

Excise Tax Differences at Oklahoma Smoke Shops

An Opportunity for Inter-Tribal Coordination

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Background: Oklahoma's tribal tobacco shops are distributed throughout the state, including in urban areas. During the time frame of this study, state excise tax rates for cigarettes varied by tribe and region, and took five distinct levels, ranging from 5.75 cents to \$1.03 per pack.

Purpose: To describe the pricing behavior of these smoke shops in a way that could support potential increases in the tribal taxation of cigarettes within the state.

Methods: Two waves (2010 and 2011) of site visits were conducted, covering nearly all tribal smoke shops in the northeastern quarter of the state, an area containing the city of Tulsa and 60% of all tribal outlets. Researchers recorded representative prices and verified the tax rate paid (via tax stamp) for each shop. Data were analyzed in 2013.

Results: Lower-taxed tribal cigarettes tended to be priced at discounts that were even greater than the differential in tax rates. For example, across waves, the average pack of Marlboros from a shop with a 5.75-cent tax stamp sold for 52 cents less than the same pack from a 25.75-cent shop and 60 cents less than from a 51.5-cent shop. The minimal inter-tribal price response to the discontinuation of large quantities of contraband cigarette sales suggests that inter-tribal price competition in the Tulsa area is not as intense as expected.

Conclusions: Ample scope exists for either unilateral or coordinated cross-tribal tax and price increases that will increase tribal cigarette tax revenue collections and improve public health.

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Introduction

Ranked by CDC as tied for 40th among the 50 states in smoking prevalence, with 23.3% of all adults (and 31.4% of Native American adults) reporting having smoked within the last month, Oklahoma confronts a serious public health priority for tobacco control.¹ Cigarette taxation has been accepted for many years as a primary policy tool for reducing smoking rates.² Oklahoma is home to 39 federally recognized Native American tribes, of which 31 were selling cigarettes through state-registered tribal smoke

shops at the time of this study.³ One obstacle to higher cigarette taxation in Oklahoma has come from the need to negotiate and coordinate changes in tax rates across Oklahoma's various tribal and non-tribal jurisdictions.⁴

Before January 1, 2005, when state excise tax rates for non-tribal shops went up 80 cents per pack, the tribal–non-tribal differential in state taxes for cigarettes had been stable at 17.25 cents per pack. In preparation for the 2005 shift in non-tribal rates, state and key tribal leaders negotiated a round of tax treaties, called “compacts,” that would coincide with the non-tribal increase. These compacts generally raised the state excise rate on tribal sales to 85.75 cents, maintaining the 17.25-cent per pack advantage for tribal outlets. During negotiations, however, concessions were made for lower state tax rates at tribal smoke shops located near borders of lower-taxed states. This yielded a 5.75-cent “exception” rate, for shops mostly near the Missouri border, and a 25.75-cent “border” rate, initially applicable to shops along the Texas, Arkansas, and Kansas borders (later applicable only along the Kansas

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0749-3797/\$36.00

<http://dx.doi.org/10.1016/j.amepre.2014.08.028>

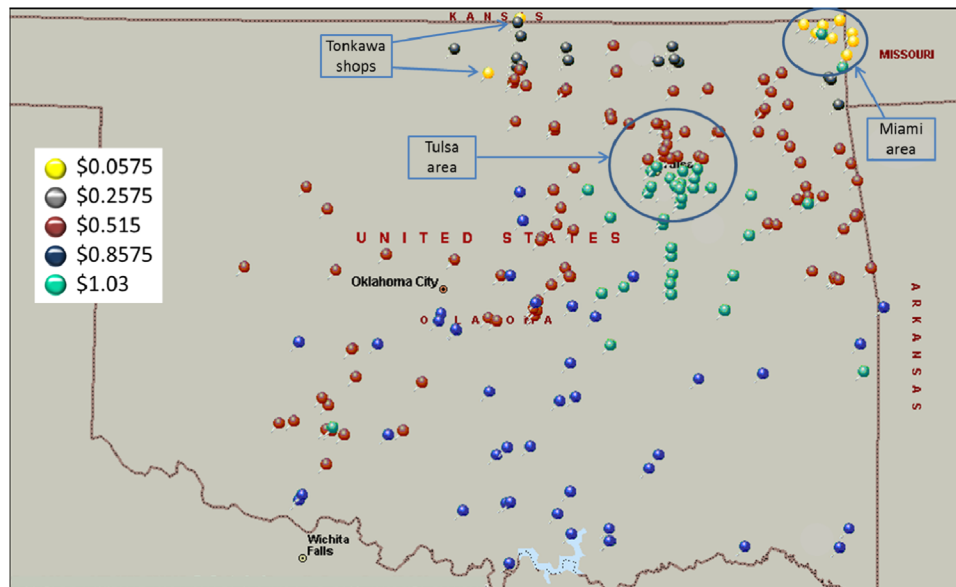


Figure 1. Map of tribal smoke shops by tax rate.

