Death and taxes: using the latter to reduce the former

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As the old adage attributed to Benjamin Franklin puts it, there are only two things in life that are certain: death and taxes. In the case of cigarette smoking, they are closely related. Raising cigarette prices, primarily by increasing cigarette taxes, reduces smoking, and thereby reduces smoking-produced death and disability. Indeed, there is no more effective weapon in the arsenal of evidence-based tobacco control policies. Taxation has become a First Principle of tobacco control worldwide, hailed by the World Bank's 1999 'bible' of international tobacco control, *Curbing the Epidemic: Governments and the Economics of Tobacco Control*,[1] and embodied in Article 6 of the Framework Convention on Tobacco Control.[2] Virtually everyone engaged in tobacco control now understands the importance of keeping cigarette prices high and the role of raising taxes in doing so.

It was not always so. In the late 1970s and early 1980s, many public health professionals believed that using taxation to reduce smoking was ineffective and even repugnant: for both 'moral' and practical reasons, discouraging smoking, they concluded, had to rely on important intrinsic considerations, not extrinsic factors like price. Smokers, they felt, should quit because of their concern for their own health or to ensure their children that they would still be around as the children grew to adulthood. Furthermore, they were convinced that taxation would have little impact because smokers were addicted, and therefore, would not change their behaviour in response to higher prices.[3]

The origins of the end of aversion to taxation as a tool of effective tobacco control lie in the publication of two research articles by Eugene Lewit and his colleagues using sophisticated econometric methods. The first, published in 1981, demonstrated that American teenagers' smoking was very price sensitive: for every 10% increase in price, the authors estimated that smoking 'participation' (prevalence) by 12–17-year-olds would decrease by 12%, while the teens' total demand for cigarettes would decrease by 14%.[4] The second study, published a year later, concluded that for adults, a 10% price increase would induce a decrease in the demand for cigarettes by 4.2%,[5] an estimate that has stood the test of time for developed nations.[6 7] Three years later, I translated these findings into their stark implications for public policy in the US. Congressional legislation had dictated that a temporary doubling of the federal cigarette excise tax to 16 cents per pack—a short-term revenue measure—would end in 1985, with the tax reverting to its previous level of 8 cents per pack. Using the findings of Lewit *et al*, but employing methods and language more accessible to the general public, I demonstrated that if permitted to occur, the halving of the tax would induce two million additional Americans to smoke, including more than 460 000 teens, with more than 480 000 additional premature smoking-produced deaths occurring in the future.[8 9] Through a well-orchestrated advocacy effort by Washington-based public health groups, this analysis contributed to the US Senate's decision to make the tax increase permanent.[3]

This direct application of findings from research on cigarette price and consumption—and a subsequent successful advocacy campaign to raise the cigarette tax in Canada, which also relied on such analysis—altered public health attitudes towards using tax to influence smoking.[3] It also inaugurated an era of more intensive research on tax, price and smoking, with well over 100 studies documenting the effects of taxation, through its impact on price, on smoking.[7] Early on, studies derived almost exclusively from developed countries' experiences, focusing on price elasticity of cigarette demand in general, with interest in how elasticity varied by age, gender and occasionally socioeconomic status. Over time, however, the research began to address more nuanced questions: when prices are raised on one tobacco product (eg, cigarettes), is the demand for other tobacco products affected (eg, smokeless tobacco)? Yes, it increases.[10] How does addiction affect price responsiveness? This question spawned a 'boomlet' in 'rational addiction' studies. These sometimes controversial studies suggested that the long-run price elasticity may be as much as twice the conventionally estimated short-run elasticities.[11] What compensatory behaviours might smokers take in response to price increases? According to one study, they might switch to higher nicotine cigarettes so that they could get their daily dose of nicotine from fewer cigarettes.[12] And so on.

Surely, one of the most important developments in this literature has been the relatively recent emergence of a body of research on the effects of tax and price on smoking in low-income and middle-income countries (LMICs). Often reflecting severe data limitations on both cigarette price and consumption, as well as the lack of a well-developed indigenous research infrastructure, some of the earliest studies were quite primitive in nature or heroic in approach. Notably, for example, in 1990 a complete lack of data on cigarette and tobacco price forced Chapman and Richardson[13] to estimate *excise tax* elasticities of demand for cigarettes and tobacco in Papua New Guinea. Observing that price elasticities had to be larger than excise tax elasticities, they inferred from their

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quite precise estimates of the latter—−0.71 for cigarettes and −0.50 for non-cigarette tobacco—a generalised conclusion that price elasticities had to be considerably larger (in absolute value) than those previously calculated for developed countries.

