United States Government Accountability Office

Report to the Committee on Finance, U.S. Senate

June 2019

TOBACCO TAXES

Market Shifts toward Lower-Taxed Products Continue to Reduce Federal Revenue

GAO-19-467

June 2019

TOBACCO TAXES

Market Shifts toward Lower-Taxed Products Continue to Reduce Federal Revenue

GAO Highlights

Highlights of GAO-19-467, a report to the Committee on Finance, U.S. Senate

Why GAO Did This Study

In 2009, CHIPRA increased and equalized federal excise tax rates for cigarettes, roll-your-own tobacco, and small cigars but did not equalize tax rates for pipe tobacco and large cigars—products that can be cigarette substitutes. GAO reported in 2012 and 2014 on the estimated federal revenue losses due to the market shifts from roll-your-own to pipe tobacco and from small to large cigars.

This report updates GAO's prior products by examining (1) the market shifts among smoking tobacco products since CHIPRA, (2) the estimated effects on federal revenue if the market shifts had not occurred, and (3) what is known about the revenue effects if Congress were to eliminate current tax disparities between smoking tobacco products. GAO analyzed data from the Department of the Treasury and U.S. Customs and Border Protection to identify sales trends for domestic and imported smoking tobacco products, to estimate the effect on tax collection if market substitutions had not occurred, and to model the effects of equalizing tax rates for smoking tobacco products.

What GAO Recommends

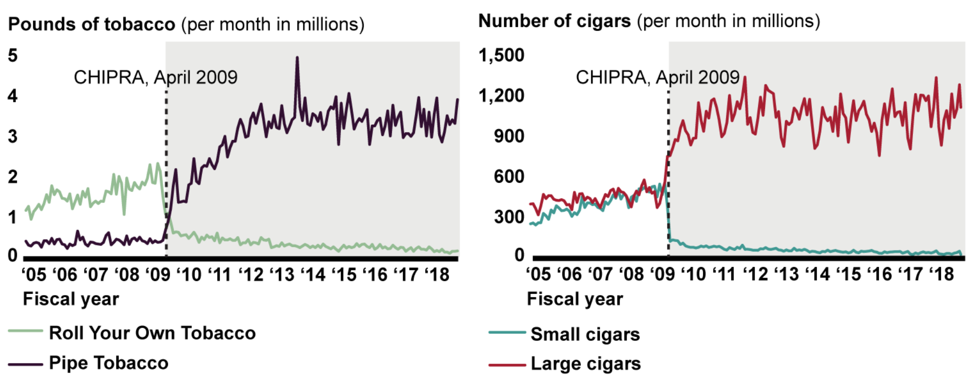
In its 2012 report, GAO recommended Congress consider equalizing tax rates on roll-your-own and pipe tobacco and consider options for reducing tax avoidance due to tax differentials between small and large cigars. Treasury generally agreed with GAO's conclusions and observations. As of May 2019, Congress had not passed legislation to reduce or eliminate tax differentials between smoking tobacco products. Treasury also generally agreed with this report's findings.

View GAO-19-467. For more information, contact David B. Gootnick at 202-512-3149 or gootnickd@gao.gov.

What GAO Found

Large federal excise tax disparities among similar tobacco products after enactment of the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009 led to immediate market shifts (see figure). Specifically, CHIPRA created tax disparities between roll-your-own and pipe tobacco and between small and large cigars, creating opportunities for tax avoidance and leading manufacturers and consumers to shift to the lower-taxed products. Following the market shifts after CHIPRA, the lower-taxed products have sustained their dominant position in their respective markets.

U.S. Sales of Roll-Your-Own and Pipe Tobacco and of Small and Large Cigars, Both Domestic and Imported, before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009



Source: GAO analysis of data from the Department of the Treasury and Customs and Border Protection. | GAO-19-467

Market shifts to avoid increased tobacco taxes following CHIPRA have continued to reduce federal revenue. GAO estimates that federal revenue losses due to market shifts from roll-your-own to pipe tobacco and from small to large cigars range from a total of about $2.5 to $3.9 billion from April 2009 through September 2018, depending on assumptions about how consumers would respond to a tax increase.

Federal revenue would likely increase if Congress were to equalize the tax rate for pipe tobacco with the rates currently in effect for roll-your-own tobacco and cigarettes. GAO estimates that federal revenue would increase by a total of approximately $1.3 billion from fiscal year 2019 through fiscal year 2023 if the pipe tobacco tax rate were equalized with the higher rate for roll-your-own tobacco and cigarettes. While equalizing federal excise taxes on small and large cigars should raise revenue based on past experience, the specific revenue effect is unknown because data for conducting this analysis are not available. These data are not collected by the Department of the Treasury because such data are not needed to administer and collect large cigar taxes under the current tax structure.

Contents

Letter		1
	Background	3
	Large Tax Disparities among Similar Tobacco Products Led to Immediate Market Shifts to Avoid Higher Taxes	10
	Market Shifts Continue to Reduce Federal Revenue	17
	Eliminating Tax Disparities between Roll-Your-Own and Pipe Tobacco Would Likely Increase Federal Revenue, While the Effect on Small and Large Cigars Is Unknown	21
	Agency Comments	25
Appendix I	Objectives, Scope and Methodology	27
Appendix II	GAO Contact and Staff Acknowledgments	32
Tables		
	Table 1: Federal Excise Tax Rates for Cigarettes, Roll-Your-Own Tobacco, Pipe Tobacco, and Small Cigars, before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009	6
	Table 2: Federal Excise Tax Rates for Large Cigars, before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009	8
	Table 3: Definitions of Smoking Tobacco Products in the Internal Revenue Code	9
Figures		
	Figure 1: Examples of Cigarette and Cigar Products	4
	Figure 2: U.S. Sales of Cigarettes and Other Smoking Tobacco Products (Roll-Your-Own Tobacco, Pipe Tobacco, Small Cigars, and Large Cigars), Fiscal Years 2008–2018	5
	Figure 3: Changes in Federal Excise Tax Rates as a Result of the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009—for Cigarettes, Roll-Your-Own Tobacco, Pipe Tobacco, and Small Cigars	7

Figure 4: U.S. Sales of Domestic and Imported Roll-Your-Own and Pipe Tobacco before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009 11
Figure 5: Growth rates of U.S. Combined Sales of Domestic and Imported Roll-Your-Own and Pipe Tobacco before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009 12
Figure 6: U.S. Sales of Domestic and Imported Small and Large Cigars before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009 15
Figure 7: Growth rates of U.S. Combined Sales of Domestic and Imported Small and Large Cigars before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009 16
Figure 8: Imported Large Cigars' Growing Share of U.S. Sales of Large Cigars after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009 17
Figure 9: Estimated Revenue Losses for Domestic and Imported Roll-Your-Own and Pipe Tobacco after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009 19
Figure 10: Estimated Revenue Losses for Domestic and Imported Small and Large Cigars after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009 20
Figure 11: Estimated Revenue That Would Be Collected for Domestic and Imported Roll-Your-Own and Pipe Tobacco If Congress Were to Equalize Federal Excise Tax Rates for These Products (October 2018–September 2023) 22
Figure 12: Actual Federal Excise Tax Revenue Collected for Small and Large Cigars before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009 25

Abbreviations

BLS	Bureau of Labor Statistics
CBP	U.S. Customs and Border Protection
CHIPRA	Children’s Health Insurance Program Reauthorization Act of 2009
FDA	Food and Drug Administration
TTB	Alcohol and Tobacco Tax and Trade Bureau

U.S. GOVERNMENT ACCOUNTABILITY OFFICE
441 G St. N.W.
Washington, DC 20548

June 13, 2019

The Honorable Chuck Grassley
Chairman
The Honorable Ron Wyden
Ranking Member
Committee on Finance
United States Senate

The Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009 increased the federal excise tax rate on cigarettes and set equivalent tax rates on roll-your-own tobacco and small cigars, which can be close substitutes for factory-made cigarettes. While CHIPRA also increased the federal excise tax rates for pipe tobacco and large cigars, it did not equalize them with the rate for cigarettes. By introducing large tax differentials among similar smoking tobacco products, CHIPRA created opportunities for tax avoidance through the substitution of higher-taxed products with lower-taxed products. We reported in 2012 and 2014 that sales of lower-taxed pipe tobacco and large cigars saw immediate and significant growth following CHIPRA, and we reported on the estimated lost federal revenue that resulted from these market shifts.[1]

To address future revenue losses, our 2012 report recommended that Congress consider modifying tobacco tax rates to eliminate significant differentials between roll-your-own and pipe tobacco and between small and large cigars.[2] We have also discussed these tobacco tax issues in our annual reports on fragmentation, overlap, and duplication as opportunities for cost savings and revenue enhancement.[3] As of May 2019, Congress has not passed legislation since CHIPRA to reduce or eliminate tax differentials among smoking tobacco products.

[1]GAO, *Tobacco Taxes: Disparities in Rates for Similar Smoking Products Continue to Drive Market Shifts to Lower-Taxed Options*, GAO-14-811T (Washington, D.C.: July 29, 2014), and *Tobacco Taxes: Large Disparities in Rates for Smoking Tobacco Products Trigger Significant Market Shifts to Avoid Higher Taxes*, GAO-12-475 (Washington, D.C.: Apr. 18, 2012).

[2]GAO-12-475.

[3]GAO, *2019 Annual Report: Additional Opportunities to Reduce Fragmentation, Overlap, and Duplication and Achieve Billions in Financial Benefits*, GAO-19-285SP (Washington, D.C.: May 21, 2019).

We prepared this report under the authority of the Comptroller General to assist Congress with its oversight responsibilities on the revenue implications of differences in federal excise tax rates among tobacco products. Our objectives were to examine (1) market shifts among smoking tobacco products since CHIPRA went into effect, (2) the estimated effects on federal revenue if the market shifts following CHIPRA had not occurred, and (3) what is known about the effects on revenue if Congress were to eliminate current tax disparities between smoking tobacco products.

Our analysis focuses on four smoking tobacco products: roll-your-own tobacco, pipe tobacco, small cigars, and large cigars. It covers sales and federal excise tax payments for these products from October 2001 through September 2018.[4] To address the objectives in this study, we reviewed documents and interviewed agency officials from the Department of the Treasury's Alcohol and Tobacco Tax and Trade Bureau (TTB), the Department of Homeland Security's U.S. Customs and Border Protection (CBP), and the Department of Labor's Bureau of Labor Statistics (BLS). We also interviewed representatives from other organizations working on tobacco and taxation issues to obtain background information on markets, industry, and consumption practices and trends for tobacco products. To identify market shifts among smoking tobacco products, we analyzed TTB removals data and CBP imports data to identify sales trends across the different tobacco products.

