Association between Point-of-Sale Advertising Bans and Cigarette Smoking

Kai-Wen Cheng, PhD
Ce Shang, PhD
Jidong Huang, PhD
Anh Ngo, MA
Frank J. Chaloupka, PhD

Objectives: This study provides global evidence on the association between cigarette point-of-sale (POS) advertising bans and adult cigarette smoking during 2007-2014. **Methods:** Data on POS advertising bans, cigarette prices, tobacco control environment, and countries' economic conditions came from the WHO MPOWER datasets and the World Bank database. Data on annual smoking prevalence and cigarette consumption were from Euromonitor International tobacco country reports. Country and year identifiers were used to link the datasets. Fractional logit regression and ordinary least squares methods were used to examine the associations between POS advertising bans and smoking prevalence and cigarette consumption. Analyses controlled for country-level GDP *per capita*, cigarette prices, percentages of population aged 15-64 and 65 and over, tobacco control environment, year indicators, and country fixed-effects. **Results:** POS advertising bans were associated with a 0.7 percentage point decrease in adult smoking prevalence and significantly associated with reduced cigarette consumption. Countries with POS advertising bans decreased by 128-154 sticks of cigarettes in *per capita* consumption per year compared to countries without such bans. **Conclusions:** Restricting cigarette advertising in the retail environment may reduce adult cigarette smoking.

Many traditional channels, such as broadcast (ie, television and radio), print, and outdoor billboards through which tobacco was once promoted have been prohibited in many countries. Because retail point-of-sale (POS) has remained largely unconstrained, it has become a primary environment for the tobacco industry to communicate and market its products to consumers. In the United States (US) in 2014, tobacco companies spent over $8 billion ($5.86 billion in 1998 dollars) at POS, accounting for over 95% of its marketing expenditures on programs that reduce cigarette prices, promotional allowances to retailers, and advertising and promotions. These expenditures represented a substantial increase in tobacco companies' marketing budget and proportion targeting at POS, compared to $5.4 billion spent at POS, accounting for 79% of its marketing expenditures in 1998.[1] Part of these marketing expenditures went toward contracts with retailers to incentivize them to post advertising, provide product displays, and give price-related promotion.[2-4] Globally, the tobacco industry spent $10 billion US dollars each year on tobacco advertising, promotion and sponsorship, in which POS promotion – including price discounts and product giveaways accounted for more than 75% of its marketing expenditures.[5]

Kai-Wen Cheng, Senior Research Specialist, Institute for Health Research and Policy, University of Illinois at Chicago, Chicago, IL. Ce Shang, Senior Research Scientist, Institute for Health Research and Policy, University of Illinois at Chicago, Chicago, IL. Jidong Huang, Associate Professor, School of Public Health, Georgia State University, Atlanta, GA. Anh Ngo, PhD Candidate, Department of Economics, University of Illinois at Chicago, Chicago, IL. Frank J. Chaloupka, Professor, Division of Health Policy and Administration, School of Public Health, University of Illinois at Chicago, Chicago, IL.
Correspondence Dr Cheng; kwcheng@uic.edu

POS advertising has been considered an important and strategic channel through which the tobacco industry utilizes to maintain current users and obtain new ones.[6,7] Studies show that POS advertising encourages unplanned purchase, decreases smokers' chances of cessation, and encourages former smokers return to tobacco use by providing current and former smokers' cues of smoking.[8-10] POS advertising also increases the odds of ever smoking[11,12] and the likelihood of youth initiating smoking.[13]

Article 13 of the WHO Framework Convention on Tobacco Control (FCTC) requires that all party countries must implement a comprehensive ban on tobacco advertising, promotion, and sponsorship (or restrictions if the comprehensive ban violated their constitutional principles).[5] As more and more countries ratified the WHO FCTC, the global population protected by POS advertising bans increased significantly. Until 2014, 75 out of 180 party countries to the WHO FCTC have banned POS cigarette advertising, with approximately 25% of the world population protected by such bans.[14]

Previous studies have examined the effects of POS advertising bans on smoking either by focusing on one specific country, comparing its smoking outcomes before and after the ban[15] or comparing smoking outcomes from multiple countries with and without such ban.[16] However, as economic conditions and the tobacco control environment vary by country, the findings from a specific country cannot be generalized to other countries. In addition, the effect of POS advertising bans is likely confounded with the effects of other related policies, as the national cigarette advertising bans may come concurrent with other tobacco control efforts.

