RESEARCH PAPER

# The association of retail promotions for cigarettes with the Master Settlement Agreement, tobacco control programmes and cigarette excise taxes

**Brett R Loomis, Matthew C Farrelly, Nathan H Mann**

*Tobacco Control* 2006;**15**:458–463. doi: 10.1136/tc.2006.016378

See end of article for authors' affiliations

Correspondence to: B R Loomis, RTI International, 3040 Cornwallis Road, PO Box 12194, Research Triangle Park, NC 27709, USA; loomis@rti.org

Received 22 February 2006
Accepted 27 July 2006

**Background:** Retail stores are the primary medium for marketing cigarettes to smokers in the US. The prevalence and characteristics of cigarette retail advertising and promotions have been described by several investigators. Less is known about the proportion of cigarette sales occurring as part of a retail promotion and about the effects of tobacco control policies on cigarette promotions.
**Objective:** To estimate the effect of the Master Settlement Agreement (MSA), state tobacco control programme funding and cigarette taxes on retail promotions for cigarettes in supermarkets in the US.
**Outcome measures:** Proportion of cigarette sales occurring under a retail promotion and the value of multipack promotions (eg, buy one pack, get one pack free) and cents-off promotions, measured using scanner data in supermarkets from 50 retail market areas from 1994 to 2004.
**Results:** Promoted cigarette sales have increased significantly since the MSA ($p<0.01$), and are higher in market areas with high tobacco control programme funding ($p<0.01$) and high cigarette tax ($p<0.01$). The value of a multipack promotion is higher since the MSA ($p<0.01$) and in market areas with high cigarette tax ($p<0.01$). The value of a cents-off promotion is negatively related to the MSA ($p<0.01$), with mixed results for tobacco control programme funding ($p<0.05$), and is unassociated with tax.
**Conclusions:** Higher promoted cigarette sales and increased promotional values in market areas with strong tobacco control policies, compared with market areas with weaker tobacco control policies, may partially offset the decline in smoking achieved in those areas.

The retail environment is the primary channel for tobacco advertising and promotion in the US. In 2003, the total advertising and promotional expenditures by the five major cigarette manufacturers was $15.15 billion, the largest amount ever.[1] Of this amount, 89.5% was spent on programmes to advertise at the point of sale, reduce the retail price of cigarettes to consumers, and facilitate the placement and sale of cigarettes in retail stores. An additional 4.5% was spent on promotional allowances to cigarette wholesalers. The remaining 6% was spent on traditional forms of advertising, such as newspapers, magazines, transit and event sponsorships.

The nature and type of cigarette promotion and advertising strategies in retail outlets have been studied by several investigators.[2–12] Nonetheless, empirical evidence of a relationship between point-of-purchase promotions for cigarettes and tobacco control policies is limited. Wakefield et al[13] collected data on 3462 tobacco retailers in 191 communities in the US between 16 February 1999 and 23 June 1999, a period spanning implementation of the Master Settlement Agreement (MSA) billboard advertising ban. They found that the prevalence of multipack discounts (eg, buy one pack, get one pack free), gift-with-purchase and price discounts was significantly higher after the ban than before the ban. Slater *et al* [14] used data collected in spring 1996 from 581 tobacco retailers. They found that gift-with-purchase promotions for Marlboro cigarettes were 2.59 times more likely in Arizona, California and Massachusetts—states with comprehensive tobacco control programmes—than in other states.

In a previous report,[11] we described the level of promoted cigarette sales before and after the MSA in the US from 1994 to 2003. In the current study, we expand on the previous report by estimating regression models to estimate the effect of the MSA, funding for state tobacco control programmes, and cigarette excise taxes on three measures of retail promotions from 1994 to 2004. We also present descriptive information on multipack discounts and cents-off promotions in supermarkets.

## METHODS

### Scanner data

Cigarette promotions and sales are from scanner data licensed from ACNielsen.[15] Data are collected from supermarkets with annual sales of at least $2 million (about $5500/day), and are reported quarterly from 1994 to 2004 for 50 retail market areas. Observations are on individual cigarette varieties, which are identified by a universal product code and item description. Variables include brand name, manufacturer, total pack sales and pack sales for three types of retail promotions: multipack (eg, buy one pack, get one pack free), gift-with-purchase (eg, buy two packs, get a free lighter) and cents-off (eg, price reduced by $0.50 per pack). Cents-off discounts do not include coupons.