To estimate the federal revenue effects of differences in federal excise tax rates for tobacco products, we also analyzed TTB's and CBP's revenue data and BLS price data for smoking tobacco products. We estimated what the effect on tax revenue collection would have been if the sales trends for roll-your-own and pipe tobacco and for small and large cigars had not been affected by substitution between the products but had been affected by the increase in price due to the tax—in other words, if the market shifts resulting from the substitution of higher-taxed products with lower-taxed products had not occurred. In addition, we analyzed what is known about the effects on federal revenue if Congress were to eliminate current tax disparities between smoking tobacco products. We assumed that the pipe tobacco federal excise tax was

[4]In this report, for smoking tobacco products, the term "removals" means the amount of a tobacco product removed for distribution in the United States from the factory or released from Customs custody. We consider removals to be equivalent to sales and generally use the term *sales* when referring to removals.

increased and equalized to the level of the roll-your-own tobacco tax as of October 1, 2018, and we calculated the cumulative revenue differential for five fiscal years through September 2023. Our analysis takes into account the expected fall in quantity demanded due to the price increases resulting from higher tax rates that CHIPRA imposed on these smoking tobacco products. We assessed the reliability of the data by performing data checks for inconsistency errors and completeness and by interviewing relevant officials. We determined that the data used in this report were sufficiently reliable for our purposes. For more information on our scope and methodology, see appendix 1.

We conducted this performance audit from September 2018 to June 2019 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

As Cigarette Sales Have Declined, Sales of Other Tobacco Products Have Increased as a Percentage of the Smoking Tobacco Market

As sales of cigarettes generally decreased over the past 10 years, combined sales of roll-your-own tobacco, pipe tobacco, small cigars, and large cigars have increased as a percentage of the total market. Figure 1 shows a sample of these smoking tobacco products.

Figure 1: Examples of Cigarette and Cigar Products

1. Roll-your-own cigarette made by hand with roll-your-own tobacco
2. Roll-your-own cigarette made in a roll-your-own machine with pipe tobacco
3. Factory-made cigarette
4. Small cigar[a]
5. Large cigar[a]
6. Traditional large cigar

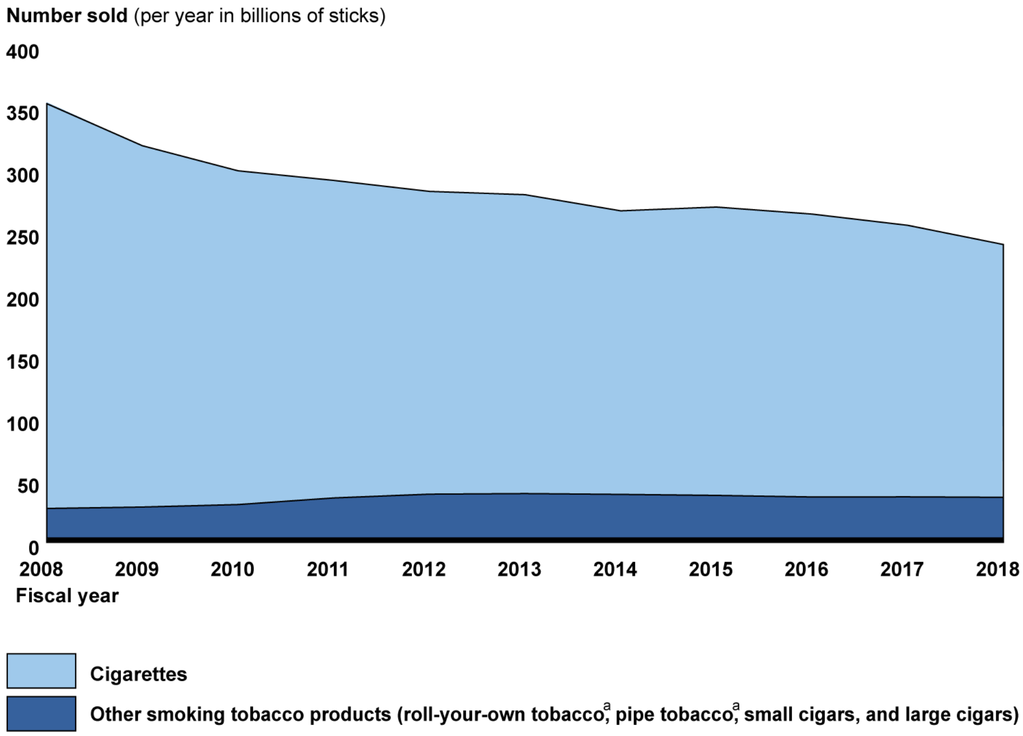
Source: GAO photo. | GAO-19-467

Note: Under the Internal Revenue Code, small and large cigars are differentiated by a weight threshold. Small cigars are defined as weighing 3 pounds or less per thousand sticks and large cigars are defined as weighing more than 3 pounds per thousand sticks.

[a]The small cigar (number 4) and the large cigar (number 5) are similar in appearance but are categorized differently for tax purposes based on their weight. To qualify as a small cigar, cigar number 4 must fall under the weight threshold differentiating small and large cigars, while cigar number 5 must be over this weight threshold.

As shown in figure 2, while the cigarette share of the smoking tobacco market has decreased, cigarette sales continue to dominate the market for smoking tobacco products. Cigarette sales fell from 350.3 billion cigarettes in fiscal year 2008 to 236.9 billion cigarettes in fiscal year 2018, and its percentage of the smoking tobacco market declined from 93.5 percent to 87.3 percent. During this same period, the combined sales of roll-your-own tobacco, pipe tobacco, small cigars, and large cigars increased from the equivalent of 24.5 billion sticks in fiscal year 2008 to 34.6 billion sticks in fiscal year 2018, an increase from 6.5 percent to 12.8 percent of the total market for smoking tobacco products.

Figure 2: U.S. Sales of Cigarettes and Other Smoking Tobacco Products (Roll-Your-Own Tobacco, Pipe Tobacco, Small Cigars, and Large Cigars), Fiscal Years 2008–2018



Source: GAO analysis of data from the Department of the Treasury and Customs and Border Protection | GAO-19-467

Note: Electronic cigarettes are not included in the sales data on smoking tobacco products represented in this figure because they are not currently taxed under the Internal Revenue Code as a tobacco product and, as a result, corresponding data on electronic cigarettes are not available.

[a]Because roll-your-own tobacco and pipe tobacco are taxed based on weight, we converted weight to cigarette stick equivalent using the Tobacco Master Settlement Agreement conversion rate that is based on the weight of 0.0325 ounces of tobacco per cigarette stick. In 1998, 46 states signed the Tobacco Master Settlement Agreement with the four largest U.S. tobacco companies to settle state tobacco-related lawsuits and recover billions of dollars in costs associated with smoking-related illnesses.

Although electronic cigarettes are growing in popularity among U.S. youth according to the FDA, they are not included in the sales data on smoking tobacco products represented in figure 2. Electronic cigarettes are not currently taxed under the Internal Revenue Code as a tobacco product.

Accordingly, corresponding data on electronic cigarettes sales are not available.[5]

Federal Excise Tax Rates on Tobacco Products Were Last Increased in 2009 under CHIPRA

Federal excise tax rates on different tobacco products are calculated in different ways. Cigarettes and small cigars are taxed on a per unit basis—the number of sticks. Roll-your-own and pipe tobacco are taxed by weight. Before CHIPRA, the federal excise tax rate on cigarettes was higher than the rates on roll-your-own tobacco, pipe tobacco, and small cigars. In 2009, Congress passed CHIPRA and significantly raised the tax rates on these four products, equalizing the rates for cigarettes, roll-your-own tobacco, and small cigars. CHIPRA also increased the tax rate for pipe tobacco, among other products, but not to the level of the other three products mentioned. Table 1 shows the increases in federal excise tax rates under CHIPRA for these four products.

Table 1: Federal Excise Tax Rates for Cigarettes, Roll-Your-Own Tobacco, Pipe Tobacco, and Small Cigars, before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009

Tobacco products	Unit of taxation	Before CHIPRA (dollars)	After CHIPRA (dollars)	Percentage Increase
Cigarettes[a]	Per thousand sticks	19.50	50.33	158
Roll-your-own tobacco	Per pound	1.10	24.78	2,153
Pipe tobacco	Per pound	1.10	2.83	157
Small cigars	Per thousand sticks	1.83	50.33	2,650

Source: GAO analysis of the Internal Revenue Code. | GAO-19-467

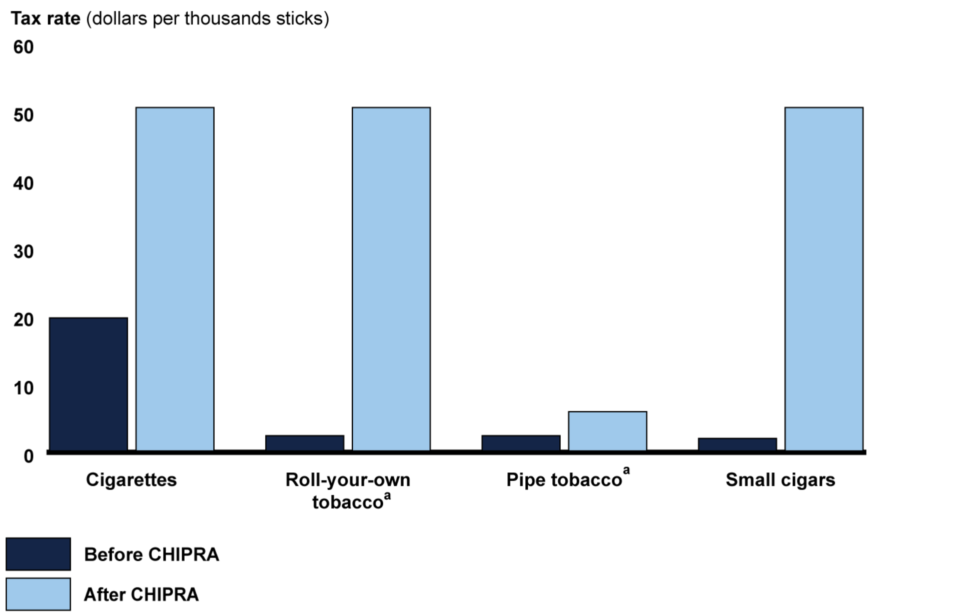
[a]The federal excise tax rate for large cigarettes up to 6.5 inches long was $40.95 per thousand sticks prior to CHIPRA and became $105.69 per thousand sticks after CHIPRA. Large cigarettes over 6.5 inches long are taxed at the rate for small cigarettes, but counting each 2.75 inches or fraction thereof in the length of each such cigarette as a separate stick.

As shown in figure 3, CHIPRA equalized—on a comparable per stick basis—federal excise tax rates for cigarettes, roll-your-own tobacco, and small cigars but not for pipe tobacco. As a result, of the three cigarette

[5]In a September 2015 report, we examined the effect of the use of electronic cigarettes on the amount of federal excise tax revenue collected from cigarettes and found no detectable effect. Possible reasons for this included the small size of the electronic cigarette market relative to the cigarette market, a lack of comprehensive and reliable data on electronic cigarette quantities and prices, and a lack of comprehensive and reliable information about the extent to which electronic cigarettes are a substitute for cigarettes. See GAO, *Electronic Cigarettes: Effect on Federal Excise Taxes Collected on Traditional Cigarettes Is Not Currently Evident,* GAO-15-771 (Washington, D.C.: Sept. 14, 2015).

products shown previously in figure 1, the cigarette made with pipe tobacco (marked as number 2) is taxed at a much lower rate than either the factory-made cigarette (number 3) or the cigarette made with roll-your-own tobacco (number 1).