In this study, we used the repeated cross-sectional data to investigate the associations between POS cigarette advertising bans and cigarette smoking during 2007-2014. This study built upon existing studies by providing a broader scope of evidence with global databases, which included the information on tobacco control policies for 196 countries during 2007-2014, the period where an increasing number of countries have ratified the WHO FCTC guidelines and implemented POS advertising bans. During 2007-2014, whereas some countries imple-mented such bans, others did not. These variations in the implementation of POS advertising bans across countries and years allows comparing smoking outcomes between countries with and without such bans. Our study focused on adult population and provided global evidence on the impacts of POS cigarette advertising bans on smoking prevalence and cigarette consumption while controlling for year and country fixed effects as well as countries' economic conditions and the tobacco control environments.

METHODS

Data and Measures

Data used in this study came from several sources. Data on annual smoking prevalence and *per capita* cigarette consumption were obtained from Euromonitor International cigarette and tobacco country reports. The information on country-level POS advertising bans were compiled from the WHO MPOWER package, Euromonitor International cigarette and tobacco country reports, the ERC tobacco country reports, and other online sources. The information on countries' economic condition and demographics, such as gross domestic product (GDP) per capita, and percent population aged 15-64 and 65 and over was from the World Bank database.

Point-of-sale cigarette advertising bans. We gathered the information on the country-level POS advertising bans from the WHO MPOW-ER packages from 2007-2008, 2010, 2012, and 2014.[5,14,17,18] Because the database only provided the policy status in the years of 2007-2008, 2010, 2012, and 2014, we cross-examined Euromonitor International cigarette and tobacco country reports, ERC tobacco reports, and other online sources to identify the implementation years of POS advertising bans in each country. The dummy variable of POS advertising bans was coded as "1" if countries reported to have POS advertising bans in the years of/after the implementation dates and as "0" for the years before these dates.

Smoking prevalence and per capita cigarette consumption. The Euromonitor International cigarette and tobacco country reports contained the information on adult smoking prevalence for 63 countries during 2007-2014 (Appendix A). Adult smokers were defined as daily smokers who are

older than the minimum legal cigarette sales age in the country.[19] Smoking prevalence was captured as the percentage of daily smokers among adult population.[19]

The reports also included the information on cigarette sales from both retail and illicit trade (in sticks). The total amount of cigarette consumption in a country was constructed as the sum of retail cigarette sales and illicit cigarette sales,[20] which were the sales for non-duty paid cigarettes, including smuggled and counterfeit/fake products.[19] Thus, *per capita* cigarette consumption was derived as the fraction of total cigarette sales to the number of population-aged 15 and over.

Cigarette price. Data on cigarette prices came from the WHO MPOWER dataset. The dataset contained the information on prices of a 20-cigarette pack of the most sold brand at international dollars (constant 2005) in 2007-2008, 2010, 2012, and 2014.[5,14,17,18] Because cigarette prices were not reported in the years of 2009, 2011, and 2013, we applied a linear interpolation of cigarette prices during the study period to fill out the missing values in these years.

Countries' demographics. The World Bank database included full information on country-level GDP *per capita*, the number of population aged 15 and over, percent population aged 15 and 64, and percent population aged 65 and over.[21] The database measured GDP per capita as gross domestic product converted to international dollars using purchasing power parity rates and the consumer price index.[21] Population aged 15-64 and 65-over were defined as the fraction of the total population that were in the age group 15-64 and 65 and over.[21]

MPOWER policy index. Since 2008, MPOWER, a policy package to assist countries in achieving their tobacco control goals was introduced and ratified by the WHO Framework Convention on Tobacco Control. MPOWER measures used 6 known tobacco control methods: M (monitor tobacco use), P (protect people from smoke), O (offer help to quit), W (warn about the dangers of tobacco), E (enforce bans on tobacco marketing), and R (raise taxes on tobacco).[22,23] A score of "1" represents no known data or no recent data (since 2009) for each policy dimension. To indicate whether a country has missing data in each MPOWER measure, we created a categorical vari-

