



Tobacco tax policy in Ontario

Market implications of the Ontario government's increases in tobacco tax rates

March 2018

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1 Executive summary



Executive summary: Ontario needs to consider alternative tobacco tax plans that take account of the contraband market.

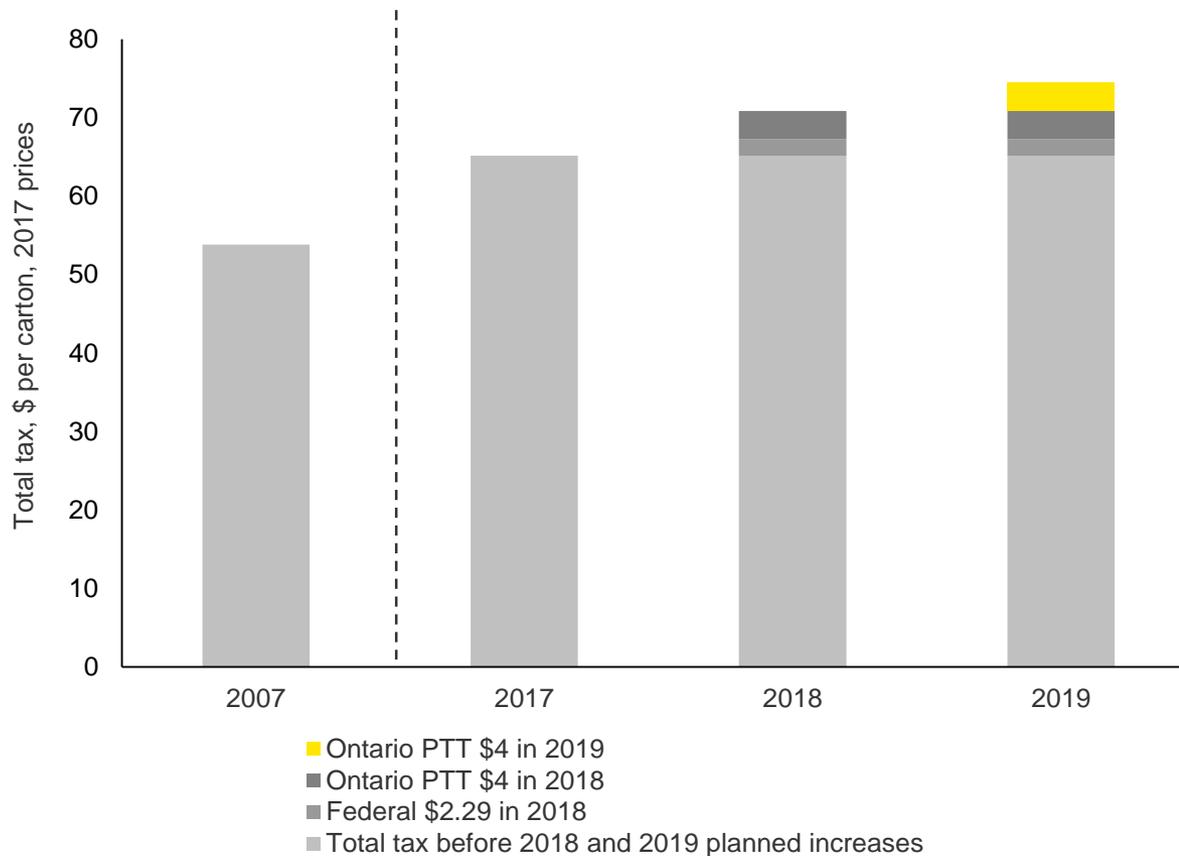
- ▶ Ontario's planned tobacco increases would add another \$8 per carton to the average price of legal cigarettes by 2019. Taken together with the recently announced federal government tax increase, and including consequential harmonized and provincial sales tax, Ontario's planned PTT increases lead to a total tax increase of over \$12/carton by 2019.
- ▶ The price gap between legal and contraband cigarettes has grown by from \$54/carton in 2014 to \$66/carton in 2017, mainly due to increases in tobacco taxation. It could increase to \$78/carton by 2019 with the recent federal increase and if the planned increases by the Ontario government go ahead.
- ▶ Ontario has a large and still growing contraband market, accounting for one-third total consumption in Ontario, and over 80% of the total contraband market across Canada.
- ▶ Tobacco tax revenues have not met, and are unlikely in the future to meet, the Ontario government's forecasts.
- ▶ There was a total tobacco tax revenue shortfall compared to Ontario government forecasts of \$240m from 2013-14 to 2017-18. There is likely to be a further tobacco tax revenue shortfall of \$470m over 2018-19 to 2019-20 if the Ontario government goes ahead with its planned provincial tobacco tax rate increases.
- ▶ The contraband tax gap accounts for \$3.4b of revenue lost over the period 2013-14 to 2017-18, and a further \$1.6b revenue is expected to be lost over 2018-19 to 2019-20. Addressing the contraband market would raise more revenue than tax rate increases.

Throughout the report all \$ refer to Canadian dollars.



Retail prices for cigarettes have increased by \$14 per carton in real terms since 2007, driven mostly by increases in tobacco taxation.

