Review of Nicotine-Control Policies in Australia and New Zealand

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Abstract

This paper examines the evolution, theoretical rationale, and effectiveness of nicotine-control policies in Australia and New Zealand. Using historical policy reviews, economic theory and econometric modelling, the paper evaluates the role of excise taxation, non-price tobacco controls and reduced-risk alternatives such as vaping in reducing smoking prevalence. The analysis employs a state-space autoregressive framework to isolate the contributions of price, vaping, and other controls to declines in smoking rates from 1980 (Australia) and 1983 (New Zealand) through to 2023. Findings indicate that real cigarette price increases account for much of the observed decline in smoking rates, with vaping contributing significantly in New Zealand but insignificantly in Australia where access to vapes was more restricted. The paper also assesses the public health implications of smoking, the potential benefits and risks of harm-reduced alternatives, and the distributional consequences of nicotine internalities. Policy recommendations emphasise proportional regulation, targeted excise structures and integration of harm reduction into tobacco-control frameworks.

Keywords: nicotine policy, tobacco control, excise tax, harm reduction, Australia, New Zealand, vaping, public health, internalities

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1. Introduction

Tobacco use remains one of the leading preventable causes of disease and premature mortality. Australia and New Zealand have implemented comprehensive tobacco-control regimes over the past five decades, marked by increasing restrictions on advertising, packaging, and smoking in public places, combined with substantial excise tax increases. More recently, the emergence of reduced-risk nicotine delivery systems (e.g., vaping, heated tobacco products, nicotine pouches) has raised new policy challenges and opportunities. New Zealand's framework has also been guided by its Smokefree Aotearoa 2025 goal, a commitment to reduce smoking prevalence to below 5% of the population by 2025.[2]

This paper undertakes a comparative review of nicotine-control policies in Australia and New Zealand, situating developments within economic theory—particularly externalities, internalities, and optimal taxation—and illustrating (in Annex A) the internality effects with

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[2] Smokefree Aotearoa 2025.

schematic consumer choice models. Annex B presents the econometric analysis and results.

2. Literature review

2.1 Externalities and internalities

The Pigovian rationale for tobacco excise taxes is well established: taxing activities that impose social costs to internalise externalities. Smoking's externalities include second-hand smoke and public health expenditure, though some studies suggest the fiscal effects may be offset by reduced pension and other fiscal liabilities.[3]

Internalities, self-control problems arising from time-inconsistent preferences, are particularly relevant for nicotine. The schematic consumer choice diagrams in Annex A illustrate how addictive consumption constraints distort optimal consumption, reducing overall wellbeing and limiting the responsiveness of tobacco use to price changes. The diagrams also show how internalities disproportionately affect low-income consumers, for whom excise-induced price rises on addictive products lead to reduced consumption of goods and services other than tobacco. Without substitutes, excise tax rises lead to relatively greater sacrifices in other products rather than reductions in tobacco use. Reduced-risk alternatives can flatten the demand curves, making taxation more effective at reducing harmful consumption.

2.2 Policy instruments

Tobacco-control measures include: (1) health warnings and plain packaging (2) advertising bans (3) additive restrictions (4) location-based smoking bans (5) cessation support and (6) excise taxes. Maintaining ongoing reductions in smoking rates has typically required a widening array of increasingly stringent tobaccocontrol measures. Prohibition and excessive use of excise taxes can potentially generate undesirable unintended consequences like the promotion of illicit markets, the expansion of organised crime and wellbeing losses for lower income smokers.

2.3 Harm reduction

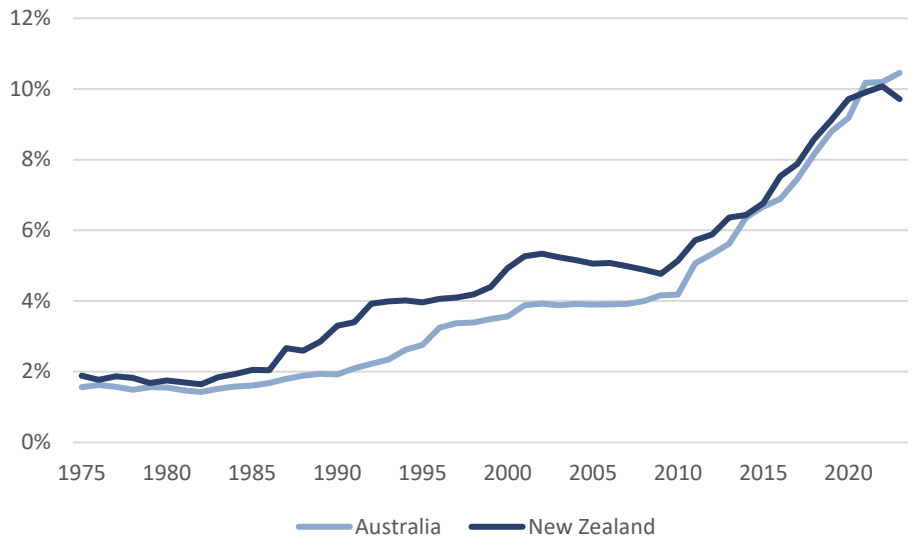
Reduced-risk alternatives such as vaping, heated tobacco and nicotine pouches deliver far fewer toxicants than combustible tobacco. While concerns persist about their long-term health effects and the lack of comprehensive population-level studies,[4] Public Health England and others recommend proportional regulation to encourage switching, while guarding against unintended uptake by non-smokers.[5]

