

Experimental Public Policy, Discovery, and Behavioral Taxation

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Abstract

Behavioral policies, including nudges and framing effects, promise public health benefits with little additional public health expenditure and are therefore popular tools among policymakers operating under tight fiscal conditions. Beyond being a low-cost option, behavioral taxes also offer an additional source of tax revenue that can shore up local, state, and federal budgets. In order for behavioral taxes to be effective, they have to result in substitution to alternative goods and services. Studies on excise taxation often report demand-elasticity estimates, but such analysis is static rather than dynamic. In order to think about the effectiveness of behavioral change, we provide a tool to help consider dynamic effects of taxes along with static policy goals. In order for the behavioral justifications for taxes to pass the devil's test, elasticity must increase over time.

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I. Introduction

Rising heart disease, diabetes, obesity, and blood pressure have sent legislators and public health professionals scrambling for ways to use policy to intervene in these preventable causes of early death. At the same time, public health expenditures are rising and public budgets are continually pinched by a general fiscal crisis at every level of government. Behavioral policies, including nudges and framing effects, promise public health benefits with little additional public health expenditure and are therefore popular tools among policymakers operating under tight fiscal conditions. Beyond being a

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low-cost option, behavioral taxes also offer an additional source of tax revenue that can shore up local, state, and federal budgets. In fact, because some excise taxes do not result in long-term substitution away from the good being taxed—for example, alcohol—they become reliable sources of revenue for government. As a result, goods without close substitutes have become attractive targets for behavioral taxation. Unfortunately, this revenue motive interacts negatively with the original public health motivations and creates an internal contradiction: the primary motive of behavioral policy is to change behavior and reduce consumption, while the motive of tax-revenue maximization is to tax goods consumed at rates that change little over time.

Because they can produce desirable health outcomes or increased tax revenue, these behavioral taxes, or taxes on disfavored goods, are growing in popularity, driven by a perfect storm of interest groups comprising politicians, business, voters, and lobbying groups (Hoffer et al. 2014). Thiele and Roosen (2008) and Holcombe (2002) note the political dynamics of how demerit goods¹ become targets of selective excise taxation.

Beyond the concerns with the revenue motive, behavioral public policy introduces several other problems: Whitman and Rizzo (2020) as well as Schubert (2017) raise conceptual concerns about rising paternalism as a result of the new behavioral justifications for policy. One specific concern here is *cognitive capture*, or systematic bias of expert opinions in policymaking (M. Thomas 2019). As a category of elite bias, a shift in some measure of political preferences may result in regressive effects of policy, where those in the lowest income quintiles bear a disproportionately large burden of new policies influenced by behavioral psychology (D. Thomas 2019; Allcott, Lockwood, and Taubinsky 2019). Those with limited political voice are underrepresented when decisions are made through political processes and, as a result, bear a larger-than-proportional cost of the policy. Nevertheless, because of their political popularity, behavioral taxes are a permeant feature of the policy toolkit. Given public choice concerns about the potential misuse of such taxes as a form of revenue seeking, our attention should therefore turn to ensuring behavioral motivations are linked to their intended results.

¹ Merit goods are defined by Head (1966, p. 3) following Musgrave as “those of which, due to imperfect knowledge, individuals would choose to consume too little.” Demerit goods have the opposite characteristic: they are consumed in excess of what would be appropriate from the policymaker’s perspective.

Our paper highlights an underrepresented area of the discussion: in order for behavioral taxes to be effective, they have to result in substitution to alternative goods and services. Studies on excise taxation often report demand-elasticity estimates, but such analysis is static rather than dynamic. In order to think about the effectiveness of behavioral change, we provide a tool to consider public policy goals and the dynamic effects of taxes. In order for the behavioral justifications for taxes to pass the devil's test, elasticity must increase over time. We discuss these dynamics in section 2. In section 3, a model is presented to categorize effective behavioral policy and to distinguish it from more traditional rent seeking developed under the cover of behavioral justifications. For a behavioral tax to be effective, long-run elasticity increases as more substitutes are discovered. This preference change is induced through entrepreneurial discovery of consumption alternatives, and is not simply a shift in demand. Section 4 discusses several additional policy options besides taxes that will result in change in the targeted behavior—for example, supply chain changes, habit formation, and information campaigns.

