HEART	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	-0.30093 0.0001	1.00000 0.0	0.10756 0.0001	-0.23655 0.0001
SV_HEART	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	-0.26901 0.0001	0.10756 0.0001	1.00000 0.0	-0.21146 0.0001
DP_HEART	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.78606 0.0001	-0.23655 0.0001	-0.21146 0.0001	1.00000 0.0
RC_HEART	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	-0.16094 0.0001	0.00208 0.9377	0.18476 0.0001	-0.17023 0.0001
RDUMMY	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	-0.01359 0.6102	-0.11712 0.0001	-0.18687 0.0001	0.08971 0.0007
B_THIRD	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.18284 0.0001	0.09519 0.0003	0.13524 0.0001	0.28158 0.0001
S_THIRD	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	-0.12798 0.0001	0.05117 0.0547	0.17084 0.0001	-0.05762 0.0305
BIG_3RDC	0.01379 0.6048	-0.00110 0.9670	0.00206 0.9384	-0.00110 0.9670	-0.00110 0.9670	-0.00110 0.9670	-0.00110 0.9670	0.02473 0.3534	0.03082 0.2475	-0.09156 0.0006	0.36083 0.0001	0.15429 0.0001
BIG_BTCS	0.01839 0.4902	-0.00086 0.9741	0.00162 0.9516	-0.00086 0.9741	-0.00086 0.9741	-0.00086 0.9741	-0.00086 0.9741	0.03162 0.2355	0.78620 0.0001	-0.19275 0.0001	-0.39401 0.0001	0.54894 0.0001
BIG_BTC	0.03277 0.2188	-0.00256 0.9235	0.00479 0.8574	-0.00256 0.9235	-0.00256 0.9235	-0.00256 0.9235	-0.00256 0.9235	0.05862 0.0277	0.13779 0.0001	-0.19266 0.0001	0.21252 0.0001	0.19656 0.0001
BIG3RDCS	0.00090 0.9730	-0.00024 0.9928	0.00045 0.9866	-0.00024 0.9928	-0.00024 0.9928	-0.00024 0.9928	-0.00024 0.9928	0.00199 0.9405	0.11740 0.0001	-0.05550 0.0372	-0.20637 0.0001	0.02900 0.2765
FHHI	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	0.00000 1.0000	-0.01730 0.5163	-0.00420 0.8747	-0.06151 0.0209	-0.06773 0.0110

