Explicit Evidence on an Implicit Contract

Young, Andrew and Levy, Daniel

Bar-Ilan University

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Andrew T. Young**
Department of Economics
University of Mississippi
University, MS 38677
atyoung@olemiss.edu
Tel: 662-915-5829
Fax: 662-915-6943

Daniel Levy
Department of Economics
Bar-Ilan University
Ramat Gan 52900, ISRAEL
Levyda@mail.biu.ac.il
Tel: + 972-3-531-8331
Fax: + 972-3-535-3180

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** Corresponding author.

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Abstract

We offer the first direct evidence of an implicit contract in a goods market. The evidence we offer comes from the market for Coca-Cola. We demonstrate that the Coca-Cola Company left a substantial amount of written evidence of its implicit contract with its consumers—a very *explicit* form of an implicit contract. In general, observing implicit contracts directly is difficult because of their implicit nature. To overcome the difficulty, we adopt a narrative approach. Based on the analysis of a large number of historical documents obtained from the Coca-Cola Archives and other sources, we offer evidence of the Coca-Cola Company not only *saying* that it had an important implicit contract with its consumers, but also *acting* on it. This study makes an additional and unique contribution by exploring *quality* as a margin of adjustment available to Coca-Cola. We present evidence that the implicit contract included a promise not only of a *constant nominal price* but also a *constant quality*. We document the dedication to a 6.5oz serving of the "Secret Formula." Indeed, during a period of over 70 years, we find evidence of only a single case of true quality change. By studying the margin of adjustment the Coca-Cola Company chose in response to changes in market conditions, we demonstrate that the perceived costs of breaking the implicit contract were large. In addition, we are able to offer one piece of direct evidence on the magnitude of these costs by studying the events surrounding the failed introduction of the New Coke in 1985.

"Sellers . . . can influence the shopping behavior of customers by pledging continuity of an offer . . . Yesterday's offer has a strong influence on today's demand."

Arthur Okun (1981, p. 28)

"Implicit contracts strike many economists . . . as quite plausible. Yet their existence is—almost by definition—not subject to objective verification, at least not from conventional data sources."

Alan Blinder, et al. (1988, p. 149)

"[Narrative approach] allows a vast body of information that cannot be employed in conventional statistical tests, to be brought to bear on [the]… question."

Christina Romer and David Romer (1989, p. 167)

INTRODUCTION

"Invisible handshakes," or implicit contracts, were popularized by Okun (1981) as a possible source of price rigidity. They have most often been explored in the context of wages set in labor markets (Rosen, 1994). However, implicit contracts are plausible sources of price rigidity for other goods and services as well, although there are no studies that offer direct evidence of this. In this paper, we fill this void in the literature by offering the first direct and, in fact, quite explicit evidence on the presence of an implicit contract. The evidence we offer comes from the market for Coca-Cola.

The fact that there are no other studies offering direct evidence on the existence of implicit contracts in product markets should not be surprising because of the difficulty of observing implicit contracts directly. Indeed, as Blinder, et al. (1988) note, implicit contracts are "…tacit agreements that are not written down [and] the theory does not predict literal price rigidity, but only that prices are relatively insensitive to fluctuations in demand" (p. 152). Given their implicit nature, conventional statistical data sources are of little use in studying implicit contracts.

To overcome the difficulties created by the lack of traditional types of data (e.g., quantitative data) on implicit contracts, we adopt narrative approach which has been recently used in another context by Romer and Romer (1989, 1994) and Zbaracki, et al. (2004). As Romer and Romer (1989) emphasize, the key benefit of the narrative approach lies in the fact that it allows one to exploit a large body of soft data containing qualitative information, which conventional econometric studies would find hard to employ. Similarly, Durlauf (2001, p. 67) states that "The tendency of economists to treat statistical studies as automatically more informative than narrative studies has no justification in general and is clearly pernicious in contexts…where the data are so poor." Thus, given the lack of data from standard sources, we believe that narrative approach can be particularly beneficial in studying implicit contracts.

Quite possibly, the most enduring and binding invisible handshake began with a peddler of patent medicines in Atlanta, Georgia—one John Stith Pemberton. In 1886, Pemberton had an ingenious

idea. Why sell 75¢ or $1 bottles of medicine? This was a marketing strategy limited to the sick. Why not sell a single serving for 5¢? Looking back, it is no surprise that the nickel Coke was born. What is surprising is that it continued to exist almost until 1960; and what is more surprising is that the Coca-Cola Company left written evidence of an implicit contract with its consumers—an *explicit* implicit contract.[1] In this paper we document the existence of this implicit contract.

The Coca-Cola price rigidity is fascinating regardless of the existence of an implicit contract. Today, if we scan the economic literature on price rigidity, we find cases of rigid nominal prices for considerable periods of time. Cecchetti (1988) examines magazine prices and finds that they normally change every 3 to 6 years. Using the Stigler and Kindahl (1970) transaction data, Carlton (1986, p. 639) finds that, "It is not unusual in some industries for prices to individual buyers to remain unchanged for several years." Kashyap (1995) studies catalog prices of 12 retail goods over a 35-year period and reports that the average time between price changes is about 15 months. Blinder, et al. (1988) present detailed survey evidence from US firms and conclude that the average lag of price adjustments following supply or demand changes is 3 months. As well, Genesove (2003) studies apartment rental prices in the US using Annual Housing Survey data and finds that, from 1947 to 1981, between 23% and 34% of the apartments had no change in nominal rent from one year to the next.[2]

On the other hand, the price of a serving of Coca-Cola did not adjust to supply or demand changes *for over 60 years*. The nickel Coke did not entirely disappear from US markets until 1959—*over 70 years!* The contrast is of an order of magnitude to say the least. Also, though it is only a single firm, the Coca-Cola Company is one of the most successful and recognized producers of a consumer good in the world.[3] During the time period we study, the soft drink industry and the Coca-Cola Company itself were a non-negligible part of the US economy. For example, in 1945 the bottled non-alcoholic carbonated beverage industry was 0.26% of US GDP (Riley, 1942, p. 343). The Coca-Cola Company had a roughly 50 percent market share in that industry, making its own contribution an economically significant 0.13% of GDP.

In a previous paper we argue that an *explicit* contract between the Coca-Cola Company and its bottlers was an important cause of this nominal price rigidity, until the contract was voided in 1921

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[1] When not cited due to their generality, some historical facts concerning the Coca-Cola Company are drawn from the works of Allen (1994) and Pendergrast (1993). Additional information is drawn from publications produced by the Coca-Cola Company and provided by their archives, which include *Reviewing "A Proud History" 1886 to 1925*; *Always Coca-Cola: A Quick Reference Chronology from 1886 to 199*; *Fact Sheet: Product Pricing Structure of Coca-Cola USA*; *Fact Sheets Concerning the Nickel Price*; and *Did You Know?*

[2] Some studies document considerably higher frequencies for price changes. Bills and Klenow (2004) examine price changes for 350 categories of goods and services covering about 70 percent of US consumer spending and document that half of the price changes last less than 4.3 months.

(Levy and Young, 2004). The nominal price of Coca-Cola syrup to bottlers was fixed by this contract. Given this, the Coca-Cola Company could only increase profits by increasing the quantity of syrup it sold to bottlers and, therefore, the Company pursued retail price maintenance. We also document that, subsequent to 1921, two technology-based factors help to explain the continuation of the nickel Coke. First, an installed base of vending machines with nickel-only capability, and the evolution of technology accommodating multiple coin types and change-making, imposed an important constraint on adjustment of the retail price. Second, at the 5¢ price, the smallest price increase compatible with the consumer using a single coin was a 100% increase to 10¢. A *monetary transaction technology* for smaller price adjustments, keeping consumer "inconvenience costs" low, was not available.[4]

In our previous paper we are not able to address the implicit contract between Coca-Cola and its consumers that we feel is important for fully explaining the nominal price rigidity; in this paper we focus on it. Limited evidence of implicit contracts in product markets has been documented. Kahneman, et al. (1986) provide survey evidence that the related issue of "fair" prices is important for understanding consumer demand and Blinder, et al. (1988), also using survey evidence, find that implicit contracts exist in about two thirds of the US economy. Of those two thirds, 51% of respondents believe that implicit contracts are "moderately" or "very" important in slowing down price adjustments. As well, survey evidence from UK firms lead Hall, et al. (1997, p. 5) to conclude that "long-term relationships with customers . . . reduce price flexibility." Besides survey evidence, Renner and Tyran (2003, p. 1) provide evidence from experimental markets that "mutually beneficial long-term relations frequently prevail in markets for experience goods" and that "these long-term relations . . . are prone to price stickiness." Cason and Friedman (2002) also provide experimental evidence along the same lines. Finally, Kackmeister (2004, 2005) finds that retail prices were less flexible in the US from 1889–1891 than from 1997–1999. He attributes this observation partly to "the weakening of the personal relationship between the retailer and customer in the present age" (2004, p. 16).