The market areas are defined by ACNielsen, and are collections of counties centred on a metropolitan area. The average number of counties in a market area is 30 (range 1–79). Market areas contain on average 4.47 million people (range 1.05 million–19.98 million) and collectively cover approximately 76% of the US population. Eighteen market areas are contained entirely within a single state. Of the 32 market areas that cross state borders, 7 have <70% of their population in a single state and 14 have ⩾90% of their population in a single state.

**Abbreviations:** CDC, Centers for Disease Control and Prevention; MSA, Master Settlement Agreement

**Table 1** Multipack promotions for single-pack cigarette sales in supermarkets, USA, 1994–2004

| Combination (buy, get) | Year 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1 | 2% | | 1% | 1% | | 6% | 27% | 22% | 35% | **62%** | **77%** |
| 2,1 | **98%** | 5% | 1% | 2% | 3% | 9% | 17% | 4% | 18% | 37% | 23% |
| 3,2 | | | **71%** | 5% | 24% | 41% | **46%** | **72%** | **47%** | 1% | |
| 4,1 | | **95%** | 27% | **88%** | 23% | 1% | | | | | |
| 8,2 | | | | 4% | **50%** | **43%** | 9% | 2% | | | |
| n* | 125 | 4093 | 9889 | 10 984 | 25 799 | 24 005 | 20 878 | 53 227 | 64 658 | 36 920 | 28 250 |

Combinations that occur rarely are not shown. The maximum percentage in each year is in bold.
*Number of packs sold as part of a multipack promotion, including free packs, in 1000s.

## Outcome variables

We constructed three measures of retail promotions from the scanner data. The first is the proportion of total sales that were promoted, defined as the sum of sales occurring under any of the three promotions, divided by total pack sales.

The second is the price discount implied by a multipack promotion, expressed as a percentage of the usual, or non-promoted, price. The price discount is calculated by determining the price per pack for the entire bundle of cigarettes, subtracted from the price that would have been paid if each pack had been purchased individually at the usual price. For example, if a pack of cigarettes usually costs \$3.25, the value of a buy-one-get-one multipack promotion that costs \$5.00 is \$0.75 per pack, because the price per pack (\$2.50) of the multipack promotion is \$0.75 less than the usual price. The value of the multipack discount as a fraction of the usual price is then \$0.75/\$3.25 = 0.23, or 23%. This example shows a noteworthy feature of multipack pricing. If the promotion were truly buy-one-get-one-free, then the two-pack bundle would cost \$3.25, the price of a single pack, rather than \$5. Such mark-ups in multipack prices are common in the scanner data and do not appear to be a function of the amount of excise tax owed on the free packs.

The third outcome variable is the value of a cents-off promotion, expressed as a percentage of the usual price. The amount of the discount is reported in the data and is divided by the usual price. For example, if a cigarette variety has a usual price of \$3.25 per pack and offers a \$0.50 discount, then the value of the promotion as a percentage of the usual price is \$0.50/\$3.25 = 0.15, or 15%.

## Tobacco policy variables

We created five tobacco policy variables: an indicator for the MSA (1, beginning in the fourth quarter of 1998; 0, otherwise), a continuous variable for cigarette excise tax (in \$/pack), and three indicators for annual per capita state tobacco control programme funding. Tobacco control programme funding is expressed relative to the Centers for Disease Control and Prevention (CDC) recommended minimum funding amounts: <25%, 25–50%, >50% of the CDC-recommended minimum.[16] Tobacco funding and cigarette tax data were merged to the market areas by state and quarter. For market areas that intersect more than one state, we calculated an average using the proportion of the population in each state as a weight. Cigarette taxes are from *The tax burden on tobacco*.[17] The tobacco control programme funding data are described elsewhere.[18]

## Control variables

The Herfindahl index of industry concentration[19] was included to account for the effects of industry-wide oligopoly structure, and was calculated from the scanner data. The share of total sales captured by each cigarette brand was included to control for the influence of an individual brand's market share on its own promotions and is also calculated from the scanner data. The unemployment rate was included to control for prevailing economic conditions. A quadratic time trend was included to account for secular changes across all markets. Indicator variables are included for each brand and market area to control for brand-specific and market-specific effects that do not change over time. Finally, quarter indicators were included to control for quarterly seasonality.