border). **Figure 1** provides a map of Oklahoma's tribal smoke shops by state tax rate, as of spring 2011.³

Soon after the 2005 tax increase, entrepreneurs started buying exception-rate (5.75-cent) cigarettes in wholesale quantities for resale at shops designated for the 85.75-cent rate.^{5,6} Using data on sales by tax rate obtained from the Oklahoma Tax Commission (OTC), **Figure 2** illustrates the extent of this reselling for the 2006–2008 fiscal years. This led to the negotiation of a partial wave of new compacts, beginning in 2008, that established a 51.5-cent state excise rate plus an additional 15-cent excise rate imposed by the tribe.^{7,8}

While this was happening, the state also saw a surge,⁹ now ended,¹⁰ in “contraband” cigarette sales. Contraband cigarettes are produced by manufacturers who are noncompliant with the Master Settlement Agreement (MSA) and sold without state or federal tax paid. Records on tribal tax collections for these contraband sales, provided in legal deposition by the Muscogee Nation, allowed the OTC to estimate that approximately 1,680,000 cartons of these “tax-free” cigarettes were sold by Muscogee smoke shops.¹¹ Combining this information with **Figure 2** data allows for an estimation that 30% to 40% of the total sales volume for Muscogee smoke shops during the 2007–2011 time frame were attributable to contraband cigarette sales. **Figure 3** shows that despite these reselling and illegal sales activities, Oklahoma tax collections still increased dramatically after the 2005 tax increase.

The focus of tobacco control research on Native American cigarette sales has been on modeling purchasing behavior and estimating sales quantities.^{12–14} The epidemiology of Native American smoking has also

been studied.¹⁵ Smuggling and inter-jurisdictional competition in cigarette sales has been extensively studied.^{16–18} Study authors are, however, unaware of any prior studies that look at incentives for tribal cigarette taxation.

With this history of five different state excise tax rates and large recent variation in illegal cigarette sales quantities, Oklahoma provides unique terrain for field work on tribal cigarette taxation and pricing behavior. This paper uses this variation to present data that suggest how unilateral or coordinated increases in tribal cigarette tax rates could help Oklahoma tribes substantially increase cigarette tax revenue collections while also improving tribal and public health. Clearly, the study authors also see these implications, with some adaptations, as generalizable to variety of other jurisdictions and contexts.

Methods

OTC records indicated that there were 226 tribal tobacco retailers and roughly 5,000 non-tribal retailers registered in the state as of December 2009.³ Cigarette price information was collected via convenience sampling on specific brands sold at tribal and non-tribal retailers using site visits and phone requests. Data were collected on five brands: (1) Marlboro, the leading “premium” brand; (2) Marlboro Special Blend, a lower-price offering; (3) Pall Mall, a widely available low-price brand; (4) Grand Prix, a generic brand widely available at tribal outlets; and (5) Echo, a low-priced regional brand.

Data collection was conducted in two waves: Wave 1 in December 2010 and February–March 2011, and Wave 2 in May–June 2011. The timing of these waves coincided with an important change in tribal tobacco policy—the discontinuation of “contraband” cigarette sales by the Muscogee Nation, verified by