This case study makes an additional and unique contribution to the study of implicit contracts by exploring *quality* as a margin of adjustment available to Coca-Cola. We present evidence that the implicit contract between the Company and its consumers included the promise not only of a constant nominal price but also a constant quality. We document the dedication to the 6.5-ounce serving and the

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[3] According to the 2002 *Business Week* ranking, Coca-Cola is the most valuable brand in the world, ahead of Microsoft, IBM, GE, Intel, etc.

[4] Daly (1970) documents a case where widespread consumer inconvenience costs were high. In northeastern Brazil around 1970, the population was generally poor, so a large proportion of transactions were small, making the demand for small change high. The government's inability to ensure a sufficient part of the money supply in small denominations led to unnecessarily difficult and time-consuming small transaction for the poorest of the population. Knotek (2005) provides a

"Secret Formula" for syrup. Indeed, we provide evidence of merely seven changes in the Secret Formula over the 73 year period. Moreover, we demonstrate that two of the seven changes are best viewed as *changes in the mix of substitutable inputs*; another two were adopted to provide identical quality between the bottled and fountain forms of the drink; and a remaining two changes were mandated by court decisions. Thus we document only a single case of true quality change.[5]

This paper begins by providing a discussion of what exactly is an implicit contract and how we can evaluate its economic importance in the case of the Coca-Cola Company. This is followed by a narrative of the changing market conditions from 1886–1959 that were the backdrop to the nickel Coke era. Some space is then devoted to the accompanying quality rigidity, taking care to document changes in the Secret Formula and argue that all but one should not be interpreted as a change in quality. With this background established we lay out evidence of the Coca-Cola Company establishing, recognizing, and acting upon an implicit contract. A final section concludes.

THE IMPORTANCE OF THE IMPLICIT CONTRACT

In general we accept Okun's (1981, pp. 49-50) definition of implicit contracts: "arrangements that are not legally binding but that give both sides incentives to maintain the relationship." [6] In the specific case of the Coca-Cola Corporation, we demonstrate that the Corporation guaranteed a constant nominal price and quality of Coca-Cola and that this guarantee was valued by its consumers. The consumers developed a sense of goodwill towards Coca-Cola that positively influenced their demand; the Corporation believed that the influence was significant enough to forego adjustment along nominal price and quality margins.

Implicit contracts are economically significant when they imply large adjustment costs along the relevant margins, i.e., price and quality in the case of Coca-Cola. These adjustment costs would ostensibly be in terms of consumer good will. In this section we argue that this particular implicit contract was economically significant and, therefore, interesting.

Our direct evidence of the implicit contract (below) is largely descriptive. However, theory suggests a straightforward way to quantify a lower bound on the adjustment costs to price and quality

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model of a firm that incorporates convenience into pricing decisions; simulation exercises reveal that the model can account for the dynamics of US newspaper cover prices.

[5] Perhaps most importantly, we find no evidence of the public perceiving any quality change in any of these Secret Formula change episodes.

[6] Rotemberg (2004, 2005) develops the idea of a fair price in a model where consumers interpret price changes according to their fairness and react accordingly. In Ball and Romer's (2003) model, prices serve as a signal in settings with long-term relationships between consumers and producers. That is why firms allow price variability to occur through infrequent price adjustments. Bils (1989) models a customer market where customers develop an attachment to a product which they have used in past.

implied by the implicit contract: quantify the costs of adjustment along the *quantity* margin where adjustment *did* occur. Assuming that the Company adjusted along what it perceived to be the least costly margin, the costs of price and quality adjustment (including those associated with the implicit contract) must be at least as high as those associated with quantity. We quantify here one type of quantity adjustment costs in the form of advertising costs.

Advertising is usually thought of as serving the functions of conveying information about product features, signaling quality, and differentiating between products. Arguably all of these specific functions are subsumed in the general function of conveying information. However, for the Coca-Cola Company any advertising expenditure from 1886–1959 was an expenditure aimed at adjusting quantity. This conclusion follows from a simple assumption: profit maximization.

A firm can adjust profits by adjusting along the margins of price, quality and quantity, or combinations of those margins. Both Coca-Cola price and quality were constant. Therefore, increasing profits could only be achieved through increasing quantity. Therefore, advertising expenditures were aimed at adjusting (upward) quantity.

Figure 1 demonstrates that Coca-Cola aggressively advertised from 1882–1946.[7] During this time, advertising expenditures were in the range of 10 to 20 percent of revenue. As a lower bound for price adjustment costs these numbers are large. Zbaracki, et al. (2004) – using data from a large US-based industrial manufacturer and its customers – find that the cost of adjusting prices is 1.23 percent of revenue. Willis (2000), using Cecchetti's (1988) magazine price data, estimates price adjustment costs to be about 4 percent of revenue. Also, Slade (1998) finds a similar number concerning Saltine crackers in a retail supermarket industry. The Coca-Cola Company appears to have faced adjustment costs an order of magnitude greater than any documented in the literature. Importantly, quantity adjustment costs are estimates of the lower bound of price and quality adjustment costs, and advertising costs are only one type of quantity adjustment costs.

While quantity adjustment costs imply a *lower bound* of price and quality adjustment costs, on the other hand these adjustment costs were not limited to those associated with the implicit contract.[8] However, we can also discuss a particular episode where costs of breaking the implicit contract are, at least qualitatively, directly observed. The episode occurred nearly three decades after the last of the nickel Cokes had disappeared. The 5¢ price had phased out over the 1950s and consumers mat have been unclear about how to partition accountability amongst the Coca-Cola Company, its bottlers, and retailers. However, on April 23, 1985 – a single date – the quality "clause" of the implicit contract was

[7] We could not obtain numbers through 1959.

broken by the Company alone. New Coke was introduced to the American public, replacing the old "Classic" Coke.

Research on changing the Secret Formula began in the early 1980s as Coca-Cola's market share was declining and Pepsi Cola's was rising. A large number of blind taste tests revealed that consumers preferred Pepsi by margins as high as 15 points. After a $4 million ($5.7 million in 1992 $s) investment in an exhaustive battery of 190,000 blind taste tests, a modified formula was beating Pepsi by 6 to 8 points.[9]

However, New Coke was instantly hated by most US consumers. Bottlers incurred a direct loss of $30 million ($38.2 million in 1992 $s) in the form of unsold New Coke inventories (*Atlanta Journal and Constitution*, 1995). The most important costs incurred, however, are hard to quantify yet are certainly large in terms of lost goodwill. Within a week of New Coke's introduction, over 1,000 phone calls per day were being received by Coca-Cola headquarters expressing shock, anger and outrage. By the beginning of June, the calls were up to 8,000 a day. In addition, 40,000 letters of protest were received. Consider quotations from some of the letters, collected by Pendergrast (1993, pp. 363–364):

> Changing Coke is like breaking the American dream, like not selling hot dogs at a ball game.
>
> I have purchased at least two cartons of Coke a week for as long as I can remember. . . My "reward" for this loyalty is having the rug pulled out from under me.
>
> Millions of dollars worth of advertising cannot overcome years of conditioning. Or in my case, generations. The old Coke is in the blood.
>
> Would it be right to rewrite the Constitution? The Bible? To me, changing the Coke formula is of such a serious nature.
>
> My dearest Coke: You have betrayed me.

The most convincing evidence that these are not merely the exceptional instances is the exasperation of then-Coca-Cola Company president Roberto Goizueta's after monitoring the consumer hotline: "They talk as if Coca-Cola had just killed God."

Not three months had passed before the quality adjustment costs associated with breaking the quality clause of the implicit contract became unbearable. On July 11, 1985, the Coca-Cola Company announced the return of Coca-Cola *Classic*.

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[8] E.g. our previous (2004) paper deals with price adjustment costs associated with vending machine replacement/modification and consumer inconvenience costs associated with abandoning a single coin price.

[9] These and other general facts below are drawn from Allen (1994, pp. 404–415) and Pendergrast (1993, pp. 354–371). There were several differences between the Old Coke and the New Coke.

RELEVANT CHANGES IN MARKET CONDITIONS: 1886–1959

We have argued above the price and quality adjustment costs implied by the Coca-Cola implicit contract were considerable. In the extreme, however, even such large adjustment costs and enduring nominal price and quality rigidity would be uninteresting if market conditions did not change during that time and/or other prices were stable. In actuality, the time period witnessed numerous, large shocks to both the supply and demand in relevant markets. Also, 1886 to 1959 was not a period when prices in general simply did not change much.

Figure 2 demonstrates that the prices of other common consumer goods fluctuated considerably from 1886 to 1959. Furthermore, beginning in the mid-1940s inflation became a powerful factor (**Figure 3**).