## Statistical analyses

To estimate all regression models, we aggregated the data so that there was one observation for each cigarette brand in each market and quarter, and limited the data to the top five cigarette manufacturers in the US (ie, Brown and Williamson, Liggett, Lorillard, Philip Morris and RJ Reynolds). These manufacturers account for approximately 98% of the sales observed in the supermarket scanner data. In all, 144 identifiable cigarette brands are present in the data. Single-pack and carton sales are included in all models. Cigarette prices, taxes and tobacco control programme

**Table 2** Cents-off promotions for single-pack and carton cigarette sales in supermarkets, USA, 1994–2004

| Quantity | Amount of discount (\$/pack) | Year 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Single pack | ⩽\$0.25 | **69%** | 43% | **69%** | **56%** | **68%** | **83%** | **65%** | 2% | 1% | 1% | 1% |
| | \$0.26–0.50 | 31% | **57%** | 31% | 44% | 32% | 17% | 35% | **75%** | **77%** | **59%** | 37% |
| | \$0.51–0.75 | | | | | | | | 7% | 21% | 7% | 18% |
| | \$0.76–1.50 | | | | | | | | 16% | 1% | 33% | 44% |
| | n* | 1246 | 544 | 1640 | 2349 | 5885 | 7261 | 1026 | 1557 | 3293 | 3311 | 4796 |
| Cartons | ⩽\$0.25 | **75%** | 47% | **71%** | 44% | **71%** | **85%** | **78%** | 2% | **81%** | **81%** | 30% |
| | \$0.26–0.50 | 25% | **53%** | 29% | **56%** | 29% | 15% | 22% | 38% | | 4% | |
| | \$0.51–0.75 | | | | | | | | **48%** | 15% | 15% | 19% |
| | \$0.76–1.50 | | | | | | | | 12% | 4% | | **51%** |
| | n† | 1564 | 1153 | 2572 | 5117 | 8186 | 9311 | 634 | 470 | 1329 | 1231 | 794 |

The maximum percentage in each year is in bold.
*Number of single packs sold as part of a cents-off promotion, in 1000s.
†Number of carton packs sold as part of a cents-off promotion, in 1000s (number of carton packs = number of cartons ×10).

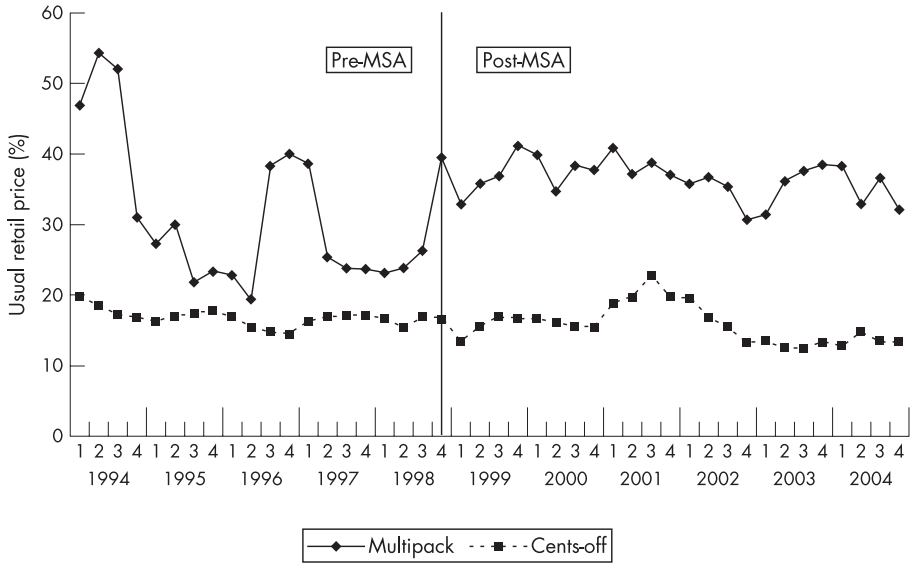


**Figure 1** Retail value of multipack and cents-off promotions as a percentage of the usual price in supermarkets, USA, 1994-2004. MSA, Master Settlement Agreement.

funding amounts were converted to real year 2004 dollars to account for inflation.