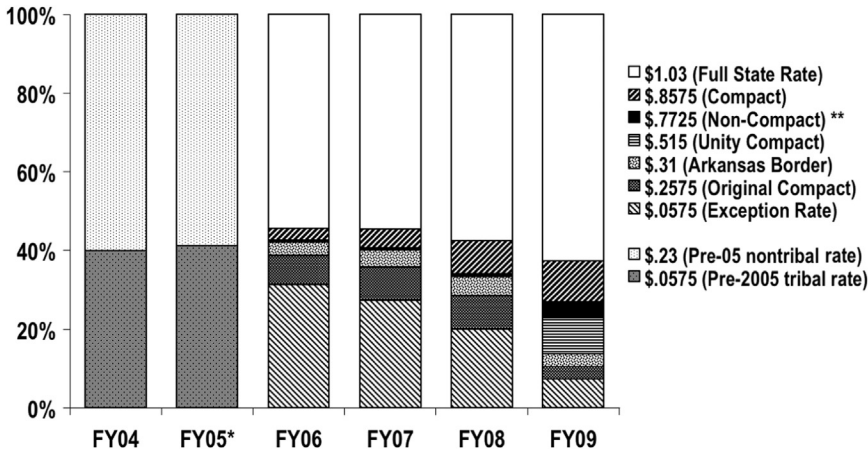


Figure 2. Proportions of cigarette tax Stamps sold, by price of stamp.
 *A voter-approved increase in Oklahoma’s cigarette tax took effect on January 1, 2005, midway through fiscal year 2005. Data Source: Oklahoma Tax Commission.
 **A 77.25-cent rate for tribes that had not signed a compact was also introduced by the 2005 tax increase, but eliminated on January 1, 2010.

shops in the state), of which 119 were successfully visited. During each site visit, researchers completed a form recording shop name, construction type, time of visit, externally displayed cigarette prices, and price information for specified cigarette brands (pack or carton, Marlboro or Grand Prix). Researchers looked for the sale of contraband cigarettes and purchased at least one pack to verify state tax rate for each shop, via the tax stamp. After each visit to a tribal shop, researchers stopped at the first non-tribal outlet passed on route (if within 5-minute driving time) to record comparison prices. No cigarettes were purchased at non-tribal outlets unless researchers felt a given outlet might be selling contraband or untaxed cigarettes. Although this sometimes happened, and some packs were purchased at non-tribal outlets, no contraband sales at non-tribal outlets were discovered in the field work.

site visit observation as occurring in mid to late March 2011. No other changes in tribal, Oklahoma, or neighboring-state tax policy occurred during the time frame of this study.

During Wave 1, researchers followed up on 85 site visits with phone calls. By comparing prices reported over the phone to prices recorded during site visits, they were able to validate that most shops would provide phone quotes, and that these were reliable.

All Wave 1 data were collected via site visits to retailers in the northeastern quarter of the state, a region that borders Kansas, Missouri, and Arkansas. There were 142 registered tribal tobacco retailers in this quadrant of the state, seven of which seemed inactive. This resulted in a list of 135 shops (60% of all tribal smoke

For Wave 2, site visits were not attempted for tribal outlets that were difficult to access or that offered cigarettes only via relatively high-priced vending machine sales. This limited site visits to 86 tribal shops, all in the northeastern quadrant of the state. All other