Figure 1: Cigarette taxes and prices per carton, real terms

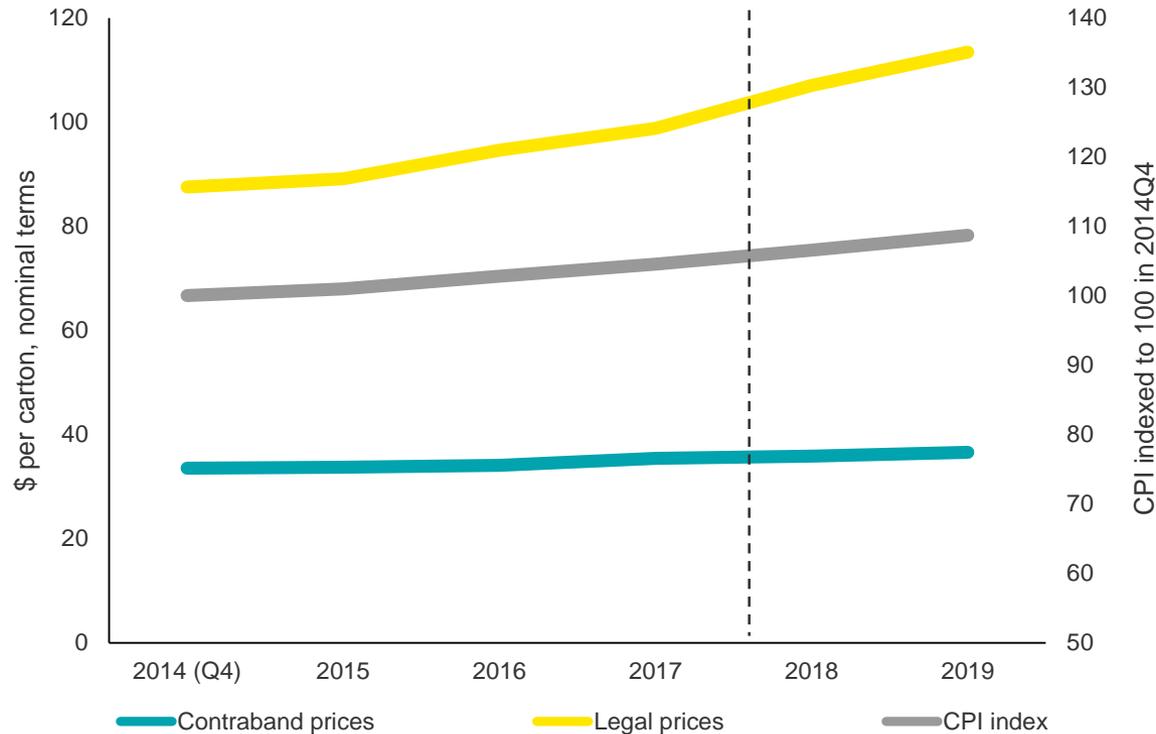


- ▶ Since 2007, retail prices for cigarettes have increased by \$14/carton in real terms.
- ▶ This increase has been driven mostly by increased taxation, from \$54/carton to \$65/carton in real terms.
- ▶ Ontario's planned provincial tobacco tax (PTT) increases alone would add a further \$8/carton by 2019 (\$6 in real terms).
- ▶ Taken together with the recent federal government increases in tobacco tax, and including consequential harmonized and provincial sales tax, the total tax increase is over \$12/carton by 2019 (over \$9 in real terms).

Source: Tax rates from Ministry of Finance, Cigarette prices from Nielsen, CPI inflation forecast from Oxford Economics.

The price gap between contraband and legal cigarettes widened between 2014 and 2017, driven mostly by recent tax increases.

Figure 2: Prices per carton for legal and contraband cigarettes

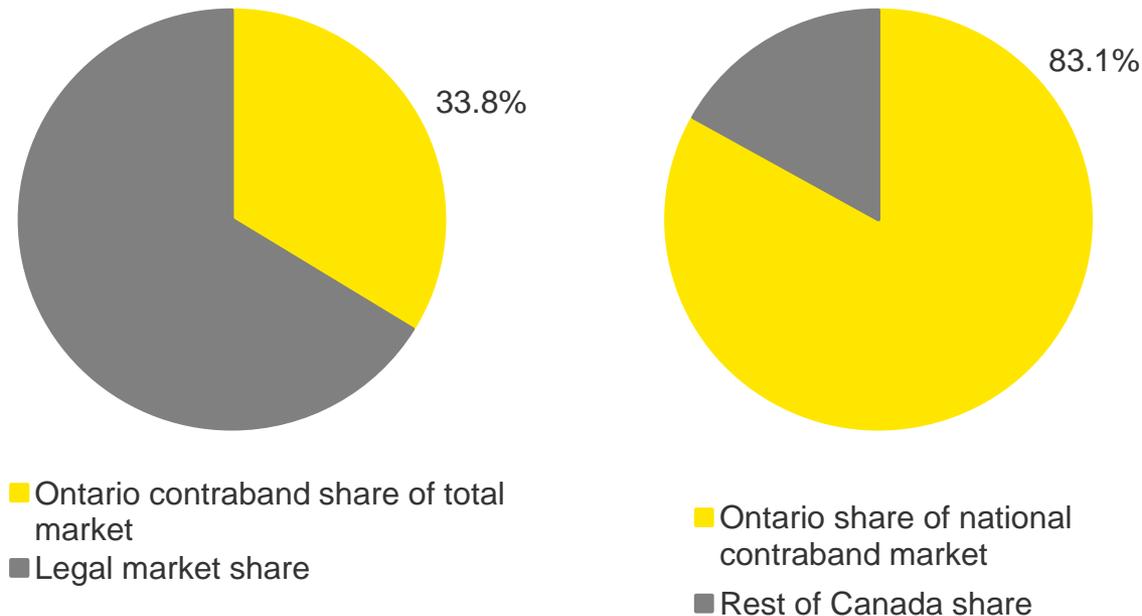


- ▶ Legal cigarette prices have increased by 15% (in nominal terms) since 2014Q4, driven mostly by higher tax rates.
- ▶ Contraband cigarette prices have been more or less flat, growing slower than inflation.
- ▶ The price gap between legal and contraband is widening, growing from \$54/carton in 2014Q4 to \$66/carton in 2017Q3, contributing to the growing trade in contraband tobacco.
- ▶ Alongside the recent federal government increase, Ontario's planned provincial tobacco tax increases could see the price gap rise to \$78/carton by the end of 2019.