The proportion of sales as part of a retail promotion for each brand is a fraction between zero and one, and a grouped variable. Accordingly, it was transformed using the logit transformation, logit(p) = log(p/1–p), and regression models were fit using weighted least squares.[20] In cases where the proportion of promoted sales was zero, we used a value of 0.001 to represent those observations in the model, as suggested by Greene.[20] Estimation was by the glogit command in Stata V.8.2.[21]

The retail values of multipack and cents-off promotions as percentages of the usual retail price for each brand are ratios bounded between zero and one. Unlike the proportion of sales that are promoted, these are not suitable for grouped logit estimation because the numerator and denominator are dollar values, not counts. Observations on brands that did not offer multipack or cents-off promotions in a given market and quarter were excluded. For these outcomes, estimation was by least squares with the regress, robust command in Stata V.8.2.[21]

## RESULTS

### Descriptive statistics

The top 10 selling brands accounted for 70% (range 36–93%) of promoted sales, on average, and 69% (range 60–76%) of all cigarette sales. Marlboro alone accounted for 42% (range 0–82%) of promoted sales and 33% (range 23–44%) of total sales.

Table 1 shows the most common types of multipack promotions. The combination receiving most sales in a given year is highlighted. From 1995 to 2001, 5-pack and 10-pack bundles were dominant. Beginning in 2002, smaller bundles, such as buy-one-get-one-free and buy-two-get-one-free, were more common. As cigarette prices have risen, manufacturers might have been reluctant to offer bundles that would be perceived as too expensive, precipitating the shift to smaller multipack bundles. The number of packs sold in US supermarkets as part of a multipack discount, including free packs, rose from 125 000 in 1994 to 64 658 000 in 2002, before falling back to 28 250 000 in 2004.

Cartons make up 57% of supermarket cigarette sales, but multipack promotions for cartons are uncommon and are not shown in table 1. However, cents-off promotions for cartons

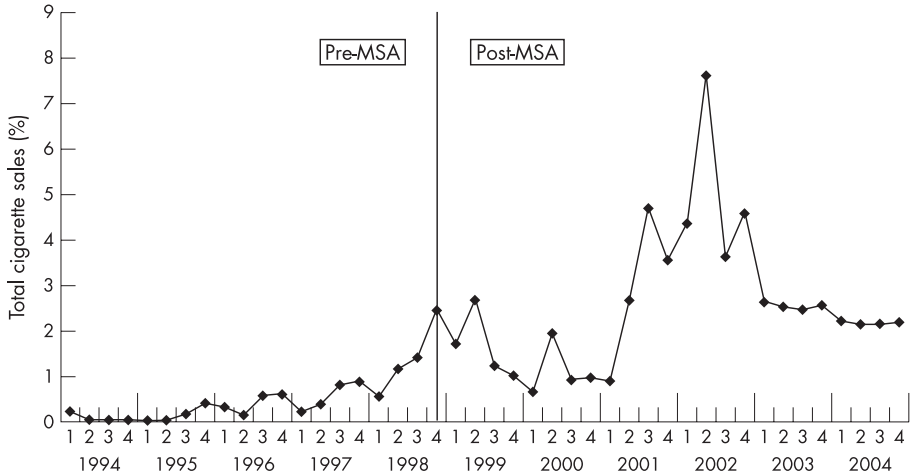


**Figure 2** Promoted cigarette sales as a percentage of total sales in supermarkets, USA, 1994–2004.

**Table 3** Regression results of the effect of state tobacco control funding, cigarette taxes and the MSA on retail cigarette promotions, 1994–2004

| Independent variable | Percentage of sales promoted<br>Odds ratio (95% CI) | Multipack value as a percentage of usual price<br>OLS coefficient (standard error) | Cents-off value as a percentage of usual price<br>OLS coefficient (standard error) |
|---|---|---|---|
| TCP funding: <25% of CDC minimum | 1.0 | Reference for funding variables | Reference for funding variables |
| TCP funding: 25–50% of CDC minimum | 1.139*** (1.108 to 1.170) | 0.002 (0.004) | −0.006** (0.003) |
| TCP funding: >50% of CDC minimum | 1.231*** (1.204 to 1.258) | 0.002 (0.003) | −0.005 (0.004) |
| Cigarette excise tax, $/pack | 2.155*** (2.071 to 2.242) | 0.022*** (0.006) | 0.005 (0.007) |
| MSA (1 = yes, 0 = no) | 1.564*** (1.518 to 1.612) | 0.071*** (0.006) | −0.031*** (0.003) |
| $R^2$ | 0.5317 | 0.5264 | 0.5168 |
| Number of observations | 110398 | 8432 | 4111 |