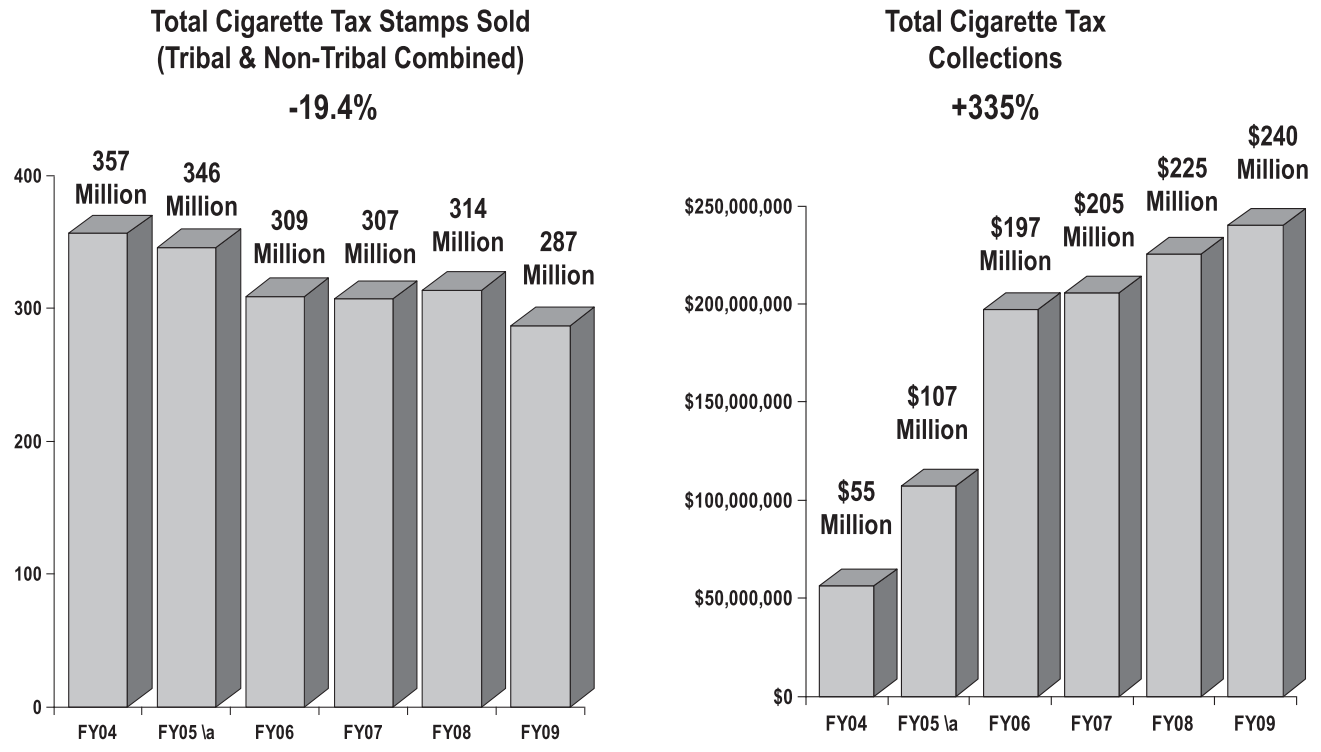


Figure 3. Cigarette sales and collections: FY2004–FY2009.
^aA voter-approved increase in Oklahoma’s cigarette tax took effect on January 1, 2005, midway through fiscal year 2005. Data source: Oklahoma Tax Commission.

tribal shops that could be reached (111 from across the state) were contacted via telephone to request carton prices for the Marlboro and Grand Prix brands. Using Stata (Version 10), mean prices were then calculated for each cigarette brand, for tribal and non-tribal outlets, within each tax stamp category, and for each wave. This analysis was performed in 2013.

Results

Of the 135 tribal smoke shops listed for site visits in Wave 1, data were collected from 119 (88%). Of the remaining 16, five shops could not be found and 11 were no longer selling (or had never sold) cigarettes. Of the 86 tribal shops listed for site visits in Wave 2, 82 successful visits were completed (95%). Of the 111 tribal shops called by phone in Wave 2, price information was obtained from 74 (67%). A summary of the price data collected is provided in [Table 1](#).

For each brand and tax rate, [Table 1](#) provides the average price observed for carton and pack sales. Non-tribal prices reflect data collected at non-tribal outlets located near each tribal smoke shop visited. Thus, the non-tribal averages posted under the 5.75-cent tax rate are for non-tribal shops visited in the neighborhoods of tribal shops facing the 5.75-cent state tax rate. All non-tribal outlets pay the \$1.03 state tax rate.

[Table 1](#) shows that, for both Waves 1 and 2, the prices for cigarette packs at the exception-rate (5.75-cent) shops are set at levels that more than compensate for the differential in tax levels relative to 25.75-cent and 51.5-cent shops. This is illustrated by the listing of average prices presented at the bottom of the table. Post-tax margins, averaged across waves and brands, were 41, 24, 1, and 6 cents per pack larger, respectively, for cigarettes sold with 25.75-cent, 51.5-cent, 85.75-cent, and \$1.03 tribal outlets, than at exception-rate shops. This gap was also roughly 10 cents larger for individual pack sales than for carton sales. Thus, the tribes and smoke shops with the lowest tax rates have not been leveraging their tax advantage into higher profit margins.

One possible explanation is that, as most of the exception-rate shops are located within the surrounds of one medium-sized town (Miami, in the northeastern corner of the state), these shops face fierce inter-tribal competition. This conjecture is supported by comparing Miami-area average prices to prices for the two exception-rate shops located in the north-central part of the state, near Tonkawa ([Table 2](#)). The more isolated exception-rate shops had average per-pack prices 17 cents above the average for Miami-area shops.