Also, besides two world wars and the Great Depression, numerous supply and demand shocks occurred in specific markets relevant to soft drink production and sale. In 1898 a (Spanish-American) war tax on proprietary medicines was instituted and the IRS declared the Coca-Cola Company liable for 1/8¢ on every nickel drink (Riley, 1942, p. 26). The Company sued the government and eventually won in 1902, but incurred the legal expenses and paid taxes of $29,502 ($567,346 in 1992 $s).[10]

In 1899, the Coca-Cola Company signed a contract granting bottling rights for most of the continental US to two Tennessee lawyers, Franklin Thomas and Joseph Whitehead. This began a trend in sales relatively away from the fountain and towards bottles. Furthermore, Thomas and Whitehead had contracted the right to buy syrup from the Company at 92¢ per gallon *in perpetuity*.

The original bottling company would split in 1900 into two regional "parent bottlers" (serving the Northern and Southern states respectively) that began licensing bottling rights to smaller bottlers, which numbered 397 by 1909. Soon the Coca-Cola Company was shipping syrup directly to the bottlers, bypassing the parent bottlers. Again, there was no specified time or way for the Company to terminate this arrangement.

The contract between the parent bottlers and the Coca-Cola Company was amended early on in 1901. The Company agreed to sell syrup to the parent bottlers at 90¢ per gallon plus 10¢ per gallon for advertising materials. (The cost of the advertising materials was then passed on to the bottlers.) Also, the parent bottlers began taking a straight 6¢ per 24 bottle case royalty from bottlers. This arrangement would not change for nearly 20 years.

A flood of legal costs arose for the Coca-Cola Company following the passage of the Pure Food and Drugs Act (PFDA) in 1906. In 1891 the Georgia State Board of Pharmacy had declared that cocaine

[10] *Rucker v. The Coca-Cola Company*. Rucker was the Collector of Internal Revenue. For perspective, the net worth of the Company in 1902 was $492,723 and expenditures on merchandise for making syrup was $293, 347 (both in 1992 $s).

was in Coca-Cola. (Indeed, Asa Candler, the President of Coca-Cola at the time, admitted under oath that Coca-Cola contained traces of cocaine.) A prolonged investigation by Dr. Harvey Wiley, chief chemist of the US Department of Agriculture, under the PFDA resulted in the banning of Coca-Cola at canteen and post exchanges by the US War Department in the Spring of 1907 through the Fall.[11] In October 1909, Wiley seized 40 barrels and 20 kegs of Coca-Cola syrup. In 1911, the Company was charged with violation of the PFDA for its caffeine content – another drug viewed negatively – and misbranding.[12] In court, the initial result would be a directed verdict in favor of the Company. By 1917 the Department of Agriculture had worked the case through multiple appeals. The Company pleaded no contest and agreed to decrease the syrup caffeine content by 50 percent while doubling the amount of (de-cocainized) coca leaf and kola nut. The Coca-Cola Company had spent over $250,000 on the case ($2.8 million in 1992 $s) (Pendergrast, 1993, p. 124).

In 1913 the tariff on Cuban sugar was reduced from 1.3840¢ per pound to 1.0048¢ (Riley, 1942, p. 44). However, in 1917 sugar rationing was instituted. In May of that year, sugar sold for 8¢ per lb, up from an average of 5¢ per lb that had held over many previous years (Pendergrast, 1993, p. 129). Then, effective February 1919, a 10 percent tax on soft drinks was imposed (Riley, 1944, p. 73). Around the same time, the Company experienced shortages of caffeine and caramel. Furthermore, the Company had to deal with the outflow of consumers during WWI as well as the postwar inflation.[13, 14]

In 1920, Prohibition was enacted. The Coca-Cola Company advertised its product as the "Great National Temperance Beverage." However, in the same year the Company made a terrible miscalculation when a sugar shortage caused the price of sugar on the world market to reach a record high of 28¢ per lb. Charles Howard Candler, Coca-Cola's then president, negotiated contracts with several large importers and refineries to ensure delivery of 4,100 tons of Java sugar at 20¢ per pound. That summer the sugar market collapsed and the price tumbled to 10¢ per lb., and then 9¢ by December. The Company was then committed to buying $8 million of sugar that was worth half that on world

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[11] The ban was actually the result of a peripheral revelation of the scrutiny: minute alcohol content. Young (1983, p. 7) explained that, "In the preparation of Coca-Cola syrup the essence of two ingredients was extracted in wine or in grain alcohol, and a minute amount of this alcohol found its way into the finished product."

[12] Paradoxically, the use of the coca bean as part of the Coca-Cola name led the Department of Agriculture to claim that the Company was guilty of misbranding for *not containing cocaine!* (Young, 1983, p. 12).

[13] Directly following WWI, there were a few incidents of some retailers charging 6¢ and 7¢ for a Coke. Also, some bottlers, against their agreement with the Coca-Cola Company, perverted the syrup with sugar substitutes. *Coca-Cola Bottler*, "Sugar Substitutes," June 1918; *Coca-Cola Bottler*, "The Use of Saccharin," September 1918; and *Coca Cola Bottler*, "Sugar and Its Substitutes," December 1918. These episodes, however, were isolated.

[14] Also during this time period the bottled nickel Coke became a standard size. When the parent bottler split in 1900, Whitehead's Southern company chose to utilize a 6 oz. bottle. Thomas' Northern company opted for an 8 oz. bottle. Clearly, as both sold for 5¢, this was effective price discrimination between customers in the hot South and those in the colder North. (Coca-Cola was then still perceived as mainly a summertime weather drink.) In 1916 this price discrimination ended and a standard 6.5 oz. "hobbleskirt" bottle was adopted nationwide.

markets (Landers, 1950). By 1921, Coca-Cola had warehouses full of contracted sugar while the price was 3¢ per lb (*Fortune*, 1951).

By 1920 the Company was losing $29,000 ($213,235 in 1992 $s) a day due to the inability to raise the syrup price.[15] In March 1920, therefore, the Company announced that it would terminate its contract with the parent bottlers. The parent bottlers obtained a temporary injunction blocking this action. A temporary solution was reached allowing the Company to sell syrup at $1.72 per gallon with a floating adjustment (a form of indexation) for sugar price changes (Pendergrast, 1993, p. 140). However, in November the contract was ruled permanent in court.[16]

A more lasting agreement was reached beginning November 1, 1921. The Coca-Cola Company charged $1.17 per gallon for syrup to parent bottlers, who then sold it to bottlers at $1.30 per gallon; and, for every cent that the price of a lb. of sugar increased in excess of 7¢, the syrup price would increase by 6¢ (Pendergrast, 1943, p. 144). Starting in 1923, a more direct solution to contractual disagreements was pursued: the buying of failing bottlers. By 1940 the Company would own 25 bottling plants (Pendergrast, 1943, p. 170).

The Great Depression was, of course, a negative demand shock. On top of that, a certain soft drink company – Pepsi Cola – began to market a 12 oz. bottle for 5¢ in 1934. During this time we observe the Company resisting downward price pressure in the face of direct competition from a new competitor and the general deflation of the era (see **Figure 2**).[17] As well, in 1933 prohibition was repealed – if anything, another negative shock to Coca-Cola demand.

On the technological front, the refrigerator became commonplace in households during the Depression and sales of 6-packs and once-a-week shopping trips became prevalent. By 1955 the take-home market constituted between 35 and 52 percent of bottle sales depending on the area (*Businessweek*, 1955).[18] Also, 1936–1937 saw the introduction of coin-operated coolers (the earliest soft drink vending machines).

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[15] Sworn testimony by Howard Candler (*The Coca-Cola Bottling Company v. The Coca-Cola Company*, a & b).

[16] The sugar situation was so dire that fountain Cokes in Atlanta temporarily rose to 8¢ (*Atlanta Constitution*, 1920). Interestingly, despite the fact that this occurred in the Coca-Cola Company's home, the incident was isolated to Atlanta.

[17] Worthy of note is the negative stigma that was, at that time, placed on price-cutting in the retail drug industry, the major outlet of fountain sales, and the food industry, a major outlet of bottle sales. In *The Red Barrel*, a magazine published by the Coca-Cola Company, Harvey Henry, chairman of the National Association of Retail Druggists, and Fred Griffiths, president of the Pennsylvania Drug Company, contributed articles condemning price competition (Henry (1933) and Griffiths (1934)). As early as 1929 the Federal Trade Commission (FTC) issued a statement condemning competitive price-cutting. Riley, *Organization*, p. 134. Also in *The Red Barrel*, Paul Willis, president of the Associated Grocery Manufacturers of America, advocated an end to price-cutting and a focus on profit through volume (Willis, 2000). Furthermore, price-cutting by Pepsi and other soft drink companies moved the American Association of Carbonated Bottled Beverages to issue monographs on responsible "cost practices." (Riley, 1942, p. 134).