CDC, Centers for Disease Control and Prevention; MSA, Master Settlement Agreement; OLC, ordinary least squares; TCP, tobacco control programme. Models controlled for brand market share, Herfindahl index of industry concentration, unemployment rate, quadratic time trend, cigarette brand, market, and calendar quarter.
*p<0.10; **p<0.05; ***p<0.01.

are more common. Table 2 reports cents-off promotions for single-pack and carton sales. The discount with most sales in a given year is highlighted. Until 2001, the dominant cents-off promotion for cartons and packs was <$0.25/pack. Cents-off promotions of >$0.50/pack were first observed in 2001 and became the majority of cents-off promotions in 2004. The number of packs sold as single-packs and cartons in US supermarkets increased from 2 810 000 in 1994 to 16 572 000 in 1999, after which cents-off sales declined rapidly. The proportion of cents-off sales accounted for by single-pack sales increased steadily over time.

Tables 1 and 2 show that multipack promotions accounted for approximately 70% of promoted sales on average in US supermarkets from 1994 to 2004. Gift-with-purchase promotions were rare in supermarkets before the MSA and non-existent after the MSA.

Figure 1 lists the trend in the average value of multipack and cents-off promotions as a percentage of the usual retail price. The value of the price discount implied by a multipack promotion averaged 32.6% of usual retail price before the MSA and 37.2% thereafter. The retail value of cents-off promotions averaged 16.8% of the usual price before the MSA and 15.8% after the MSA.

Figure 2 lists the trend in the percentage of cigarettes sold under a retail promotion in supermarkets. Promotions accounted for about 0.5% of total sales before the MSA and about 2.5% of total sales after the MSA. Promoted sales first peaked in the fourth quarter of 1998 at 2.4% of total sales, coinciding with the signing of the MSA. Since then, promoted sales were fairly stable, at a quarterly average of 2.3%, until spiking again to 4.7% in the third quarter of 2001. Between the third quarter of 2001 and the end of 2003, promoted cigarette sales averaged 3.7% of the total sales, with a maximum of 7.3% in the second quarter of 2002. Promoted sales were flat, at around 2.5% of sales, in 2003 and 2004.

### Regression results

The proportion of each brand's sales that are promoted is significantly positively related to all of the tobacco policy variables (table 3). Compared with states that spend <25% of the CDC-recommended minimum on tobacco control, the odds of a promoted sale increase by 14% (odds ratio (OR) 1.14, 95% CI 1.11 to 1.17) in states that spend between 25% and 50% of the recommended minimum and by 23% (OR 1.23, 95% CI 1.20 to 1.26) in states that spend >50% of the recommended minimum. For every $1.00 increase in the cigarette tax, the odds of a promoted cigarette sale double (OR 2.16, 95% CI 2.07 to 2.24). Since the MSA, the odds of a promoted sale have increased by 56% (OR 1.56, 95% CI 1.52 to 1.61).

A $1.00 increase in the cigarette excise tax is associated with an increase of approximately 2 percentage points ($p<0.01$) in the average value of a multipack promotion as a percentage of retail price. Likewise, the MSA is associated with a 7-point increase ($p<0.01$). To interpret these results, consider the example used earlier, of a buy-one-get-one-free multipack promotion selling for $5.00 (ie, $2.50/pack). With a usual price of $3.25/pack, the implied price discount of $0.75/pack is 23% of usual price. After a $1.00 excise tax increase, the price of the same multipack promotion would change such that the implied price discount would increase to 25%, representing a greater value to the smoker. If the $1.00 tax increase is fully passed on and the usual price rises to $4.25/pack, then the implied price discount of the promotion would be $1.06/pack and the multipack would cost $6.38 ($3.19/pack). The net result is that the tax hike led to a 31% increase in usual price, but the price per pack of the multipack increased by only 26%, partially offsetting the increased tax.

Unlike multipack promotions, the average value of a cents-off promotion as a percentage of the usual price is significantly negatively related to the MSA and not significantly related to cigarette taxes. After the MSA, the average value of a cents-off promotion declined by approximately 3 percentage points, on average. This implies that, since the MSA, cigarette prices have been rising faster than the value of cents-off promotions, despite the increasing nominal values of cents-off promotions shown in table 2. The model also suggests that the value of cents-off promotions in states that spend between 25% and 50% of the CDC-recommended minimum on tobacco control programmes is significantly smaller than in states that spend <25% of the CDC-recommended minimum; however, the effect size is small ($\beta = -0.006$).