Source: Legal market prices from Nielsen, Contraband prices from GfK Illicit Monitor.

Contraband tobacco in Ontario accounts for over 80% of Canada's contraband market, and up to \$750m per year of lost tax revenues.

Figure 3: Ontario's contraband market, 2017
% of total volumes and % of total Canada contraband

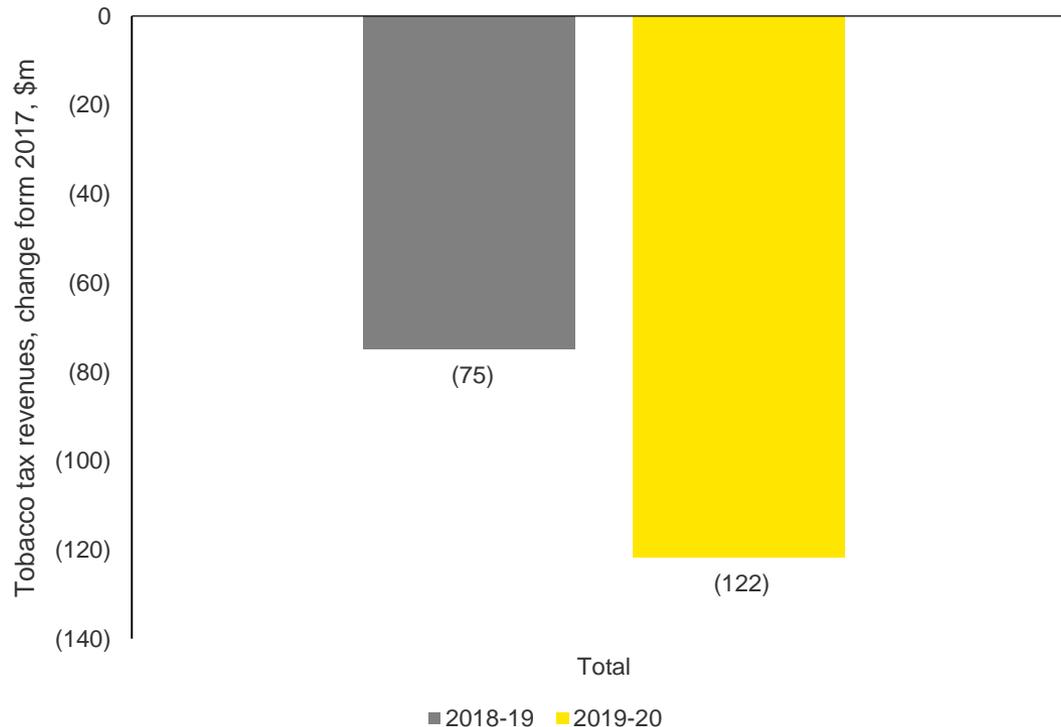


- ▶ The market for contraband tobacco is around 1/3 of the total market in Ontario. In some parts of Ontario this share rises to more than 60%.
- ▶ Ontario accounts for the lion's share – over 80% – of the total contraband market across Canada.
- ▶ The fiscal cost for the Ontario government of contraband was up to \$750m per annum over 2013-14 to 2017-18 – a cumulative total of \$3.42b over the period.
- ▶ Without any improvement in enforcement, the recent federal rate increase and Ontario's planned PTT increases could further drive legitimate consumption into the contraband market.

Source: Contraband volumes from GfK Illicit Monitor, Ernst & Young LLP analysis of tax gap.

Total Ontario plus federal tobacco tax revenues are expected to fall if Ontario goes ahead with its planned tax rate increases.

Figure 4: Forecast change in combined Ontario and federal tax revenues (real terms)