During Wave 1, contraband cigarettes were being sold (and often prominently advertised) at 14 of the 30 Muscogee smoke shops visited. These cigarettes had an

average pack price of \$2.79 and carton price of \$23.86 (observed averages from project field observations). As mentioned above, all contraband sales by Muscogee shops had ceased by Wave 2. The Cherokee had several smoke shops in the Tulsa and Muskogee areas within 5 to 10 miles of Muscogee competition selling contraband cigarettes. The Sac & Fox jurisdictional area is on the western frontier of the Muscogee area and they had some shops relatively near such Muscogee outlets. The Osage had two shops that could also have been considered within range of contraband-selling outlets. For reference, all of these shops are located in or around the city of Tulsa, with Muscogee shops generally located in or to the south of Tulsa.

[Table 3](#) highlights the price response to the discontinuation of contraband sales, comparing average prices for Muscogee, Cherokee, Osage, and Sac & Fox outlets (excluding a few Cherokee and Osage shops that paid the 25.75-cent rate). To explain the small disparity in price levels, note that Muscogee cigarettes were carrying a \$1.03 per pack state tax. Cigarettes for all other included shops were carrying a 51.5-cent state excise tax plus a 15-cent tribal tax across all waves.

Looking at the cross-wave price differentials presented in the middle of [Table 3](#), one sees very little response to the discontinuation of contraband cigarette sales. Carton prices tended to increase between waves in amounts that were more pronounced but, on a per-pack basis, these changes were modest. Increases in Cherokee and Muscogee prices are consistent with the idea that contraband cigarettes were competing with tax-paid brands, but the price changes are only modest, and do not carry over to the Osage and Sac & Fox outlets. For Osage and Sac & Fox shops, some differentiation is seen between price differences for the generic brand, Grand Prix, versus for the premium brand, Marlboro. For the Osage, however, this is seen only in individual pack pricing, implying that it may reflect idiosyncratic, as opposed to strategic, pricing policy.

To further explore these results, investigators calculated price differentials at the shop level for the 14 Muscogee shops selling contraband cigarettes plus 11 non-Muscogee shops that provided the closest inter-tribal competition. These results, at the bottom of [Table 3](#), show a strange diversion of the pricing for individual pack sales from carton pricing (that may reflect marketing strategy) but no coherent trend in price changes coinciding with timing of the discontinuation of contraband sales.

Discussion

The present analysis suggests that the cessation of contraband cigarette sales by the shops of one major tribe had only a minor impact on prices for the smoke