Source: SCANTRACK 2 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1410

	RC_HEART	RDUMMY	B_THIRD	S_THIRD	BIG_3RDC	BIG_BTCS	BIG_BTC	BIG3RDCS	FHHI
FV	-0.06205	-0.26078	0.28493	-0.08538	0.20821	-0.11687	0.20387	0.02964	-0.08441
	0.0198	0.0001	0.0001	0.0013	0.0001	0.0001	0.0001	0.2660	0.0015
FP	-0.10310	-0.01202	-0.15042	0.10624	0.08737	-0.14683	0.06422	0.03728	-0.12541
	0.0001	0.6521	0.0001	0.0001	0.0010	0.0001	0.0159	0.1618	0.0001
VX	-0.03970	0.05981	0.02646	-0.06302	0.28236	-0.07206	0.37056	-0.18051	-0.10589
	0.1362	0.0247	0.3208	0.0179	0.0001	0.0068	0.0001	0.0001	0.0001
VZ	-0.30975	0.05869	-0.30822	0.11058	0.06450	0.12184	0.18949	-0.02129	-0.16987
	0.0001	0.0275	0.0001	0.0001	0.0154	0.0001	0.0001	0.4244	0.0001
VAX	-0.02088	0.02037	0.02993	0.09404	0.20050	-0.24177	0.21587	0.04899	-0.10438
	0.4334	0.4447	0.2614	0.0004	0.0001	0.0001	0.0001	0.0659	0.0001
VAZ	-0.00907	0.02083	0.01300	-0.03244	0.00369	0.00072	0.00924	0.04785	-0.01006
	0.7336	0.4344	0.6256	0.2235	0.8898	0.9783	0.7289	0.0725	0.7058
TS	0.00500	0.09162	-0.07646	-0.08091	-0.12678	0.05171	-0.12565	0.12677	0.10079
	0.8513	0.0006	0.0041	0.0024	0.0001	0.0522	0.0001	0.0001	0.0002
CB	0.03372	-0.08819	0.21107	-0.02864	0.18342	-0.04252	0.10428	-0.14389	-0.01863
	0.2057	0.0009	0.0001	0.2825	0.0001	0.1105	0.0001	0.0001	0.4845
CS	-0.12933	-0.09074	-0.05664	-0.19074	-0.10450	0.28484	-0.05407	-0.24196	0.11384
	0.0001	0.0006	0.0334	0.0001	0.0001	0.0001	0.0424	0.0001	0.0001
MNG	0.01311	-0.05171	0.10258	-0.01073	0.08892	-0.16050	0.09377	0.07791	-0.07222
	0.6228	0.0522	0.0001	0.6874	0.0008	0.0001	0.0004	0.0034	0.0067
TEMPA	0.02786	-0.00638	0.00163	0.00219	-0.06728	0.00496	-0.06279	-0.02604	-0.00256
	0.2958	0.8108	0.9514	0.9345	0.0115	0.8524	0.0184	0.3286	0.9234
TEMP	-0.07511	0.07523	-0.01601	-0.06198	-0.00095	0.16789	0.07569	-0.06512	0.01368
	0.0048	0.0047	0.5481	0.0199	0.9716	0.0001	0.0045	0.0145	0.6079
TIME	0.00000	0.00000	0.00000	0.00000	0.02421	0.02839	0.05715	0.00266	0.00000
	1.0000	1.0000	1.0000	1.0000	0.3636	0.2867	0.0319	0.9205	1.0000
TIMESQR	0.00000	0.00000	0.00000	0.00000	0.02266	0.02571	0.05340	0.00272	0.00000
	1.0000	1.0000	1.0000	1.0000	0.3952	0.3346	0.0450	0.9186	1.0000
POP	-0.01513	0.31138	-0.07618	0.05741	0.76283	-0.14272	0.80676	0.08903	-0.08898
	0.5703	0.0001	0.0042	0.0311	0.0001	0.0001	0.0001	0.0008	0.0008
INCOME	-0.01312	0.15900	0.05735	0.15987	0.36205	-0.37978	0.33665	0.10227	-0.05126
	0.6225	0.0001	0.0313	0.0001	0.0001	0.0001	0.0001	0.0001	0.0543

Source: SCANTRACK 2 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1410

	RC_HEART	RDUMMY	B_THIRD	S_THIRD	BIG_3RDC	BIG_BTCS	BIG_BTC	BIG3RDCS	FHHI
COL	-0.07002	0.01049	-0.17857	0.09320	0.27878	-0.31362	0.25245	0.02374	-0.12948
	0.0085	0.6938	0.0001	0.0005	0.0001	0.0001	0.0001	0.3731	0.0001
WAGE	-0.23238	0.05176	-0.00298	0.19974	0.22821	-0.21569	0.18146	0.20411	-0.14696
	0.0001	0.0520	0.9111	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
DCOST	-0.12229	0.15656	-0.14450	0.24428	0.57940	-0.27350	0.60505	0.00471	-0.02947
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.8598	0.2687
PLASTICS	-0.17965	0.28495	-0.25005	-0.28389	-0.37394	0.24684	-0.28721	-0.08227	0.07829
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0020	0.0033
P_SYRUP	0.00000	0.00000	0.00000	0.00000	0.02302	0.02649	0.05430	0.00267	0.00000
	1.0000	1.0000	1.0000	1.0000	0.3876	0.3202	0.0415	0.9203	1.0000
P_CORN	0.00000	0.00000	0.00000	0.00000	0.00311	0.00491	0.00747	-0.00001	0.00000
	1.0000	1.0000	1.0000	1.0000	0.9070	0.8538	0.7793	0.9998	1.0000
PPLASTIC	0.00000	0.00000	0.00000	0.00000	-0.01109	-0.01656	-0.02650	-0.00023	0.00000
	1.0000	1.0000	1.0000	1.0000	0.6774	0.5345	0.3200	0.9930	1.0000
P_ALUM	0.00000	0.00000	0.00000	0.00000	0.01802	0.02280	0.04270	0.00152	0.00000
	1.0000	1.0000	1.0000	1.0000	0.4989	0.3922	0.1090	0.9546	1.0000
P_PET	0.00000	0.00000	0.00000	0.00000	0.01379	0.01839	0.03277	0.00090	0.00000
	1.0000	1.0000	1.0000	1.0000	0.6048	0.4902	0.2188	0.9730	1.0000
C	0.00000	0.00000	0.00000	0.00000	-0.00110	-0.00086	-0.00256	-0.00024	0.00000
	1.0000	1.0000	1.0000	1.0000	0.9670	0.9741	0.9235	0.9928	1.0000
E	0.00000	0.00000	0.00000	0.00000	0.00206	0.00162	0.00479	0.00045	0.00000
	1.0000	1.0000	1.0000	1.0000	0.9384	0.9516	0.8574	0.9866	1.0000
M	0.00000	0.00000	0.00000	0.00000	-0.00110	-0.00086	-0.00256	-0.00024	0.00000
	1.0000	1.0000	1.0000	1.0000	0.9670	0.9741	0.9235	0.9928	1.0000
J	0.00000	0.00000	0.00000	0.00000	-0.00110	-0.00086	-0.00256	-0.00024	0.00000
	1.0000	1.0000	1.0000	1.0000	0.9670	0.9741	0.9235	0.9928	1.0000
L	0.00000	0.00000	0.00000	0.00000	-0.00110	-0.00086	-0.00256	-0.00024	0.00000
	1.0000	1.0000	1.0000	1.0000	0.9670	0.9741	0.9235	0.9928	1.0000
T	0.00000	0.00000	0.00000	0.00000	-0.00110	-0.00086	-0.00256	-0.00024	0.00000
	1.0000	1.0000	1.0000	1.0000	0.9670	0.9741	0.9235	0.9928	1.0000
AD	0.00000	0.00000	0.00000	0.00000	0.02473	0.03162	0.05862	0.00199	0.00000
	1.0000	1.0000	1.0000	1.0000	0.3534	0.2355	0.0277	0.9405	1.0000