able of missing values of the 6 MPOWER scores. A score of 2-4 (for M score) and a score of 2-5 (for POWER scores) represent the weakest to the strongest level of the policies.[5] The scores in the years of 2009, 2011, and 2013 were not reported in the database. Thus, the scores in the previous years (2007-2008, 2010, and 2012) were used to fill in the missing values in these years, assuming that there were no policy changes over the years. Alternatively, a linear interpolation of MPOWER policy index was applied to fill out the missing values and yield similar results. To capture the overall tobacco control environment in each country, we also constructed a composite score that was a sum of the 5 MPOWER measures.
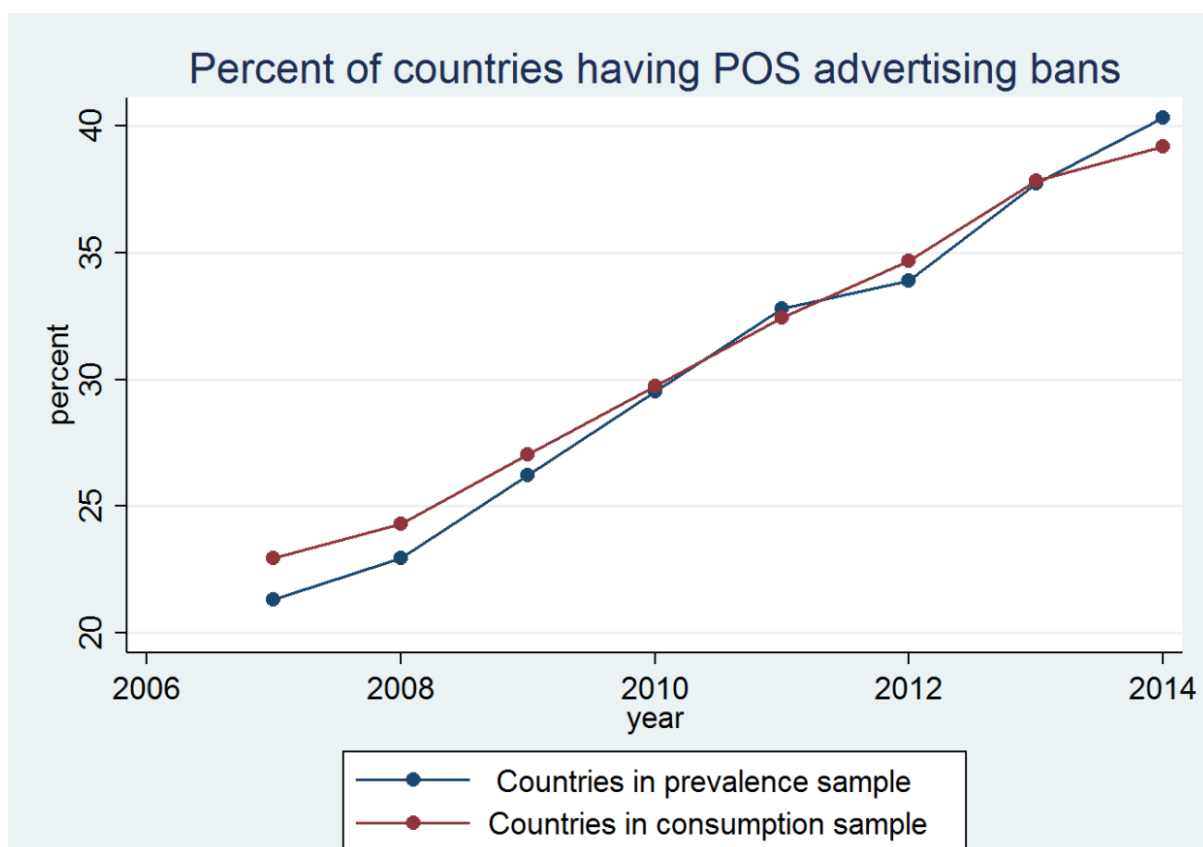
Year and country identifiers were used to link the datasets and to compile the final analytical samples. Only observations with non-missing values of dependent variables (ie, smoking prevalence and cigarette consumption) were included in the final samples. Thus, the final smoking prevalence sample includes 63 countries or 490 country-year observations, and the final cigarette consumption sample includes 75 countries or 593 country-year observations (Appendix B). Whereas 49% of countries in the smoking prevalence sample were high-income countries (with ≥ $12,236 GDP *per capita*), 51% were middle- and low-income countries (with less than $12,236 GDP *per capita*). On the other hand, 47% of countries in the cigarette consumption sample were high-income countries and 53% were middle- and low-income countries.