II. Behavioral Taxes: Definition and Critique

Public health motivations for behavioral taxes are here to stay, but behavioral policy is still in its infancy. Maxwell, Lau, and Howard (2015) argue, in *American Psychologist*, a top psychology journal, that to call the failure to replicate a set of basic results in behavioral psychology a “replication crisis” is a bit of a misnomer because failure to replicate key findings in laboratory work should have been expected so early in the development of the science (Shrout and Rodgers 2018; Resnick and Belluz 2018). But the failure to replicate basic results should call into question some of the enthusiasm for these ideas when they are used directly in public policy. This section defines a behavioral tax and distinguishes it from other kinds of taxes. We also detail likely policy failures, viewed through the lens of the behavioral motivation to implement public policy.

A. Behavioral Taxes Defined

Behavioral taxes are a particular application of excise taxes to influence behavior of consumers. Taxes sit on a spectrum of policy influence ranging from prohibition, to taxation, to regulation, and then to nudging (Hoffer et al. 2014, p. 50). Not all taxes are intended to modify behavior, of course. When the income tax increases, supply of labor will only change a little, which means it is inelastic. Gruber

and Saez (2002) estimate overall income elasticity at 0.4 while income elasticity among income earners over \$100,000 is 0.57. Taxpayers who itemize have greater elasticity. In fact, for income taxes, a behavioral change in the willingness to work of those who are taxpayers would be undesirable policy. Alcohol and cigarette taxes, because of their large role in raising revenue, are not linked primarily to behavioral arguments for taxation despite being labeled sin taxes.² The motivation for taxes centered on behavioral psychology is an attempt to use taxes among a larger set of policy tools to reduce consumption.³ The extent to which behavior is unresponsive to taxation and therefore acts as a selective tax on certain politically underrepresented consumers is explored in D. Thomas (2019).

The history of cigarette policy demonstrates the complexity of behavior change through public policy, even before behavioral psychology became influential for policymakers.⁴ There is a conflict between prioritizing public health and prioritizing public revenue. For example, taxes on smoking might actually be higher than the associated costs of smoking warrant.⁵ Taxes on cigarettes increased substantially over the last three decades in Western countries, largely justified by the associated health care costs. Reduction in smoking prevalence over time has been lauded as a major public health victory. Yet, before we assign credit for this behavior change to cigarette taxes alone, we must consider the many other factors that played a role in the change. Increasing taxes, public health information campaigns, and changes in underlying commitments to health and safety all help to account for a rapid decline in smoking after decades of coordinated policy responses including the 1964 surgeon general's report linking smoking to cancer as well as other public information campaigns and changes to public and private smoking policies. It is important to look at how all these

² Yeomans (2019) argues that excise taxes amounted to as much as 40 percent of total government revenue in the nineteenth century, and in more recent years 2 percent of government revenue still comes from an excise tax on alcohol alone.

³ This paper focuses on public health outcomes, but other policy applications—for example, regulating financial markets—are discussed in the broader behavioral-economics literature.

⁴ Strassheim (2020) details the rise of behavioral public policy in detail.

⁵ Lowering taxes on cigarettes might cause more smoking and therefore reduce aggregate health care costs when smokers die earlier. This positive influence on budgets is not a sufficient reason to lower taxes on cigarettes, because policy reflects broader goals than simple utilitarian calculus (Bagchi and Feigenbaum 2014).

factors move together because without taking a broader perspective, taxes on cigarettes might get more credit for the behavior change than is warranted.

Policy makers seem to place priority on the revenue motivation. The historic reduction in smoking should be counted as a major public health victory, but policymakers began to place taxes on electronic cigarettes to prevent the erosion of the tax base. While these substitutes are still unsafe, they offer a healthier alternative than cigarette smoking. Taxes on the substitute product helped shift some demand back to the traditional and far more unhealthy vice (Saffer et al. 2020; Pesko, Courtemanche, and Maclean 2017). Chiou and Muehlegger (2014) also point out that taxing all cigarettes at the same rate results in a preference for lower-quality and less healthy varieties of cigarettes, something a nuanced public health policy would need to address. If the motivation of the policy is clearly to generate revenue, the role that public health plays in justifying new taxes should be limited.

As behavioral public policy has become more popular, its tendency to target goods consumed by low-income earners has resulted in regressive effects (Allcott, Lockwood, and Taubinsky 2019; D. Thomas 2019). Consumers with few good alternatives to the taxed good will continue to buy it. Goods with inelastic demand are stable sources of revenue. This is the implicit trade-off policymakers face with regard to behavioral taxation. Behavioral policy goals only advance when behavior changes, but behavior changes erode the tax base. The empirical puzzle of whether the revenue motive or public health motive dominates is therefore central to all evaluations of behavioral policy.