Figure 3: Changes in Federal Excise Tax Rates as a Result of the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009—for Cigarettes, Roll-Your-Own Tobacco, Pipe Tobacco, and Small Cigars



Source: GAO analysis of the Internal Revenue Code. | GAO-19-467

[a]Because roll-your-own tobacco and pipe tobacco are taxed based on weight, we converted weight to cigarette stick equivalent using the Tobacco Master Settlement Agreement conversion rate that is based on the weight of 0.0325 ounces of tobacco per cigarette stick. In 1998, 46 states signed the Tobacco Master Settlement Agreement with the four largest U.S. tobacco companies to settle state tobacco-related lawsuits and recover billions in costs associated with smoking-related illnesses.

CHIPRA also increased the federal excise tax rate on large cigars. Large cigars are unique among tobacco products in that the tax rate is ad valorem—calculated as a percentage of the manufacturer's or importer's sale price—up to a maximum tax (currently $402.60) per thousand sticks. CHIPRA increased the ad valorem rate for large cigars from 20.72 percent to 52.75 percent of the manufacturer's or importer's sale price, up to a maximum of $402.60 per thousand sticks (see table 2).

Table 2: Federal Excise Tax Rates for Large Cigars, before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009

Unit of taxation	Before CHPRA	After CHIPRA	Percentage increase
Percentage of manufacturer's or importer's sale price—up to a maximum tax	20.72	52.75	155
Maximum tax in dollars per thousand sticks	48.75	402.60	726

Source: GAO analysis of the Internal Revenue Code. | GAO-19-467

To reduce federal excise taxes, manufacturers of inexpensive small cigars have an incentive to modify their product to qualify for the lower-taxed large cigar category by adding weight. For example, manufacturers of cigars with a sale price of $50 per thousand would pay $26.38 per thousand in federal excise taxes if the cigar qualified as large cigars compared to $50.33 per thousand if they qualified as small cigars. Consequently, a manufacturer of small cigars would experience a tax savings of $23.95 per thousand if it changed the product to qualify as a large cigar. In figure 1, although the small cigar (marked as number 4) and the large cigar (number 5) are similar in appearance, they are likely taxed at significantly different rates, depending on the price of the large cigar.[6]

Treasury Administers and Collects Federal Excise Taxes on Domestic Tobacco Products

Domestic manufacturers and importers of tobacco products must obtain a permit from TTB before engaging in business. TTB collects federal excise taxes on domestic tobacco products when these products leave manufacturing facilities.[7] CBP, within the Department of Homeland Security, collects the federal excise taxes on imported tobacco products after those products are released from Customs custody.

Tobacco products—including roll-your-own tobacco, pipe tobacco, small cigars, and large cigars—are broadly defined in the Internal Revenue Code (see table 3). Roll-your-own tobacco and pipe tobacco are defined

[6]Under the Internal Revenue Code, small and large cigars are differentiated by a weight threshold. Small cigars are defined as weighing 3 pounds or less per thousand sticks and large cigars are defined as weighing more than 3 pounds per thousand sticks.

[7]The federal excise taxes on domestic tobacco products are determined when these products leave the manufacturing facilities and are paid to TTB with semimonthly tax returns, according to TTB officials.

by such factors as the use for which the product is suited and how the product is offered for sale, as indicated by its appearance, type, packaging, and labeling.[8] These definitions do not specify any physical characteristics that would differentiate pipe tobacco from roll-your-own tobacco, and TTB faces challenges in distinguishing these two products for tax collection purposes. We reported in 2014 that according to government officials, representatives of nongovernmental organizations, and industry, the new pipe tobacco products introduced after CHIPRA had minimal, if any, differences from roll-your-own tobacco products. We further reported in 2014 that TTB took rulemaking actions intended to more clearly differentiate the two products. As of May 2019, TTB was still finalizing its regulatory approach for distinguishing between the two products. According to TTB officials, TTB continues to face the challenges inherent in identifying specific physical characteristics that clearly distinguish pipe tobacco from roll-your-own tobacco.

Table 3: Definitions of Smoking Tobacco Products in the Internal Revenue Code

Product	Definition
Cigarette	(1) Any roll of tobacco wrapped in paper or in any substance not containing tobacco, and (2) any roll of tobacco wrapped in any substance containing tobacco which, because of its appearance, the type of tobacco used in the filler, or its packaging and labeling, is likely to be offered to, or purchased by, consumers as a cigarette described in (1).
Roll-your-own tobacco	Any tobacco which, because of its appearance, type, packaging, or labeling, is suitable for use and likely to be offered to, or purchased by, consumers as tobacco for making cigarettes or cigars, or for use as wrappers thereof.
Pipe tobacco	Any tobacco which, because of its appearance, type, packaging, or labeling, is suitable for use and likely to be offered to, or purchased by, consumers as tobacco to be smoked in a pipe.
Small cigar	Any roll of tobacco wrapped in leaf tobacco or in any substance containing tobacco (other than any roll of tobacco which is a cigarette) that weighs 3 pounds or less per thousand.
Large cigar	Any roll of tobacco wrapped in leaf tobacco or in any substance containing tobacco (other than any roll of tobacco which is a cigarette) that weighs more than 3 pounds per thousand.

Source: 26 U.S.C. §§ 5701, 5702. | GAO-19-467

TTB officials have discussed the complexity of administering the federal excise tax on large cigars because it is calculated as a percentage of the

[8] 26 U.S.C. § 5702.

manufacturer's or importer's sale price, up to a maximum tax per thousand sticks. We reported in 2014 that TTB's efforts to monitor and enforce tax payments on large cigars became more complex after CHIPRA as more manufacturers and importers determined their tax liability based on the sale price per stick rather than simply paying the set maximum tax. In addition, we reported that according to TTB officials some large cigar manufacturers and importers began to restructure their market transactions to lower the sale price for large cigars and obtain tax savings based on a lower ad valorem rate. According to TTB officials, some manufacturers and importers, for example, were "layering" sales transactions by including an additional transaction at a low price before the sale to the wholesaler or distributor and using this low initial price to calculate the tax. According to TTB officials, such transactions are conducted with an intermediary that may have a special contract arrangement with the manufacturer or importer. The intermediary may then add a large markup to the subsequent sale price to the wholesaler or distributor. This added transaction effectively lowers the manufacturer's or importer's sale price and thus reduces the taxes collected. TTB officials stated that these types of transactions have continued since 2014, and that taking enforcement actions to counter them is challenging and resource intensive due to their complexity. TTB officials also noted that these activities can range from legal tax avoidance to illegal tax evasion, requiring a case-specific analysis of each transaction.

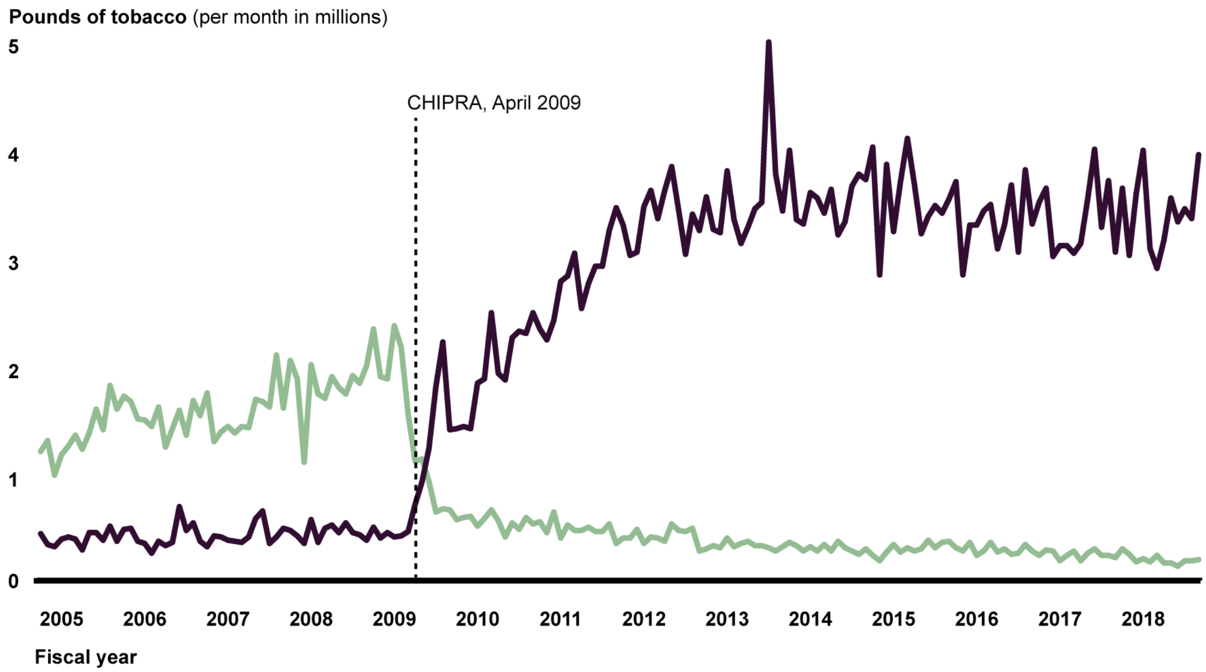
Large Tax Disparities among Similar Tobacco Products Led to Immediate Market Shifts to Avoid Higher Taxes

Large tax disparities among similar tobacco products created opportunities for tax avoidance and led to immediate market shifts to the lower-taxed products. Specifically, since CHIPRA took effect in 2009, pipe tobacco consumption increased significantly—steeply at first and then leveling off. Over the same period, roll-your-own tobacco consumption fell sharply and then more gradually declined. Similarly, large cigar consumption rose sharply after CHIPRA took effect, while sales of small cigars dramatically decreased and now make up very little of the combined market share for cigars.

Roll-Your-Own Market Shifted to Pipe Tobacco following CHIPRA

Following CHIPRA's passage, pipe tobacco sales rose steeply, peaking in July 2013 and leveling off since then (see fig. 4). Pipe tobacco sales grew from 5.2 million pounds in fiscal year 2008, the fiscal year before CHIPRA came into effect, to 40.7 million pounds in fiscal year 2018. Pipe tobacco sales reached a high in fiscal year 2013, with consumption exceeding 42.4 million pounds and spiking in July 2013 for a monthly high of over 4.9 million pounds. After this spike, the pipe tobacco market leveled off with monthly sales fluctuating from 2.8 million to 4.1 million pounds. Despite this leveling off, pipe tobacco's share of the combined roll-your-own and pipe tobacco market continued to increase, reaching approximately 95 percent in fiscal year 2018, which is the highest it had been since CHIPRA took effect.