## DISCUSSION

Our findings show that promoted cigarette sales, as a proportion of all cigarette sales, have increased considerably since the MSA, and are higher in market areas with high cigarette taxes and substantial tobacco control programme funding. The price discount implied by a multipack promotion is also higher in market areas with high cigarette excise taxes since the MSA, but it is not associated with tobacco control programme funding. The value of cents-off promotions as a percentage of the usual retail price is negatively related to the MSA and unassociated with taxes, with mixed results for tobacco control programme funding.

Retail promotions for cigarettes are important for public health because they are likely to increase cigarette sales. In the supermarket scanner data, promoted cigarette prices were on average 25% lower than non-promoted prices, resulting in higher consumption and potentially offsetting reductions in

smoking achieved by state tobacco control programmes and tax increases. Retail promotions also perform the basic functions of all cigarette advertising, which is to cue current smokers to light up, remind the former smokers of their smoking habit, and draw attention to the product. Cigarette advertising in general increases cigarette sales,[22 23] and it is reasonable to expect that retail promotions also increase sales.

Youth and young adult smokers appear to be especially vulnerable to retail advertising and promotion. Promotions may encourage initiation of regular smoking among youth,[24] and the likelihood of taking advantage of retail promotion increases, the lesser the age.[25] Retail advertising for the most popular youth brands (ie, Marlboro, Camel and Newport) may be more prevalent in stores frequented by youth,[8] and frequent exposure by youth to retail advertising has been associated with higher prevalence rates of lifetime smoking.[9] Owning a tobacco promotional item is also significantly associated with susceptibility to smoking[26] and progression to established smoking.[27]

## What this paper adds

- Retail stores are the primary medium for marketing cigarettes to smokers in the US.
- In 2003, total advertising and promotional expenditures by the five major cigarette manufacturers was a record $15.15 billion, with over $13 billion of that amount spent on programmes to advertise at the point of sale, reduce the price of cigarettes to smokers, and facilitate the placement and sale of cigarettes in retail stores.
- The prevalence and characteristics of cigarette retail advertising and promotions have been fairly well described. However, less is known about the proportion of cigarette sales occurring as part of a retail promotion and about the effects of tobacco control policies on cigarette promotions.
- This paper uses data on cigarette sales in supermarkets from 50 market areas across the US to estimate the effect of the Master Settlement Agreement (MSA), state tobacco control programme funding, and cigarette taxes on retail promotions for cigarettes in supermarkets in the US.
- The outcomes studied include the proportion of cigarette sales occurring under a retail promotion, the value of multipack promotions (eg, buy one pack, get one pack free) and the value of cents-off promotions from 1994 to 2004. We found that promoted cigarette sales have increased considerably since the MSA and are higher in market areas with high tobacco control programme funding and high cigarette tax.
- The value of a multipack promotion is higher since the MSA and in market areas with high cigarette tax. The value of a cents-off promotion is negatively related to the MSA, with mixed results for tobacco control programme funding, and is unassociated with tax.
- These results suggest that progress towards reduced tobacco consumption in areas with high cigarette tax and well-funded tobacco control programmes may be partially offset by increased retail promotions for cigarettes.
- More stringent regulation of retail advertising and promotion should be considered.

At least two reasons can be cited for the likely positive association between strengthening tobacco control policies and promoted cigarette sales. Firstly, firms in concentrated industries, such as the tobacco industry, rely heavily on advertising and promotion to increase sales rather than compete on the basis of price alone. In the face of declining sales, such as those that occur in the presence of strong tobacco control policies,[18] all firms may respond by increasing their advertising and promotional efforts accordingly. For example, Chaloupka et al[28] examined industry documents to evaluate cigarette companies' marketing strategies. They describe tobacco companies as being knowledgeable about and sensitive to the effect of tax and price changes on cigarette consumption, and cite examples of marketing and promotional campaigns built around anticipated cigarette tax increases. Secondly, smokers actively seek out low-cost cigarettes in response to rising cigarette prices and take advantage of retail promotions when they are available. Hyland et al[29] surveyed 3602 smokers in the US and found that 18% of them use coupons more often now than 5 years ago. White et al[25] found that 35% of California smokers use promotional offers every time they see one.