Table 1. Summary of observed cigarette prices^a

	Tax stamp 0.0575				Tax stamp 0.2575				Tax stamp 0.5150				Tax stamp 0.8575				Tax stamp 1.0300			
	Tribal		Nontribal		Tribal		Nontribal		Tribal		Nontribal		Tribal		Nontribal		Tribal		Nontribal	
	M	n	M	n	M	n	M	n	M	n	M	n	M	n	M	n	M	n	M	n
Wave 1																				
Marlboro pack	4.19	(9)	5.35	(5)	4.82	(9)	5.58	(11)	4.91	(41)	5.58	(41)	5.14	(8)	5.63	(6)	5.27	(34)	5.61	(39)
Marlboro carton	40.38	(6)			45.34	(9)	48.99	(1)	46.28	(26)	50.55	(7)	47.63	(3)			49.22	(19)	48.39	(10)
Marl Spec Bl pack	3.14	(2)			3.60	(1)	4.69	(2)	3.86	(8)	4.57	(2)	3.85	(1)			4.19	(9)	4.49	(1)
Marl Spec Bl carton					37.08	(3)			35.42	(2)							39.95	(1)	37.99	(1)
Pall Mall pack	3.00	(5)	4.26	(4)	4.01	(5)	4.59	(10)	4.30	(10)	4.38	(22)	4.17	(3)	4.36	(4)	4.69	(11)	4.46	(23)
Pall Mall carton	29.33	(3)			38.73	(3)			38.60	(5)	36.11	(1)	41.53	(1)			42.66	(6)	36.43	(3)
Grand Prix pack	2.99	(4)			3.63	(10)	4.75	(2)	3.75	(47)	4.22	(6)	3.76	(8)	3.79	(2)	4.00	(21)	4.33	(4)
Grand Prix carton	29.17	(3)			33.11	(9)			33.48	(37)	39.99	(1)	36.69	(5)			37.27	(17)		
Echo pack	2.85	(2)			3.43	(6)	3.96	(3)	3.51	(19)	3.87	(4)	3.58	(4)			3.77	(13)	4.20	(9)
Echo carton	27.24	(4)			31.32	(10)			32.33	(29)			31.5	(1)			35.43	(22)		
Wave 2																				
Marlboro pack	4.43	(7)	4.92	(6)	4.83	(12)	5.62	(7)	4.90	(46)	5.68	(29)	5.16	(8)	5.45	(4)	5.24	(24)	5.67	(19)
Marlboro carton	40.75	(7)			45.75	(8)	50.94	(4)	46.47	(39)	49.86	(8)	47.78	(4)	50.87	(1)	50.02	(19)	49.42	(9)
Marl Spec Bl pack	3.66	(6)	4.40	(5)	4.26	(9)	4.70	(6)	4.21	(37)	4.86	(35)	4.20	(4)	4.73	(4)	4.67	(22)	4.87	(19)
Marl Spec Bl carton	36.17	(3)			39.86	(6)	37.29	(1)	39.53	(38)	39.82	(3)	40.55	(26)			43.48	(12)	40.29	(3)
Pall Mall pack	3.32	(7)	4.28	(6)	4.14	(9)	4.48	(6)	4.23	(27)	4.44	(30)	4.43	(5)	4.58	(5)	4.57	(15)	4.52	(20)
Pall Mall carton	29.05	(2)	29.69	1	38.93	(5)	40.05	(1)	37.93	(18)	33.97	(4)	41.53	(1)			44.11	(7)	36.26	(2)
Grand Prix pack	2.80	(1)	4.36	1	3.57	(9)	4.42	(3)	3.78	(45)	4.17	(6)	3.84	(7)			3.99	(18)	4.00	(5)
Grand Prix carton	29.93	(2)			34.07	(10)	35.99	(1)	34.51	(58)	38.99	(1)	36.30	(34)			38.03	(21)		
Echo pack	2.96	(4)			3.39	(7)	4.14	(2)	3.55	(16)	4.03	(6)	3.65	(2)			3.75	(13)	4.15	(1)
Echo carton	26.82	(3)	25.49	(1)	32.21	(7)			32.79	(29)			32.05	(1)			34.21	(23)		

(continued on next page)

Table 1. Summary of observed cigarette prices^a (continued)

	Tax stamp 0.0575		Tax stamp 0.2575		Tax stamp 0.5150		Tax stamp 0.8575		Tax stamp 1.0300	
	Tribal	Nontribal	Tribal	Nontribal	Tribal	Nontribal	Tribal	Nontribal	Tribal	Nontribal
	M	n	M	n	M	n	M	n	M	n
Simple averages of per-pack prices, across brands ^b										
Wave 1	3.20		3.82		3.93		4.03		4.26	
Wave 2	3.31		3.92		3.98		4.12		4.32	
Cross-wave	3.26		3.87		3.96		4.07		4.29	
Tax-adjusted ^c	3.20		3.61		3.44		3.21		3.26	

^aFor each brand and tax rate, this table provides the average price observed for carton and pack sales. The numbers in parentheses (n) specify the number of shops from which the averages were calculated. Non-tribal prices reflect data collected at non-tribal outlets located near each tribal smoke shop that was visited. Thus, the non-tribal averages posted under the 5.75-cent tax rate are for non-tribal shops visited in the neighborhoods of tribal shops facing the 5.75-cent state tax rate. All non-tribal outlets pay the \$1.03 state tax rate.

^bWave 2 carton prices for Marlboro Special Blend and Grand Prix include phone results from outside the northeastern quadrant of the state. Carton prices for Special Blend are excluded from these averages. ^cPrices are adjusted for taxes by subtracting the applicable state excise tax. Oklahoma has no ad valorem sales tax on cigarettes. In addition to state and federal taxes, cigarettes sold at tribal smoke shops are also subject to tribal taxes. These rates vary from tribe to tribe and sometimes, within a tribe, even vary from shop to shop. These tribal tax rates are thought generally to vary from 0 cents to 15 cents per pack and, since tribal tax rates are not generally known, no adjustment is made for these tribal tax rates.

Marl Spec Bl, Marlboro Special Blend.