The focus on taxing inelastic demand is a result of the Ramsey approach that prioritizes the taxation of goods with inelastic demand in order to minimize the distortion of economic behavior. According to Holcombe (2002), this Ramsey approach creates incentives to rent seek, or conform policy to interest group preferences. What is taxed (or left untaxed) reflects the interests of those with political voice. The burden of the tax falls on those with weak economic or political voices. The observation that policy in general tends to reflect the preferences of middle-income groups is known as “Director’s Law” (Stigler 1970). Unlike income taxes, which fall on a broad tax base, taxing disfavored consumption items has the potential to create transfers from marginalized groups toward those who are the primary beneficiaries of government spending, the middle-income earners.

B. Substitution: The Most Important Factor for Behavioral Change

It is important to any evaluation of excise taxation to know both the short-run effects of price changes and longer-run effects of price changes. Longer-term changes in demand are not parallel shifts in demand curves, nor are they movements along a nonlinear curve; they are changes in the slope of the demand curve due to the discovery of new substitutes. The induced change in preferences from behavioral taxes should remain distinct in our analysis from exogenous changes in preferences that are typically associated with demand-curve shifts. The *second law of demand* in the neoclassical or Marshallian framework helps to illustrate this distinction. Taxes increase the price to the consumer. The second law of demand claims an empirical regularity that elasticity increases as time passes; this is not to be confused with the effect of movements along a single nonlinear demand curve with extreme changes in price.⁶ Demand for the taxed good becomes more elastic as consumers discover alternative strategies, including purchasing other goods or services, to adjust to the higher prices they are facing after the implementation of a tax. Discovery depends, in part, on considering previously unknown alternatives. If gasoline taxes rose considerably, the demand for housing closer to the city center might increase as individuals are required to spend more on gasoline fuel and seek to conserve it by reducing their commute time. It would be inaccurate to simply state that consumers' preference for driving had changed.

For a behavioral tax to work, substitutes have to be discovered for consumers to react to the incentives generated by a higher final price. Consumers operate within particular constraints. The magnitude of the incentive effect is defined by the elasticity of demand. It is generally assumed that substitution increases in the long run. This is not captured by an *ex ante* point estimate of price elasticity of demand. The long-run substitution away from taxed goods would be evidence that the behavioral policy was effective. A consumer chooses potato chips for reasons other than price. In reality, many factors influence substitution and changes in elasticity over time.

Designing policy requires systematic and dynamic considerations that play out over time. Partial-equilibrium solutions, which prioritize one or a few concerns in isolation, are blind to reactions such as

⁶ See Mrázová and Neary (2017, p. 3840, fn. 10) for a more recent treatment of this issue.

substitution or unintended consequences (Lipsey and Lancaster 1956). Behavioral taxes, as a policy, tend to treat incentives in isolation, as partial solutions. Policy viewed in that way has been referred to as fine-tuning. Policy is generated by external observers. As behavioral taxes increase, many static problems solved by one-off interventions can become interrelated. Thus, they require systematic and dynamic analysis. Consumer choice is generated by choosers in a particular nexus of alternatives. For some consumers, particularly those in lower income quintiles, quite a few of the products they consume will be targets for behavioral taxation—for example, retail grocery purchases. As the number of taxed items in a consumption bundle increases, fewer consumer purchases can escape the tax through substitution.

Policy makers should pay special attention to the untaxed options that consumers have available as means to escape taxes if the policy is intended to cause substitution. Whether it does so also hinges on the long-run elasticity of demand, which, in turn, depends on consumers' discovering substitutes. Behavioral policymakers may imagine a surgical procedure, fine-tuning, in applying behavioral taxes to consumer choice. The reality for those consumers whose consumption patterns consist primarily of disfavored goods is that the taxes may appear coarse, not fine. If the result is to increase total tax burden, the policy reduces after-tax incomes rather than changing behavior to the degree intended. In areas in which the emerging evidence for behavioral tax effectiveness is far more complex, policy requires both systematic and simultaneous changes to the environment of choice that allow for substitution. This examination of the requirements for effective behavioral change is explored in section 4.