Data Analysis

Main analysis. Because smoking prevalence was measured as a proportion variable with values between 0 and 1, fractional logit regressions,[24] a type of generalized linear model for bounded outcomes between 0 and 1, were employed to examine the association between POS advertising bans and smoking prevalence. Ordinary least squares (OLS) regressions were applied to examine the association between POS advertising bans and per capita cigarette consumption. All regressions controlled for cigarette prices, country-level GDP per capita, percent population aged 15-64, percent population aged 65 and over, year indicators, and country fixed-effects.

Because R score (raising taxes) may be highly

Figure 1
Percent of Countries Having Point-of-Sale (POS) Advertising Bans in the Smoking Prevalence and Cigarette Consumption Samples during 2007-2014

correlated with MPOWER cigarette prices, we performed 2 model specifications. In model 1, we controlled for MPOWER cigarette prices, and the composite score as the sum of 5 MPOWE scores, capturing the time-variant country-specific tobacco control efforts. In model 2, we used R score as an alternative price measure, and controlled for the composite score as the sum of 6 MPOWER scores. Because a score of "1" represents a lack of data, the indicator of missing R score was included in the regressions to separate out the effect of missing values from the price effect in model 2.

Both year and country fixed-effects were included in the models to account for unmeasured time-invariant factors and country-specific invariant factors that may affect cigarette smoking. By employing the 2-way fixed-effect models, we used only within country changes over time of POS

advertising bans to assess their causal effects on smoking prevalence and cigarette consumption. Standard errors were clustered at the country levels. All analyses were conducted in Stata v.13.0.1.

The variance inflation factor (VIF) was further estimated to examine potential problems of multicollinearity in the models controlling for year- and country-fixed-effects to evaluate the extent to which the country-level variables were correlated with POS advertising bans. The multicollinearity may yield wrong signs of the estimates. The estimates of VIF are 7.21-7.52 for the smoking prevalence sample and 6.83-7.10 for the cigarette consumption sample, which are below 10 – the rule of thumb number for high multicollinearity. Thus, multicollinearity is not a severe problem here.

Sensitivity analysis. A linear probability model was used to estimate the association between POS

	Smoking Prevalence Sample		Per Capita Cigarette Consumption Sample	
Samples				
Variables	**Mean**	**SD**	**Mean**	**SD**
Smoking Prevalence	0.249	0.079		
Per capita Cigarette Consumption (in Thousand Sticks)			1.487	0.888
POS Advertising Bans	0.306	0.461	0.310	0.463
M Score	3.345	0.825	3.204	0.936
Missing M Score	0.020	0.142	0.059	0.236
P Score	2.814	1.245	2.786	1.204
Missing P Score	0.098	0.298	0.094	0.293
O Score	3.837	0.690	3.789	0.761
Missing O Score	0.00	0.00	0.012	0.108
W Score	3.357	0.960	3.251	1.016
Missing W Score	0.00	0.00	0.012	0.108
E Score	3.5	0.932	3.499	0.985
Missing E Score	0.00	0.00	0.012	0.108
R Score	4.065	0.786	3.911	0.934
Missing R Score	0.00	0.00	0.012	0.108
Mpower Price	4.184	2.211	3.934	2.159
GDP per capita (in Ten Thousand Dollars)	2.372	1.551	2.268	1.610
Population Aged 15-64 (%)	67.001	3.319	66.665	4.661
Population Aged 65 and Over (%)	12.579	5.426	11.293	5.802
N	490		593	
Number of Countries	63		75	

Table 1
Summary Statistics (2007-2014)

Note.
E: Enforce bans on tobacco marketing. GDP: gross domestic product. M: monitor tobacco use. O: Offer help to quit. P: protect people from smoke. POS ad: point of sale advertising. R: Raise taxes on tobacco. SD: standard deviation. Sample sizes and country composition are different for smoking prevalence and cigarette consumption analytical samples due to data availability. The summary statistics are calculated using all years of 2007-2014. W: Warn about the dangers of tobacco.

advertising bans and smoking prevalence, as smoking prevalence was a continuous variable ranging from 0 to 100. In addition, because the sources of illicit cigarette consumption were not identified in Euromonitor International tobacco country reports, raising the concerns on its data accuracy and reliability,[25] we used legal cigarette consumption as an alternative outcome. Furthermore, smoking outcomes were measured in the following year instead of the concurrent year of the POS advertising bans to ensure the policy took place before smoking outcomes. Finally, as a score of "1" represents lack

of data of each MPOWER policy dimension, we excluded the observations with missing MPOWER score and used the scores of 2-4 or 2-5 to construct the composite score.

