

**THE LABOR MARKET EFFECTS OF A UNIFORM
IMPOSITION OF CIGARETTE EXCISE TAXES
IN NEW YORK STATE**

Prepared for the
FACT Alliance for the Fair Application of Cigarette Taxes

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Objective

The purpose of this study is to assess the potential change in employment and worker earnings associated with the imposition of New York's State's cigarette excise tax on all cigarettes sold or consumed in the State. The analysis was performed using a three-stage approach. First, the characteristics of the retail cigarette industry in New York were examined, focusing on industry structure, employment patterns, and distribution lines. Second, changes in employment and earnings were estimated for workers in the retail cigarette industry stemming directly from the imposition of tobacco excise taxes on all cigarette sales or purchases in New York State. Third, an assessment was made of the indirect and induced employment and earnings changes linked primarily to the shifts in business-to-business purchases between establishments in the retail cigarette industry and businesses in all other local industries.

Retail Cigarette Industry

The retail cigarette industry cuts across several lines of business. Unlike many other products in the economy, there is no unique point of sale. Cigarettes can be purchased in tobacco shops, grocery stores, convenience shops, gasoline service stations, mass transit facilities, from vending machines in a number of differing locations, etc. Consequently, there are no government statistics which can completely describe the industry from a sole source. Rather, demographic data on several industries and from many different statistical agencies must be carefully combined to develop a comprehensive industry profile.

The latest County Business Patterns (CBP) data for retail tobacco shops in New York State show that there were approximately 1500 paid employees, working in one of 391 business establishments, with an annual payroll of nearly \$25 million in 2001. In addition, this same data source reported that the vast majority of tobacco shops were small businesses. In 2001, there were 310 establishments with 1 - 4 employees, 49 shops with 5 - 9 employees, 17 locations with 10 - 19 employees, and 15 businesses with 20 - 49 employees across the State. While these data do not cover all cigarette retailers and, on the other hand, include other tobacco product sales, they provide valuable insight into the employment practices of the industry and the average earnings of industry workers.

The CBP data were compared with employment and earnings information for the retail tobacco industry obtained from unpublished ES202 data. This latter source reports the number of employees and associated payroll statistics based on input provided by employers with workers covered under the State's unemployment insurance program. Labor market analysts generally agree that Es202 data provide the most accurate picture of labor market conditions. This study used data compiled for calendar year 2002, the latest available full-year data. Another quality advance of Es202 data is that the labor statistics are collected on a quarterly basis over the course of the year, as opposed to County Business Patterns information that is based on a specific period in the first quarter of each year. Despite these statistical differences, both data sources indicated a similar number of industry workers, with only a modestly higher average earnings per employee

in the Es202 report.

From an economist's viewpoint, any retail industry should be analyzed using a concept called "gross retail margins", not total industry revenues. This preferred measure is defined as the difference between industry sales receipts and the wholesale value of the merchandise sold. These receipts provide the foundation for retailers to hire workers, invest in capital equipment, rent required facilities, and generate operating profits. Gross retail margins represent the amount of "value-add" that retailers contribute to the overall production of goods and services in the economy.

Industry sources indicate that gross retail margins in cigarette markets typically range from approximately 12% to 18% of industry sales revenue (excluding excise taxes). Larger volume operations tend to have margins towards the lower end of the range, while smaller tobacco retailers normally have margins toward the upper limit.

Gross margins from cigarette retail operations in New York State were estimated by combining the dollar value of cigarette sales with industry trade margins. Sales in the State were divided into two categories: (1) sales from outlets run by Native American firms; and (2) cigarettes purchased from other local outlets for which the State's tobacco excise taxes were paid. Together, these two sources account for all the industry job opportunities for paid workers in the State.