Figure 4: U.S. Sales of Domestic and Imported Roll-Your-Own and Pipe Tobacco before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009



Pounds of tobacco (per fiscal year in millions)

Roll-your-own tobacco	16.0	17.9	18.5	21.3	17.0	6.4	5.6	4.8	3.7	3.4	3.4	3.3	2.7	2.2
Pipe tobacco	4.5	4.8	4.9	5.2	10.7	23.3	33.1	40.0	42.4	42.2	42.1	39.9	39.8	40.7

Source: GAO analysis of data from the Department of the Treasury and Customs and Border Protection. | GAO-19-467

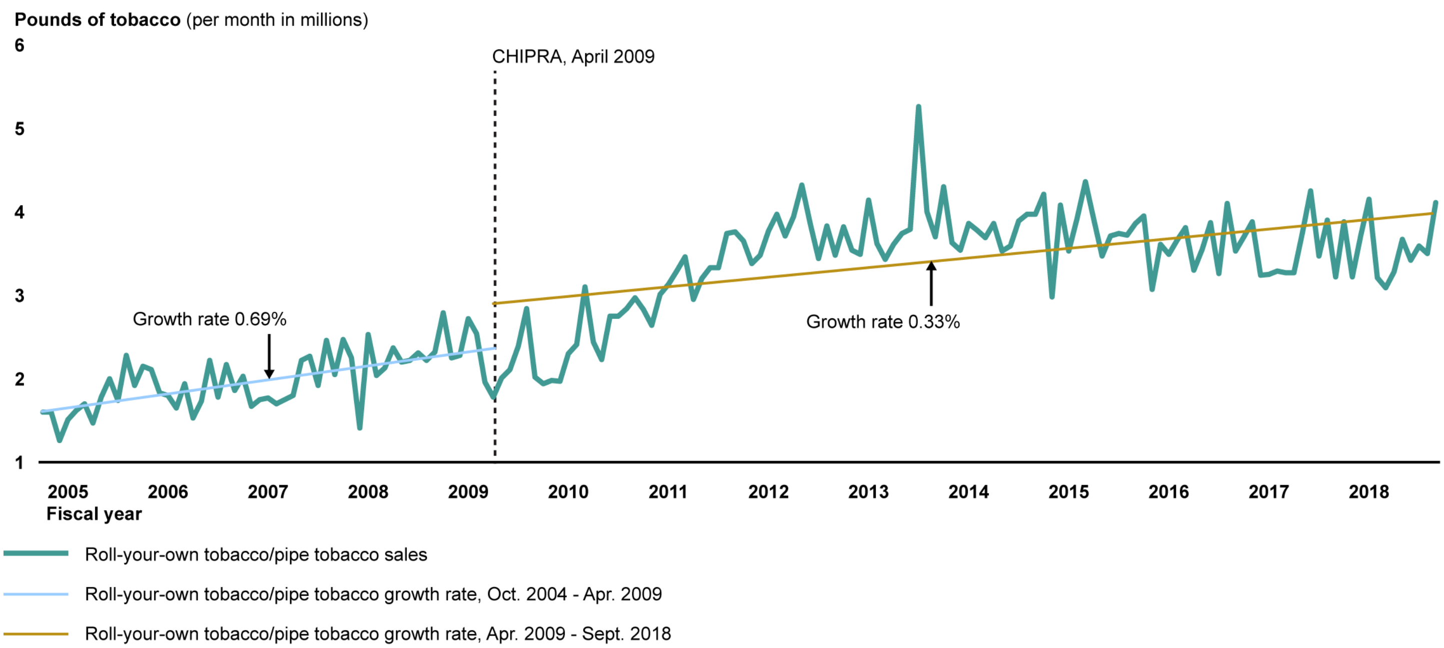
Note: CHIPRA passed in February 2009 and took effect in April 2009.

Figure 4 also shows that as pipe tobacco sales increased significantly after the passage of CHIPRA, roll-your-own tobacco experienced an immediate drop in sales. Annual sales of roll-your-own tobacco dropped from 17.0 million pounds in fiscal year 2009 to 6.4 million pounds in fiscal year 2010, before declining further to 2.2 million pounds in fiscal year 2018. The lowest annual sales for roll-your-own tobacco since CHIPRA occurred in fiscal year 2018. Over the 11 fiscal years from 2008 through

2018, roll-your-own tobacco's share of the combined roll-your-own and pipe tobacco market decreased from approximately 78 percent to approximately 5 percent.

Figure 5 shows that the overall combined sales of pipe tobacco and roll-your-own tobacco were higher after CHIPRA than before CHIPRA. However, the growth rate declined from 0.69 percent before CHIPRA to 0.33 percent after CHIPRA took effect.

Figure 5: Growth rates of U.S. Combined Sales of Domestic and Imported Roll-Your-Own and Pipe Tobacco before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009



Source: GAO analysis of data from the Department of the Treasury and Customs and Border Protection. | GAO-19-467

Note: The growth rates represent linear growth rates for periods both before and after CHIPRA's passage.

In April 2012, we reported that the rise in pipe tobacco sales after CHIPRA coincided with the growing availability of commercial roll-your-own machines that enabled customers to produce a carton of roll-your-own cigarettes with pipe tobacco in less than 10 minutes.[9] Not only were customers able to save money through lower taxes on pipe tobacco, but

[9] GAO-12-475.

the commercial roll-your-own machines also provided significant time savings compared with rolling cigarettes by hand.

The market shift from roll-your-own to pipe tobacco has persisted in recent years despite a change in the legal status of businesses making commercial roll-your-own machines available to consumers, resulting in these machines being less readily available. Following the growth in the availability of commercial roll-your-own machines, Congress passed a law in July 2012 that included a provision adding "any person who for commercial purposes makes available for consumer use…a machine capable of making cigarettes, cigars, or other tobacco products" to the definition of "manufacturer of tobacco products" for tax purposes.[10] As a result, businesses meeting this definition faced increased tax liability and regulatory requirements. According to TTB officials and industry observers, the number of businesses making commercial roll-your-own machines available to customers declined after the 2012 law's passage.[11] Nevertheless, combined annual sales of pipe tobacco and roll-your-own tobacco generally have not decreased since the 2012 law was passed.

Besides its lower federal excise tax, which creates financial incentives, pipe tobacco has other advantages over roll-your-own tobacco that may also contribute to its sustaining an overwhelming share of the combined roll-your-own and pipe tobacco market. For example, according to the Food and Drug Administration (FDA), pipe tobacco is not covered by the Federal Food, Drug, and Cosmetic Act restriction, such as the ban on flavor additives, imposed on roll-your-own tobacco and cigarettes.[12] Also, according to FDA, pipe tobacco does not currently have the warning label

[10]The Moving Ahead for Progress in the 21st Century Act. Pub. L. No. 112-141, § 100122.

[11]TTB officials told us that they have received fewer complaints or referrals in the last few years on the illegal use of commercial roll-your-own machines.

[12]*See* 21 U.S.C. § 387g(a)(1)(A). According to FDA guidance, while the flavor restriction doesn't apply to "bona fide pipe tobacco," it would apply to tobacco which, "because of its appearance . . . or its packaging and labeling is likely to be offered to, or purchased by, consumers as a cigarette or roll your own tobacco."

requirements that are imposed on roll-your-own tobacco and cigarettes.[13] Finally, while makers of roll-your-own tobacco are required to make payments under the Tobacco Master Settlement Agreement, makers of pipe tobacco do not make these payments.[14] This increases the incentive for roll-your-own tobacco users to switch to the cheaper pipe tobacco.

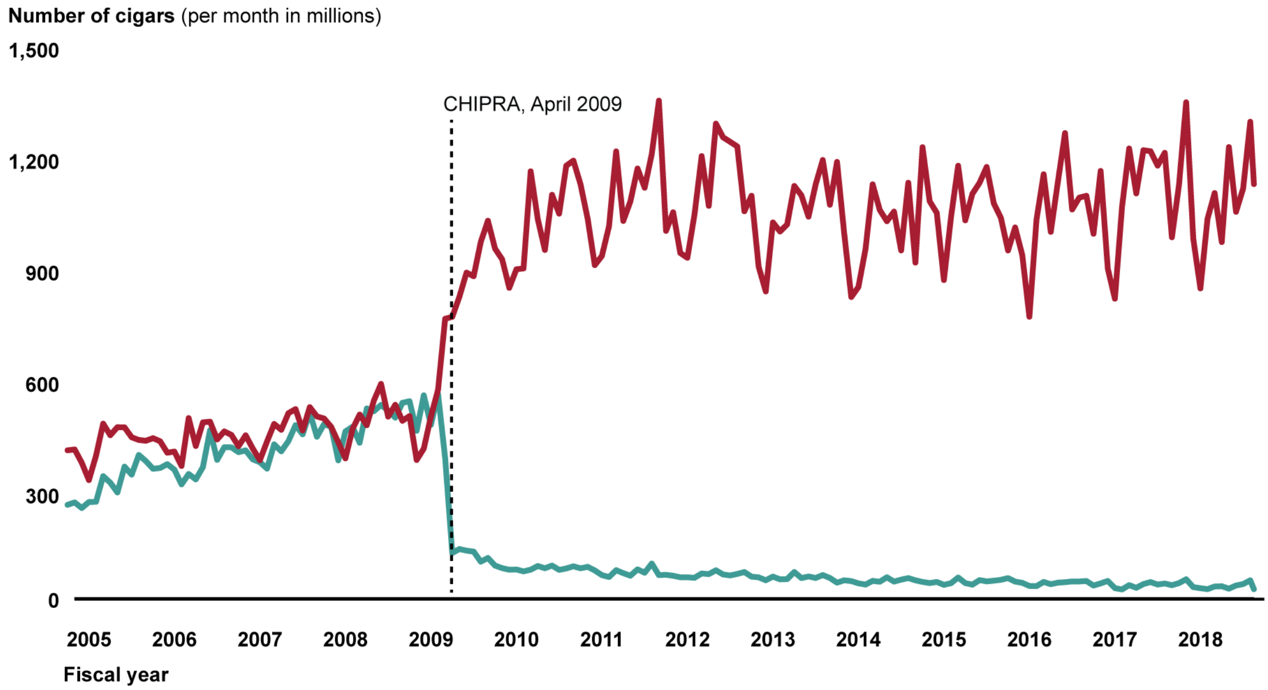
Small Cigar Market Shifted to Large Cigars after CHIPRA

After CHIPRA, sales of lower-taxed large cigars rose sharply, while sales of small cigars plunged (see fig. 6). From fiscal year 2008 through fiscal year 2018, annual sales of large cigars increased from 5.8 billion sticks to 13.1 billion sticks. This increase included a significant spike in demand immediately after CHIPRA's passage in 2009. The increase in annual sales then largely leveled off after fiscal year 2010, with sales ranging between 11.9 and 13.2 billion large cigars. As a share of the combined market for small and large cigars, large cigar sales have continued to expand. Large cigar sales increased from approximately 50 percent of the combined market in fiscal year 2008 (before CHIPRA) to approximately 92 percent in fiscal year 2010 and reached approximately 97 percent by the end of fiscal year 2018.

[13]Under the Family Smoking Prevention and Tobacco Control Act enacted in 2009, FDA was granted regulatory authority over four products: cigarettes, cigarette tobacco, roll-your-own tobacco, and smokeless tobacco. FDA was also given authority to go through the rulemaking process to extend its authority over other tobacco products, including pipe tobacco and cigars. In May 2016, FDA published a rule extending its authority over these two products, as well as electronic cigarettes. Under the rule, provisions that would apply to newly deemed tobacco products include minimum age and identification restrictions, requirements to include health warnings, and restrictions on vending machine sales. According to FDA, these requirements are being phased in over time, and warning label requirements for pipe tobacco and cigars are pending court resolution.

[14]In 1998, 46 states signed the Tobacco Master Settlement Agreement with the four largest U.S. tobacco companies to settle state tobacco-related lawsuits and recover billions of dollars in costs associated with smoking-related illnesses. Roll-your-own tobacco is included under the Tobacco Master Settlement Agreement, but pipe tobacco is not.