RESULTS
Main Analysis

Figure 1 presents a time trend for the proportions of countries having POS advertising bans during 2007-2014 in our final smoking prevalence and cigarette consumption samples. The final samples

Table 2
The Association between POS Advertising Bans and Adult Smoking
Prevalence and Cigarette Consumption

Dependent Variables	Adult Smoking Prevalence		Cigarette Consumption	
Models	**Model 1**	**Model 2**	**Model 1**	**Model 2**
POS Ad Bans	-0.038	-0.040	-0.128	-0.154*
	[-0.095 0.018]	[-0.097 0.016]	[-0.269 0.015]	[-0.28 -0.029]
Mpower Price	-0.026		-0.216**	
	[-0.059 0.007]		[-0.291-0.141]	
R Score		-0.011		-0.176
		[-0.052 0.030]		[-0.382 0.031]
GDP per capita	0.012	0.003	0.342**	0.291**
	[-0.072 0.095]	[-0.080 0.087]	[0.123 0.561]	[0.104 0.479]
N	490	496	593	593
Number of Countries	63	63	75	75
Marginal Effect of POS Ad Bans	-0.007	-0.007	-0.128	-0.154*
Marginal Effect of Price	-0.005	-0.002	-0.216**	-0.176
Price Elasticity	-0.084	-0.034	-0.571**	-0.466
Income Elasticity	0.019	0.01	0.522**	0.444**

* $p < .05$, ** $p < .01$

Note.
Confidence intervals (95%) in brackets. Model 1 uses MPOWER cigarette prices. Model 2 uses R score as a measure of cigarette prices and controls for an indicator of missing R score. Other covariates in the models are percent population aged 15-64, percent population aged 65 and over, the MPOWER composite score, year indicators, and country fixed effects. Standard errors were clustered at the country levels. The marginal effect of POS ban on smoking prevalence was derived from Stata command 'margins, dydx()'.

were limited to countries with the information on smoking prevalence and cigarette consumption during 2007-2014 period. As Figure 1 shows, 21%-22% of countries had POS advertising bans in 2007. The number of countries with POS advertising bans increased over time and reached its peak at approximately 40% in 2014 in both samples.

Table 1 reports summary statistics of the dependent and independent variables during the study period in the smoking prevalence and cigarette consumption samples. Smoking prevalence among adults was 25%. The average *per capita* cigarette consumption per year was 1487 sticks, approximately 75 packs of cigarette per year or 6 packs per months. About 30%-31% of the countries in the 2 samples had POS advertising bans at some point during 2007-2014. The means of MPOWER scores were mainly between 3 and 4, indicating that some countries implemented the policies

with a medium strength and some countries implemented the policies with a higher strength. During 2007-2014, the average price of a 20-cigarette pack of the most sold brand at international dollars was 4 in both the smoking prevalence sample and the cigarette consumption sample.

Table 2 contains the estimates of the association between POS advertising bans and smoking prevalence and cigarette consumption, estimated using fractional logit regressions and OLS regressions respectively. Whereas the upper panel contains coefficients of interest, the lower panel shows marginal effects of POS advertising bans, price elasticities, and income elasticities.

Our models suggest that POS advertising bans were associated with a 0.7-0.9 percentage point decrease in adult smoking prevalence. However, these associations did not reach the statistical significance levels in all models.

Table 3
Sensitivity Analysis - the Association between POS Advertising Bans and Adult Smoking Prevalence and Cigarette Consumption

Dependent Variables	Adult Smoking Prevalence		Cigarette Consumption			
Specifications	Linear Probability For Smoking Prevalence Analysis		Legal Cigarette Consumption as an Alternative Outcome		Exclusion of Missing MPOWER Scores	
Models	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3
POS ad bans	-0.007	-0.002	-0.164*	-0.119*	-0.137*	-0.108+
	[-0.019 0.005]	[-0.01 0.008]	[-0.291 -0.037]	[-0.23 -0.005]	[-0.269 -0.003]	[-0.229 0.012]
MPOWER Price		-0.006+		-0.21***		-0.21***
		[-0.01 0.0003]		[-0.31 -0.11]		[-0.31 -0.11]
R Score	-0.003		-0.180		-0.168	
	[-0.012 0.006]		[-0.393 0.033]		[-0.379 0.043]	
GDP per capita	0.002	0.0005	0.345**	0.26*	0.349**	0.31*
	[-0.015 0.019]	[-0.016 0.017]	[0.110 0.579]	[0.06 0.46]	[0.114 0.584]	[0.04 0.57]
N	496	428	593	519	515	444
Number of Countries	63	62	75	75	71	68
Marginal Effect of POS Ad Bans	-0.007	-0.002	0.164*	-0.119+	-0.137*	-0.108+
Marginal Effect of Price	-0.003	-0.006+	-0.180	-0.21***	-0.168	-0.2***
Price Elasticity	-0.05	-0.01	-0.476**	-0.529***	-0.444	-0.529***
Income Elasticity	0.019	0.005	0.526**	0.397*	0.532**	0.473*