[3] DeCicca, P., Kenkel, D. and Lovenheim, M.F. (2022), pp.883-970.
[4] WHO (2021).
[5] See for example Public Health England (2015), Mallock et al. (2018), Nutt et al. (2014).

3. Policy context

Both Australia and New Zealand have steadily tightened smoking-related regulations since the 1970s. Both countries have also steadily increased excise rates on tobacco. In New Zealand from 2011 through 2020, excise rates were automatically indexed each year to the change in the Consumer Price Index (CPI) plus 10%. After 1 January 2020, the formal 10% additions ended, but annual CPI-based indexation has continued. In Australia, starting December 2013, a series of 12.5% annual excise increases took place through to 2017, continuing with further increases through 2020. Since 2023, in addition to wage-based indexation, an additional annual surcharge of 5% per year has been applied, scheduled to run through September 2026. As a result of these tax increases in both countries the cost of a 10-cigarette per day smoking habit has increased from around 2% to around 10% of the average wage between the 1980s and the 2020s (refer Figure 1).

Figure 1: Price of 70 cigarettes as share of average weekly wage



New Zealand permits vaping, imposes no excises on vapes and in 2024 reduced the excise on heated tobacco products to 50% of the cigarette rate. Australia retains more restrictive vaping access rules. Both countries prohibit oral tobacco products, though New Zealand is considering a regulated market for nicotine pouches and snus.[6]

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4. Methodology

A state-space first order auto regressive (AR1) model was estimated for Australia (1980–2023) and New Zealand (1983–2023), with smoking prevalence as the dependent variable. Key explanatory variables were the real price of cigarettes (70-cigarette cost as a share of average weekly wage) and vaping prevalence. The AR1 term captures other systematic influences. A

[6] See the NZ First/National 2023 Coalition Agreement from the 24th of November 2023 and Ministry of Health on behalf of the Associate Minister of Health, Hon Casey Costello from the 23rd of July 2024. While the sale of snus and nicotine pouches is currently illegal in New Zealand, individuals can import them for personal use.

fuller presentation of the statistical analysis is provided in Annex B.

5. Results

Smoking rates in Australia are reported to have declined by 26.3 percentage points from 36.3% of the population aged 15+ in 1980 to 10% in 2023. Our model suggests that 54% of this decline (14.2 percentage points) can be attributed to real increases in the cost of cigarettes. The AR1 term picks up the residual systematic decline in smoking rates, i.e. 12.2 percentage points.

In New Zealand smoking rates declined from 33% in 1983 to 8.3% in 2023. Our model indicates that 8.0 percentage points (32%) of the decline can be attributed to real price increases. Unlike Australia, where vaping and e-cigarettes were banned until 2021 and then only available via pharmacy prescriptions, in New Zealand 8.1 percentage points of the decline (33% overall and 83% in the last decade) can be attributed to increased vaping. The remaining 35% (8.5 percentage points) of the observed decline in New Zealand smoking rates can be attributed to other forms of control and changes in social norms.

Our findings are supported by a recent study[7] that finds that between 2016 and 2023 the decline in smoking prevalence was more pronounced in New Zealand than in Australia, while the uptake in vaping has been higher in New Zealand. The study notes that New Zealand's less restrictive approach to novel tobacco products may have contributed to the more rapid decline in smoking in that country.

6. Health impacts

Smoking accounted for 9.9% of the deaths in New Zealand (2021) with another 0.7% from second-hand smoke. Disability adjusted life year (DALY) losses are concentrated in middle age, with most of the DALY losses due to premature death. Switching to reduced-risk products like vaping can cut toxicant exposure by 80 to 99%, though long-term risks associated with the reduced-risk products remain uncertain.

7. Discussion: policy design

The analysis and findings presented in this review provide insights for policy design aimed at enhancing public-health outcomes.

1. **Maintain and refine excise taxation on combustible tobacco**

Increasing excise taxes on cigarettes and other combustible tobacco products have been associated with reductions in smoking prevalence in both New Zealand and Australia. Periodic reviews of tax rates could help ensure their continued effectiveness, taking into account factors such as inflation and shifts in consumer income. At the same time, it would be prudent to

[7] Mendelsohn et al. (2025).

remain attentive to potential unintended consequences, including the risk of increased illicit trade, and to adapt enforcement and border controls as necessary.