Source: SCANTRACK 2 - U.S. - ALL CITIES
Correlation Analysis
Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1410

	RC_HEART	RDUMMY	B_THIRD	S_THIRD	BIG_3RDC	BIG_BTCS	BIG_BTC	BIG3RDCS	FHHI
C_HEART	-0.16094	-0.01359	0.18284	-0.12798	0.03082	0.78620	0.13779	0.11740	-0.01730
	0.0001	0.6102	0.0001	0.0001	0.2475	0.0001	0.0001	0.0001	0.5163
P_HEART	0.00208	-0.11712	0.09519	0.05117	-0.09156	-0.19275	-0.19266	-0.05550	-0.00420
	0.9377	0.0001	0.0003	0.0547	0.0006	0.0001	0.0001	0.0372	0.8747
SV_HEART	0.18476	-0.18687	0.13524	0.17084	0.36083	-0.39401	0.21252	-0.20637	-0.06151
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0209
DP_HEART	-0.17023	0.08971	0.28158	-0.05762	0.15429	0.54894	0.19656	0.02900	-0.06773
	0.0001	0.0007	0.0001	0.0305	0.0001	0.0001	0.0001	0.2765	0.0110
RC_HEART	1.00000	-0.12537	0.15404	0.05839	0.09335	-0.30805	-0.05841	-0.19691	0.23209
	0.0	0.0001	0.0001	0.0283	0.0004	0.0001	0.0283	0.0001	0.0001
RDUMMY	-0.12537	1.00000	-0.19072	0.17084	-0.00340	-0.01729	0.03370	0.18654	0.08252
	0.0001	0.0	0.0001	0.0001	0.8985	0.5165	0.2060	0.0001	0.0019
B_THIRD	0.15404	-0.19072	1.00000	-0.26132	0.24483	-0.02407	0.12178	0.14228	-0.25529
	0.0001	0.0001	0.0	0.0001	0.0001	0.3664	0.0001	0.0001	0.0001
S_THIRD	0.05839	0.17084	-0.26132	1.00000	0.03987	-0.19630	0.01916	0.01122	0.36119
	0.0283	0.0001	0.0001	0.0	0.1346	0.0001	0.4722	0.6737	0.0001
BIG_3RDC	0.09335	-0.00340	0.24483	0.03987	1.00000	-0.24488	0.91503	0.08107	-0.09035
	0.0004	0.8985	0.0001	0.1346	0.0	0.0001	0.0001	0.0023	0.0007
BIG_BTCS	-0.30805	-0.01729	-0.02407	-0.19630	-0.24488	1.00000	0.00455	0.16573	0.00374
	0.0001	0.5165	0.3664	0.0001	0.0001	0.0	0.8644	0.0001	0.8884
BIG_BTC	-0.05841	0.03370	0.12178	0.01916	0.91503	0.00455	1.00000	0.09754	-0.13911
	0.0283	0.2060	0.0001	0.4722	0.0001	0.8644	0.0	0.0002	0.0001
BIG3RDCS	-0.19691	0.18654	0.14228	0.01122	0.08107	0.16573	0.09754	1.00000	-0.15056
	0.0001	0.0001	0.0001	0.6737	0.0023	0.0001	0.0002	0.0	0.0001
FHHI	0.23209	0.08252	-0.25529	0.36119	-0.09035	0.00374	-0.13911	-0.15056	1.00000
	0.0001	0.0019	0.0001	0.0001	0.0007	0.8884	0.0001	0.0001	0.0