Table 2. Isolated versus competitive exception-rate shops

	Miami area, cross-wave averages		Tonkawa area, cross-wave averages	
		n		n
Marlboro pack	4.22	(12)	4.58	(4)
Marlboro carton	3.98	(10)	4.30	(3)
Grand Prix pack	2.83	(3)	3.13	(2)
Grand Prix carton	3.00	(1)	2.93	(4)
Echo pack	2.90	(4)	2.98	(2)
Echo carton	2.67	(4)	2.71	(3)
Simple averages ^a	3.27		3.44	

^aPrices for Marlboro Special Blend and Pall Mall brands were not collected from both locations; thus, these are omitted from the table. Averages price numbers are calculated by simple average across brands and pack versus carton in the table.

shops of neighboring tribes. This implies that, for most of the state, inter-tribal price competition is not very strong and that tribal revenues would almost certainly be increased even via unilateral increases in tribal tax rates. In an area where inter-tribal smoke shop competition is more intense, as one seems to see in Miami, unilateral increases in tribal tax rates might not be practical. Still, increases in tribal tax rates (possibly with minimum price agreements) could be arranged via inter-tribal negotiation and compacting, with enforcement provisions. Although such “price-fixing” arrangements would be illegal for private enterprises, the making of such arrangements via tax treaty is not illegal. The scope for such agreements would be limited only by the extent of cross-border competition (from Missouri, in this case) and competition from non-tribal shops. If necessary, cross-subsidization schemes conditioned on sales quantity data available to the OTC could be negotiated to compensate individual tribes most adversely impacted by coordinated tax and price increases. Communication with tribal leadership about how these details could be arranged is an ongoing activity of the project that funded the research for this article.

The primary benefits from increases in tribal cigarette taxation and pricing would be realized in public health. Time and again, taxation has been shown to be one of the best tools available for reducing teen and adult smoking.² Most studies of the price elasticity of demand for cigarettes produce estimates in the range from -0.25 to -0.50, implying that a 10% increase in the price of cigarettes will reduce cigarette purchase quantities by 2.5% to 5%.¹⁹ These estimates measure the short-term

Table 3. Summary of pricing by tribe^a

Mean prices by tribe and wave	Marlboro pack	Marlboro carton	Grand Prix pack	Grand Prix carton
Muscogee, Wave 1	5.29 (n/N=25/31)	49.32 (n/N=11/31)	3.97 (n/N=15/31)	37.43 (n/N=13/31)
Muscogee, Wave 2	5.24 (24/31)	49.99 (18/31)	3.99 (18/31)	38.14 (19/31)
Cherokee, Wave 1	4.84 (22/38)	45.27 (15/38)	3.71 (26/38)	34.10 (21/38)
Cherokee, Wave 2	4.86 (26/38)	46.01 (26/38)	3.73 (27/38)	34.55 (28/38)
Osage, Wave 1	4.85 (6/6)	46 (1/6)	3.96 (6/6)	33.92 (3/6)
Osage, Wave 2	4.85 (5/6)	46.00 (2/6)	4.13 (4/6)	34.04 (3/6)
Sac & Fox, Wave 1	5.06 (9/11)	48.32 (6/11)	3.74 (8/11)	35.26 (6/11)
Sac & Fox, Wave 2	5.01 (8/11)	48.02 (8/11)	3.83 (8/11)	35.75 (7/11)
Inter-wave price change (with carton prices normalized to the pack)^b				
Muscogee deltas	-0.05	0.07	0.02	0.07
Cherokee deltas	0.02	0.07	0.02	0.05
Osage deltas	0.00	0.00	0.17	0.01
Sac & Fox deltas	-0.04	-0.03	0.08	0.05
Weighted averages	-0.02	0.05	0.04	0.06
Inter-wave price changes comparing shops that sold illegal cigarettes to nearest competitor shops of different tribes^c				
Shops that had sold illegal cigarettes	-0.04	0.10	-0.15	0.07
No. of price pairs	(13)	(4)	(4)	(6)
Competitor shops	-0.14	-0.01	0.03	0.00
No. of price pairs	(7)	(4)	(7)	(6)

^aInside parentheses are number of prices recorded for each product (*n*) divided by the total number of shops for the corresponding tribe, based on a March 1, 2011, list from the Oklahoma Tax Commission (OTC). Note that, although the total number of registered vendors from the OTC list is 208, site visits identified that some of these sell no cigarettes to the public or, as often happens in casinos, simply provide high-priced vending machine sales.