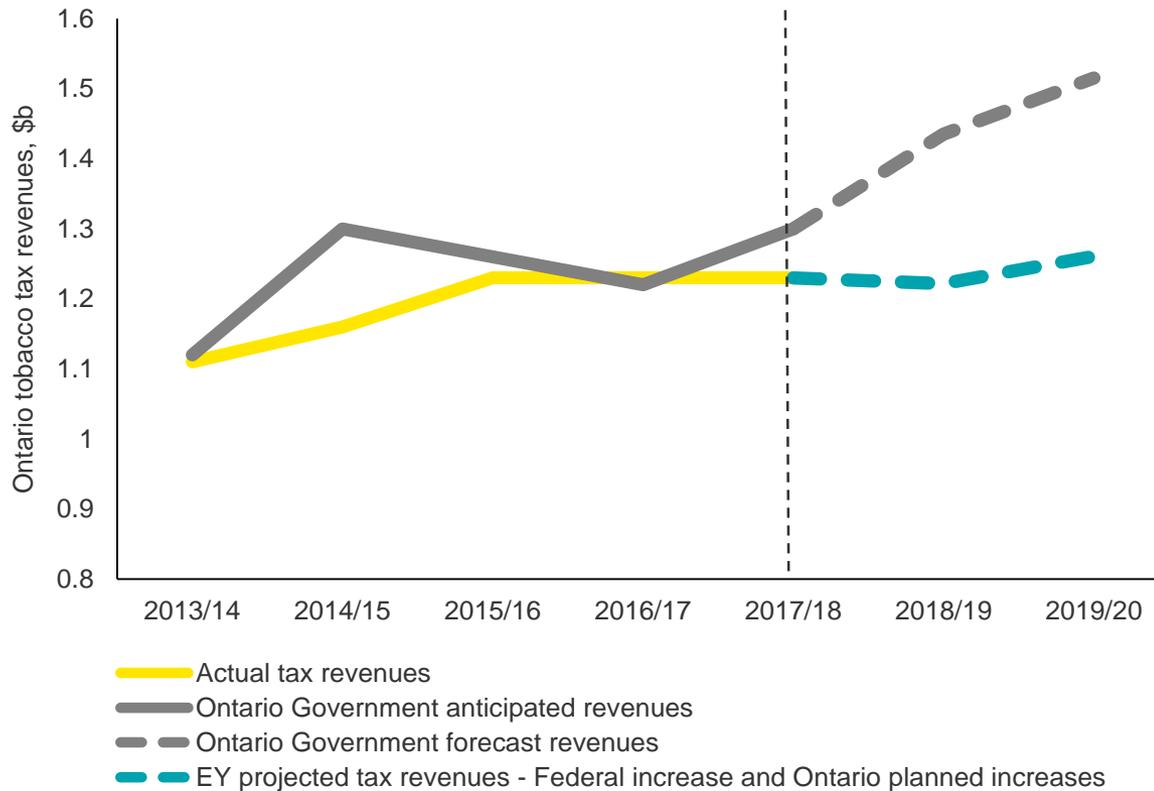


- ▶ Ontario's planned tobacco tax increases are expected to reduce total combined provincial and federal tobacco tax revenues.
- ▶ Total tobacco tax revenues would be likely to fall by \$75m in 2018-19, and over \$120m in 2019-20 (in real terms).

Source: Ernst & Young LLP analysis using Ontario Ministry of Finance tax revenue data.

Even after a total \$8/carton increase, Ontario's tax revenues will rise only marginally and fall well short of government forecasts.

Figure 5: Ontario tobacco tax revenues, actual and forecast (nominal terms)

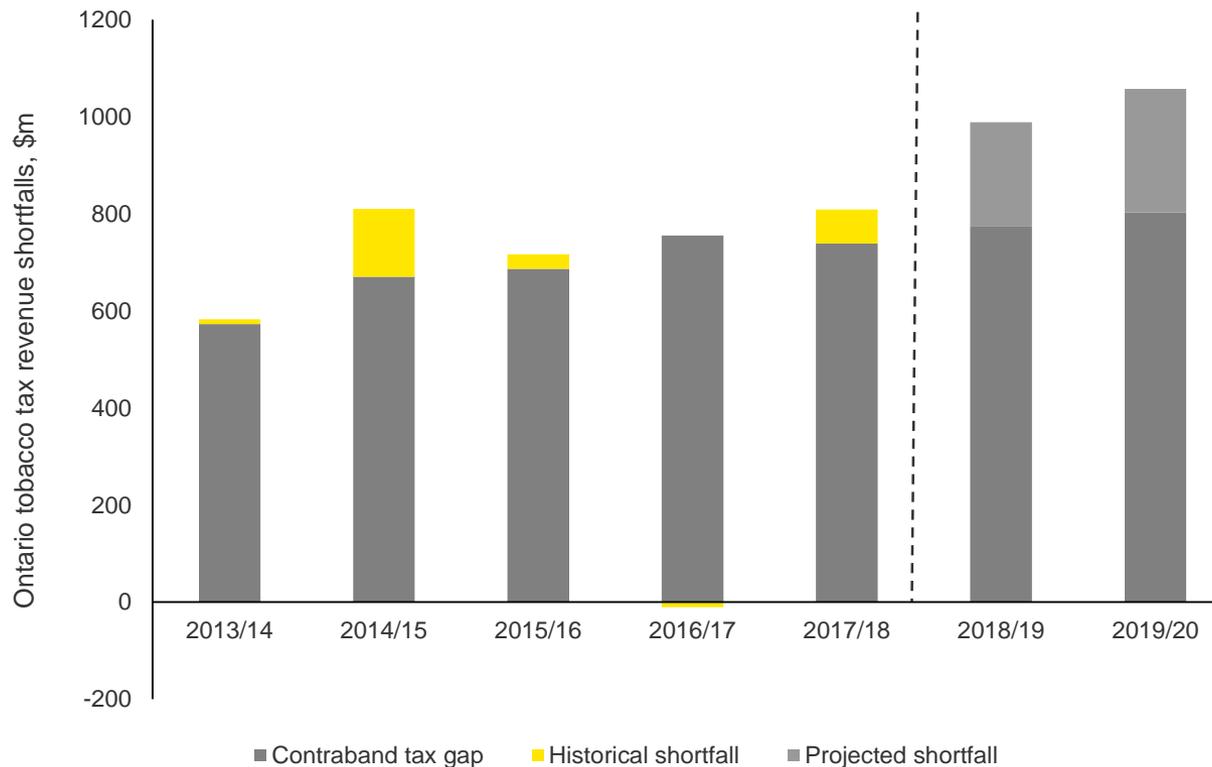


- ▶ Ontario's tobacco tax revenues have not increased in proportion with recent increases in the provincial tobacco tax rate.
- ▶ Tobacco tax revenues have disappointed compared to forecast – total cumulative shortfall \$240m from 2013-14 to 2017-18.
- ▶ The large and still growing contraband market has contributed to revenues falling short of projections.
- ▶ This pattern is expected to continue, with planned large tobacco tax increases set to yield only small revenue gains (in nominal terms) for Ontario – around \$235m lower than forecast in each year.

Source: Ernst & Young LLP analysis using Ontario Ministry of Finance tax revenue data and Ontario 2017 Budget projections.