This study has two main limitations. Firstly, our results may not generalise to other retail channels for cigarettes, such as convenience stores, because supermarkets account for a minority of cigarette sales,[30] are less likely to participate in cigarette manufacturer incentive programmes,[7] and have a lower prevalence of advertising and promotion than other outlets.[3 5 12] Secondly, the scanner data undercount the true level of retail promotional activity. According to the Federal Trade Commission,[1] cigarette companies spent over $677 million on multipack discounts in 2003 (retail value added-bonus cigarettes). Many of these promotions are captured by the scanner data. In comparison, cigarette companies spent $10.8 billion on price discounts, which includes buy downs and voluntary price reductions. Many of these types of promotions would not be captured by the scanner data. Manufacturer's coupons are also not captured by scanner data.

These two limitations explain why promoted sales occur only 3% of the time on average in the scanner data. Although the conclusions of this analysis are strictly applicable only to supermarkets and specific types of promotions, higher market share and higher levels of promotions in other retail channels and the existence of unmeasured promotional activity strongly suggest that our results understate the true strength of the relationship between cigarette promotions and state tobacco control programmes and policies. A simple calculation can give a sense of how retail promotions (measured by scanner data and others that are unmeasured) may affect cigarette sales in the US. In 2003, 19 336 300 000 packs of cigarettes were sold in the US at an average price of $3.72.[17] In the same year, cigarette companies spent $13 365 527 000 on promotions to reduce the retail price of cigarettes (including price discounts, promotional allowances to retailers, coupons and retail value added-bonus cigarettes), which is $0.69 per pack.[1] If half this amount is translated directly into reduced cigarette prices, then eliminating all promotions would result in a $0.34-cent per pack increase, to $4.06, a 9.3% increase. Assuming a price elasticity of −0.4, this price increase would lead to a 3.7% decline in consumption, or 719 543 849 fewer packs, or 3.4 packs less per US adult.

The main goals of tobacco control policy in the US are to encourage smoking cessation among adults, reduce initiation among youth and protect the public from second-hand smoking. As long as cigarette companies are allowed to advertise and promote their products, there will always be the potential for aggressive marketing practices to reduce the effectiveness of policies intended to lower cigarette use and improve the public health. Policies such as strengthening minimum price laws and

granting the Food and Drug Administration authority to regulate tobacco marketing should be explored.

## ACKNOWLEDGEMENTS

All opinions are those of the authors alone and not necessarily those of the Robert Wood Johnson Foundation, the Department of Health and Human Services, or the Office on Smoking and Health. We thank James Nonnemaker for comments on an earlier draft of this paper.

### Authors' affiliations

**B R Loomis, M C Farrelly, N H Mann,** RTI International, Research Triangle Park, North Carolina, USA

This work was supported by a grant from the Robert Wood Johnson Foundation Substance Abuse Policy Research Programme (grant 48280). Data acquisition was supported by the Centers for Disease Control and Prevention, Office on Smoking and Health.

Competing interests: None.