* p < .05, ** p < .01, *** p < .001

Note.
Confidence intervals (95%) in brackets. Model 2 uses R score as a measure of cigarette prices and controls for an indicator of missing R score. Model 3 examines the effect of POS advertising bans at time t on smoking prevalence and cigarette consumption at time (t+1). The results of Model 1, which uses MPOWER cigarette prices are not represented in the table but are very similar to the results of Model 2. Other covariates in the models are percent population aged 15-64 and percent population aged 65 and over, year indicators, country fixed effects, and the composite MPOWER score. Standard errors were clustered at the country levels. The marginal effect of POS ad bans on smoking prevalence was derived from Stata command 'margins, dydx()'.

POS advertising bans were significantly associated with reduced cigarette consumption. Countries with POS advertising bans experienced a reduction of 128-154 sticks of cigarettes in *per capita* cigarette consumption per year, compared to countries without such bans.

Cigarette prices were associated with reduced smoking prevalence and significantly associated with reduced cigarette consumption. Price elasticity of smoking prevalence and cigarette consumption is -0.084 and -0.571, reflecting an overall price elasticity of cigarette demand of -0.655. This implies that a 10% increase in cigarette prices was associated with a 6.55% decrease in cigarette demand.

Countries' GDP *per capita* was not significantly associated with smoking prevalence but was significantly associated with increased cigarette consumption. The estimates of income elasticity were 0.444-0.522, indicating that a 10% increase in GDP would increase cigarette consumption by 4.44%-5.22%.

Sensitivity Analysis

Table 3 presents the results of the robustness check, which produce results similar to our models. The results suggest that POS advertising bans were associated with reduced smoking prevalence and significantly associated with lower cigarette consumption (p ≤ .05). Our estimates are robust to different specifications.

DISCUSSION

Our study used data from over 60 countries during 2007-2014 and provided global evidence on the impacts of POS cigarette advertising bans on countries' smoking prevalence and cigarette consumption. About 30% of countries in the samples have POS advertising bans at some point during the study period. Although POS advertising bans did not significantly reduce smoking prevalence, it significantly reduced countries' annual *per capita* cigarette consumption. Our estimates suggest that countries with POS advertising bans experienced a reduction of 128-154 sticks of cigarette in *per capita* cigarette consumption per year compared to countries without such bans. Cigarette prices and countries' GDP per capita were also significantly associated with reduced cigarette consumption. The estimates of price elasticity are -0.571 to -0.466. The estimates of income elasticity are 0.444-0.522.

Our estimate of price elasticity for overall cigarette demand was -0.655, with -0.084 from smoking prevalence and -0.571 from cigarette consumption. Chaloupka and Warner[26] documented the price elasticity estimates for overall cigarette demand fall within a relatively wide range from -0.14 to -1.23, most falling in a narrower range from -0.3 to -0.5. Gallet and List[27] conducted a meta-analysis from 86 countries and found that the price elasticity estimates range from –3.12 to +1.41, with a mean of -0.48. Accordingly, our price elasticity estimates fall within these suggested ranges. Given our price elasticity estimate of -0.655, a 10% increase in cigarette prices is associated with a 6.55% decrease in cigarette consumption. Our findings are consistent with previous findings and confirm that cigarette price is a significant risk factor for adult smoking.[28,29]

Our study has some limitations. First, using the aggregate data at the national level did not allow us to compare differential effects of POS adver-tising bans on different demographic subgroups. Findings from previous studies suggest that POS tobacco advertising targets on communities of particular racial, ethnic, and lower socioeconomic backgrounds.[2,13,14,17,30] Second, smoking prevalence is a stock value of initiation and cessation. As most of the initiation begins during adolescent ages, smoking prevalence among adult population describes the status of smoking cessation. Therefore, the effects of POS advertising bans on adult smoking prevalence may be captured through the effects on quitting and relapsing of former smokers. By taking into account smoking prevalence as a whole, this study cannot separate these 2 effects from one another. Thus, future studies may benefit from utilizing a longitudinal individual-level data to examine the impacts of POS advertising bans on smoking cessation and relapse.