Tax rate increases will fail to deliver expected tax revenues – addressing the contraband problem could have a bigger impact.

Figure 6: Past and projected future tax shortfalls (nominal terms)



- ▶ Up to \$750m per annum could have been raised for Ontario (PTT plus sales tax) if excise had been collected on all contraband tobacco.
- ▶ On top of that, tax revenues from legal cigarettes have consistently fallen short of government forecasts – cumulative shortfall is \$240m over 2013-14 to 2017-18.
- ▶ This pattern is likely to continue; tobacco tax revenue is expected to be around \$235m a year below Ontario government’s forecasts.
- ▶ Total cumulative tobacco tax shortfall to date almost \$3.65b, and another \$2.05b expected over the next two years.

Source: Ernst & Young LLP analysis using Ministry of Finance data on tax revenues and GfK Illicit Monitor data on contraband tobacco.

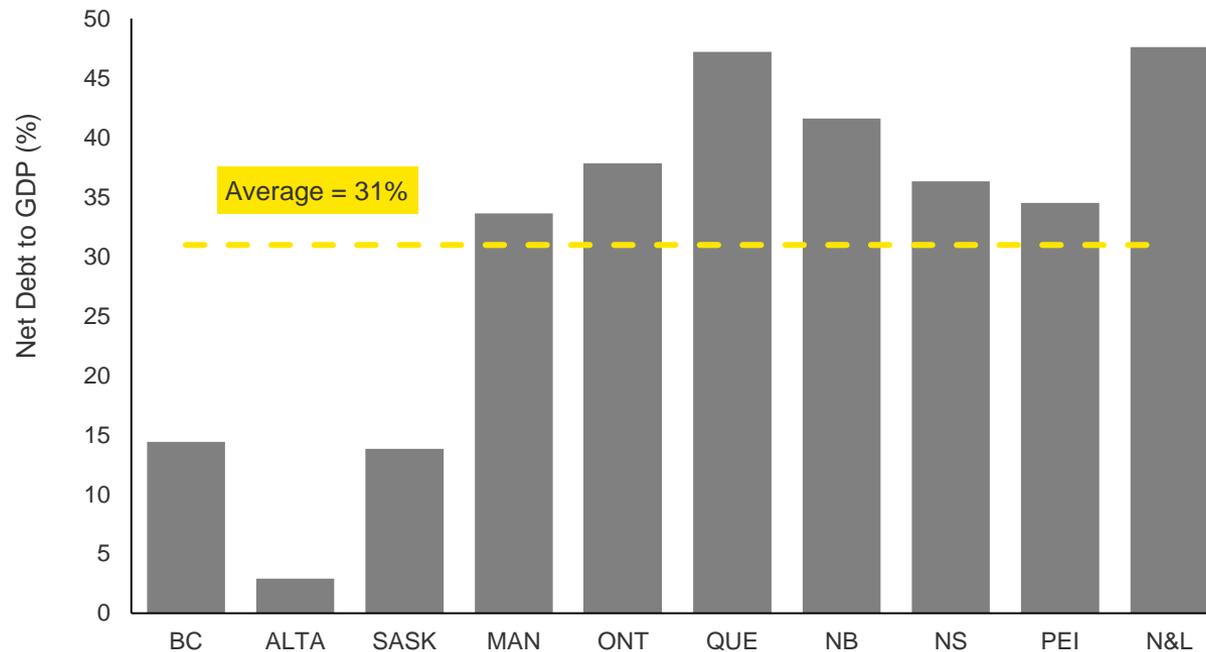
3 Supporting analysis



Fiscal context: Ontario is targeting a balanced budget so it can reduce its debt/GDP ratio, which is above average for Canada.

\$133b in Ontario's tobacco tax revenues are around \$1.2b per annum compared to a total budget deficit of \$1.5b and total tax revenues of 016-17.

Figure 7: Provincial debt/GDP ratios in 2016-17



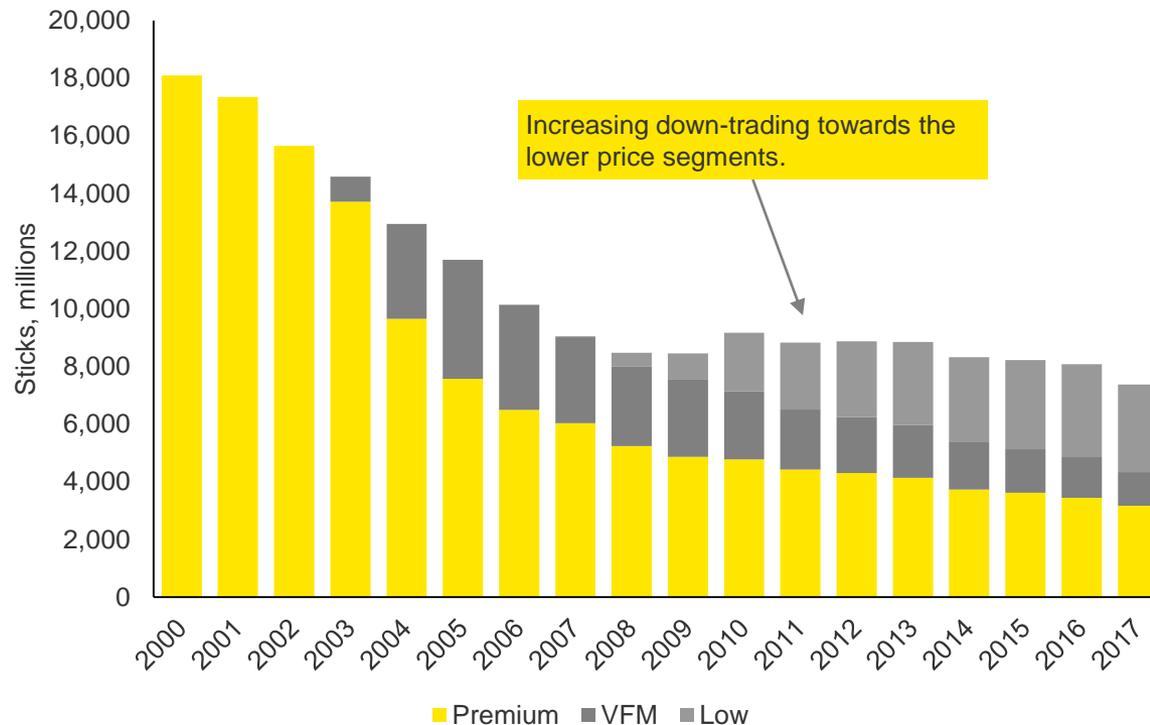
- ▶ Ontario was faced with a \$1.5b budget deficit in 2016-17. It is targeting a balanced budget for 2017-18 to reduce its overall debt/GDP ratio.
- ▶ However, initial forecasts from Ontario suggest that the government has projected to earn around \$60m less in tobacco tax revenues for 2017-18 due to declining legal cigarette volumes.