[18] There was a quantity discount with 6-packs for 25¢. This price was introduced circa 1939 and remained constant along with the 5¢ single bottle until the 1950s.

WWII again witnessed consumers becoming soldiers and leaving the country. Sugar rationing was enacted again. At the worst point, producers were rationed 50 percent of their prewar levels (Pendergrast, 1993, p. 201). Riley (1942, p. 86) describes how, for soft drink producers, "Shortages of crowns, sugar, bottles, cases, gasoline, trucks, equipment, manpower, and virtually everything else required for production and business operation were problems of everyday occurrence."

Postwar inflation began putting pressure on the nickel Coke. By the late 1940s, with nominal production costs soaring, a handful of bottlers began charging 90¢ or $1.00 per case to retailers, rather than the usual 80¢.[19] In response some affected retailers broke from the nickel. The 1950s would indeed mark the decade when the bell tolled for the nickel Coke. *Time* (1950b, p. 12) observed that, in 1950, "In New York City, bottled Coca-Cola broke loose from its nickel moorings and for the first time went to 6¢." However, as of 1950 only 125 of the 1,100 bottlers had initiated price increases to retailers. In 1951, Coca-Cola dropped the placing of "5¢" in its advertising material.[20] By 1955, *Businessweek* (1955, p. 44) reported that a "bottle of Coke today sells for 6¢, 7¢ or even 10¢ depending on the area." As well, the Coca-Cola Company was introducing, for the first time, various bottle sizes at various prices. By 1959 the last of the 6.5 oz. nickel cokes were gone.

Given the many and varied changes in market conditions documented above, we think that the price and quality rigidity of the nickel Coke is *prima facie* interesting from an economic point of view. Though both marked supply and demand changes, the Coca-Cola Company chose to forgo adjustment along two of the three margins available to it. We argue below that an implicit contract contributed importantly to these exceptionally long-lasting rigidities. Before doing so, however, we elaborate on the quality rigidity – a form of rigidity receiving little attention and documentation in the literature relative to its price-based counterpart.

QUALITY RIGIDITY

During the over-70 year nominal price rigidity, Coca-Cola exhibited almost equally enduring quality rigidity. We argue that constant quality evolved into a "clause" of the implicit contract. To our knowledge this is the first instance of a margin other than price being associated with an implicit contract. In this section we simply document the quality rigidity during the relevant time period.

Schaeffer and Bateman (1985) document merely six changes in the Secret Formula from 1886 to 1960. The first change was made in 1889 when glycerin was added as a preservative. The Company

[19] The Coca-Cola Company, *Fact Sheet.*

[20] When the nickel price became untenable, Robert Woodruff (then the President of the Coca-Cola Company) got his friend, President Dwight D. Eisenhower, to petition the US Treasury to issue a 7.5¢ coin. The US treasury apparently had "strong objections" to this (Kahn, 1969, p. 133).

had faced complaints that the syrup turned rancid in storage. Since the old Coca-Cola syrup was perishable, in order to serve an identical product to a larger market this Formula change was necessary and could not be substituted for with a price adjustment.

Second, in 1899, the Coca-Cola Company decided to prepare two different syrups for fountains and bottles.[21] The change was designed to ensure that bottled Coca-Cola (for which the rights had just been sold to Thomas and Whitehead) had an identical taste to fountain Coca-Cola. Since this Formula change was carried out to ensure identical quality in different settings, it could not be substituted for with a price change.

The federal government's effort to impose a stamp tax on Coca-Cola as a medicine in 1898 was the impetus for the third change. Though Coca-Cola sued the government and eventually recovered taxes paid, during the litigation the issue of cocaine arose. Following the judge's ruling, the Coca-Cola Company contracted Schaeffer Alkaloidal Works to "de-cocainize" the Secret Formula's "Merchandise No. 5" (Schaeffer and Bateman (1985) and Gootenburg (2004)). This change is best viewed as exogenously imposed by the pressure of US regulators and courts. No price change could effectively substitute for it.

The fourth change involved different types of sugar. The Coca-Cola Company had been using "confectioner's A"-grade sugar – a powdered, rather than granulated, form. Because of its powdered form, confectioner's A carried moisture with it, which caused a tendency for the sugar to sour (Candler, 1950). Granulated sugar was adopted in 1904 (Schaeffer and Bateman, 1985). Since we can find no evidence of consumers detecting a change in the taste, the two types of sugar are best thought of as perfect substitutes in the Coca-Cola production process. Again, no price change appears able to have substituted for the change.

In 1918, government was again the impetus a change in the Secret Formula. This fifth change resulted from the US Department of Agriculture's 1909 lawsuit against the Coca-Cola Company under the PFDA. One charge was that syrup was "adulterated" by the presence of caffeine.[22] On April 20th, 1918, the Company agreed to a settlement whereby it would reduce the caffeine content of Coca-Cola by almost two thirds (Schaeffer and Bateman, 1985). Again this change was exogenously imposed and the Company could not have substituted a price change.

The sixth change was related to the disastrous stockpiling of 20¢ per lb. sugar in 1920. The Coca-Cola Company developed a form of syrup with considerably less sugar in it than regular syrup. This concentrate could then be used in any production plant worldwide by simply adding sugar

[21] Specifically, the bottled syrup had more sugar, caramel, citric acid and phosphoric acid; and less water and caffeine.
[22] *United States v. Forty Barrels and Twenty Kegs of Coca-Cola*.

(Schaeffer and Bateman, 1985). A problem with this was that cane sugar—the only type used in Coca-Cola up until then—could not be guaranteed in continuous supply to other regions of the world. The Company developed a beet sugar which it believed would not compromise the quality of the drink. Beets could be grown in more regions and, therefore, beet sugar was easier to maintain a continuous supply of. Again, since we can find no evidence of consumers detecting a change in the taste, the two types of sugar are best thought of as perfect substitutes in the production process.

We were able to find an additional episode of a change in the Secret Formula. This was a temporary change and it happened in 1942 when WWII sugar rationing created a substantial shortage of Coca-Cola for civilian consumption. The Company decided to use a sugar substitute – most likely saccharine – along with rationed sugar.[23] Additionally, there was a shortage of caffeine – inventories were down to less than a month's supply and the price shot up from $1.50 per lb. to more than $7.50 per lb.[24] Coca leaves were also in short supply. A temporary cutback in the amount of caffeine and also coca leaves used in production of Merchandise No. 5 was approved. Since sugar rationing was exogenously imposed, the use of sugar substitute could not be replaced with a price change. However, the extent to which a price change would have substituted for the reductions in caffeine and coca is less clear.

It is noteworthy that we are unable to find any evidence of any of these changes in the Secret Formula even being noticed by the public. In fact, most of the public was not even aware of these changes. Furthermore, even if all seven of these Formula changes—temporary and otherwise—are interpreted as quality changes that substituted for price changes, from 1886 to 1959 we find an average of 1 quality change per decade.

EVIDENCE OF THE IMPLICIT CONTRACT

Extending the Invisible Handshake to Consumers

Here we present evidence that Coca-Cola's fixed nominal price and quality were part of an implicit contract between the Coca-Cola Company and its consumers. What is remarkable about this implicit contract is that the Company made it *explicit* in the written guarantees and assurances of millions of print ads, displays, promotional giveaway items, etc. Moreover, assurances of quality and price were often included together. The guarantee of a constant price appears to have been a "clause" of

[23] Robert Woodruff, then president of the Company reluctantly agreed to use the substitute but stated: "I am very leery about these things and much prefer not to do anything of the kind, except as a *matter of life and death*" (Woodruff, Letter to Arthur Acklin).
[24] Hayes, Letter to Robert W. Woodruff.

the implicit contract from early on; that of constant quality seems to have evolved later on. Below we provide some of the numerous examples of evidence on the implicit contract left by the Company itself. To provide an accurate view of both the Company's and consumers' perspectives, we present most of the material literally, simply quoting text.

Consider an 1898 ad in the *Atlanta Police Department Bulletin*. At the time Coca-Cola was only local to the Atlanta area and only sold at fountains. But, at whatever fountain one chose, the ad promised Coca-Cola at "5 cents per Glass". Also, besides claiming that it "Relieves Headache Immediately," the ad guaranteed the drink to be "Delicious! [and] Refreshing!" This was certainly not a *constant quality* guarantee, but it began a theme that would later evolve into such a guarantee.

In a 1903 *Atlanta Journal,* Coca-Cola's ad now touted that it was "At Soda Fountains and Carbonated in Bottles." In either case, it was still "5 CENTS". Moreover, again it promised to be "Delicious! [and] Refreshing!" An advertisement with the same promises appeared in a 1909 *Atlanta Constitution*. So, for over a decade, Atlanta consumers were promised Coca-Cola for 5¢ in either the bottle or at the fountain.