In 2002, Native American firms sold 28 million cartons of cigarettes. This statistic came from a recent Post Standard (Syracuse) newspaper article, where the reporters of the story successfully sued the State of New York to disclose the volume of wholesale shipments to Native American retail shops. Using an assume average price of \$28 per carton, Native American sales accounted for nearly \$800 million of activity. These sales were normally larger volume transactions, therefore, a trade margin of 12% was used, resulting in gross retail margin receipts of approximately \$95 million. In the same year, the total volume of "taxed" transactions was slightly more than 80 million cartons. Using an average price (excluding tobacco excise taxes) of \$33 per carton, industry revenues from this segment of the market was approximately \$2650 million. Since these sales are normally made in smaller volumes, a trade margin of 18% was used, yielding margin receipts of \$475 million.

One of the goals of the study was to estimate the total number of employees or equivalent full-time workforce in New York State which supports the local retail trade in cigarettes. That is, the employment count in retail tobacco shops from Es202 data needed to be adjusted to reflect the use of workers associated with cigarette sales in business establishments whose primary product sales were not tobacco. However, employees in these other establishments should not be fully allocated to tobacco sales - only the portion of each worker's time devoted to the actual selling of cigarettes. This approach leads to the concept of a full-time equivalent worker. Total industry employment counts were estimated by calculating the percentage of gross retail margins paid out to employees in the form of labor compensation (wage and salary payments plus fringe benefits) using government data and, then, dividing that estimate by the average compensation per

employee based on the State Es202 data. Using this technique, total industry employment was estimated at approximately 8300 workers statewide in 2002. Native American firms employed roughly 1300 people, with the remainder attributed to “taxed” sale locations.

Baseline Cigarette Demand - 2002

The total demand for cigarettes by New Yorkers can be segmented into five groups: (1) sales of local “taxed” cigarettes to New Yorkers; (2) internet and 800-network sales to New York residents from retailers outside the State; (3) internet and 800-network sales to local buyers from retailers within the State; (4) bootlegged sales to local customers; and (5) cross-border purchases by New Yorkers. In addition, there are internet and 800-network sales to non-New Yorkers supplied by local retail tobacco establishments.

In an earlier study for the FACT Alliance, the demand for cigarettes by State residents in 2002 was estimated to be approximately 124 million cartons. The volume of “taxed” sales was slightly more than 80 million cartons. Internet and 800-network purchases by local residents were estimated to have been roughly 30 million cartons, with 33% of that total supplied by retailers outside the State and the remaining 67% coming from local businesses. In addition, bootlegged sales were in the vicinity of 9.5 million cartons, while cross-border sales accounted for another 4.5 million cartons. Sales to non-New Yorkers by local merchants using internet and 800-network platforms were estimated at 8 million cartons. These latter sales, along with similar shipments by internet and 800-network sites to New York residents (noted above), accounted for the 28 million cartons handled by Native American firms in 2002.

Alternative Scenario

An alternative demand scenario was generated under the assumption that all cigarettes purchased by New York residents or sold by local retailers to non-New Yorkers would be subject to the current State tobacco excise tax of \$15.00 per carton. This assumed change would produce two separate economic effects: (1) the imposition of the tax on alternative distribution sites would raise the overall average price of cigarettes, reducing the absolute demand for the product statewide; and (2) there would be shift in market share from these alternative channels to the more traditional retail sources as product prices approach more equality. The first impact involved the estimation of how much product prices changed and how sensitive consumers were to these changes. Based on the same previous study for the FACT Alliance in which the topics of the incidence of an excise tax on prices and the price elasticity (sensitivity) of demand exhibited by consumers were addressed, the net reduction in smoking would be in the range of 2.5 - 3.0 million cartons statewide. The second impact would be significantly larger. On this topic, economists turn to a concept called the “cross-price elasticity of demand”. That is, what would be the change in one competitor’s (or group of competitors) volume of sales as a result of a change in the price charged by another competitor (or group of competitors). Academic research suggests that this particular elasticity is significantly larger than the overall price elasticity of demand for the product. For example, while the total market demand for

gasoline is highly insensitive to a price change, an individual service station would observe a huge gain/loss in sales volume in response to a penny or two change in its posted price below/above the prevailing industry average price. In the cigarette market, a conservative estimate of this cross-price elasticity would be 1.1 - suggesting that a 10% price increase by one competitor would translate into an 11% increase in another competitor's sales volume.