Third, the WHO MPOWER packages did not provide detailed information on the conditions under which a country could report to have POS advertising bans. Thus, countries with exceptions (eg, for tobacco shops) may not be captured in our POS cigarette advertising bans dichotomous variable. Furthermore, several criticisms were raised on the data quality for Euromonitor International, particularly on its illicit trade data, due to Euro-monitor's reliance on tobacco industry intelligence for data sources and the unidentified data sources.[25] However, our results from an alternative model, only accounting for legal cigarette sales and excluding the illicit sales, are consistent to findings from the main model specification. Lastly, the results would be sensitive to which countries are included in the analytical datasets. If developing countries are more likely than developed countries to be selected into the final sample, the impacts of POS advertising bans may be over-estimated, particularly because POS advertising bans could have larger effects in developing countries than in developed countries.[31,32] Our cigarette consumption study sample includes 35 high-income countries and 40 low- and middle-income countries. This limited sample size would not provide enough power to detect the separate impacts of POS advertising bans on cigarette smoking in low-, middle-, and high-income countries. Despite these factors, our results are robust to different specifications and consistent with the findings of previous studies. In our models, we also captured potential observed

and unobserved time and country-specific factors that can influence adult smoking.

IMPLICATIONS FOR TOBACCO REGULATION

As POS advertising becomes the least regulated channel for tobacco marketing, tobacco companies increasingly shift their marketing budgets to POS. Our study took advantage of international datasets and provided global evidence on the impacts of POS cigarette advertising bans on countries' smoking prevalence and cigarette consumption on over 60 countries during 2007-2014. Our results suggest that POS advertising bans were associated with reduced cigarette consumption. Restricting cigarette advertisements in the retail environment may reduce adult smoking.

Conflict of Interest Statement

The authors declare no conflicts of interest.

Human Subjects Statement

This research used no human participants and was exempt from review.

References

1. Federal Trade Commission US. *Cigarette Report for 2014.* 2016. Available at: https://www.ftc.gov/system/files/documents/reports/federal-trade-commission-cigarette-report-2014-federal-trade-commission-smokeless-tobacco-report/ftc_cigarette_report_2014.pdf. Accessed July 10, 2018.
2. Feighery EC, Ribisl KA, Schleicher NC, Clark PI. 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(6):876-884.
3. Bloom PN. Role of slotting fees and trade promotions in shaping how tobacco is marketed in retail stores. *Tob Control.* 2001;10(4):340-344.
4. Lavack AM, Toth G. Tobacco point-of-purchase promotion: examining tobacco industry documents. *Tob Control.* 2006;15(5):377-384.
5. World Health Organization (WHO). *WHO Report on the Global Tobacco Epidemic, 2013: Enforcing Bans on Tobacco Advertising, Promotion and Sponsorship.* Geneva, Switzerland: WHO; 2013. Available at: http://www.who.int/tobacco/global_report/2013/en/. Accessed July 10, 2018.
6. National Cancer Institute. The Role of the Media in Promoting and Reducing Tobacco Use. *Tobacco Control Monograph* Vol 19. Bethesda, MD: US Department of Health and Human Services, National Institutes of Health, National Cancer Institute; 2008.
7. Donovan RJ, Jancey J, Jones S. Tobacco point of sale advertising increases positive brand user imagery. *Tob Control.* 2002;11(3):191-194.
8. Clattenburg EJ, Elf JL, Apelberg BJ. Unplanned cigarette purchases and tobacco point of sale advertising: a potential barrier to smoking cessation. *Tob Control.* 2013;22(6):376-381.
9. Siahpush M, Shaikh RA, Hyland A, et al. Point-of-sale cigarette marketing, urge to buy cigarettes, and impulse purchases of cigarettes: results from a population-based survey. *Nicotine Tob Res.* 2016;18(5):1357-1362.
10. Siahpush M, Shaikh RA, Smith D, et al. The association of exposure to point-of-sale tobacco marketing with quit attempt and quit success: results from a prospective study of smokers in the United States. *Int J Environ Res Public Health.* 2016;13(2):203.
11. 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(3):315-318.
12. Feighery EC, Henriksen L, Wang Y, et al. An evaluation of four measures of adolescents' exposure to cigarette marketing in stores. *Nicotine Tob Res.* 2006;8(6):751-759.
13. Slater SJ, Chaloupka FJ, Wakefield M, et al. The impact of retail cigarette marketing practices on youth smoking uptake. *Arch Pediatr Adolesc Med.* 2007;161(5):440-445.
14. World Health Organization (WHO). *WHO Report on the Global Tobacco Epidemic 2015: Raising Taxes on Tobacco.* Geneva, Switzerland: WHO; 2015. Available at: http://www.who.int/tobacco/global_report/2015/en/. Accessed July 10, 2018.
15. Kennedy RD, Grant A, Spires M, Cohen JE. Point-of-sale tobacco advertising and display bans: policy evaluation study in five Russian cities. *JMIR Public Health Surveill.* 2017;3(3):e52.
16. Shang C, Huang J, Li Q, Chaloupka FJ. The association between point-of-sale advertising bans and youth experimental smoking: findings from the Global Youth Tobacco Survey (GYTS). *Aims Public Health.* 2015;2(4):832-843.
17. World Health Organization (WHO). *WHO Report on the Global Tobacco Epidemic, 2008: The MPOWER Package.* Geneva, Switzerland: WHO; 2008. Available at: http://www.who.int/tobacco/mpower/2008/en/. Accessed July 10, 2018.
18. World Health Organization (WHO). *WHO Report on the Global Tobacco Epidemic, 2011: Warning about the Dangers of Tobacco.* Geneva, Switzerland: WHO; 2011. Available at: http://www.who.int/tobacco/global_report/2011/en/. Accessed July 10, 2018.
19. Euromonitor International. Tobacco Industry Market Research. Available at: http://www.euromonitor.com/tobacco. Accessed August 30, 2015.
20. Ng M, Freeman MK, Fleming TD, et al. Smoking preva-