Since that very early study, research on the relationship between tax/price and smoking in LMICs has grown substantially in both quantity and methodological sophistication,[7] consistent with a more general dramatic growth in tobacco control research in LMICs and by LMIC authors in recent years.[14] The indigenous research structure is improving in LMICs, as is the data collection. Thanks to the support by organisations such as the Rockefeller Foundation and, most recently, the Bloomberg Initiative to Reduce Tobacco Use,[15] scholars in LMICs are receiving training on econometric research methods and grant support to carry out studies.

This development is essential to the future of effective tobacco control worldwide. Government officials in LMICs will be far more responsive to studies deriving directly from their countries' data than to more general pronouncements on the effect of taxation based on studies from developed countries. Country-specific studies not only have more credibility in the eyes of government officials, but also permit more precise calculations as to how specific tax increases will affect government revenues, smoking-related healthcare costs, etc. Tobacco control research has had a discernible impact on policy and tobacco use in the world's affluent nations.[16] It must now play a similar role in those less affluent countries in which the future of the smoking disease pandemic is brewing.

In some ways, the early scholars examining the relationship between price and cigarette consumption had it far easier than today's researchers. In countries like the USA, where much of the early research occurred, the product (the cigarette) was relatively homogeneous (there were many fewer brands of cigarettes, fewer brand variants, fewer cigarette-like combustible alternatives and fewer novel smokeless options). As well, price tended to be quite consistent across brands. Today, smokers confront a sometimes bewildering array of cigarette and non-cigarette tobacco options. Prices in many countries vary widely, prices vary from one country to its immediate neighbours, and price discounting and black and grey markets make ascertainment of actual prices paid, and actual consumption for that matter, far more difficult. Thus, a relatively new challenge—and an important one for the evolution of effective tobacco control—is to understand how smokers respond to tax increases in environments in which they have alternatives to simply paying the higher tax. The proliferation of discounted brands has increased options; so too has the availability of cigarettes purchased over the internet. In some countries, indigenous peoples sell cigarettes at tax-free prices, and smokers find it easy to purchase cigarettes on their reservations. In other countries, roll-your-own tobacco can compete with manufactured cigarettes, the latter frequently featuring higher taxes. Duty-free cigarettes, cigarette smuggling and smokers simply crossing borders to purchase cigarettes further complicate both analysis of price response *and* tobacco control itself.

For this reason, the present volume is especially timely and welcome. While the issue of tax evasion and avoidance—and tax response more generally—has been addressed in previous studies, I am aware of no previous collection of studies in which a wide array of evasion and avoidance behavioural responses are addressed in multiple countries, both developed nations and LMICs. The papers in this volume do not afford simple answers to what are, after all, quite complicated questions. Findings are not always consistent with expectation or, for that matter, with those of other papers in the volume, but the compendium does provide a treasure trove of empirical evidence pertaining to behavioural responses to taxes and differential prices, and it offers us a more informed opportunity to address the myriad policy questions that relate to tobacco taxation and to tax evasion and avoidance.

Quite independent of its substantive contributions, the volume marks an important maturation in the field of tobacco control research: until quite recently, research by LMIC authors was a relative rarity.[14] This volume demonstrates that LMIC authors can join with those from developed countries as full partners in addressing a complex set of tobacco control issues. In part that has been made possible by the aforementioned training and grant opportunities now available to research colleagues in LMICs. In the present instance, however, another feature of the research landscape integral to the evolution of the volume warrants explicit mention as well, and indeed praise: these papers represent the latest instalment in the wealth of research emanating from the International Tobacco Control Policy Evaluation Project[17]—universally known within the tobacco control policy research community simply as the ITC (International Tobacco Control) project. The brainchild of Professor Geoffrey Fong, one of this volume's editors and authors, ITC is an international cohort survey of tobacco use that develops country-specific and cross-cultural comparative research directed at evidence-based tobacco control policy making. Administered in more than 20 countries representing half of the world's population and a majority of its tobacco users, ITC is devoted specifically to providing evidence-based support for Framework Convention on Tobacco Control policies. Prolific in its productivity, ITC represents one of the greatest assets ever developed in the field of tobacco control research. The present volume shows us how and why.

To conclude with where we began, death and taxes are both inevitable. But tobacco-produced deaths are not. And taxes on cigarettes and other tobacco products—large taxes, raised frequently—can go a long way, if not all the way,[18] to ensuring a substantial and continuing decline in the number of smoking-produced deaths. For that to occur, we need to convince governmental authorities of the public health and fiscal wisdom of raising taxes, and we need to learn how to levy those taxes in a manner that will minimise their avoidance through means other than not smoking. The papers in this volume provide evidence that will help us in seeking to achieve these goals.