The baseline demand profile estimated the total purchases by New Yorkers from internet and 800-network vendors to be approximately 30 million cartons. These retailers would likely sustain an effective price increase in the vicinity of 35 - 37.5%, implying a 40% loss in market sales, or 12 million cartons. With "taxed" sales of slightly more than 80 million cartons and an estimate of approximately 7000 employees supporting these sales, the number of cartons sold per employee was estimated at 11.5k for this segment of the market. Using this ratio, the additional demand on traditional retailers would generate the need for 1050 more workers. However, 8 million of those sales would represent a shift of business between retailers in the State. A similar employment ratio was calculated for Native American businesses by combining the 28 million cartons sold with the estimate of 1300 employees, yielding a number of 21.5k cartons per employee. The loss of workers by these establishments would be approximately 370. In addition, Native American firms would lose an additional 185 workers from lost sales to non-New Yorkers as their competitive position in the national internet and 800-network market would be eroded. The study's estimate of the falloff in these sales would be about 4 million cartons, implying a cross-price elasticity of nearly 1.4 for these operations - slightly higher than the within-state elasticity. Cross-border sales would be severely impacted since its underlying economic advantage would be virtually eliminated, adding a shift of a least 4 million cartons to more traditional retailers. Bootlegged sales would also be negatively impacted, transferring at least an added 8 million cartons to mainstream retailers. These latter two impacts would create job gains for 1050 more paid workers. The net impact on employment from these marketplace movements would be in the range of 1500 - 1600 jobs. Adjusting for the statewide reduction in smoking (2.5 - 3.0 cartons), there would be a gain of 1300 - 1400 industry workers, a 16% increase over the baseline scenario. In line with these job gains, worker earnings would be \$35 - 40 million higher.

These direct effects are only the first wave of economic change. In addition to the initial or direct impact on economic activity, there are indirect and induced changes. These added effects consist of: (1) changes in activity in other industries to meet the direct industry requirements of the cigarette retailers; (2) changes in the output of all industries to meet the changes in demand in (1) above; and (3) changes in local economic activity related to shifts in local household income. These regional impact factors, commonly referred to as input/output multipliers, are based on research conducted by the U.S. Bureau of Economic Analysis, U.S. Department of Commerce. These employment and earnings multipliers provide the basis for translating the estimated direct impacts on the retail tobacco industry into overall economic impacts. The New York State employment multiplier for retail trade is 1.3724, while the earnings multiplier is 1.6377. Using the local total employment impact ratio, the total net change in State employment is in the

range of 1900 - 2000 (after netting out an estimated 750 jobs lost by the Native American firms). In a similar manner, the earnings multiplier implies a net change of \$55 - 60 million in taxable incomes.

Summary

The retail tobacco industry spans many markets. Cigarettes are sold in many different commercial settings. In 2002, the industry supported the equivalent of 8300 full-time jobs in New York State. A uniform imposition of the State's tobacco excise tax on all cigarettes purchased by New Yorkers or sold by local retailers would shift 24 million cartons of local consumption back to more traditional distribution sources, create a loss of approximately 4 million cartons of out-of-state sales, and reduce smoking in the State by 2.5 - 3.0 million cartons. These changes in market conditions would create a net increase of 1300 - 1400 jobs in the retail cigarette market, with higher labor earnings of \$35 - 40 million. These direct employment and earnings effects would ultimately impact total jobs in New York State by 1900 - 2000 workers, with a net increase of \$55 - 60 million in taxable incomes.