III. Experimental Public Policy, Policy Failure, and a Diagnostic Tool

As our discussion of the systematic problems with behavioral taxation above suggests, behavioral public policy largely still is in an experimental stage. To design policy that is more likely to deliver on stated objectives, short-run and long-run substitution must both be understood, and this understanding must inform policy. The number and knowledge of available substitutes are the prime determinants of demand elasticity (both short and long runs). In this section, we offer a diagnostic tool that will help distinguish a tax that successfully changes behavior from one that is motivated by revenue seeking. If

behavioral taxes are ineffective, we expect to see changes to the policy bundle to help increase elasticity over time, ultimately increasing substitution. If the failed policy is not ultimately revised to increase elasticity, we call this choice to continue a selective tax political rent seeking.

A. Behavioral-Policy Failure

The presence of increased revenue suggests that demand is inelastic and that behavior is not changing sufficiently, resulting in a behavioral-policy failure.⁷ Holding the intended goal of behavior change constant, effectiveness is determined by an increase in long-term elasticity.⁸ Even if we accept that the tax singles out politically unfavorable activity, effectiveness requires a reduction in that activity; otherwise it is little more than a source of revenue (Hoffer et al. 2014). One measure of policy effectiveness for goods with elastic demand is lower tax revenue generated from the good over time. Consumers who discover untaxed substitutes are no longer in the tax base, which is a sign of effective policy. In the case of resilient inelastic demand, the behavioral justification is ineffective, but the policy might still be good for generating revenue. In the selection of goods to tax and the bundle of policies used to achieve behavioral change, political actors may have revenue as a first if not only priority.

Soda taxes are the highest-profile case for evaluating health-policy effectiveness. Reduction in sugar intake should reduce obesity, a major public health issue. For example, a \$0.01-per-ounce tax translates into a roughly 10 percent increase in the price of a twenty-ounce drink (at around \$2.00 retail price). A perfectly elastic response would involve a 10 percent tax and a 10 percent change in soda consumption, and some studies report elasticities as high as 12 percent (Teng et al. 2019; Cawley, Frisvold, and Jones 2019, p. 14).⁹

⁷ For a careful discussion of policy failure's many facets, including "conflicted failure," see McConnell (2015).

⁸ In a classic negative-externality approach, this has to be true because the goal was getting to a new, lower, socially optimal level of consumption. Part of the story was to shift consumption to a social optimum, a point at which social marginal cost and social marginal benefit are equal.

⁹ Muhammad et al. (2019) look at elasticities globally in 164 countries, refining by sex, age, and income to determine how elasticities differ between representative groups. The authors show that lower-income countries have slightly more elastic responses to soda taxes, while more wealthy countries have less of a response. The response is largest among younger and older people, with smaller effects on those

The introduction of a behavioral tax when previously there was none creates a new revenue source. When point estimates of elasticity are applied to policy uses, estimates may vary widely from what is observed.¹⁰ If consumers were to cut down the level of sugar that is estimated from a 10 percent reduction in consumption, the effect would be equivalent to five fewer calories per day per person, contributing to a reduction in weight of 0.5 pounds over three years, holding other variables constant (Cawley et al. 2019). One of the variables that must be held constant in claiming obesity reduction as a result of such taxes is that consumers who actually cut down on sugar do not substitute intake of other sugar sources in response to reducing soda (Hoffer et al. 2017). Even when taxes are effective in terms of elasticity, they might not generate all of the benefits proponents claim if consumers find alternative high-sugar but low-tax substitutes.¹¹

When behavioral taxes are ineffective—that is, the elasticity in response to the after-tax price change is less than one—we should see an increase in tax revenue without much of a reduction in consumption in response to the tax. In Philadelphia, the excise tax of \$0.015 per ounce on sugar-sweetened beverages (SSBs) started in 2017, and the data from the first year show little overall change in SSB consumption for that city (Zhong et al. 2020). In extreme cases, such as the 2014 Berkeley SSB tax of \$0.01 per ounce, the targeting of specific goods actually generated an increase in consumption of the taxed good (Palma and Zhang 2021; Debnam 2017). This evidence suggests that if the purpose of the tax was to change behavior, the presence of inelastic demand is evidence of an ineffective policy.

The problem with substitution does not only apply to SSBs. Other consumer products that are linked to heart disease, diabetes, high blood pressure, and obesity also have substitutes. A policy meant to reduce saturated fats, for example, only works to combat health issues if what is used in its place is both better in terms of

in middle age. Nakamura et al. (2018) look at Chile's SSB tax in urban areas and show that after one year, in the aggregate, there were few gains and there was a less elastic response among lower-income groups.