Coca-Cola did not remain local to Atlanta for long. A 1906 full-page *Cosmopolitan* ad brought the promise of a "5¢" price "AT ALL FOUNTS AND IN BOTTLES" to the nation as a whole. Similar ads were run in *American Theater* and *Country Life in America* in 1906. That same year, and ironically given the court battles to follow, the Coca-Cola Company also ran ads stating that it was "GUARANTEED UNDER THE PURE FOOD AND DRUG ACT".[25] Despite ensuing problems with Harvey Wiley and the PFDA, the theme of *guaranteeing purity* along with the 5¢ price would become a recurrent one.

In the early 1900s Coca-Cola was facing competition from a myriad of imitators trying to ride the Coca-Cola coattails, e.g. Coke-Ola, Koca-Nola, Kokola, Toca-Cola, Kaw-Kola, Taka-Cola, and Roco-Cola (Allen, 1994, p. 73). By 1908 the Coca-Cola Company was stressing that consumers should make sure to "GET THE GENUINE" Coca-Cola. The above quotes are from the July 16th, 1908 issue of *Life* and the ad also guaranteed that Coca-Cola was "5c. Everywhere". Also, 1912 Coca-Cola ads warned "BEWARE!!! of Imitations" and encouraged consumers to "Demand the Genuine – Refuse Substitutes".[26] The competition with imitators, along with the guarantee of purity, would complement each other in an evolving theme of constant quality in Coca-Cola's advertising.

The 1920s continued stressing the "5¢," price, as in a full-page ad in a 1922 issue of *The Ladies Home Journal*. Then the 1930s witnessed the introduction of the famous "pause that refreshes"

[25] The Coca-Cola Company, "Guaranteed."
[26] Advertising Copy Collection, 00349 ARS.

slogan.[27] The "pause", at this point, had been part of consumers' lives for over 50 years and was "the best friend thirst ever had." We here see the Company stressing a familiarity with the Coca-Cola formula that would also feed into the evolving theme of constant quality.

In 1941 issues of *National Geographic*, *Boys' Life*, *Collier's*, *Life*, *Time*, and the *Saturday Evening Post*, the "pause that refreshes" was still promised at "5¢," but now there was an additional claim: "You trust its quality."[28] And in a 1942 *Saturday Evening Post* the "5¢" "Delicious and Refreshing" Coca-Cola stated that "Quality carries on." The guarantee of quality was prominent and the "carries on" implied a constancy that could be depended on over time. By 1945, during WWII sugar shortages and the resulting sugar rationing, the Coca-Cola Company evoked this guarantee to explain Coca-Cola shortages to civilian consumers. "Where's all the Coke gone, anyway?" asked one ad:

> [T]he answer is: there's a world-wide sugar shortage, caused by world-wide disorder and confusion that goes along with war. Sugar shortage means Coke shortage because *Coca-Cola never compromises on quality*. Today, yesterday, tomorrow—Coca-Cola means Coca-Cola, *the same quality as always* [our emphasis].[29]

Another ad featured a neighborhood store clerk telling consumers, "Sorry, but we're short on Coke today."[30] Consumers are encouraged not to blame the clerk because, again, the sugar is being rationed and "there's one thing you can always be sure of—the Coke you get is the real thing [and] *the same quality you have always known* [our emphasis]." Both ads, of course, still promised Coca-Cola for "5¢", but now the guarantee of constant quality is explicit.

Along with these print ads, the Coca-Cola Company provided various promotional items, most of which featured the "5¢" guarantee. **Table 2** presents the tallies of different promotional items for a single year, 1913, as a snapshot of how Coca-Cola blanketed the nation with its idea of the nickel Coke.

The prominent "5¢" guarantee finally departed from Coca-Cola ads in 1951. For the first time in 65 years, the familiar "pause that refreshes" was not guaranteed to consumers for a nickel.

Informing and Convincing Retailers

Advertisements alone may be flimsy evidence of an implicit contract. However, in this case the promises of the contract of constant quality and price were kept to great extent. Furthermore, we now document the Coca-Cola Company's efforts to inform retailers that an implicit contract existed with consumers, and that it was in their common interest not to break its conditions. In many instances, this

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[27] E.g. *Nation's Business* (1938).
[28] Advertising Copy Collection, 01625 ARS.
[29] Advertisement No. S-3.
[30] Advertisement No. S-2.

evidence is more explicit in detail than the ads aimed at consumers.

In a 1916 *Drug Trade Journal* insert, when WWI had caused syrup ingredient prices to rise, the Coca-Cola Company stated:

> Some said: "Raise the price to the retailer." Some said: "Lower the quality." Some said: "Cut the advertising appropriation." That is the summary of the advice we have received . . . from people who knew how greatly our cost . . . has been advanced. . . . We said: "Price, quality and advertising will remain the same." [W]e would be mighty poor specimens if we tried to make the druggist carry the load of our increased costs. . . . The burden is ours—we have gladly assumed it. . . . [W]e are determined to make it a fat year from the standpoint of keeping faith with dealers and the public. All we ask of dealers is the *natural and human* reciprocity of serving only the genuine and serving it properly.[31]

Presumably, in asking for retailers to "serve it properly," the Company referred to 6.5 oz. at 5¢ and using unadulterated syrup.

By 1920s the Coca-Cola Company was using inserts in trade journals to encourage the standard 6.5 oz. size and 5¢ price as something expected by consumers and profitable to retailers. "This Glass increases sales", stated a 1923 insert referring to 6.5 oz. glasses that could be "bought in quantity from your jobber." The insert also referred to "The Right Price" of "5¢" which "is *the price people expect to pay* for Coca-Cola, because it is *established by years of custom* [our emphasis]." As well, "it gives you [the retailer] a good profit on every sale, but it gives you most profit by giving you more sales [and it's] the price that keeps your cash register ringing, and that's the music that builds business."[32]

In 1925 the Coca-Cola Company issued a series of bulletins under the title of *Reviewing "A Proud History" 1886 to 1925* to regional managers, regional outdoor advertising managers, branch managers, district sales managers, salesmen, the service section, sign painters and decorators of the Company. Each and every page included, in the lower margin, an underlying theme to convey to retailers: "Use the Retailer's figures to show him the profit on Coca-Cola [and] Show him how to push sales to increase the profit on Coca-Cola." Retailers needed to know that "It is not the 5¢ so much as it is the 2,400,000,000 drinks per year. . . . It is this volume which enables us to offer the public, at a nickel, an absolutely pure soft drink" (p. 1900).

By the 1940s the efforts to convince retailers of the profitability of Coca-Cola at 5¢ became even more pronounced. "LOOK AT IT THIS WAY" requested a 1942 insert featuring a magnifying glass focused on a nickel:

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[31] Advertising Copy Collection, 00502 ARS.
[32] Trade Paper Insert.

> Coca-Cola magnifies the nickel to real importance in your store. When you look at Coca-Cola in terms of what you sell in a year, you see a *big* profit from a 5¢ sale. On the sale of a case a day your gross profit is $125.00 a year. How's that for magnifying the value of a nickel?

Concerning quality, another 1942 insert declares, "There's a seven-letter word for it":

> QUALITY . . . the quality of genuine goodness. That's what your customers recognize in Coca-Cola. . . . 5¢ You trust its quality.[33]

Yet another 1942 insert states the Coca-Cola Company's guarantee to consumers—"Quality carries on . . . 5¢"—and then makes a guarantee to retailers:

> We make this pledge to YOU[.] In national magazines, in newspapers, on posters, and over the radio, we're telling the world that the unmatched *quality of Coca-Cola remains the same* even though the quantity is limited by Government order.[34]

Considering the "5¢" in print, this insert may be viewed also as a veiled warning to retailers not to charge more as a type of retail price maintenance.[35]

As late as 1950 an insert in *Food World* touted the explicit pledge: "Continuous Quality" and "Continuous Price".[36] The quality would be continuous until 1985 with the introduction of "New Coke" (and even then the Secret Formula would be soon reintroduced with "Coca-Cola Classic"). The nickel price would, however, not endure past the 1950s.

The Coca-Cola Company's Belief in the Implicit Contract's Importance

The above documentation of the Coca-Cola Company's efforts to inform retailers of the implicit contract and to urge them to enforce it is evidence that the Company believed the implicit contract represented an economically important relationship with consumers. We can fortify such a view with a few pieces of direct evidence from internal Coca-Cola Company documents.

The 1924 annual report of the Coca-Cola Company—the first published during Robert Woodruff's presidency—states "All of our equipment might be replaced more easily than our goodwill, which has been cultivated through 38 years of consistent effort" (p. 4).