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死亡与税收：以后者降低前者

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本杰明.富兰克林曾经说过一句名言：“死亡和纳税是人生无法避免的两件大事。”对于吸烟，这两者更加密切相关。提高卷烟价格（主要增加卷烟税），可减少吸烟，从而减少吸烟所致的死亡和残疾。事实上，没有比循证烟草控制政策更有效的控烟策略。税收已经成为全球烟草控制的首要原则，被誉为国际烟草控制的“圣经”（见世界银行1999年出版的《遏制烟草流行：政府与烟草控制经济学》一书[1]），并被写入《烟草控制框架公约》[2]第六条。现在，几乎每个从事烟草控制工作的人都明白提高卷烟价格的重要性和增加烟草税的作用。

但情况并非一向如此。在20世纪70年代末和80年代初，许多公共卫生专业人员认为，通过税收减少吸烟是无效的，甚至是令人反感的。他们断定，出于道德和现实考虑，劝阻人们吸烟必须依靠重要的内在因素，而不是外在因素（如价格）。他们觉得，吸烟者出于自身健康的考虑，或者由于已向孩子作出伴其成长的保证，会自动戒烟。此外，他们还认为，由于吸烟者容易上瘾，税收几乎起不到作用，因此提高卷烟价格不会改变吸烟者的行为[3]。

Eugene Lewit及其同事利用高级计量经济学方法研究并发表的两篇论文使税收作为有效控制烟草的手段不再令人反感。第一篇文章发表于1981年，证明了美国吸烟青少年对卷烟价格十分敏感。作者估算出，卷烟价格每提高10%，12-17岁青少年的吸烟参与度（流行率）将下降12%，而青少年的卷烟总需求量会减少14%[4]。第二篇文章发表于1年后。其结论是，对成年人而言，卷烟价格上涨10%，将导致卷烟需求量下降4.2%[5]。该结论在发达国家已经受住了时间的考验[6,7]。三年后，我将这些研究成果应用到美国的公共政策中，产生了显著影响。国会立法制定了一项短期收益的举措，将联邦卷烟消费税暂时翻倍到每包16美分，到1985年再将税收恢复到以往每包8美分的水平。在此，我将Lewit等人的研究结果采用公众更容易理解的方法和语言做一解释：如果税收减半成为现实，那么美国吸烟人数会额外增加200万（其中包括46万青少年），并且这将会导致在未来有超过48万的人死于过早吸烟[8,9]。通过华盛顿各公共卫生组织的精心宣传，该分析结果使得美国参议院决定永久增加烟草税[3]。

对卷烟价格与消费的研究发现的直接应用，以及随后加拿大基于此研究而开展的提高卷烟税的成功宣传活动，改变了公众健康对利用税收来影响吸烟的态度[3]。这还标志着一个更加深入研究税收、价格和吸烟关系的时代的来临：已有100多个研究记录了通过税收影响卷烟价格、进而影响吸烟行为的效果[7]。在早期，研究几乎完全来自发达国家的经验，主要从总体上关注卷烟的需求价格弹性，以及不同年龄、性别和社会经济地位的群体的需求价格弹性变动情况。然而随着时间的推移，研究者开始关注更细微的问题。例如，当某烟草产品（如卷烟）的价格升高时，其他烟草产品（如无烟烟草）的需求是否会受到影响？答案是肯定的：其他烟草产品的需求确实会增加[10]。再比如，成瘾性是如何影响价格反应的？这个问题引发了“理性上瘾”研究的短暂繁荣。这些尚具争议性的研究表明，长期价格弹性可能是常规估计的短期价格弹性的两倍[11]。那么，吸烟者可能采取哪些补偿行为以应对价格上涨呢？根据一项研究显示，他们可能会更倾向于选择尼古丁含量高的卷烟，因为这样就能从少量卷烟中获得日常所需的尼古丁。其他问题，诸如此类。

当然，本刊最重要的进展之一是相对近期出现的一系列关于中低收入国家（LMICs）中税收和价格对吸烟影响的研究。通常，一些最早期的研究在卷烟价格和消费问题上都存在严重的数据限制，也缺乏完善的本土研究架构，因此这些研究在方法上是十分原始、夸张的。一个值得注意的例子发生在1990年，在完全缺乏关于卷烟与烟草价格的数据的情况下，Chapman和Richardson[13]对巴布亚新几内亚的卷烟与烟草需求的消费税弹性进行了估计并观察到价格弹性大于消费税弹性。根据他们精确估计出的后者（即卷烟的弹性为-0.71，而无烟烟草为-0.50），他们做出了推断，进而得出了一个普遍结论：中低收入国家的价格弹性（绝对值）远大于以往发达国家计算的值。