¹⁰ See Blakely et al. (2019) for some technical issues surrounding the application of sample price elasticity outside of the context of the original estimates.

¹¹ Chiou and Muehleger (2014) explain how cigarette taxes lead to substitution of lower-priced, less healthy cigarettes and as a result produce poorer health outcomes.

health outcomes and itself used in a healthy way. If this policy shifts demand to trans-fatty acids, the long-run effects could be worse. Partially hydrogenated oils were banned in 2015 after decades of Food and Drug Administration policy that shifted demand away from saturated fats (Food and Drug Administration 2018).

It is crucial to distinguish between behavioral policy that is successful in reducing the prevalence of undesirable public health behavior and policy that is ineffective in causing a change, especially among different demographic and income groups. This distinction is the major factor in devising better policy by learning from previous experiments with behavioral taxes. The simple triage tool offered in the next section provides a taxonomy for policymakers.

B. Triage Tool for Evaluating Behavioral Taxes

In the triage model, the examined tax proposal must be motivated by the discussion of a behavioral concern. Such concerns could include, but are not limited to, public health, such as those related to smoking, sugary and salty foods, alcohol, or vehicle emissions. The stated purpose of the tax has to include reducing the quantity of the activity that is motivating the behavioral tax. There are three outcomes we account for in our diagnostic tool, after policy is introduced:

- a. Effective in the short run: behavior changes; tax revenue is low
- b. Ineffective in the short run: behavior does not change because other substitutes are not found, and tax revenue stays high (failed behavioral policy)
- c. Ineffective in the short run and the long run: behavior does not change and tax revenues stay high (political rent seeking)

In outcome (a), the behavioral tax serves as an indication to the consumer that the good or service has an external cost (or is at least disfavored politically), and the higher after-tax price leads the user to seek substitute goods or services that can replace the main goals consumers sought when they previously purchased that good or service. For rapid change to occur, the consumer has to quickly find an alternative that is close enough to effectively substitute. These substitutes are often not known to the actor before some act of discovery, much less to an expert anticipating the various reactions a group of people affected by the policy might have.

In outcome (b), the ineffectiveness of the policy indicates that something prevented the consumer from finding a close substitute.

The unchanged level of consumption suggests that a different policy is needed to increase behavioral change. Failure to change ineffective policy reveals information about the policy motivation. This acknowledgment of inaction in the face of policy failure is an important step because in order to create effective behavioral tax policy we have to learn to differentiate between behaviorally motivated policy and policy motivated by revenue considerations.

In outcome (c), the ineffectiveness of the behavioral tax is persistent enough to believe that the behavioral motivation always was secondary or opportunistic. Outcome (c) is pure political rent seeking, which is already covered in the existing literature. Alcohol taxes are the classic example of (c) because it is not behaviorally motivated either historically or in its effect on consumption. Alcohol taxes, therefore, should not be considered behavioral taxes.

This straightforward diagnostic tool allows us to identify more quickly where behavioral taxes are changing behavior and to note patterns useful in making more effective policy. In the case of persistent failure to achieve the desired result, policymakers should redesign policy to develop more effective behavioral taxes and learn from both policy failures and successes. The end result of behavioral taxation should not be revenue generation especially because of the potential for policymakers to concentrate economic incidence on underrepresented groups. The more persistent policy failures are over time, the more confident we are in our assessment that public policy that is justified on behavioral grounds is merely revenue seeking. We call this test of persistence the *devil's test*, suggesting that the failure to reform policy in the face of evidence of its failure reveals more about the implicit intentions of policy than it does about the stated objectives (Thomas and Thomas 2020).

IV. Some Elements of Long-Term Behavioral Change

Part of designing good behavioral policy is to observe carefully the related changes in other activities. Preferences are resilient to exogenous shocks such as behavioral taxes, at least in the short run.¹²

¹² Stigler and Becker (1977, p. 82) write, “Mill’s ‘habits and modes of thought’, or his ‘maxims and traditions which have descended’ in our analysis result from the investment of time and other resources in the accumulation of knowledge about the environment, and of the skills with which to cope with it.” The authors discuss the habit-formation factors that characterize individual preferences. Choice is more than the application of incentives to existing preferences that then cause people to adopt new preferences.