APPENDIX

Price Elasticity

The price elasticity of demand is the percentage change in quantity demanded in response to a given change in product price, all other conditions held constant. Price elasticity is normally a negative number, reflecting the inverse relationship between price and quantity in the demand function. Price elasticity is often characterized in reference to its numerical value, dropping the negative sign. A price elasticity coefficient greater than one would indicate strong sensitivity to price changes; a value less than one, weak price sensitivity. An elasticity of zero would indicate complete indifference to market price. Customer preferences, the prices of other goods and both the number and quality of substitutes all have a major impact on price elasticity. The relative price of a product will itself influence price sensitivity. Because the purchase of a lower-cost product would deplete less of household income than a higher-cost alternative, inexpensive products are generally less price-sensitive than expensive ones. Products that have few close substitutes will be less price-sensitive, while goods that have many alternatives will tend to be highly elastic. The price elasticity of demand for cigarettes was estimated to be approximately -0.4 in an earlier study. This suggests that cigarette sales will not be sharply impacted by changing prices.

The cross-price elasticity of demand is another form of economic sensitivity analysis. This elasticity measures the response of one product's quantity demanded to the change in another product's price. That is, the cross-price elasticity is the percentage change in the quantity demanded of product A relative to the percent change in the price of product B. The cross-price elasticity is a positive number for similar products. Economists typically use this concept to define competitors in a given market. High positive values indicate a close linkage between two competitors - one firm's product can substitute, to a certain degree, for another company's product. The cross-price elasticity in the cigarette industry among competitors appears to be slightly larger than 1.0 - in the range of 1.1 to 1.4. This suggests that a substantial shift in market shares would result from changing relative prices in the total marketplace.

Regional Input/Output Multipliers

An input/output (I/O) model is used to estimate the implications for economic activity in different industries. Because of the interdependencies among the industries, the growth of any single industry cannot be studied in isolation. The I/O approach is best suited to take explicit account of the direct as well as indirect relationships among all industries.

The basic parameters of any I/O model are derived from a set of identifies known as the transaction tables. These tables show the flows of goods and services among different industries and the flows to each industry's final users (households, businesses, exporters,

importers, and governments). These identifies also show the link between the broad GDP components and the demand for individual industry products. Industries buy in one range of markets and sell in another set.

Every firm can be examined from two points of view: first, as a producer of the output it sells to other firms and to the final users of its product, and second, as a user of the inputs it buys from other firms and the primary factors of production it purchases (labor, land, capital, etc.). If all business firms, households and governments are grouped into industries, the same two-fold market structure holds. Industries buy in one range of markets and sell in another set. The I/O transaction tables show these dual market relationships among all industries in the economy.

Each row of the main transaction table shows the sales distribution of a given industry's output to every other industry and to each of the major final users (households, businesses, exporters, importers and the public sector) in the economy. Meanwhile, each column of the table shows the distribution of a given industry's purchases of materials from other industries and the use of primary factors of production.

This study employed the use of regional input/output multipliers to assess the total (direct, indirect and induced) changes associated with a change in public policy. The direct effects are only the first wave of economic changes. There are four separate effects that collectively account more fully for the regional economic repercussions of producing a dollar's worth of output in a given industry. These effects are: (1) change in output for a given industry needed to meet the initial dollar change in spending by the final users; (2) changes in the output of other industries to meet the direct requirements of a given industry; (3) changes in the output of all industries to meet the changes in production in (2) above; and (4) the regional production required to meet changes in demand by final users created by higher local income generated by the first three effects.

These regional impact factors, which were used to capture the total economic effects by industry, are based on research conducted by the U.S. Bureau of Economic Analysis. Researchers at the U.S. Department of Commerce have developed regional I/O models called RIMS II (Regional Input/Output Modeling Systems) that capture the specific industrial composition of the local economy. This study used two impact multipliers from this body of research - employment and earnings multipliers. The earnings multiplier represents the total dollar change in earnings of households employed by all industries for each additional dollar of earnings paid directly to workers employed in the retail cigarette industry. In a similar manner, the employment multiplier represents the total change in the number of jobs in all industries for each additional job in the retail cigarette industry.