2. Differentiate regulation and taxation for reduced-risk nicotine products

Discouraging a shift from smoking to reduced-risk alternatives may undermine efforts to reduce the social harms of tobacco use. Policymakers might consider differentiated regulatory and taxation frameworks for smokefree alternatives with the aim of incentivising switching by current smokers. This could involve lower excise taxes and less restrictive regulation compared to combustible tobacco, provided that robust quality and safety standards, marketing restrictions (particularly to youth) and clear product labelling are maintained. For example, nicotine pouches could be explicitly incorporated into the formal regulatory regime, as public health evidence suggests they carry substantive potential to accelerate reductions in smoking prevalence, while maintaining the safeguards necessary to mitigate unintended consequences.

It is in this context of reduced harm that products like ZYN (nicotine pouch) have been authorised for sale by the FDA in the United States.[8] In the same vein and as noted above, the government of New Zealand is considering options for permitting snus and nicotine pouches - that are currently not permitted for sale in New Zealand - using a risk-proportionate regulatory regime.

3. Monitor and mitigate social equity impacts

High tobacco taxes, while effective as a deterrent, can have regressive effects and disproportionately impact low-income populations. Allocating a portion of tobacco tax revenues to targeted health initiatives and cessation support in disadvantaged communities could help mitigate these effects.

4. Adopt a comprehensive regulatory approach

Over the years, many countries have enacted increasingly detailed regulations governing the advertising, marketing, packaging, and sale of tobacco products. These rules drill down into the specifics, such as the mandated size and placement of health warnings, the precise colour and transparency of overwraps and the systematic rotation of cessation messages, resulting in a regulatory landscape that is highly developed in certain areas. However, this depth comes at the expense of breadth, as many novel products, such as nicotine pouches and some vaping devices, may fall outside these established tax categories or evade specific advertising restrictions, leaving regulatory gaps that can be exploited.

Addressing these challenges requires a more adaptive and comprehensive regulatory approach, one that not only maintains rigorous controls over established products but also ensures that all products, including emerging alternatives, are effectively covered. This would help close loopholes, strengthen public health protections and ensure that regulation keeps pace with innovation in the tobacco and nicotine market.

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[8] Prior to its decision, the FDA reviewed extensive data on the ZYN nicotine pouches and concluded that the overall public health impact of the ZYN nicotine pouch products, considering reduced toxicant exposure, the potential for complete switching among adults who use cigarettes or smokeless tobacco, and relatively low youth usage, was sufficient to support marketing authorisation under the Premarket Tobacco Product Application framework. This decision reflects the agency's judgment that the benefits to adult users outweigh potential risks, including those to non-users and youth, under current conditions. FDA (2025). FDA News Release.

In this context, a risk-proportionate regulated market emerges as a pragmatic and effective alternative to unregulated or prohibition-based approaches. Regulation allows for the implementation of quality and safety standards, the application of targeted public health measures such as warning labels and the ability to monitor and respond to market developments. This approach not only helps to mitigate the risks associated with tobacco and other nicotine products but also provides a framework for encouraging harm reduction and supporting cessation efforts.

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8. Conclusions

Australia and New Zealand's successes in reducing smoking have hinged on sustained price measures and comprehensive controls. In both countries, these strategies contributed to steady declines in smoking prevalence, though they have also generated challenges, including increased illicit trade and equity concerns, particularly where tax levels are very high.

A key distinction between the two countries has been the treatment of novel nicotine products. In New Zealand, a more open yet regulated approach to alternatives such as vaping has been instrumental in accelerating recent declines in smoking prevalence, complementing the effects of traditional control measures. By contrast, Australia has adopted a more restrictive stance and has seen less uptake in vaping and a less sharp decline in smoking in recent years.

Taken together, these different policy outcomes highlight the potential public health and welfare benefits of adopting a risk-proportionate framework. Incorporating a broader spectrum of reduced-risk products, such as vaping, heated tobacco products, snus and nicotine pouches into nicotine-control strategies could enhance responsiveness to price signals and facilitate harm reduction, thereby sustaining long-term public health objectives and contributing to the achievement of the 5% smoking prevalence target.