Figure 6: U.S. Sales of Domestic and Imported Small and Large Cigars before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009



Number of cigars (per fiscal year in billions)														
Small cigars	3.6	4.4	5.0	5.7	3.6	1.0	0.9	0.8	0.7	0.6	0.5	0.5	0.4	0.4
Large cigars	5.0	5.2	5.4	5.8	8.4	12.0	13.1	13.2	12.4	11.9	12.9	12.4	12.9	13.1

Source: GAO analysis of data from the Department of the Treasury and Customs and Border Protection. | GAO-19-467

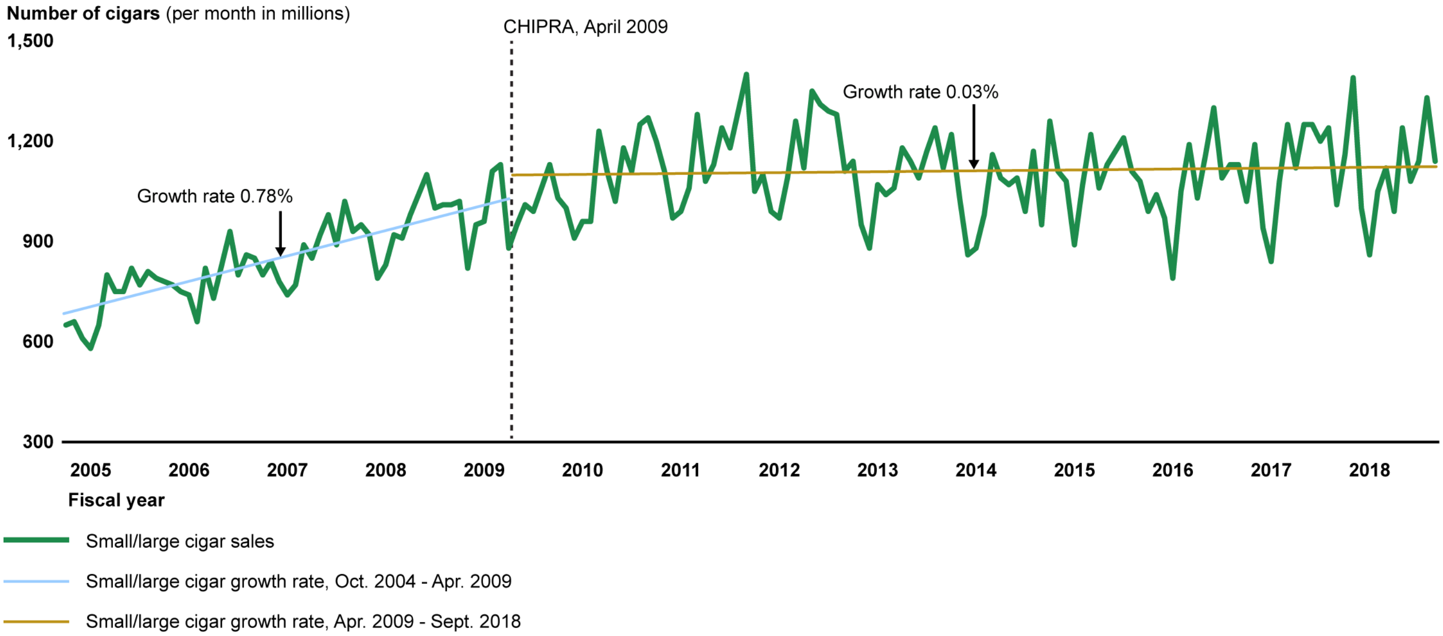
Note: CHIPRA passed in February 2009 and took effect in April 2009.

Figure 6 also shows that just as large cigar sales increased immediately following CHIPRA, sales of small cigars declined substantially. Annual small cigar sales dropped from 3.6 billion to 1.0 billion sticks between fiscal years 2009 and 2010, and declined further to 0.4 billion sticks by fiscal year 2018. Over the 10-year period between 2008 and 2018, the market share held by small cigars decreased from a high of approximately 50 percent of the combined small and large cigar market in 2008 to approximately 3 percent in fiscal year 2018.

Figure 7 shows that the overall combined sales of small and large cigars were higher after CHIPRA than before CHIPRA, although the growth rate for small and large cigars leveled off after CHIPRA took effect in 2009.

The growth rate before CHIPRA was 0.78 percent and the growth rate after CHIPRA was 0.03 percent.

Figure 7: Growth rates of U.S. Combined Sales of Domestic and Imported Small and Large Cigars before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009

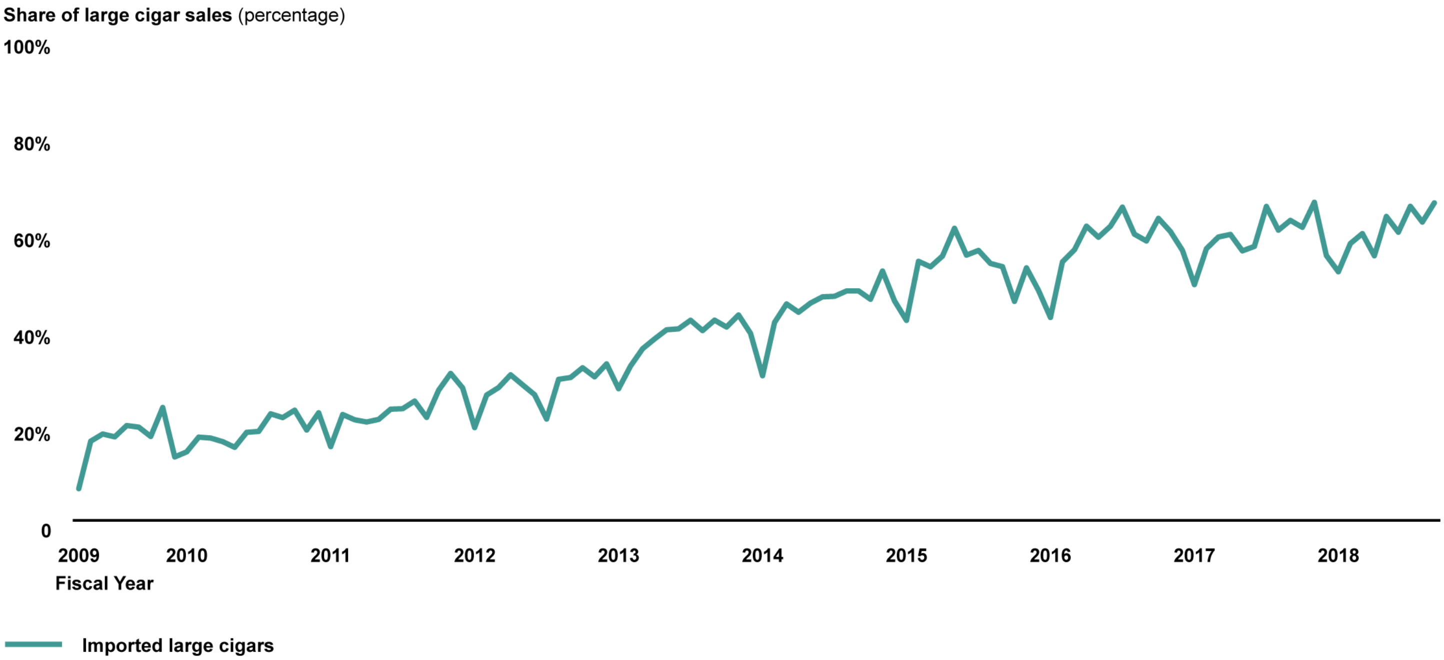


Source: GAO analysis of data from the Department of the Treasury and Customs and Border Protection. | GAO-19-467

Note: The growth rates represent linear growth rates for periods both before and after CHIPRA's passage.

The makeup of large cigar sales also changed after CHIPRA, with imports replacing domestic cigars as the main contributor to the large cigar market (see fig. 8). When CHIPRA took effect in April 2009, domestic large cigars made up 93.5 percent of the large cigar market. After CHIPRA, the large cigar market began to shift in favor of imports and, by February 2017, imported large cigars consistently became the majority product in the large cigar market. As of September 2018, imported cigars made up 65.6 percent of the large cigar market compared to 93.5 percent held by domestic large cigars in April 2009.

Figure 8: Imported Large Cigars' Growing Share of U.S. Sales of Large Cigars after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009



Source: GAO analysis of data from the Department of the Treasury and Customs and Border Protection. | GAO-19-467

Market Shifts Continue to Reduce Federal Revenue

Market shifts to avoid increased tobacco taxes following CHIPRA have continued to reduce federal revenue. We estimate that federal revenue losses due to market shifts from roll-your-own to pipe tobacco and from small to large cigars range from approximately $2.5 to $3.9 billion from April 2009 through September 2018, depending on assumptions about how consumers would respond to a tax increase.[15] In contrast, total tax revenue collected for smoking tobacco products, including cigarettes, amounted to about $138 billion over the same time period. We previously reported in 2014 on the estimated federal revenue losses resulting from these market shifts, reporting that estimated federal revenue losses due to the market shifts from roll-your-own tobacco to pipe tobacco and from

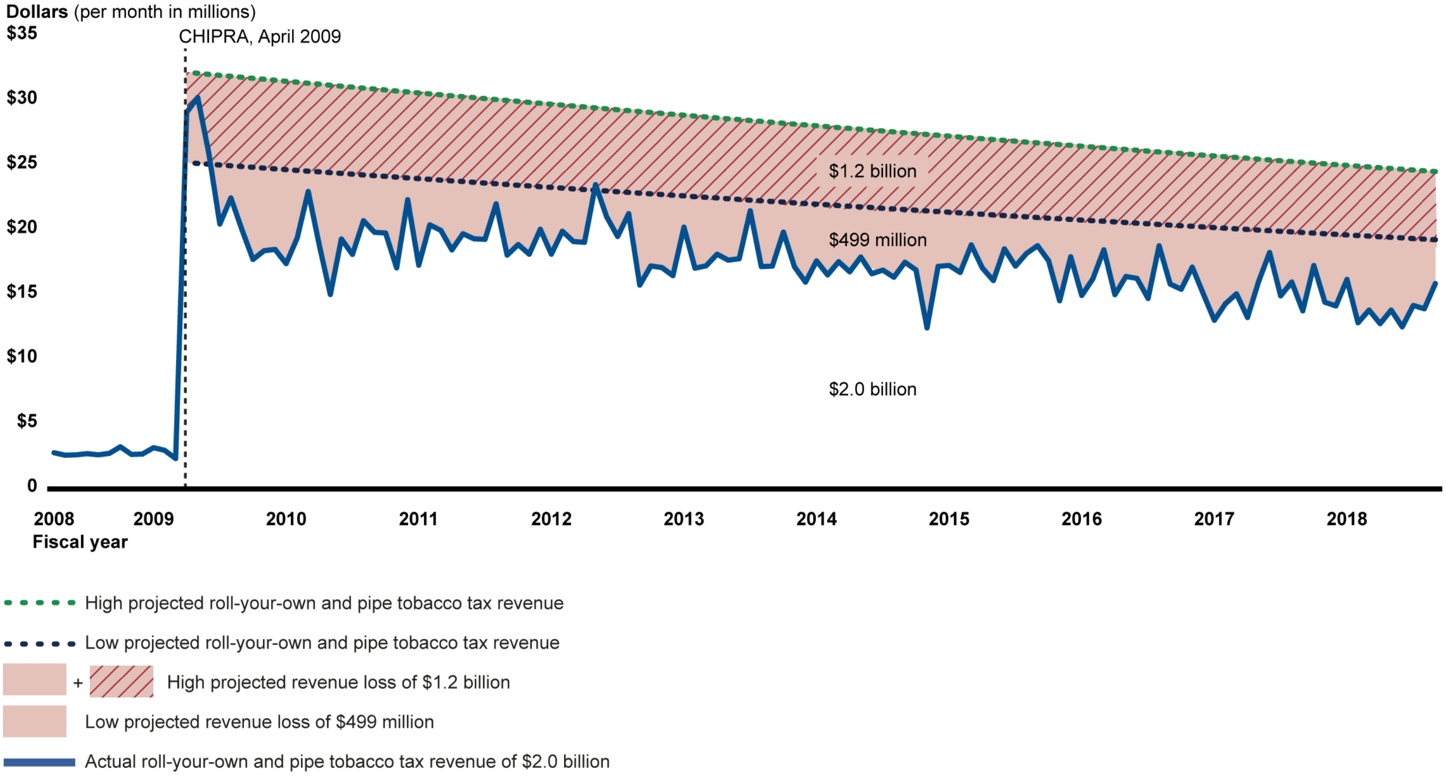
[15]The difference between the revenues collected under current law and our estimate of the higher revenues that would have been due in the absence of the market shifts is what we refer to as "revenue losses."