^bPrice change is calculated as Wave 2 price minus Wave 1 price. The weights for the weighted averages use the cross-wave minimum of the number of price observations for the product presentation and tribe.

^cPrice change numbers for this subtable reflect averages across shops for which a prices were obtained in both waves. The "competitor shops" reflect averages for the geographically nearest non-Muscogee tribal competitors to each of the "shops that had sold illegal cigarettes."

response to changes in cigarette price. Since it normally takes time for smokers to successfully quit smoking, the full impact of price increases would not likely be realized until sometime after the price increase. Estimates of the long-term (2 to 3 years after a price increase) price elasticity tend to be higher and range from -0.5 to -0.8.²⁰ Within this range, 50% to 60% of the reduction in

smoking is generally attributed to people quitting or not starting (reduced participation), with the rest attributable to reduced consumption by those who continue to smoke.^{19,20} Using a -0.3 number as a middle-ground prediction for the elasticity of participation and starting from a \$4.50 per pack current average price, a 50-cent increase in the average price of cigarettes sold in

Oklahoma would cause a 0.87 percentage point decline (3.33% relative reduction) in Oklahoma smoking participation rates. Using estimates from the Campaign for Tobacco-Free Kids,²¹ this 3.33% reduction in smoking rates would be associated with \$96 million in annual savings in smoking-caused healthcare expense and lost productivity in Oklahoma. Given the higher incidence of smoking for Native American residents of Oklahoma, the incidence of these benefits in health and productivity for Oklahoma's Native American communities would also be expected to be higher.

A key limitation of this research is that study waves occurred in proximity first before and then after the discontinuation of contraband cigarette sales. Thus, the data may not reflect a full adjustment to this change in the competitive environment. Further waves of data collection, plus work analyzing data on sales quantities per shop that has been made available, are in progress. Seasonal effects are also a consideration and favor the relative comparisons of Table 3 to the absolute comparisons of Table 1. Still, one would expect very little seasonal variation in prices except perhaps at casino locations and maybe for shops near the town of Miami.

Tribes use smoke shops as a means of generating revenues and jobs, thus it seems that the fundamental problem, from the tribal tax commissioner's perspective, is analogous to the problem of oligopoly pricing. Because tribal smoke shops often suffer a disadvantage with regard to location, these shops need to maintain a price advantage. Clearly, tribes also want to avoid price increases that will not be matched by other tribal and non-tribal competitors. Some interesting work on harmonization (and disparities) in cigarette pricing for the European Union has recently been published,²² but the authors are not aware of any such investigations regarding Native American cigarette sales.

A key distinction between the tribal tax commissioner's problem and the simple oligopoly pricing problem (adapted from monopoly pricing) is that only a small portion of the revenue generated from smoke shop sales is paid in tribal taxes. Consider, for example, the situation of the Comanche Nation. The price of an average brand of cigarettes at their shops is roughly \$4 per pack. Of this, 15 cents⁷ goes as excise tax to the tribe, 51.5 cents is paid to the Oklahoma Tax Commission, and the remaining 333.5 cents is split between the manufacturer, wholesaler, vendor, MSA payments, and federal taxes. If the Comanche double their excise rate to 30 cents, their benefit will be 15 cents per pack times total quantity sold after the price increase. Their "cost" (or loss in revenue) will be 15 cents times only the reduction in quantity sold. Meanwhile, loss in revenue to other parties will be \$3.85 per pack times the reduction in quantity sold. Thus, the

Comanche get 100% of the revenue increase from a tax increase while bearing only about 4% of the cost. In this example, the Comanche would need to face an extraordinarily high price elasticity of demand in excess of 25.0 before this tax increase would cause them to lose tax revenues. This could only happen if their smoke shops face very direct and strong competition. Furthermore, even in the face of strong inter-tribal competition, a coordinated increase in tribal tax rates could still serve to increase tribal revenue collections while improving public health.

Publication of this article was supported by the Oklahoma Tobacco Research Center (OTRC), with funding from the Oklahoma Tobacco Settlement Endowment Trust (TSET).

This research was supported by the OTRC, with funding from TSET.

No financial disclosures were reported by the authors of this paper.

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