Appendix F

Means, Extremes, and Variation in Regression Variables

Source: NEGI - U.S. - ALL CITIES

Correlation Analysis

47 'VAR' Variables: FV FP VX VZ VAX VAZ TB TS CB CS MNG FIX TEMPA TEMP TIME TIMESQR POP INCOME COL WAGE DCOST NCOKE PLASTICS P_SYRUP P_CORN PPLASTIC P_ALUM P_PET C M J L T AD C_HEART P_HEART SV_HEART DP_HEART RC_HEART RDUMMY B_THIRD S_THIRD BIG_3RDC BIG_BTCS BIG_BTC BIG3RDCS FHHI

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
FV	1122	2.793153	0.772789	3133.917403	1.284521	5.654161
FP	1122	2.289974	0.252173	2569.350615	1.682481	2.978057
VX	1122	0.074866	0.263293	84.000000	0	1.000000
VZ	1122	0.366310	0.482010	411.000000	0	1.000000
VAX	1122	0.142602	0.349823	160.000000	0	1.000000
VAZ	1122	0.391266	0.488251	439.000000	0	1.000000
TB	1122	0.035651	0.185500	40.000000	0	1.000000
TS	1122	0.019608	0.138710	22.000000	0	1.000000
CB	1122	0.063280	0.243574	71.000000	0	1.000000
CS	1122	0.062389	0.241968	70.000000	0	1.000000
MNG	1122	0.369875	0.482986	415.000000	0	1.000000
FIX	1122	0.024955	0.156059	28.000000	0	1.000000
TEMPA	1122	12.476248	11.632574	13998	0	37.800000
TEMP	1122	65.918048	17.325682	73960	15.600000	106.450000
TIME	1122	15.692513	8.590128	17607	1.000000	30.000000
TIMESQR	1122	319.979501	276.216079	359017	1.000000	900.000000
POP	1122	38.327408	37.097088	43003	9.368140	209.845940
INCOME	1122	10.279608	1.515828	11534	6.805233	15.526252
COL	1122	100.727367	5.325687	113016	89.074421	114.215833
WAGE	1122	20.802146	3.267519	23340	12.964082	30.065208
DCOST	1122	1.115922	0.375119	1252.064559	0.666594	2.815904
NCOKE	1122	0.067736	0.251405	76.000000	0	1.000000
PLASTICS	1122	23.224029	9.412295	26057	5.700000	43.200000
P_SYRUP	1122	90.717291	5.651923	101785	82.100000	100.000000
P_CORN	1122	119.012210	16.097130	133532	96.700000	150.500000
PPLASTIC	1122	100.805437	2.321231	113104	93.700000	103.400000
P_ALUM	1122	100.205258	4.389349	112430	94.100000	106.400000
P_PET	1122	93.237611	8.581617	104613	81.200000	110.100000
C	1122	0.166667	0.372844	187.000000	0	1.000000
M	1122	0.166667	0.372844	187.000000	0	1.000000
J	1122	0.166667	0.372844	187.000000	0	1.000000
L	1122	0.166667	0.372844	187.000000	0	1.000000
T	1122	0.166667	0.372844	187.000000	0	1.000000
AD	1122	2.780329	0.721022	3119.529438	1.786321	3.648742
C_HEART	1122	0.203209	0.402566	228.000000	0	1.000000
P_HEART	1122	0.288770	0.453393	324.000000	0	1.000000
SV_HEART	1122	0.315508	0.464925	354.000000	0	1.000000
DP_HEART	1122	0.106952	0.309190	120.000000	0	1.000000
RC_HEART	1122	0.390374	0.488052	438.000000	0	1.000000
RDUMMY	1122	0.335116	0.472241	376.000000	0	1.000000
B_THIRD	1122	0.294118	0.455848	330.000000	0	1.000000
S_THIRD	1122	0.737968	0.439936	828.000000	0	1.000000
BIG_3RDC	1122	1640.080489	1662.197816	1840170	60.065280	8131.299840
BIG_BTCS	1122	0.485886	0.075078	545.163959	0.344818	0.697714
BIG_BTC	1122	5451.243188	3363.114097	6116295	817.000320	17386
BIG3RDCS	1122	0.773315	0.182885	867.659798	0.361941	1.000000
FHHI	1122	1.611987	0.776553	1808.649630	0.397690	3.651000