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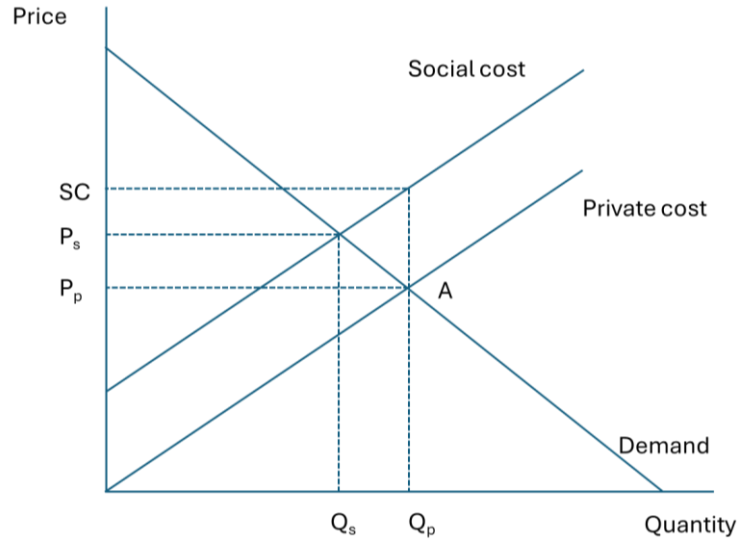
Annex A: The optimal rate of excise tax on tobacco products

1. Foundations of optimal excise tax theory

The concept of the *optimal* excise tax draws on Pigovian principles—taxing activities that impose costs on third parties ("externalities") to align private decision-making with social welfare.

- Externalities arise when consumption imposes costs beyond the buyer–seller transaction, e.g., health damage from smoking or second-hand smoke.
- Excise taxes ("sin taxes") can both reduce harmful activity and generate revenue to offset social costs.
- The *optimal* rate equals the marginal external cost at the socially efficient consumption level.

Figure A1: Externality costs to society



Without tax: Market equilibrium is at Point A with price *Pp* and quantity *Qp*.
With optimal tax: Price rises to *Ps*, quantity falls to *Qs*, and residual harm is recovered via tax revenue.

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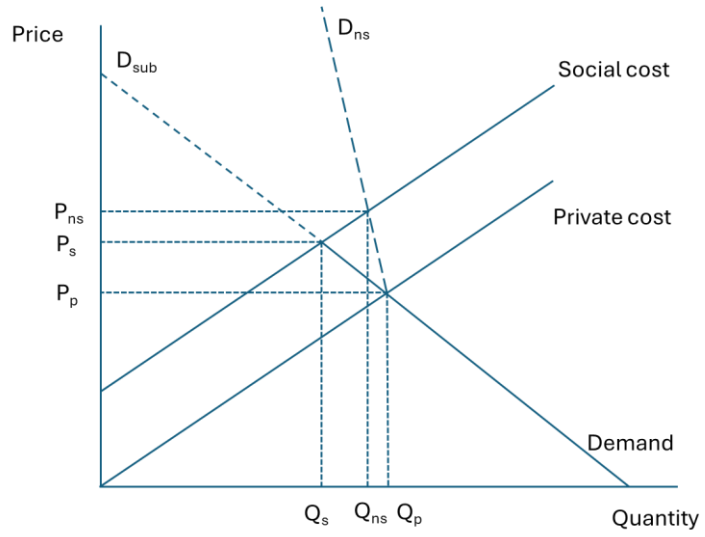
2. Real-world complexities: nicotine addiction & lack of substitutes

Two major factors have historically weakened tobacco tax effectiveness:

1. Nicotine's addictive nature → Consumers show low price sensitivity.
2. Limited alternatives (until recently) → Inelastic demand curves.

Figure A2: Impact when there is a lack of substitutes



- Without substitutes, demand curve is steeper (*Dns*).
- The optimal excise tax rate is higher (*Pns – Pp*) but yields smaller consumption reductions (*Qp → Qns*).

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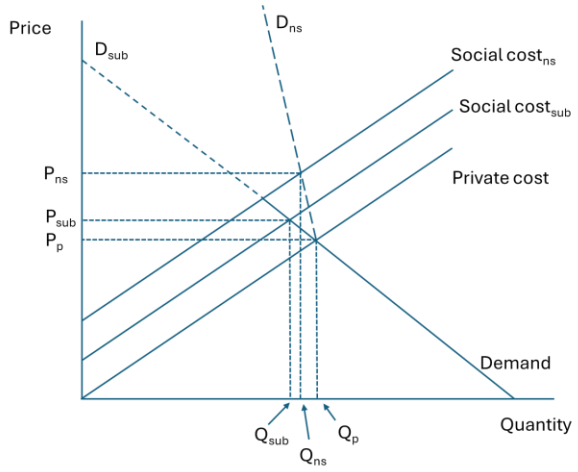
3. Reduced-risk alternatives and tax differentiation

The emergence of vaping, heated tobacco products (HTPs), and nicotine pouches changes tax policy calculus:

- They typically impose *lower social costs* (e.g., 90–99% reduction in toxicants compared to cigarettes).
- Demand is more elastic when substitutes exist (*Dsub*), enabling larger consumption shifts with smaller tax increases.