small to large cigars ranged from approximately $2.6 billion to $3.7 billion from April 2009 through February 2014.[16]

- **Estimated tax revenue losses in the combined roll-your-own and pipe tobacco markets.** TTB and CBP collected approximately $2.0 billion in federal excise tax revenue from domestic and imported roll-your-own and pipe tobacco from April 2009 through September 2018. We estimate that during the same period the market shift from roll-your-own to pipe tobacco reduced federal excise tax revenue by an amount ranging from $499 million to $1.2 billion (see fig. 9).

[16] In GAO-14-811T, we compared actual revenue collected with a counterfactual scenario projecting post-CHIPRA sales trends according to historic sales trends for all four products. For our current estimate, the pre-CHIPRA sales trends, based on historical data, are projected forward as if no substitution occurred, and these trends are adjusted downward based on the actual sales trend for cigarettes, which have generally declined over this period. As discussed earlier, the sales trends for the four products covered in this report also leveled off in recent years. As a result, we updated our counterfactual scenario for this report to reflect these market changes.

Figure 9: Estimated Revenue Losses for Domestic and Imported Roll-Your-Own and Pipe Tobacco after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009



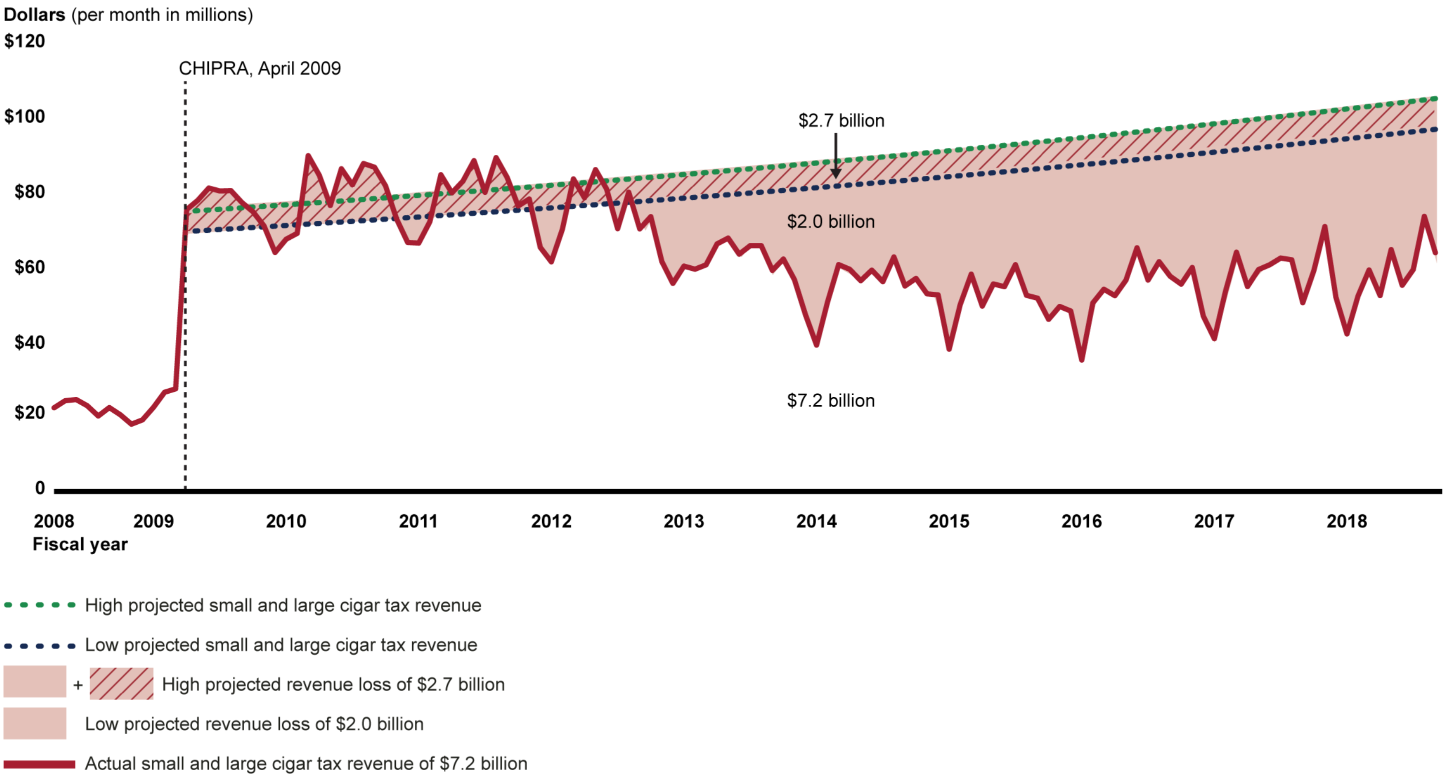
Source: GAO analysis of data from the Department of the Treasury, Customs and Border Protection, and Bureau of Labor Statistics. | GAO-19-467

Notes: Revenue losses are estimated as the cumulative difference between monthly projected and actual revenue.

The two estimated tax revenue lines reflect high and low estimates for projected tax revenue if the market shift from roll-your-own to pipe tobacco had not occurred after CHIPRA. The slopes of these projected tax revenue lines are based on the pre-CHIPRA sales trend for pipe tobacco and the post-CHIPRA sales trend for cigarettes. The pre-CHIPRA sales trend, based on historical data, is projected forward as if no substitution occurred, and this trend is adjusted downward based on the actual sales trend for cigarettes, which has generally declined over this period. The high and low estimates are based on different assumptions about consumer response to a tax increase—how much demand for the products would be likely to decrease because of the higher prices resulting from the increased tax rates set by CHIPRA.

- **Estimated tax revenue losses in the combined small and large cigar markets.** TTB and CBP collected about $7.2 billion in federal excise tax revenue from domestic and imported small and large cigars from April 2009 through September 2018. We estimate that during the same period the market shift from small to large cigars reduced federal excise tax revenue by an amount ranging from $2.0 billion to $2.7 billion (see fig. 10).

Figure 10: Estimated Revenue Losses for Domestic and Imported Small and Large Cigars after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009



Source: GAO analysis of data from the Department of the Treasury, Customs and Border Protection, and Bureau of Labor Statistics. | GAO-19-467

Notes: Revenue losses are estimated as the cumulative difference between monthly projected and actual revenue.

The two estimated tax revenue lines reflect high and low estimates for projected tax revenue if the market shift from small to large cigars had not occurred after CHIPRA. The slopes of these projected tax revenue lines are based on the pre-CHIPRA sales trend for large cigars and the post-CHIPRA sales trend for cigarettes. The pre-CHIPRA sales trend, based on historical data, is projected forward as if no substitution occurred, and this trend is adjusted downward based on the actual sales trend for cigarettes, which has generally declined over this period. The high and low estimates are based on different assumptions about consumer response to a tax increase—how much demand for the products would be likely to decrease because of the higher prices resulting from the increased tax rates set by CHIPRA.

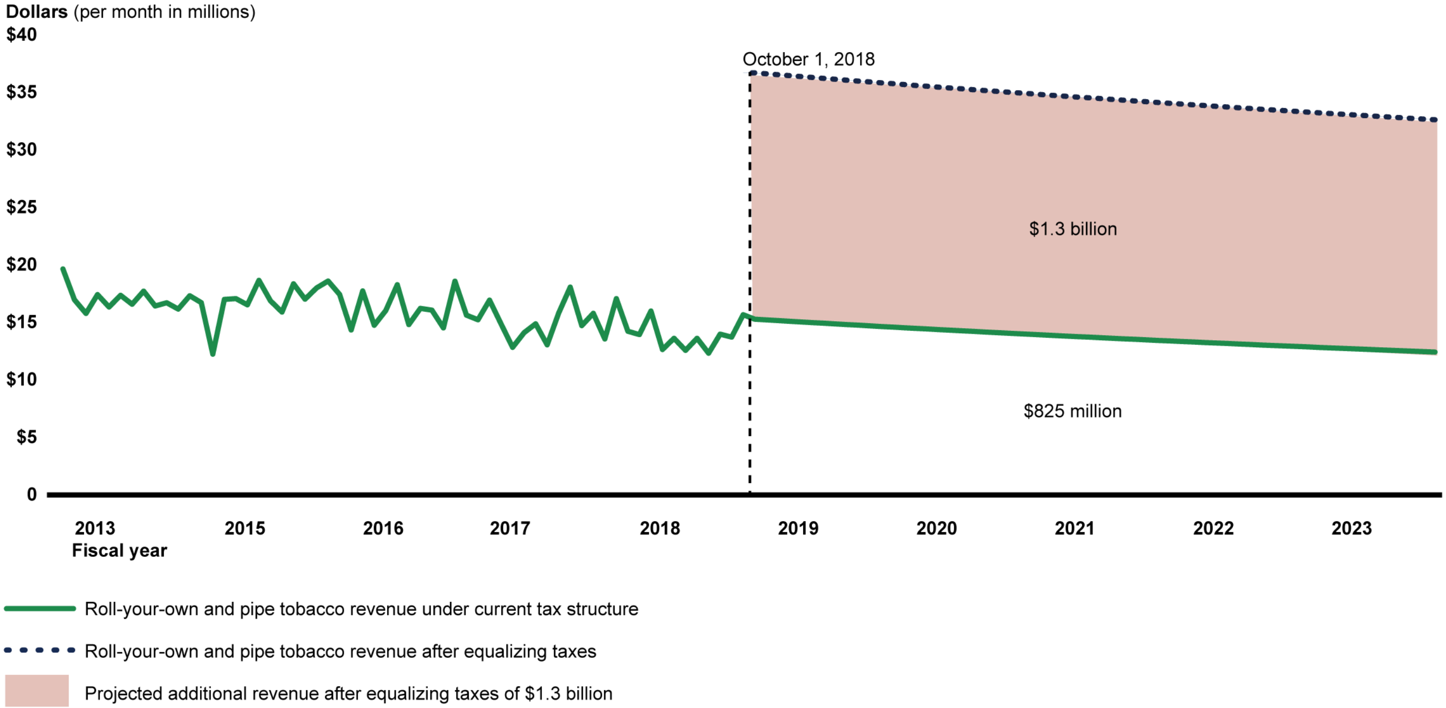
Eliminating Tax Disparities between Roll-Your-Own and Pipe Tobacco Would Likely Increase Federal Revenue, While the Effect on Small and Large Cigars Is Unknown

Federal revenue would likely increase if Congress were to equalize the tax rate for pipe tobacco with the rates currently in effect for roll-your-own tobacco and cigarettes. We estimate that federal revenue would increase by a total of approximately $1.3 billion from fiscal year 2019 through fiscal year 2023 if the pipe tobacco tax rate were equalized to the higher rate for roll-your-own tobacco and cigarettes. While equalizing federal excise taxes on small and large cigars should raise revenue based on past experience, the specific revenue effect is unknown because the data needed for conducting that analysis are not available. See appendix 1 for information on our methodology for estimating the effect on tobacco tax revenue if Congress were to eliminate current tax disparities among similar tobacco products and our assumptions about price sensitivity and other factors.