Over twenty years later, in 1948, then-president Robert Woodruff received an editorial in the mail written, and published, by Duke Merritt of the Cartersville, Georgia *Daily Tribune*. Merritt wrote that the editorial was written "in appreciation of the fact that Coca-Cola is the one unchanged friend of

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[33] Advertising Copy Collection, 01724 ARS.
[34] Advertising Copy Collection, "Chain Store Age."
[35] The types of promotional items in **Table 2** can be considered retail price maintenance of the same type.

childhood, still the same good taste at the same nickel price".[37] In the editorial, Merritt wrote that:

> [W]ay back yonder, a loaf of bread was a nickel, soap was a nickel . . . and coffee and milk were a nickel each [and even] beer, was also five cents a glass then. . . Coca-Cola has changed neither its price nor its quality. . . Look what has happened to other five-cent items in Coca-Cola's nickel life time. Bread is 15 cents a loaf, in most places, soap is 10 and 15 cents a cake, coffee and milk each cost a dime . . . and beer is 30 cents, we hear. But our old friend Coca-Cola still remains the same, merely five cents.

Woodruff replied to Merritt: "Your comment regarding our product and our Company describes exactly what has been our desire. . ."

> . . . In the recent era of rationing and the subsequent period of high—and rising—costs, the maintenance of the 5¢ price has not been devoid of difficulty, but the compensations that arise from doing so, as exemplified by your friendly remarks, are many and not the least of them is the *good will embodied in such expressions as these in your editorial* [our emphasis].

Cartersville, Georgia was not the only area of the country where such sentiments prevailed. In the December 28, 1947 *Sunday Booster* (Lincoln-Belmont area of Chicago), Leo Lerner wrote:

> No doubt you have noticed the new look in the grocery stores? [*sic*] It's on the price tags. The day my wife sent me shopping . . . I asked the proprietor if there was anything else in the store [besides Coca-Cola] that had not risen in price. . . [H]e shook his head, melancholy as he could be. "Nope," said the grocer. "Coke is the only thing in the whole place that hasn't gone up in price". . . I stuffed the groceries I bought for $3 into my overcoat pocket and went out. On the way I tipped my hat to the Coca-Cola.

In Indiana, *The Lampmaker*, published by Local Union No. 663 UAW-CIO, praised Coca-Cola in 1946:

> The Coca Cola Company [*sic*] . . . has notified its salesmen that regardless of the price of sugar it will maintain its price to retailers so that the coke [*sic*] can be sold by the retailer at five cents per bottler. . . Coca Cola, indeed, is the pause that refreshes in a Big Business world that has gone hog-wild for higher and higher prices. It's still Coca Cola—5¢.

And an editorial from a 1946 *Worthington Globe* (Worthington, Minnesota) lashed out at individual retailers that deviated from the 5¢ standard:

> [S]ome local firms have selected for a price upping the very commodity that will discredit all these reassuring words and action – the lowly "Coke". . . [Here] come a bunch of local

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[36] Advertising Copy Collection, 02815 ARS.
[37] Robert W. Woodruff Papers, Coll. 10, Box 124.

> pirates before the clods are dry on OPA's grave, who would take Coca-Cola out of the mouths of ordinary common people and make a dime drink of it—nectar for blue bloods to drink. And this without a cent increase in the wholesale price. Fie on them! May their cash registers tarnish in a pause that will refresh their memories of a mutual pledge taken to 'hold the line' and combat inflation!

The Coca-Cola Company preserved copies of these editorials and articles in their archives.

A few years after the above testaments appeared in print, internal Company documents express the Company's dedication to the 5¢ policy, even as inflation was fast making it untenable. E.g., in 1950 the Company distributed to bottlers a document called "Profit and Price Promotion" which stated:

> [T] raditional prices of 5¢, 25¢ and $1.00 [per bottle, per 6-pack and per case respectively] —consistently maintained through years and throughout most of the country—have been another of the foundation stones of the Coca-Cola industry . . . (pp. 2–3).[38]

Also in 1950, H.B. Nicholson, a vice president at the New York offices of the Company, wrote a letter to a counterpart in Atlanta elaborating on the "Price and Profit Program":

> [This program] has largely to do with the maintenance of the traditional 5¢ retail price on the part of the dealers. The purpose of this campaign is to revitalize the profit story to dealers and to put in the hands of Coca-Cola salesmen merchandising tools which will help them re-tell over and over again the profit story to the dealer.[39]

And in a "Letter to Bottlers on Price" the Company estimated Coca-Cola's retail price elasticity in the neighborhood of a nickel: "Where the price of Coca-Cola goes from 5¢ to 10¢ the loss in volume has been as high as 58 percent" (p. 5).[40] Whether an elasticity around one half is "large" on some objective basis is unimportant. The amount of effort expended by the Coca-Cola Company to maintain the nickel Coke implies that it subjectively judged it to be large.

Concern for the 5¢ policy in Coca-Cola Company documents extended to fountain sales.[41] Overall, numerous—much more so than listed above—memos, letters and documents discussing methods of 5¢ price maintenance circulated within the Coca-Cola Company and were sent between the Company and its bottlers. Notably, not one of these methods proposed an alteration of the Coca-Cola syrup or the serving size.

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[38] Coca-Cola 6-packs appeared circa 1939. It is unclear as to when cases of Coca-Cola appeared for sale at $1.00 as "Profit and Price Promotion" document is the only mention of retail case sales that we were able to locate. In all cases the bottles were 6.5 ounces. Different sizes were not marketed until 1955.

[39] Nicholson, Letter to Pope F. Brock.

[40] A traditional Keynesian belief has been that prices are more flexible up than down. Interestingly, while no justification is given, the letter claims that "It is easy to increase your price, but it may not be easy to reduce. In fact, the consequence of increasing prices may make future reductions *impossible*" (p. 7) (our emphasis).

World War II: the Handshake Extends across the Globe

Perhaps the most dramatic and tangible evidence of the Coca-Cola Company's valuation of the implicit contract is the guarantee that the Company extended, and fulfilled at considerable cost, to the US military in WWII. As described above, Woodruff made a pledge: Coca-Cola would be available to every member of the armed forces for 5¢ no matter where they were stationed. Ben Oehlert, a Coca-Cola lawyer in charge of diplomatic efforts at establishing operations overseas, urged on Woodruff in his plans claiming that the resultant goodwill would "carry through the lives of the young men now in the Army and through them will be reflected in generations to come" (Allen, 1994, p. 255).[42]

During WWII, more than 5 billion bottles of Coca-Cola were delivered to armed service members. It all began with a June 29, 1943 top-secret cable from General Dwight Eisenhower, sent from Allied Headquarters in North Africa, asking for delivery of 10 bottling plants and enough syrup to provide his men with six million bottles of Coca-Cola a month.[43] In the end, a total of 64 bottling plants were shipped abroad and set up near combat areas.[44] For the Normandy invasion, Paul Bacon, Coca-Cola's chief technical observer (TO) in London asked for a requisition of 400,000 cases of Coca-Cola, 50,000 lbs of CO_2 gas, one and a half million bottle caps, 1,800 ice coolers, 1,000,000 gallons of syrup, and 5 bottling plants to be packed for amphibious landing. The quartermaster for the European Theater initially denied this request, but then supreme Allied commander Dwight Eisenhower ordered the requisition (Allen, pp. 260–261). In the Pacific Theater, cases of Coca-Cola were parachuted from AAF transport plains to soldiers below.[45] Besides overseas operations to deliver Coca-Cola to US soldiers, the Company also served training camps across the US where it sold nickels, at cost, to soldiers.[46] By the end of the war, the Company had borrowed $5.5 million ($45.9 million in 1992 $s) to finance its efforts (Allen, 1994, p. 265). This was one of the smartest investments the company ever made: "After gulping down more than a billion servings of Coca-Cola, eleven million veterans were returning with a lifelong attachment to the soft drink" (Allen, 1994, p. 265).