Source: Ontario deficit and tax data from 2017 Ontario Budget, Provincial Debt/GDP from Royal Bank of Canada.

The experience from the 2000s shows that increases in tobacco tax rates incentivised consumers to seek cheaper alternatives.

Between 2000 and 2009, total legal cigarette volumes fell by over 50% and saw the emergence of Value for Money (VFM) and low-priced segments to prevent consumers down-trading to contraband. Demand for legal cigarettes fell again in 2017, down almost 9% compared with 2016.

Figure 8: Legal market volumes, by price category



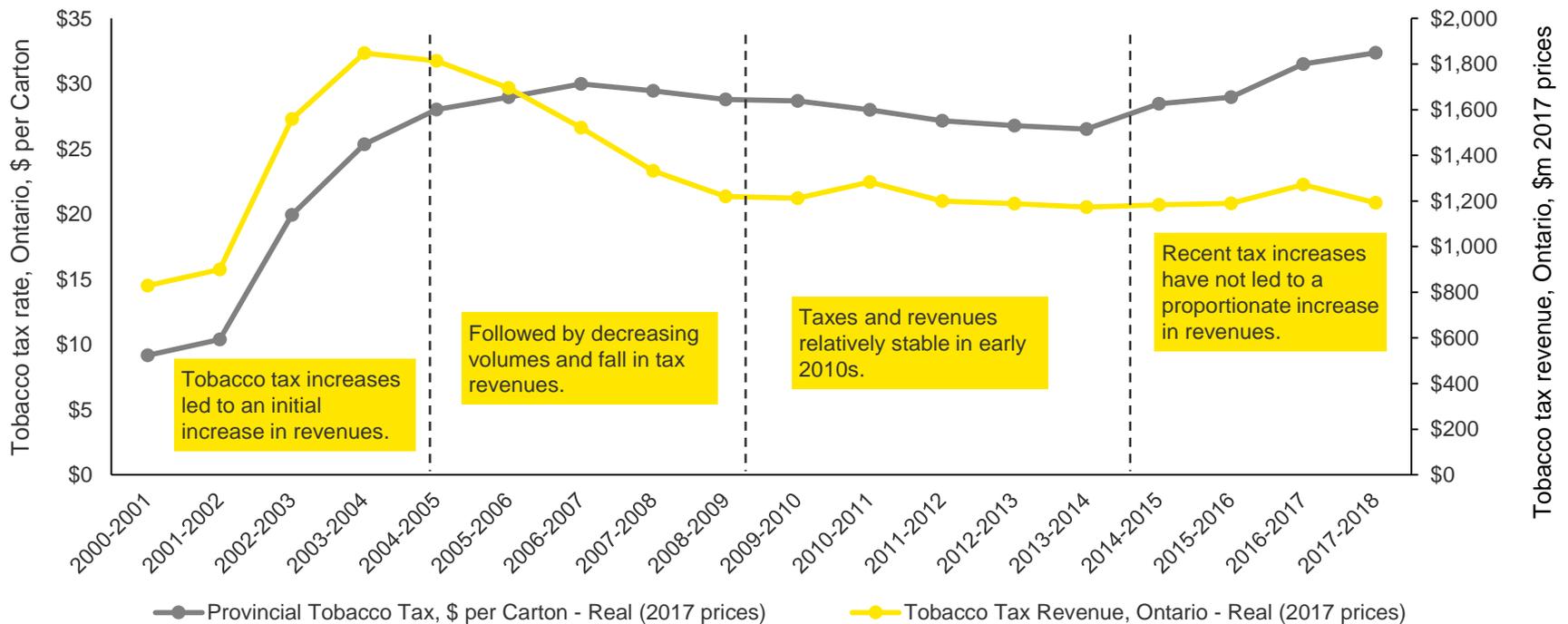
Source: Industry shipment volumes.

- ▶ Despite the introduction of lower priced segments, this was not enough to incentivise consumers to choose legal products, and saw a significant increase in contraband sales.
- ▶ Based on our estimated price elasticity of demand, the recently announced federal government increase will reduce legal demand by 2.5% in 2018.
- ▶ If the Ontario government also goes ahead with its planned tobacco tax rate increases, legal demand is expected to fall by almost 11% in 2018 and a further 7% in 2019.

Recent tobacco tax increases have not delivered proportionate increases in tobacco tax revenues.