Estimated Revenue Would Increase If Congress Were to Equalize Federal Tax Rates on Roll-Your-Own and Pipe Tobacco

We estimate that under current tax rates TTB and CBP would collect approximately $825 million in federal excise tax revenue from domestic and imported roll-your-own and pipe tobacco from October 2018 through September 2023. If Congress were to increase the federal excise tax rate on pipe tobacco of $2.83 per pound to the higher roll-your-own tobacco rate of $24.78 per pound, we estimate that $1.3 billion in additional federal revenue would be collected for these two products for the same time period (see fig. 11).

Figure 11: Estimated Revenue That Would Be Collected for Domestic and Imported Roll-Your-Own and Pipe Tobacco If Congress Were to Equalize Federal Excise Tax Rates for These Products (October 2018–September 2023)



Source: GAO analysis of data from the Department of the Treasury, Customs and Border Protection, and Bureau of Labor Statistics. | GAO-19-467

Note: The estimated tax revenue lines project tax revenue if federal excise taxes on roll-your-own and pipe tobacco had been equalized on October 1, 2018. The projection of the current tax structure is based on extending into the future the most recent 5-year historic trend for roll-your-own and pipe tobacco. The projection of tax revenue after equalizing roll-your-own and pipe tobacco tax rates is adjusted downward based on the consumer response in quantity demanded to the tax increase and then follows the same 5-year historic trend. The revenue differential is calculated as the monthly difference between the two scenarios.

Estimated Revenue Effect of Equalizing Federal Tax Rates on Small and Large Cigars Is Unknown Because Data Are Not Available

The revenue effect if Congress were to equalize federal excise tax rates on small and large cigars is unknown because data for conducting this analysis are not available. Unlike roll-your-own and pipe tobacco, which are each taxed by weight, the tax rate on large cigars is based on an ad valorem rate and the tax rate on small cigars is based on number of sticks.[17] Legislative proposals in the 115th and 116th Congress for changing the federal excise tax on large cigars have included replacing the ad valorem rate with a rate based on weight, together with a minimum tax per cigar.[18] Shifting from an ad valorem tax to one based on weight could effectively equalize small and large cigar tax rates and address challenges that TTB currently faces in administering the large cigar tax; however, developing a reliable estimate of the revenue effect of such a change is not possible because the data needed on large cigars to conduct this analysis are not available. Specifically, data are not available on (1) large cigar weights or (2) the distribution of large cigars for which the federal excise tax now being paid is above or below the current rate for small cigars.[19] These data on large cigars are not collected by TTB because such data are not needed to administer and collect large cigar taxes under the current tax structure.[20] In the absence of these data, it is not possible to reliably calculate the potential effect on tax revenue of a counterfactual scenario for equalizing small and large cigar federal excise taxes. See appendix I for more information on the additional data needed for developing an estimate of the revenue effect of equalizing the federal excise tax rate on small and large cigars.

As previously discussed, the number of imported large cigars has increased in recent years and the ratio of imported to domestic large

[17]The federal excise tax rate for small cigars is currently $50.33 per thousand sticks, which is equivalent to 5.03 cents per stick. The current federal excise tax rate for large cigars is 52.75 percent of the manufacturer's or importer's sale price, up to a maximum tax of $402.60 per thousand sticks.

[18]*See, e.g.,* Youth Vaping Prevention Act of 2019, H.R. 293, 116th Congress (2019); Mothers and Offspring Mortality and Morbidity Awareness Act, S. 3776, 115th Congress (2018); Tobacco Tax Equity Act of 2017, S. 1837, 115th Congress (2017); Tobacco Excise Tax and Parity Act of 2017, H.R. 729, 115th Congress (2017).

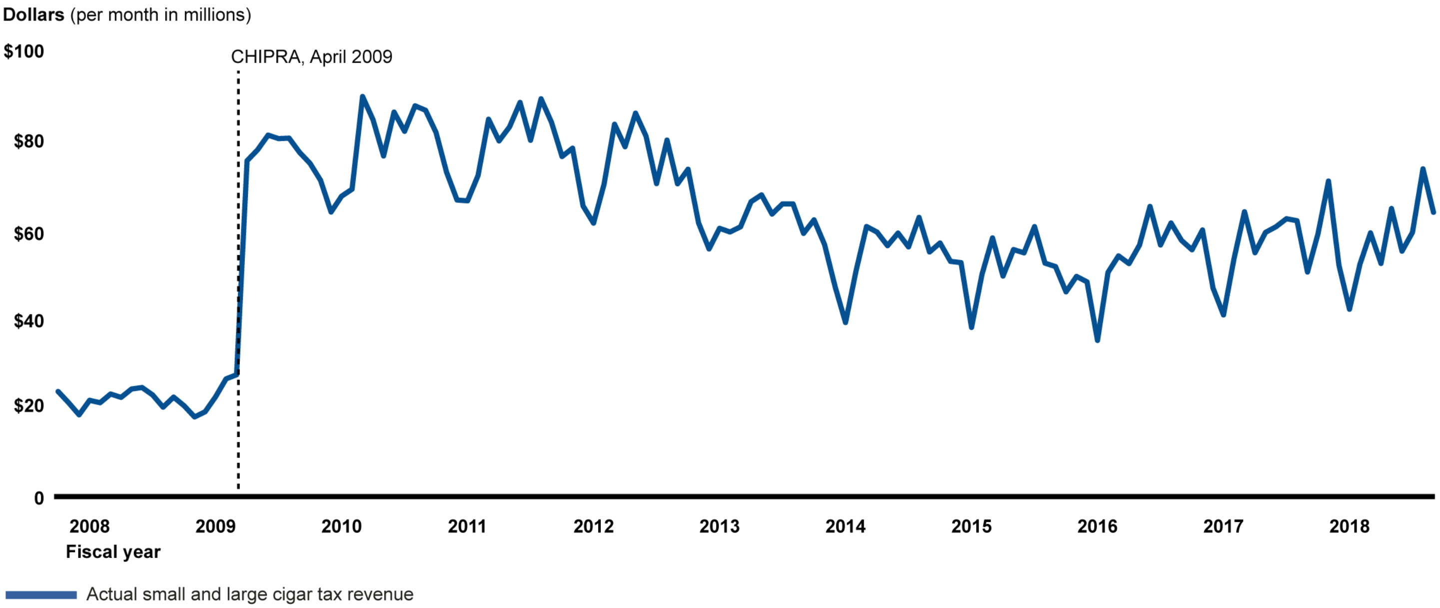
[19]TTB collects aggregate cigar data on a monthly basis, and TTB officials stated that they do not collect data from manufacturers specifically on the quantity, and amount federal excises taxes paid, for large cigars paying above or below the small cigar rate of 5.03 cents per stick.

[20]According to TTB officials, industry members are required to keep records of pricing data and while TTB reviews that information for audits, it does not require reporting of the data on a continual basis.

cigars in the U.S. market has shifted toward imports. As part of this trend, there has also been an increase in the proportion of imported large cigars that are taxed at a lower rate than the small cigar tax rate of 5.03 cents per stick. From fiscal years 2013 through 2018, 72 percent of imported large cigars were taxed at a rate less than 5.03 cents per stick. As a result of this increase in inexpensive imported large cigars, annual large cigar revenue has begun to decline. Large cigar revenue has declined from a monthly average of $71.5 million over the period from April 2009 to December 2012 to a monthly average of $52.9 million over the period from January 2013 through September 2018. Large cigars account for approximately 95 percent of combined small and large cigar revenue. Figure 12 shows actual combined small and large cigar federal excise tax revenue from fiscal year 2008 through fiscal year 2018.

The combined average monthly federal revenue for small and large cigars increased significantly after CHIPRA went into effect in 2009, from $21.3 million in fiscal year 2008 to $72.8 million in fiscal year 2010, and remains above the pre-CHIPRA level (see fig. 12). Based on this experience, if Congress were to equalize federal excise taxes through a tax increase for large cigars, revenue should increase. However, the magnitude of the revenue effect of equalizing taxes on small and large cigars is unknown because the data for conducting this analysis are not available.

Figure 12: Actual Federal Excise Tax Revenue Collected for Small and Large Cigars before and after the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009



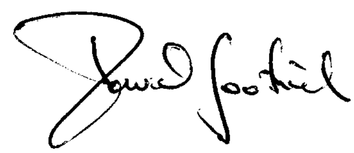
Source: GAO analysis of data from the Department of the Treasury, and Customs and Border Protection. | GAO-19-467

Agency Comments

We provided a draft of this report for comments to the Departments of the Treasury, Homeland Security, and Labor. The Department of the Treasury generally concurred with the report's findings and provided technical comments, which we have addressed as appropriate. The Department of Homeland Security also provided technical comments, which we have addressed as appropriate. The Department of Labor did not provide comments on the report.

We are sending copies of this report to the appropriate congressional committees and the Secretary of the Treasury, the Secretary of Homeland Security, the Secretary of Labor, and other interested parties. In addition, the report is available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-3149 or gootnickd@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix II.



David B. Gootnick
Director
International Affairs and Trade

Appendix I: Objectives, Scope and Methodology

Our objectives were to examine (1) market shifts among smoking tobacco products since the Children's Health Insurance Program Reauthorization Act (CHIPRA) of 2009 went into effect, (2) the estimated effects on federal revenue if the market shifts following CHIPRA had not occurred, and (3) what is known about the effects on revenue if Congress were to eliminate current tax disparities between smoking tobacco products.

Our analysis focuses on roll-your-own tobacco, pipe tobacco, small cigars, and large cigars. It covers sales and federal excise tax payments for these products from October 2001 through September 2018. To address the objectives in this study, we reviewed documents and interviewed agency officials from the Department of the Treasury's Alcohol and Tobacco Tax and Trade Bureau (TTB), the Department of Homeland Security's U.S. Customs and Border Protection (CBP), and the Department of Labor's Bureau of Labor Statistics (BLS). We also interviewed representatives from other organizations working on tobacco and taxation issues to obtain background information on markets, industry, and consumption practices and trends for tobacco products.