Figure A3: Introduction of reduced-risk alternatives



Optimal tax for reduced-risk products (*Psub – Pp*) should be lower than for cigarettes.

Policy implications:

- Tax rates should be proportional to relative harm.
- Over-taxing reduced-risk products may discourage smokers from switching, undermining public health gains.
- Caution remains due to uncertain long-term health effects.

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4. Role of nicotine and internalities

Nicotine itself is relatively harmless compared to combustion products, but its addictiveness creates internalities—short-term preferences overriding long-term welfare.

- Similar to caffeine or alcohol in habit formation, but with stronger compulsive effects.
- Internalities differ from externalities: they primarily harm the user, not third parties.
- Excise taxes target externalities, so their effectiveness for internalities is limited.

Consumer-choice model

Figure A4: Consumer choice with two normal goods and a budget constraint

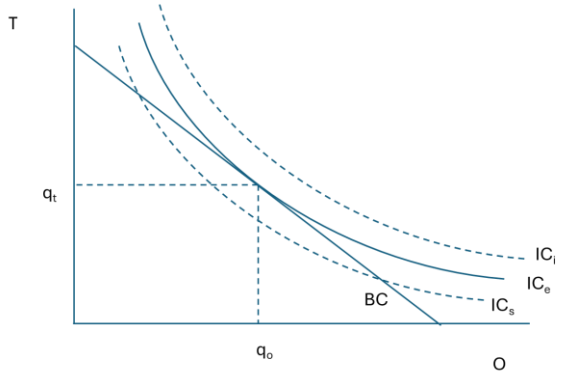
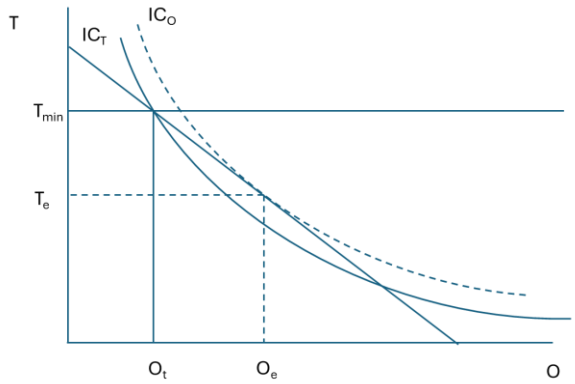


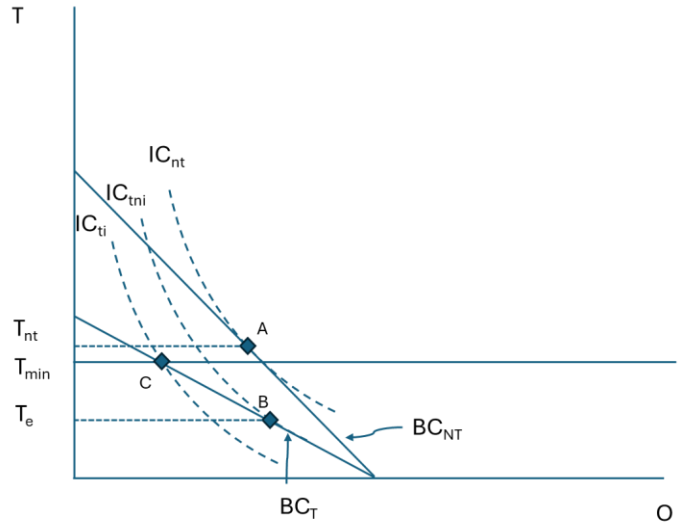
Figure A5: Wellbeing impact of internalities



- Without addiction, consumers allocate spending optimally between two goods.
- Addiction introduces a *minimum consumption threshold* (*Tmin*), causing a welfare loss as consumers divert spending from other goods.

5. Interaction of internalities with excise taxes

Figure A6: Excise taxes with the presence of internalities



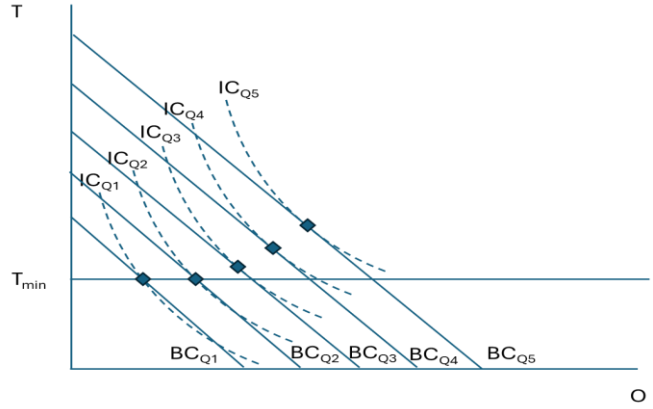
- Without addiction: A tax shifts consumption from $A \rightarrow B$, reducing tobacco use.
- With addiction: Minimum consumption level shifts outcomes from $A \rightarrow C$, further reducing welfare due to a reduction in the consumption of other goods in order to maintain a minimum level of tobacco consumption.