lence and cigarette consumption in 187 countries, 1980-2012. *JAMA.* 2014;311(2):183-192.

21. The Work Bank. Indicators. 2016.Available at: https://data.worldbank.org/indicator. Accessed May 10, 2016.

22. World Health Organization (WHO). *MPOWER: Six Policies to Reverse the Tobacco Epidemic.* Geneva, Switzerland: WHO; 2008. Available at: http://tobacco.cleartheair.org.hk/?p=525. Accessed July 10, 2018.

23. World Health Organization (WHO). *Global Progress Report on Implementation of the WHO Framework Convention on Tobacco Control.* Geneva, Switzerland: WHO; 2014 Available at: http://www.who.int/fctc/reporting/2014globalprogressreport.pdf. Accessed July 10, 2018.

24. Angrist J, Pischke J. *Mostly Harmless Econometrics: An Empiricist's Companion.* Princeton, NJ: Princeton University Press; 2008.

25. Blecher E, Liber A, Ross H, Birckmayer J. Euromonitor data on the illicit trade in cigarettes. *Tob Control.* 2015;24(1):100-101.

26. Chaloupka F, Warner K. The economics of smoking. In Newhouse J, Culyer A, eds. *Handbook of Health Economics.* London, UK: Elsevier; 2000: 1(PART B), 1539-1627.

27. Gallet CA, List JA. Cigarette demand: a meta-analysis of elasticities. *Health Econ.* 2003;12(10):821-835.

28. Schaap MM, Kunst AE, Leinsalu M, et al. Effect of nationwide tobacco control policies on smoking cessation in high and low educated groups in 18 European countries. *Tob Control.* 2008;17(4):248-255.

29. Levy DT, Benjakul S, Ross H, Ritthiphakdee B. The role of tobacco control policies in reducing smoking and deaths in a middle income nation: results from the Thailand SimSmoke simulation model. *Tob Control.* 2008;17(1):53-59.

30. Counter Tobacco Organization. Disparities in point-of-sale advertising and retailer density. Available at: http://countertobacco.org/resources-tools/evidence-summaries/disparities-in-point-of-sale-advertising-and-retailer-density/. Accessed February 20, 2017.

31. Saffer H, Chaloupka F. The effect of tobacco advertising bans on tobacco consumption. *J Health Econ.* 2000;19(6):1117-1137.

32. Blecher E. The impact of tobacco advertising bans on consumption in developing countries. *J Health Econ.* 2008;27(4):930-942.