For objective one, we identified market shifts among smoking tobacco products by analyzing TTB domestic removals data[1] and CBP imports data to identify sales trends across the different domestic and imported tobacco products before and after CHIPRA took effect. For objectives two and three, we estimated the federal revenue effects of differences in federal excise tax rates for tobacco products by analyzing TTB's and CBP's revenue data and BLS price data for smoking tobacco products. We estimated what the effect on tax revenue collection would have been if the sales trends for roll-your-own and pipe tobacco and for small and large cigars had not been affected by substitution between the products but had been affected by the increase in price due to the tax—in other words, if the market shifts resulting from the substitution of higher-taxed products with lower-taxed products had not occurred. In this report, we refer to this estimated effect on federal tax revenue collection as revenue losses. In addition, we analyzed what is known about the effects on federal revenue if Congress were to eliminate current tax disparities between smoking tobacco products. We assumed that the pipe tobacco

[1]In this report, for smoking tobacco products, "removals" means the amount of a tobacco product removed for distribution in the United States from the factory or released from Customs custody, as measured in pounds for roll-your-own and pipe tobacco or in the number of sticks for cigarettes and small and large cigars. We consider removals to be equivalent to sales and generally use the term sales when referring to removals.

federal excise tax was increased and equalized to the level of the roll-your-own tobacco tax as of October 1, 2018, and we calculated the cumulative revenue differential for five fiscal years through September 2023. We assessed the reliability of the data for these objectives by performing data checks for inconsistency errors and completeness and by interviewing relevant officials. We determined that the data used in this report were sufficiently reliable for our purposes.

Our estimate of federal revenue losses resulting from differences in federal excise tax rates among smoking tobacco products includes combined tax revenue losses for the roll-your-own and pipe tobacco markets as well as the small and large cigar markets. Our analysis takes into account the expected fall in quantity demanded due to the price increases resulting from the higher federal excise tax rates that CHIPRA imposed on these smoking tobacco products, holding other variables constant. To calculate the range of federal revenue losses, we included high and low estimates based on assumptions about the effect of a price increase on projected sales. Economic theory shows that when the price of a product increases, the demand for the product will adjust downward, decreasing at an estimated rate based on demand for the product, i.e., price elasticity.[2] On the basis of our prior work estimating revenue losses from tobacco taxes and a literature review, we determined that the price elasticity for the smoking tobacco products ranges from -0.6 to -0.3, respectively, for the low and high revenue estimates. Our projections also take into account the historic sales trends for these products, the sales trend of cigarettes after CHIPRA and the tax component of the price.[3]

We developed our revenue loss estimate by comparing the actual tobacco tax revenues collected by TTB with a counterfactual scenario. The counterfactual model draws from a model used by Dr. Frank Chaloupka, an economist and a leading scholar who has investigated the effect of prices and taxes on tobacco consumption in numerous publications. In particular, we based our methodology on Dr. Chaloupka's model calculating the effect of raising cigarette taxes in the State of Illinois.[4] This methodology projects the effect of a future tax increase

[2]For example, a price elasticity of demand of -0.6 means that when prices go up by 10 percent, demand will decrease by 6 percent.

[3]GAO-14-811T, GAO-12-475.

[4]Frank Chaloupka and Jidong Huang, *A Significant Cigarette Tax Rate Increase in Illinois Would Produce a Large, Sustained Increase in State Tobacco Tax Revenues* (Chicago, IL: University of Illinois at Chicago, Jan. 3, 2011).

based on the historic sales trend, the amount of the tax, and the price elasticity of demand. Under this model, when a tax increase is enacted, demand for the product is expected to decline based on the price elasticity and the effect on prices. Following this initial decline, demand for the product is expected to continue at the rate of its historic sales trend. We updated this model by assuming that tobacco products that incur a tax increase to match the tax rate on cigarettes will follow the cigarette sales trend after CHIPRA rather than the product's historic trend. For example, the roll-your-own tax rate increased under CHIPRA to match the rate on cigarettes because it was viewed as a substitute for cigarettes. Projecting the pre-CHIPRA sales trend forward based on historical data could provide a misleading result as it includes the additional consumption from substitution. Under our assumption, the pre-CHIPRA sales trend is adjusted downward based on the actual sales trend for cigarettes, which has generally declined in recent years.

The BLS price data used in our analysis are a subset of the data used for calculating the Consumer Price Index for tobacco products. The BLS data contain retail price information collected each month throughout the United States. These price data only include excise taxes from federal, state and local governments and exclude shipping, handling, sales tax, and fuel surcharges. Because the BLS data are at the retail level, there is an expected markup in addition to the charges mentioned above. To simplify the model, we assumed that the markup remains constant after CHIPRA was passed. We calculated an average price for the year before CHIPRA was enacted, and we calculated the post-CHIPRA price by adding the new tax to the pre-CHIPRA price.[5] Therefore, we estimated only the effect of CHIPRA on taxes.[6]

We calculated large cigar revenues and developed a revenue loss estimate for large cigars using assumptions based on available data. As discussed earlier in the report, small cigars are currently taxed at $50.33 per thousand sticks, while, large cigars are taxed at 52.75 percent of the manufacturer's sale price, up to a cap of $402.60 per thousand sticks. TTB collects revenue data for all cigars, but does not collect separate revenue data for small and large cigars. We calculated large cigar

[5]Using an average post-CHIPRA price from BLS would be misleading as it would include increases in state and local excise taxes and would artificially inflate the effect of CHIPRA on prices.

[6]The data provided by the BLS should be interpreted with care because they do not meet the BLS's standard publication criteria.

revenues by subtracting small cigar revenue from total cigar revenue. We calculated small cigar revenues by multiplying the number of sticks reported to TTB in each month by the tax rate. After calculating large cigar revenue, we estimated the average tax paid per cigar by dividing the large cigar revenue by the number of sticks for each month and calculating the average price. From March 2007 through March 2009, the average large cigar tax collected was 4.2 cents per stick. CHIPRA raised this cap from 4.9 cents to approximately 40 cents per stick. We calculated that the average taxable price for large cigars before CHIPRA was 20.12 cents. Since the tax is based on the price rate, the percentage change in price due to taxation is based on the percentage change of the price, plus tax, before and after CHIPRA.[7]

To calculate the potential effect on federal tax revenue from raising the tax rate for pipe tobacco to match the roll-your-own tax rate, we followed the model discussed above, but we adjusted the pipe tobacco tax to the roll-your-own rate of $24.78 per pound. The model assumes that taxes would have been equalized as of October 1, 2018, and calculates the cumulative revenue differential for 5 fiscal years through September 2023. The model takes into account the additional reduction in consumption due to the tax increase and estimates potential revenue differentials. A price elasticity of -0.8 is assumed to provide a conservative scenario. Our model assumes that there are no other smoking tobacco products that are close substitutes, an assumption we also made in our previous models; the higher elasticity of -0.8 accounts for a drop in consumption altogether. The magnitude is based on a literature review and interviews with the Joint Committee on Taxation. After the drop in demand due to the tax increase, demand is projected linearly using the most recent 5-year historic trend. The projection of actual sales is calculated by applying the same historic trend to the actual sales of roll-your-own and pipe tobacco. Actual revenue is calculated by multiplying the tax rate to the projected sales.

An analysis projecting the impact of equal tax rates for small and large cigars requires a different set of assumptions. The reliability of any such model would be questionable, particularly for large cigars because the tax rate on them is calculated as a percentage of the price. Compared with determining the tax on all other tobacco products, according to TTB,

[7] TTB does not track the individual sale prices of cigars in a way that would make it possible to determine the magnitude of underestimation caused by the cap.

determining the tax on large cigars is extremely complex. We concluded that modeling hypothetical consumption trends for smoking tobacco products after equalizing tax rates on small and large cigars would require a complex set of assumptions not sufficiently grounded in reliable data. These assumptions include the price distribution of large cigars since CHIPRA was enacted and assumptions about the proportion of the large cigar market captured by imported large cigars if large cigars were taxed similarly to small cigars.

Rather than calculating a tax revenue estimate using assumptions not grounded in reliable data, we present actual cigar revenue and show how the large cigar market has changed from domestic cigars to cheaper imported cigars over time. While it is possible to develop a tax equalization model based only on applying a minimum tax rate per large cigar of 5.03 cents per stick—to ensure large cigars are not taxed below the small cigar tax rate of 5.03 cents per stick—this approach would not produce a reliable estimate of the full revenue effect of legislative proposals to equalize small and large cigar taxes. Applying only a minimum tax would have the effect of underestimating the federal excise tax collected from more expensive cigars because this would reduce the revenue estimates on large cigars that are currently taxed at between 5.03 cents per stick and the maximum rate of 40 cents per stick. In addition, the distribution of domestic large cigar sales that are taxed below the small cigar tax rate is unknown because TTB data on domestic large cigar sales are collected by manufacturers and reported monthly as a quantity aggregate. Without incorporating this information on the distribution of large cigars paying above and below the small cigar tax rate of 5.03 cents per cigar, an estimate of the revenue effects of equalizing small and large cigars would understate the potential revenue that could have been collected from large cigars.

We conducted this performance audit from September 2018 to June 2019 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: GAO Contact and Staff Acknowledgments

GAO Contact

David B. Gootnick, (202) 512-3149 or gootnickd@gao.gov

Staff Acknowledgments

In addition to the contact named above, Christine Broderick (Assistant Director), Jeremy Latimer (Analyst-in-Charge), Pedro Almoguera, David Dayton, Mark Dowling, Christopher Keblitis, and Ethan Kennedy made key contributions to this report.

GAO's Mission

The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's website (https://www.gao.gov). Each weekday afternoon, GAO posts on its website newly released reports, testimony, and correspondence. To have GAO e-mail you a list of newly posted products, go to https://www.gao.gov and select "E-mail Updates."

Order by Phone

The price of each GAO publication reflects GAO's actual cost of production and distribution and depends on the number of pages in the publication and whether the publication is printed in color or black and white. Pricing and ordering information is posted on GAO's website, https://www.gao.gov/ordering.htm.

Place orders by calling (202) 512-6000, toll free (866) 801-7077, or TDD (202) 512-2537.

Orders may be paid for using American Express, Discover Card, MasterCard, Visa, check, or money order. Call for additional information.

Connect with GAO

Connect with GAO on Facebook, Flickr, Twitter, and YouTube.
Subscribe to our RSS Feeds or E-mail Updates. Listen to our Podcasts.
Visit GAO on the web at https://www.gao.gov.

To Report Fraud, Waste, and Abuse in Federal Programs

Contact FraudNet:

Website: https://www.gao.gov/fraudnet/fraudnet.htm

Automated answering system: (800) 424-5454 or (202) 512-7700

Congressional Relations

Orice Williams Brown, Managing Director, WilliamsO@gao.gov, (202) 512-4400, U.S. Government Accountability Office, 441 G Street NW, Room 7125, Washington, DC 20548

Public Affairs

Chuck Young, Managing Director, youngc1@gao.gov, (202) 512-4800
U.S. Government Accountability Office, 441 G Street NW, Room 7149
Washington, DC 20548

Strategic Planning and External Liaison

James-Christian Blockwood, Managing Director, spel@gao.gov, (202) 512-4707
U.S. Government Accountability Office, 441 G Street NW, Room 7814,
Washington, DC 20548