In February 2016, the Ontario government introduced a \$3/carton increase, and in April 2017 introduced a further \$2/carton increase. However, in the 2017 calendar year, tobacco tax revenues declined by 7% in real terms.

Figure 9: Ontario tobacco tax rates versus revenues (real terms)



Source: Ontario Ministry of Finance tax revenue data.

Price elasticity has increased over time, and federal plus Ontario tax is now estimated to be above the revenue maximising rate.

Our central estimate of the price elasticity in Ontario is currently -1.82, which implies the tax rate is above the maximum point on the Laffer Curve. This is comparable with other estimates of legal cigarette price elasticity – e.g. UK government estimate -1.19, and Irish government estimate also -1.8.

Figure 10: Evolution of price elasticity over time

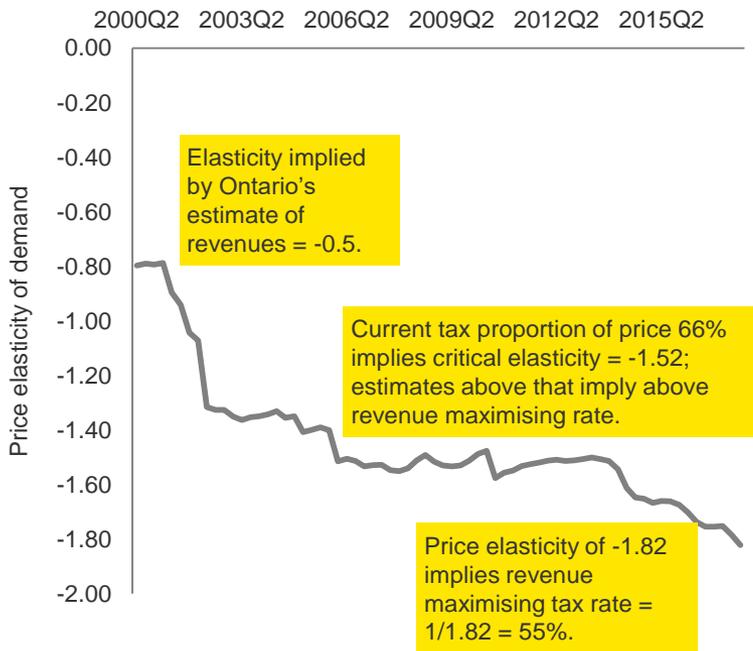
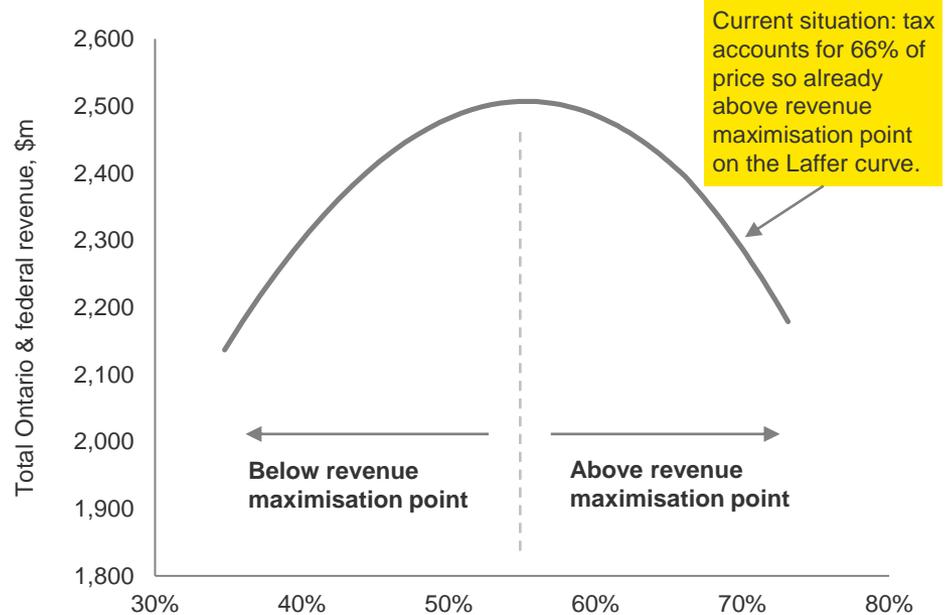


Figure 11: Tobacco tax rates versus revenues (real terms)



Source: Ernst & Young LLP analysis using Nielsen price data and Ontario Ministry of Finance tax revenues data.