How important to soldiers was this wartime promise by the Coca-Cola Company? Recalling his request from Allied Headquarters in North Africa, Eisenhower commented that he had taken "a survey to see just what the men wanted and more of them voted for Coca-Cola than beer."[47] The most telling

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[41] E.g. Unsigned, Letter to F.E. Riggs. Riggs was regional sales manager for the Coca-Cola Company in Chicago.
[42] See Allen (1994, pp. 254–265) for a description of the war effort operations.
[43] Eisenhower, Top Secret Cable.
[44] *Always Coca-Cola*, p. 11.
[45] *Coca-Cola Bottler*, "Coca-Cola Parachuted to Thirsty Troops," December 1944.
[46] *Coca-Cola Bottler*, "Thanks for Nickels!," January 1944.
[47] Eisenhower, Testimony.

account of this importance is offered by a war correspondent, Howard Fast, who almost died as a result of a pilot's fear of not fulfilling a Coca-Cola-related order (Pendergrast (1993, p. 205) and Fast (1990, pp. 109–205)). Fast's transport plane landed at a remote Saudi Arabian Army outpost where the temperature was 157ºF. They were there to collect thousands of empty Coke bottles. When their overloaded C46 failed to gain altitude, Fast suggested getting rid of the bottles. The pilot responded that dumping the bottles was not an option:

> Guns they could dump, jeeps, ammo, even a howitzer… but Coca-Cola bottles? No way. Not if you wanted to keep your points and not become a PFC [Private First Class, the third lowest enlisted rank] again. . . . You don't [mess] with Coca-Cola.[48]

CONCLUSIONS

Using narrative approach, we have documented the existence of a long-term, implicit contract between the Coca-Cola Company and its consumers—a contract that *explicitly* promised the unaltered "Secret Formula" at the constant price of 5¢. We have documented the development of this implicit contract in terms of the Coca-Cola Company's advertising to its consumers, communications to its bottlers, and own internal documentation.

This paper is a case study, albeit one of an exceptionally important corporation. However, we believe the importance of this case study goes beyond Coca-Cola for two reasons. First, existing evidence on implicit contracts is either from anonymous surveys or from experimental markets. This case study demonstrates a large, real firm explicitly expressing its belief in an implicit contract and also acting on that belief in the most explicit fashion. It is to our knowledge the only direct evidence of an implicit contract in an economically important product market.

Second, we believe that this evidence may call attention to other long-term fixed prices and implicit contracts from a similar time period. For example, the Wrigley Company's 5-stick packages of gum were 5¢ from 1893 until 1972.[49] KC Baking Powder was selling for a fixed price of 25¢ for over 50 years (Levy and Young, 2004). Also, Young and Blue (2005) study Sears Catalog price data from 1938–1951 and document three brand name items that did not change price once over the entire time period—Gillette "blue blade" razors (5 for 25¢), Tums tablets (36 for 25¢), and Bayer aspirin (100 for 59¢). Implicit contracts may be partly accountable for these types of long-term, consumer good prices. Taken together, such contracts may have contributed significantly to rigidity in aggregate price

[48] The word we left out of quote was not "mess." Indicative of soldiers' interest in Coca-Cola were the taunts of Tokyo Rose: "Wouldn't it be nice to have an ice-cold Coca-Cola! Can't you just hear the ice tinkling in your glass?" (Allen, 1994, p. 258).

dynamics in the US.

[49] Personal email correspondence with Anne M. Vela, Consumer Affairs Coordinator, Wm. Wrigely Jr. Company, February 1999.

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TABLE 1

GALLONS OF COCA-COLA SYRUP SOLD AND REAL GDP

Year	Gallons of Syrup (U.S.)	Percent Change	Real GDP ($1992 Billion)	Percent Change
1928	23,226,092	–	894.2	–
1929	25,704,674	10.6	951.7	6.4
1930	26,322,820	2.4	862.1	–9.4
1931	25,101,423	–4.6	788.8	–8.5
1932	20,551,973	–18.1	682.9	–13.4
1933	19,376,587	–5.7	668.6	–2.1
1934	24,101,485	24.4	719.8	7.6
1935	27,482,431	14.0	778.2	8.1
1936	34,798,464	26.6	888.2	14.1
1937	40,652,790	16.9	932.5	5.0
1938	44,022,545	8.3	890.8	–4.5
1939	50,909,998	15.6	961.1	7.9

Sources: "Sales of Coca-Cola: Sales 1886 through 1939," Coca-Cola Company, and Gordon (2000, Appendix A).

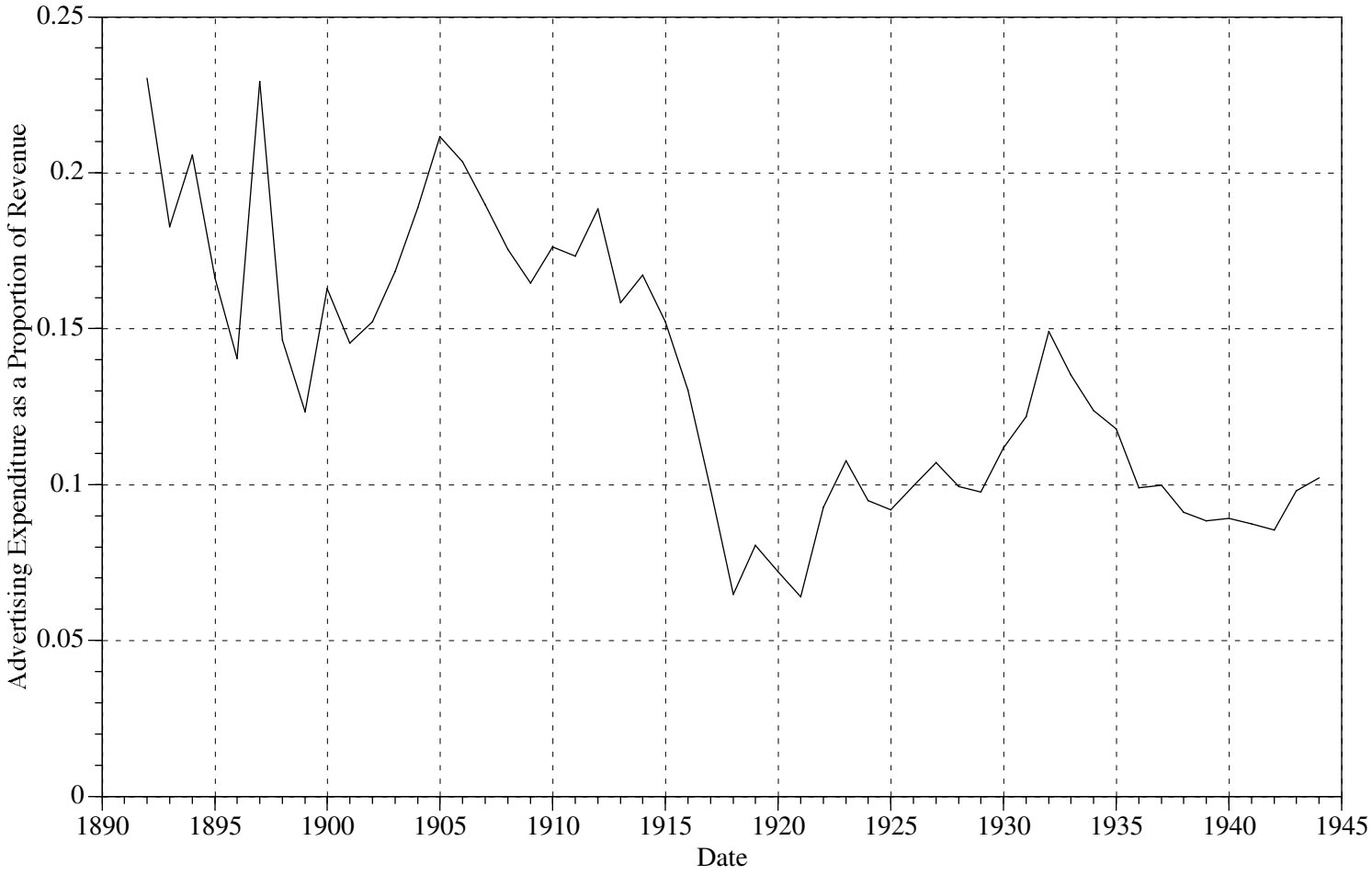
TABLE 2

ADVERTISING MATERIAL DISTRIBUTED BY THE COCA-COLA COMPANY IN 1913

200,000	4-head cutouts for window display
5,000,000	Lithograph metal signs from 6” X 10” to 5’ X 8’
10,000	Enamel metal signs 12” X 36”, 18” X 45”
60,000	Fountain festoons
250,000	Special signs for bottlers 12” X 36”
50,000	Cardboard cutouts for window display
60,000	4-head festoons for soda fountains
10,000	Lithograph metal display signs
20,000	Lithograph metal display containing reproduction of bottles
50,000	Metal signs for tacking under windows
200,000	Fiber signs for tacking on walls of refreshment stands
2,000,000	Trays for soda fountains
50,000	Window trims
250,000	5-head window displays and mirror decorations
1,000,000	Japanese fans
50,000	Christmas wreaths and bell decorations for fountains
50,000	The Coca-Cola Company song
1,000,000	Calendars
50,000	Thermometers
10,000,000	Match books
50,000,000	Doilies (paper)
	24-sheet posters for billboards 10’ X 20’
	Oil-cloth signs for storefronts
10,000	Large calendars for business offices
144,000	Pencils
	Transparent signs for windows and transoms
20,000	Blotters
10,000	Framed metal signs for well displays
5,000	Transparent globes, mosaic art glasswork
	Art glass signs
25,000	Baseball score cards
	Celluloid display cards
$300,000	Newspaper advertising
	Magazine, farm paper, trade paper, religious paper ads
	Other forms of advertising