Implications:

- Taxes may be less effective and impose higher welfare costs on addicted smokers.
- Before reduced-risk alternatives, price hikes in New Zealand and other countries had limited impact on smoking rates.

6. Distributional effects and poverty impact

Figure A7: Smoking internalities mean that excise taxes can impose a larger wellbeing cost on poorer people



- Poorer smokers face tighter budget constraints and are more likely to be bound by *Tmin*.
- Excise taxes cause them to reduce consumption of essentials rather than tobacco, worsening welfare inequality.
- Higher-income smokers are less affected by the addiction constraint.

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7. Policy recommendations & cautions

Internality-related conclusions:

- Addiction impacts policy effectiveness, especially without substitutes.
- Income effects make excise taxes regressive for lower-income groups.
- Addressing internalities requires non-tax interventions (education, cessation programs, substitution encouragement).

Two key problems—often confused:

1. Smoking-related health costs (externality) → Appropriate for excise tax intervention.
2. Nicotine addiction/self-control (internality) → Requires different policy tools; the social concern only manifests when addiction combines with associated health impacts.

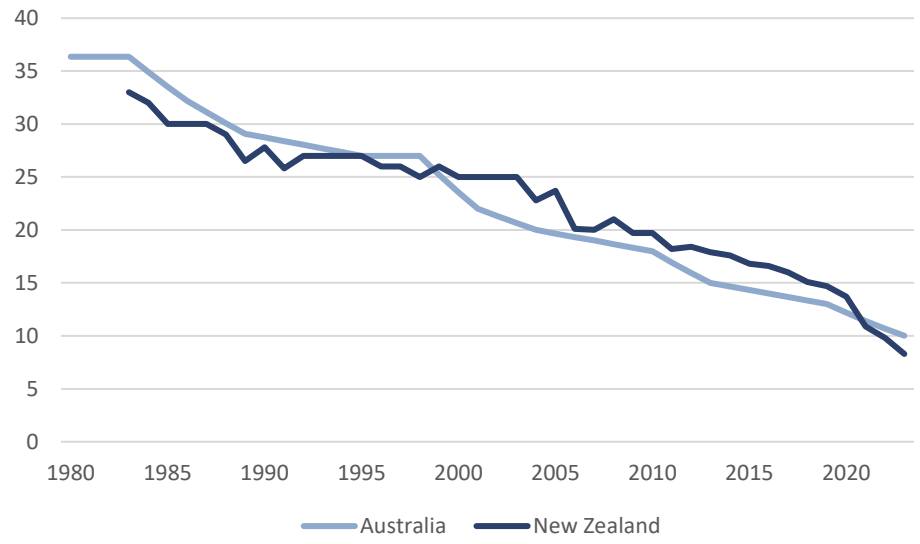
Strategic takeaways:

- Focus excise tax policy on reducing health harms.
- Maintain differentiated, lower tax rates for reduced-risk alternatives to incentivise switching.
- Avoid policies that inadvertently keep smokers on more harmful products.
- Recognise that nicotine internalities resemble other habitual but socially accepted behaviours, like caffeine use, when separated from health risks.

Annex B: Analysis of nicotine-control policies on smoking rates

This Annex provides an analysis of the relative contributions of different nicotine tax and control policies to the evolution of smoking rates in Australia and New Zealand. The dependent variable is the smoking rate, as measured by current smokers as a % of the population aged 15 and over.[9]

Figure B1: Smoking rates, current smokers % of 15+ population



Method

State space analytical methods[10] with a first order auto regressive (AR1) process to isolate influences not captured by cigarette prices or the introduction of vaping to smoking rates are used. The general model form is:

$$SR_t = \beta_0 + \beta_1 A_t + \beta_2 V_t + \nu_t + \epsilon_t$$

Where:

SR_t is the smoking rate in time t (as graphed in Figure B1);

β_0 is a fixed level parameter to be estimated;

A_t is the real price of cigarettes at time t, defined here as the price of 70 cigarettes divided by the average wage (as graphed in Figure B1);

V_t is the vaping rate at time t, (as graphed in Figure B2);

β_1, β_2 are to be estimated parameters;

ν_t is a first order autoregressive component of the form:

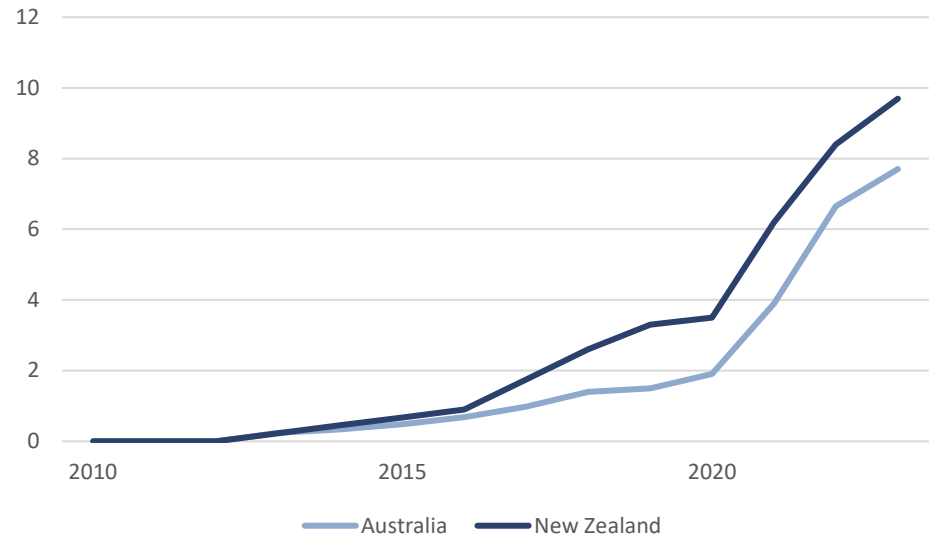
[9] A current smoker is defined as someone who has smoked more than 100 cigarettes in their lifetime and currently smokes at least once a month.

[10] Estimation using the Structural Time Series Analyser, Modeller and Predictor (STAMP): S J Koopman et al., *Structural Time Series Analyser and Modeller and Predictor: STAMP 8* (London: Timberlake Consultants, 2007).

$$\nu_t = \rho_\nu \nu_{t-1} + \xi_t,\ \xi_t \sim NID(0, \sigma_\xi^2);$$

ρ_ν is a 0 to 1 damping factor estimated using a recursive Kalman Filter algorithm; and ϵ, ξ are irregular terms.

Figure B2: Vaping rates, % of 15+ population



Model estimation used annual data from 1980 to 2023 for Australia (ie, 44 sample points) and from 1983 to 2023 for New Zealand (ie, 41 sample points). The estimation for all models is with a fixed level with use of the autoregressive (AR1) process used to soak up systematic changes in the smoking rate over time that cannot be explained by the explanatory variables: affordability of cigarettes and the vaping rate.

Results: Australia

Summary model estimation results for Australia are reported in Table B1. The model suggests that the increasing cost of tobacco relative to wages (see Figure 1) is statistically correlated with the decline in smoking rates in Australia in recent decades. However, the model does not find a statistically significant correlation between smoking and vaping rates. The estimated coefficient is slightly negative (-0.127) suggesting that the presence of vaping may have modestly supported declines in Australian smoking rates, but the lack of statistical significance means that this is not a robust result.

Table B1: Regression results for Australian smoking rate

Dependent variable	**Australian smoking rate**
Estimation period	1980 - 2023 (T = 44, N = 1)

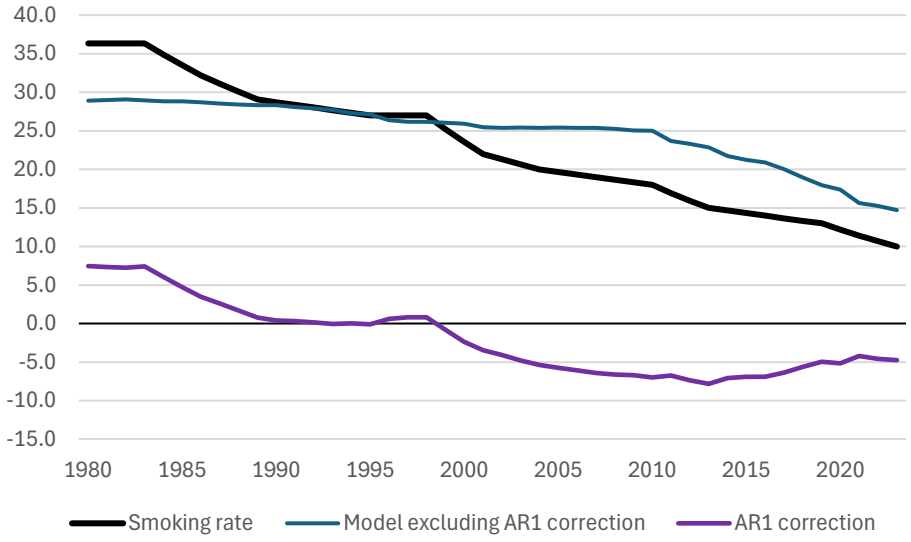
	Coefficient	RMSE	t-value	Prob
Level	31.188			
Affordability	-148.016	34.448	-4.297	[0.00010]
Vaping rate	-0.127	0.226	-0.563	[0.57667]
AR (1) coefficient	0.970			
Standard Error of equation	0.721			
R2	0.992			