## REFERENCES

1 **Federal Trade Commission (FTC)**. Federal Trade Commission cigarette report for 2003 (August 2005). http://www.ftc.gov/reports/cigarette05/050809cigrpt.pdf (accessed 3 Oct 2006).
2 **Barbeau EM**, Wolin KY, Naumova EN, *et al*. Tobacco advertising in communities: associations with race and class. *Prev Med* 2005;**40**:16–22.
3 **Celebucki CC**, Diskin K. A longitudinal study of externally visible cigarette advertising on retail storefronts in Massachusetts before and after the Master Settlement Agreement. *Tob Control* 2002;**11**(Suppl II):ii47–53.
4 **Dewhirst T**. POP goes the power wall? Taking aim at tobacco promotional strategies utilised at retail. *Tob Control* 2004;**13**:209–10.
5 **Feighery EC**, Ribisl KM, Schleicher N, *et al*. Cigarette advertising and promotional strategies in retail outlets: results of a statewide survey in California. *Tob Control* 2001;**10**:184–8.
6 **Feighery EC**, Ribisl KM, Clark PI, *et al*. How tobacco companies ensure prime placement of their advertising and products in stores: interviews with retailers about tobacco company incentive programs. *Tob Control* 2003;**12**:184–8.
7 **Feighery EC**, Ribisl KM, Schleicher NC, *et al*. Retailer participation in cigarette company incentive programs is related to increased levels of cigarette advertising and cheaper cigarette prices in stores. *Prev Med* 2004;**38**:876–84.
8 **Henriksen L**, Feighery EC, Schleicher NC, *et al*. Reaching youth at the point of sale: cigarette marketing is more prevalent in stores where adolescents shop frequently. *Tob Control* 2004;**13**:315–18.
9 **Henriksen L**, Feighery EC, Wang Y, *et al*. Association of retail tobacco marketing with adolescent smoking. *Am J Public Health* 2004;**94**:2081–3.
10 **Laws MB**, Whitman J, Bowser DM, *et al*. Tobacco availability and point of sale marketing in demographically contrasting districts of Massachusetts. *Tob Control* 2002;**11**(Suppl I):S71–3.
11 **Loomis BR**, Farrelly MC, Nonnemaker JM, *et al*. Point of purchase cigarette promotions before and after the Master Settlement Agreement: exploring retail scanner data. *Tob Control* 2006;**15**:140–2.
12 **Terry-McElrath Y**, Wakefield M, Giovino G, *et al*. Point-of-purchase tobacco environments and variation by store type—United States, 1999. *MMWR Morb Mortal Wkly Rep* 2002;**51**:4–7.
13 **Wakefield MA**, Terry-McElrath YM, Chaloupka FJ, *et al*. Tobacco industry marketing at point of purchase after the 1998 MSA billboard advertising ban. *Am J Public Health* 2002;**92**:937–40.
14 **Slater S**, Chaloupka FJ, Wakefield M. State variation in retail promotions and advertising for Marlboro cigarettes. *Tob Control* 2001;**10**:337–9.
15 **ACNielsen**. Scan-Trac™ data, Grocery Channel, 50 Retail Markets, 1994–2004 2005.
16 **Centers for Disease Control**, Prevention (CDC). *Best practices for comprehensive tobacco control programs—August 1999*. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1999.
17 **Orzechowski and Walker**. *The tax burden on tobacco, historical volume 38*. Arlington, VA: Orzechowski and Walker, 2003.
18 **Farrelly MC**, Pechacek TF, Chaloupka FJ. The impact of tobacco control program expenditures on aggregate cigarette sales: 1981–2000. *J Health Econ* 2003;**22**:843–59.
19 **Tirole J**. *The theory of industrial organization*. Cambridge, MA: The MIT Press, 1988.
20 **Greene W**. *Econometric analysis*, 3rd edn. Upper Saddle River, NJ: Prentice Hall, 1997.
21 **StataCorp**. *Stata statistical software: release 8.2*. College Station, TX: Stata Corporation, 2003.
22 **Saffer H**, Chaloupka F. The effect of tobacco advertising bans on tobacco consumption. *J Health Econ* 2000;**19**:1117–37.
23 **Keeler TE**, Hu T-W, Ong M, *et al*. The U.S. National Tobacco Settlement: the effects of advertising and price changes on cigarette consumption, *Appl Econ* 2004;**36**:1623–9.
24 **Pierce JP**, Gilmer TP, Lee L, *et al*. Tobacco industry price-subsidizing promotions may overcome the downward pressure of higher prices on initiation of regular smoking. *Health Econ* 2005;**14**:1061–71.
25 **White VM**, White MM, Freeman K, *et al*. Cigarette promotional offers: who takes advantage? *Am J Prev Med* 2006;**30**:225–31.
26 **Feighery E**, Borzekowski DL, Schooler C, *et al*. Seeing, wanting, owning: the relationship between receptivity to tobacco marketing and smoking susceptibility in young people. *Tob Control* 1998;**7**:123–8.
27 **Biener L**, Siegel M. Tobacco marketing and adolescent smoking: more support for a causal inference. *Am J Public Health* 2000;**90**:407–11.
28 **Chaloupka FJ**, Cummings KM, Morley CP, *et al*. Tax, price and cigarette smoking: evidence from the tobacco documents and implications for tobacco company marketing strategies. *Tob Control* 2002;**11**(Suppl I):i62–72.
29 **Hyland A**, Bauer JE, Li Q, *et al*. Higher cigarette prices influence cigarette purchase patterns. *Tob Control* 2005;**14**:86–92.
30 **Hyland A**, Laux FL, Higbee C, *et al*. Cigarette purchase patterns in four countries and the relationship with cessation: findings from the International Tobacco Control (ITC) Four Country Survey. *Tob Control* 2006;**15**(Suppl III):iii59–64.

# The Lighter Side


© Frederick Deligne, Nice-Matin, France