Source: SCANTRACK 1 - U.S. - ALL CITIES
Correlation Analysis

46 'VAR' Variables: FV FP VX VZ VAX VAZ TB TS CB CS MNG TEMPA
TEMP TIME TIMESQR POP INCOME COL WAGE DCOST PLASTICS P_SYRUP P_CORN PPLASTIC
P_ALUM P_PET C E M J L T AD C_HEART P_HEART SV_HEART
DP_HEART RC_HEART RDUMMY B_THIRD S_THIRD BIG_3RDC BIG_BTCS BIG_BTC BIG3RDCS FHHI

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
FV	630	1.065103	0.247718	671.014762	0.575143	1.947138
FP	630	1.925265	0.170692	1212.917115	1.529700	2.490760
VX	630	0.228571	0.420246	144.000000	0	1.000000
VZ	630	0.625397	0.484405	394.000000	0	1.000000
VAX	630	0.526984	0.499668	332.000000	0	1.000000
VAZ	630	0.836508	0.370108	527.000000	0	1.000000
TB	630	0.023810	0.152576	15.000000	0	1.000000
TS	630	0.042857	0.202696	27.000000	0	1.000000
CB	630	0.065079	0.246862	41.000000	0	1.000000
CS	630	0.049206	0.216470	31.000000	0	1.000000
MNG	630	0.395238	0.489290	249.000000	0	1.000000
TEMPA	630	12.675397	12.716256	7985.500000	0	44.085714
TEMP	630	65.433271	17.612505	41223	19.450000	97.753571
TIME	630	18.773016	8.349913	11827	1.000000	32.000000
TIMESQR	630	422.036508	305.511914	265883	1.000000	1024.000000
POP	630	35.133206	15.266826	22134	14.176140	78.362660
INCOME	630	13.030812	1.440804	8209.411341	9.800507	16.750388
COL	630	101.064399	8.967334	63671	89.136667	126.816339
WAGE	630	26.864414	3.891964	16925	20.913339	46.010619
DCOST	630	1.043723	0.195979	657.545491	0.718923	1.707950
PLASTICS	630	31.639167	10.232497	19933	11.092000	48.717000
P_SYRUP	630	110.578254	5.559090	69664	103.300000	121.600000
P_CORN	630	91.785238	9.402849	57825	76.600000	112.600000
PPLASTIC	630	111.372857	6.602643	70165	103.500000	122.500000
P_ALUM	630	102.343175	1.954322	64476	98.700000	107.100000
P_PET	630	55.986508	3.597516	35272	46.900000	66.900000
C	630	0.079365	0.270523	50.000000	0	1.000000
E	630	0.092063	0.289345	58.000000	0	1.000000
M	630	0.066667	0.249642	42.000000	0	1.000000
J	630	0.066667	0.249642	42.000000	0	1.000000
L	630	0.068254	0.252382	43.000000	0	1.000000
T	630	0.073016	0.260369	46.000000	0	1.000000
AD	630	3.802942	0.268183	2395.853181	3.388868	3.996709
C_HEART	630	0.257143	0.437406	162.000000	0	1.000000
P_HEART	630	0.330159	0.470644	208.000000	0	1.000000
SV_HEART	630	0.246032	0.431039	155.000000	0	1.000000
DP_HEART	630	0.119048	0.324102	75.000000	0	1.000000
RC_HEART	630	0.355556	0.479062	224.000000	0	1.000000
RDUMMY	630	0.233333	0.423289	147.000000	0	1.000000
B_THIRD	630	0.134921	0.341910	85.000000	0	1.000000
S_THIRD	630	0.795238	0.403848	501.000000	0	1.000000
BIG_3RDC	630	607.180693	466.221004	382524	94.262400	2259.388800
BIG_BTCS	630	0.492792	0.078048	310.459220	0.340259	0.682449
BIG_BTC	630	2361.630827	1146.295883	1487827	691.536000	5124.508800
BIG3RDCS	630	0.847959	0.195511	534.214167	0.429145	1.000000
FHHI	630	1.745520	0.700975	1099.677710	0.784115	3.319380