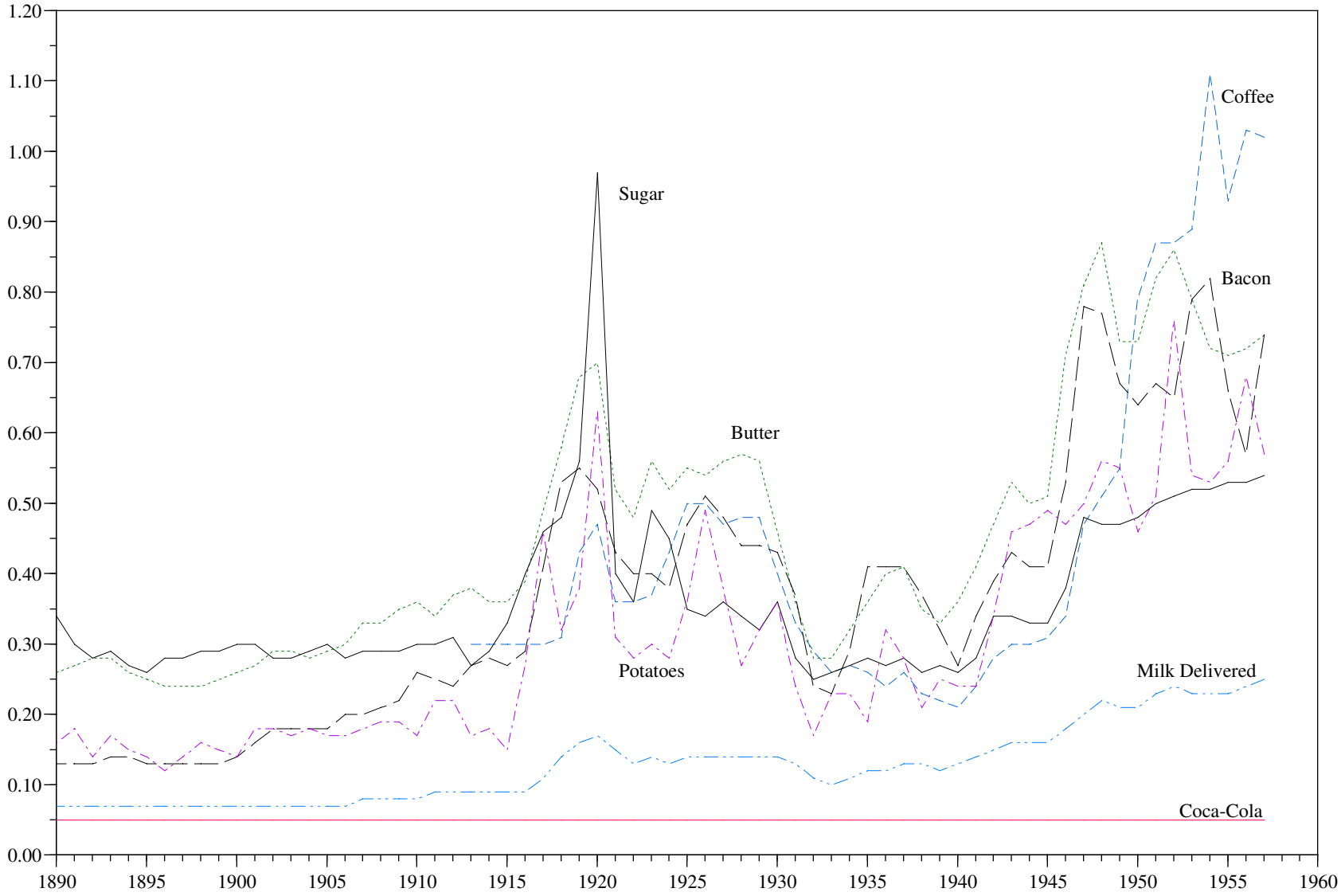
Source: Tedlow (1990, Exhibit 2-1, p. 53).

Figure 1. Coca-Cola Advertising Expenditures as a Proportion of Revenue, 1892–1946



Source: Internal Company Documents, Coca-Cola Company Archive, Atlanta, GA.

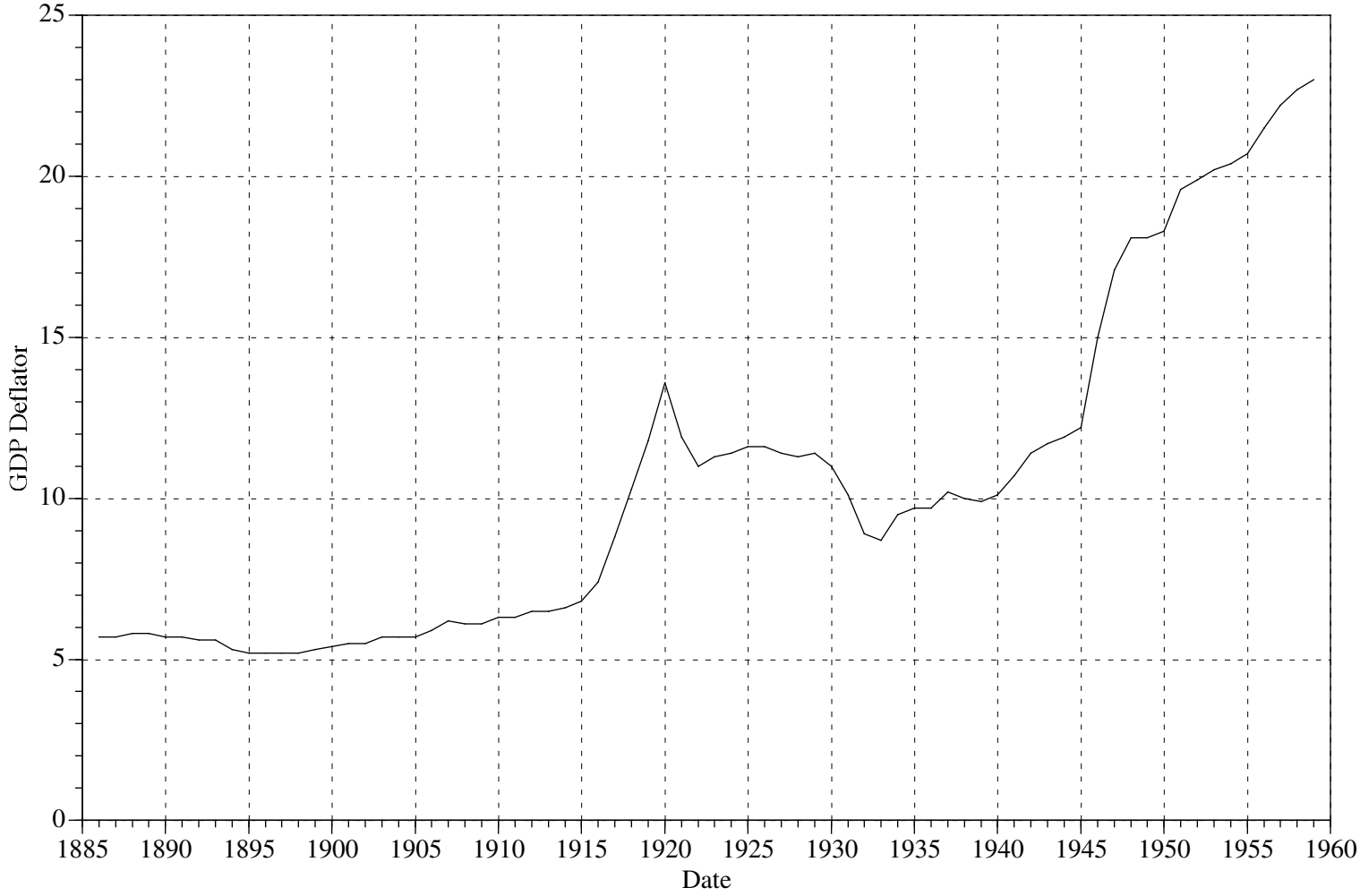
Figure 2. Retail Price of 6 1/2 oz Coca-Cola vs Retail Prices of Other Foodstuff, 1890–1957



Measurement Units: Coca-Cola ($/6.5oz), Milk Delivered ($/Qt), Coffee ($/Lb), Butter ($/Lb), Sugar ($/Lb), Bacon ($/Lb), and Potatoes ($/10 Lb).

Source: *Historical Statistics of the United States: Colonial Times to 1970*, 1989 Edition.

Figure 3. GDP Deflator, 1886–1959 (1992 = 100)



Source: Gordon (2000), Appendix A.