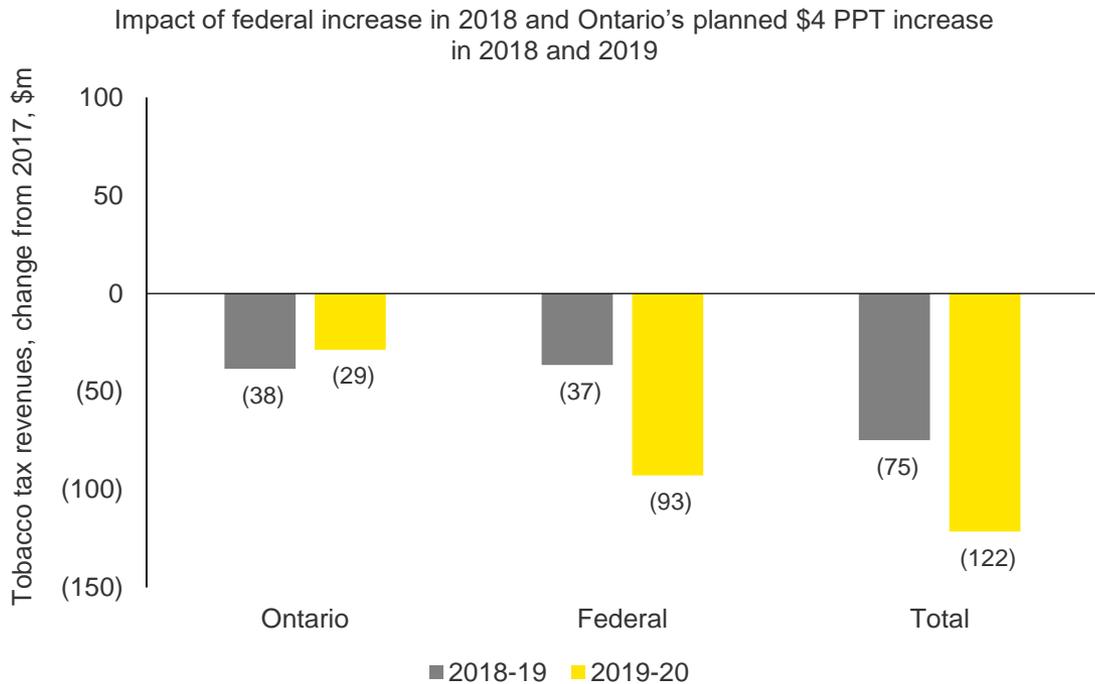
UK government price elasticity: "Update to HMRC Working Paper Number 9: Econometric Analysis of Cigarette Consumption in the UK", September 2015, HMRC

Irish government price elasticity: "Economics of Tobacco: An Analysis of Cigarette Demand in Ireland", September 2015, Office of the Revenue Commissioners / Irish government Economic & Evaluation Service.

Total provincial and federal tobacco tax revenues for Ontario are expected to fall if the planned tax rate increases go ahead.

Ontario's revenues from tobacco taxation will be impacted by the federal government's approach and vice versa. If the Ontario government goes ahead with its planned increases there will be large falls in federal tax revenues, and both governments will lose out.

Figure 12: Ontario and federal tax revenue forecast (real terms)



- ▶ Alongside the federal \$2.29/carton increase in 2018, Ontario's planned tax increases are expected to lose \$38m in 2018-19 and \$29m in 2019-20.
- ▶ For comparison, Ontario forecasted gains of \$132m and \$207m respectively, in real terms.
- ▶ Taking into account the impact on federal tax revenues, total tobacco tax revenues in Canada would likely fall by \$75m and \$122m in 2018-19, and 2019-20 respectively.

Source: Ernst & Young LLP analysis using Ontario Ministry of Finance tax revenue data.

3 Technical appendix – econometric results



Estimation of price elasticity of demand.

- ▶ Equation estimated on quarterly legal consumption and pricing data from 2001Q1 to 2017Q3.
- ▶ As the variables are non-stationary the equation is estimated in differences to remove any spurious correlation.
- ▶ Cigarettes volumes is a function of price and income; price is the lagged real Weighted Average Price (WAP), income is Ontario real personal disposable income per capita.
- ▶ Dummies are included for the 2006 indoor smoking ban and seasonality. The dummy on the smoking ban is statistically significant.
- ▶ The coefficient on the real WAP is the coefficient of interest in our estimation. When multiplied by the WAP, this gives the average elasticity estimate, which changes over time as the price changes.
- ▶ Estimated price elasticity of demand for 2017 is -1.82.

Diagnostic tests

Test for ...	Result
Autocorrelation (DW test)*	1
Heteroskedasticity (BP test)	0.197
Normality test (JB test)	0.992
Multicollinearity (VIF test)	1.339
Endogeneity/IV tests (WH test)	0.024
General specification (Ramsey test)	0.723

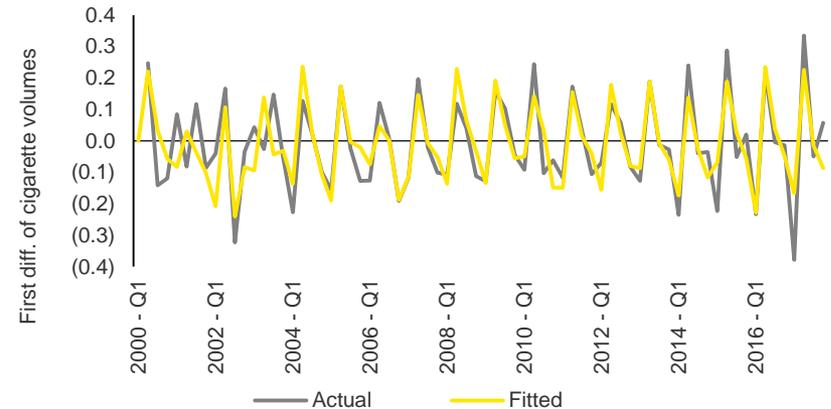
* There is autocorrelation in the residual, which was also present in other specifications. Overall this specification has the best set of diagnostic tests.

Dependent variable: log change in real legal consumption

Explanatory Variable	Coefficient	Standard Error
Intercept	-0.148***	0.000
Lag change in log real price	-0.018***	0.002
Log change in real income/head	3.964***	0.000
Lag Smoking Ban dummy 2006	-0.170**	0.040
Q2 dummy	0.330***	0.000
Q3 dummy	0.150***	0.000
Q4 dummy	0.079**	0.011
Adjusted R ² = 0.647		

Significant codes: '***' 1%, '**' 5%, '*' 10%

Figure 13: Actual vs. fitted values



Sources: Cigarette consumption data from industry shipment volumes, cigarette prices from Nielsen, Ontario CPI and personal disposable income/head data from Oxford Economics.

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