Source: SCANTRACK 2 - U.S. - ALL CITIES
Correlation Analysis

45 'VAR' Variables: FV FP VX VZ VAX VAZ TS CB CS MNG TEMPA TEMP
TIME TIMESQR POP INCOME COL WAGE DCOST PLASTICS P_SYRUP P_CORN PPLASTIC P_ALUM
P_PET C E M J L T AD C_HEART P_HEART SV_HEART DP_HEART
RC_HEART RDUMMY B_THIRD S_THIRD BIG_3RDC BIG_BTCS BIG_BTC BIG3RDCS FHHI

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
FV	1410	0.831748	0.388292	1172.764033	0.279267	3.049620
FP	1410	1.886118	0.170008	2659.426881	1.366721	2.473101
VX	1410	0.363121	0.481070	512.000000	0	1.000000
VZ	1410	0.773759	0.418545	1091.000000	0	1.000000
VAX	1410	0.763121	0.425319	1076.000000	0	1.000000
VAZ	1410	0.998582	0.037649	1408.000000	0	1.000000
TS	1410	0.046809	0.211303	66.000000	0	1.000000
CB	1410	0.024823	0.155640	35.000000	0	1.000000
CS	1410	0.026241	0.159908	37.000000	0	1.000000
MNG	1410	0.107801	0.310239	152.000000	0	1.000000
TEMPA	1410	12.447492	11.076857	17551	0	39.228571
TEMP	1410	67.466426	16.304049	95128	18.500000	107.989286
TIME	1410	15.500000	8.658512	21855	1.000000	30.000000
TIMESQR	1410	315.166667	276.630098	444385	1.000000	900.000000
POP	1410	33.539609	22.729693	47291	8.072980	141.058350
INCOME	1410	13.589641	1.785988	19161	9.720311	19.021100
COL	1410	100.797738	9.213141	142125	88.688333	127.037538
WAGE	1410	27.283635	3.987424	38470	20.592679	47.636786
DCOST	1410	1.007004	0.241536	1419.875272	0.670811	1.722960
PLASTICS	1410	29.478479	9.090068	41565	10.920000	46.486000
P_SYRUP	1410	125.126667	3.381133	176429	120.300000	131.200000
P_CORN	1410	112.946667	9.285309	159255	96.700000	130.400000
PPLASTIC	1410	119.636667	1.849887	168688	116.100000	122.500000
P_ALUM	1410	104.026667	1.967410	146678	98.700000	105.800000
P_PET	1410	68.683333	10.622778	96844	54.900000	96.800000
C	1410	0.066667	0.249532	94.000000	0	1.000000
E	1410	0.100000	0.300106	141.000000	0	1.000000
M	1410	0.066667	0.249532	94.000000	0	1.000000
J	1410	0.066667	0.249532	94.000000	0	1.000000
L	1410	0.066667	0.249532	94.000000	0	1.000000
T	1410	0.066667	0.249532	94.000000	0	1.000000
AD	1410	4.255286	0.291698	5999.953871	3.907746	4.540717
C_HEART	1410	0.191489	0.393613	270.000000	0	1.000000
P_HEART	1410	0.276596	0.447474	390.000000	0	1.000000
SV_HEART	1410	0.234043	0.423549	330.000000	0	1.000000
DP_HEART	1410	0.127660	0.333829	180.000000	0	1.000000
RC_HEART	1410	0.382979	0.486286	540.000000	0	1.000000
RDUMMY	1410	0.234043	0.423549	330.000000	0	1.000000
B_THIRD	1410	0.106383	0.308437	150.000000	0	1.000000
S_THIRD	1410	0.574468	0.494599	810.000000	0	1.000000
BIG_3RDC	1410	418.863107	531.348174	590597	5.572800	3251.301120
BIG_BTCS	1410	0.511826	0.081947	721.674541	0.381265	0.736327
BIG_BTC	1410	1807.074894	1467.847626	2547976	450.645120	10105
BIG3RDCS	1410	0.896304	0.181327	1263.789288	0.380426	1.000000
FHHI	1410	1.691366	0.633770	2384.825430	0.435000	3.117420