从早期研究至今，对中低收入国家中税收或价格与吸烟关系的研究，不论是研究数量还是方法的先进性均得到了充分发展。与此同时，近年来关于中低收入国家烟草控制的研究及其研究者人数更是急剧增长[14]，中低收入国家的本土研究架构和数据收集工作正在逐步完善。由于得到了相关机构（如Rockefeller Foundation）及近期 Bloomberg Initiative to Reduce Tobacco Use 的支持，中低收入国家的学者正在接受关于计量经济学研究方法的培训，并获得了开展研究的经费支持。

这种发展对未来在全球范围内有效控制烟草是至关重要的。与发达国家研究税收效应的

一般声明相比，中低收入国家的政府官员将更容易接受直接从他们国家获得的研究数据。针对各国的研究不仅在政府官员眼中更具可信度，而且在关于具体增税是如何影响政府财政及吸烟相关的医疗费用等方面计算更精确。烟草控制研究已经对世界富裕国家的政策和烟草使用情况产生了明显影响[16]。如今，那些相对不富裕国家的烟草控制研究必须扮演相似的角色，以防止由吸烟所致疾病的流行。

从某些方面来说，早期的学者们研究价格和卷烟消费之间的关系，远比现在的研究人员更容易。像美国这样早期研究较多的国家，其产品种类（比如卷烟）相对单一（卷烟品牌不多，品牌差异较小，类似卷烟的可燃替代品不多，新颖的无烟产品较少）。同样，不同品牌间的价格也往往是近似的。今天，吸烟者们有时面对的是在一系列令人眼花缭乱的卷烟与无烟烟草中做选择。不同国家间的卷烟价格差异很大，一个国家与其邻国间的价格也不同，价格折扣和黑色、灰色市场使得实际价格和实际消费的估计更困难。因此，一个新兴的挑战，同时也是实现有效控烟的重要改革，便是了解吸烟者在除了单纯支付较高税额以外还有什么方法应对税额增长。低价品牌的扩散增加了卷烟的选择性，通过互联网购买卷烟也增加了卷烟的可及性。在一些国家，原住民以免税的价格出售卷烟，同时吸烟者也发现很容易购买到原住民专购的卷烟。而在其他国家，手卷烟可与机制卷烟同台竞争，但后者通常税额更高。免税卷烟、走私卷烟和跨境购买卷烟的吸烟者，使得针对价格反应和烟草控制本身的分析进一步复杂化。

由于上述原因，本刊特别及时和受欢迎。当偷税避税问题——大体上说是人们对税收的反应——在以往研究中被提及时，我意识到多个国家（包括发达国家和中低收入国家）均存在一系列逃税避税行为，而以往研究未收集这部分数据。本刊中的文章尚不能对此进行简单回答，毕竟这是相当复杂的问题。研究结果并非总与预期设想一致，本刊中的其他文章也存在相似问题，但本刊的确提供了有关税收和价格差行为反应的宝贵经验，同时也为我们提供了一个更适当的机会，来解决与烟草税收和逃税避税行为有关的政策问题。

除其巨大贡献外，本刊还标志着烟草控制研究领域的更加成熟：直到最近，中低收入国家研究人员的研究仍是相对缺乏的[14]。本书表明，中低收入国家的研究人员可作为发达国家研究者的全面合作伙伴，参与解决烟草控制的一系列复杂问题。对中低收入国家的研究同行而言，此方案的可行性部分来源于上述的培训和资金支持。在现有情况下，本刊也进一步明确提及了研究设计整体的另一个特征，也是确实值得称赞的地方：这些文章代表了“国际烟草控制政策评估项目”众多研究中的最新部分[17]。国际烟草控制政策评估项目在烟草控制政策研究领域常被简称为“ITC项目”，它是本书编辑和作者之一——Geoffrey Fong教授的智慧结晶。ITC项目是一个研究特定国家烟草使用情况的国际性队列研究，同时也是一个指导制定循证烟草控制政策的跨文化比较研究。ITC项目覆盖20多个国家近世界一半的人口以及绝大多数烟草使用者，致力于为《烟草控制框架公约》提供循证支持。随着队伍的发展壮大，ITC代表了烟草控制研究领域有史以来最伟大的资产之一。本刊向我们展示了它是如何做到这一点的，以及这样做的原因。

最后，回到本文伊始，死亡和纳税都是不可避免的，但由烟草所致的死亡并非不可避免。对卷烟及其他烟草产品征税——增加税额，提高频率——是一项长期举措，即使不能贯彻始终[18]，也可确保吸烟所致的死亡人数大幅、持续减少。为实现此目标，我们需要说服政府公共卫生部门和财税部门以增加税收，并学习如何减少除不吸烟外的其他避税行为。本刊中的文章所提供的证据将有助于我们实现这些目标。

作者 本评论由KW构思并撰文。
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