Graphing the components of the model over the estimation period (see Figure B3) allows an examination of the relative contribution of tobacco excise tax policies to the observed reduction in Australian smoking rates. Smoking rates in Australia are reported to have declined by 26.3 percentage points from 36.3% of the 15+ population in 1980 to 10% in 2023. Our model suggests that 54% of this decline (14.2 percentage points) can be attributed to real increases in the cost of cigarettes. The AR1 term picks up the residual systematic decline in smoking rates, ie, 12.2 percentage points. We cannot be categorical about the contributions to the residual impact, but observation of the AR1 series in Figure B3 suggests four phases in this residual component:

- A 7 percentage point decline in the late 1980s;
- Stability in the 1990s;
- An 8 percentage point decline from 1998 to 2014; and
- A 3 percentage point increase in the decade since 2014.

Such outcomes are consistent with suppositions that smoking rate declines have also been supported by changes in social norms about smoking and other tobacco-control regulations such as advertising bans, plain packaging, health education support for quitting and so on. A concern is that the model suggests that there might have been some erosion in the effectiveness of these non-price tobacco controls during the last decade. This could explain the upward slope in the AR1 correction since around 2012 in Figure B3 which may reflect, for example, the shock value of graphic packaging no longer being as strong as when first introduced.

Figure B3: Components for Australian smoking rate model



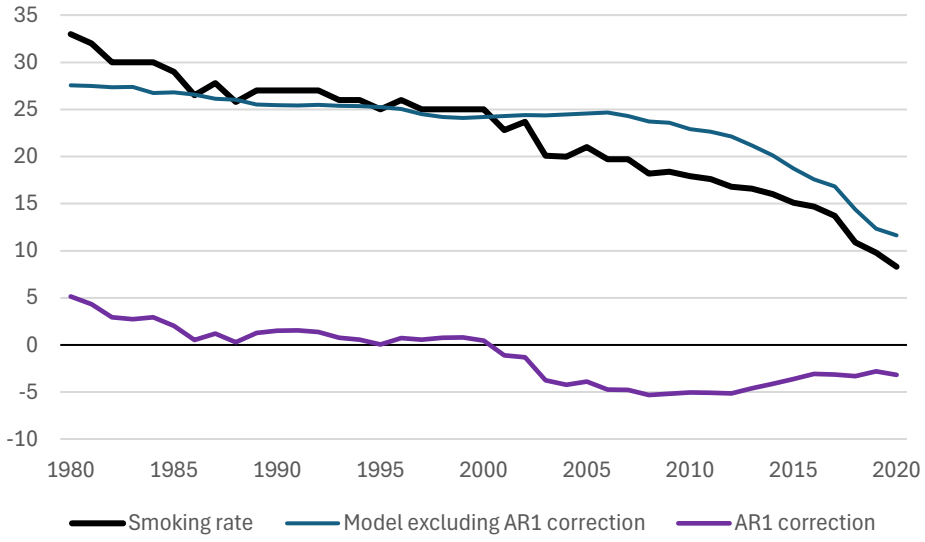
Results: New Zealand

The key difference between the results for Australia and New Zealand is that for New Zealand (Table B2) a significant correlation is found between the expansion of vaping and declines in smoking rates. The components for these models are graphed in Figure B4.

Table B2: Regression results for New Zealand smoking rate

Dependent variable	**New Zealand smoking rate**			
Estimation period	1983 - 2023 (T = 41, N = 1)			
	Coefficient	**RMSE**	**t-value**	**Prob**
Level	29.398			
Affordability	-99.059	44.663	-2.218	[0.03261]
Vaping rate	-0.840	0.255	-3.298	[0.00212]
AR (1) coefficient	0.958			
Standard Error of equation	1.081			
R2	0.971			

Figure B4: Components for New Zealand smoking rate model



The implication of the model results for suggested influences on the 24.7 percentage point decline in smoking rates in New Zealand (from 33% in 1983 to 8.3% of the 15+ population in 2023) are:

- An 8.0 percentage point contribution for increases in real tobacco costs (ie, 32% of the 24.7 percentage point reduction);

- An 8.1 percentage point contribution from the expansion of vaping, which is 33% of the 24.7 percentage point decline since 1983, and 83% of the 9.6 percentage point decline over the last decade;

- The remaining 8.6 percentage point contribution (or 35% of the decline in smoking rates since 1983) measured by the AR1 term accounts for the contribution from other tobacco controls and changing social norms; and

- As with Australia, there is a possible indication (the upward slope in AR1 correction since 2012 in Figure B4) of an erosion of the influence of these other tobacco controls over the last decade, but any such erosion has been offset by the expansion of vaping.