In the longer run, preferences might change, which is consistent with the second law of demand. This section explores other sources of longer-term demand change, including how supply chains change, how information about consumer goods changes, and some other sources of changes in habits that occur over time. To be successful, behavioral health policy, for example, must examine the broader systemic factors that make unhealthy food more plentiful, more desirable, and cheaper, including macroeconomic policies such as agricultural subsidies and related transfer programs. In order to change behavior in the long term, behavioral policy more generally must rely on far more than behavioral taxes. The final range of coordinated effort requires a whole suite of policy changes, and the behavioral tax plays at most a small role in lasting change. In this section, food policy is used as a specific example of the influence of behavioral psychology on the literature.

A. Supply Chain

Supply chain changes are logically prior to long-run behavioral changes in consumer choice. For consumer choice to become healthier, healthier options must be available. When consumers shop in bodegas that sell only fatty, salty, or sugary foods and beverages, they are limited to the available options, all of which stoke the flames of the obesity epidemic. Larson, Story, and Nelson (2009, p. 75) find that “the highest levels of obesity (32%-40%) were observed in census tracts with no supermarkets.” One promising turn of events was the incredible growth of Walmart supercenters as sources of very cheap food for many communities that otherwise had few options. Despite having a diversity of food options, from healthy to unhealthy, consumers still opted for unhealthy food. In fact, the lower prices might result in more consumption as obesity rates rise with the dispersion of Walmart superstores (Courtemanche and Carden 2011). This is an important example because the addition of a supercenter provides access to a much wider range of food items than was available previously, essentially eliminating many dreaded food deserts.

The evidence of the effect of greater availability of options is that changing the supply side is a necessary but not a sufficient condition. Not only do preferences have to change, but preferences reveal much more systematic problems of consumer demand for unhealthy food. In the presence of more Walmart supercenters, obesity does rise. Courtemanche and Carden (2011) do point out, however, that

the associated savings on grocery bills are larger than any estimate of health care costs that would result from changes in diet, offering some optimism.

The literature has struggled with determining why lower-income neighborhoods have higher rates of obesity. The idea of food deserts gained some popularity as a critique of the systematic absence of grocery stores in certain urban areas where the lowest-income-quintile consumers live. The flip side of this problem is labeled food swamps (Cooksey-Stowers et al. 2017). A food desert is a place where healthy food is scarce, while a food swamp is a place where unhealthy food is plentiful. This distinction is useful in describing some of the longer-term demand issues that have to be addressed before behavioral taxes alone can address public health issues around unhealthy consumption. Courtemanche et al. (2018) show that both household and child food security improve when Walmart superstores expand (a proxy for an improved supply chain). A preference for food security over food quality helps tell part of the story of consumer priorities. The institutions that contribute to healthy habit formation might develop over time but only once food security is no longer an issue. Next, we look at what influences this habit formation.

B. Habit Formation

Even if changes are made to supply chains, consumer habits will lag. Habits are learned over time. In their paper, Stigler and Becker (1977, p. 82) mention the process by which habits emerge. Their presentation anticipates how behavioral psychology following Tversky and Kahneman (1974) will be incorporated into economics, especially in the role of writing policy. Stigler and Becker (1977, p. 89) mention fashion, advertising, and addiction and suggest that habits—for example, musical taste—are cultivated and then become a source of consumer preferences expressed through relative demand inelasticity. The role that habits play in identity formation acts as a constraint on the increase in elasticity of consumer demand over time. Consumers will be slow to substitute unless their habits change, because habit change occurs prior to preference change. In the behavioral literature, the rigidity in mental models is denoted by the term *heuristics*.¹³ Economists examining the causes of nutritional

¹³ Heuristics are the mental models that people use to inform choice. Individual choices use intuitive heuristics (precognitive choices over frameworks). Public health models use the term “heuristics” as a term of art for engineered choice.

inequality have found evidence of habits' impact on consumer choice; for example, differences in health outcomes result from differences in demand as opposed to differences in neighborhood environment (Allcott et al., 2019). Allcott et al. make it apparent that habit formation most often does not result from the inability of low-income households to acquire the same foods at the same prices as high-income households.¹⁴ Instead, the disparity in health outcomes we observe results simply from preferences and habits, and this pushes back against policies that simply focus on improving supply chains for healthy food items. Once more, habit formation is a necessary component of actuating effective and long-term change.

One of the key insights of behavioral psychology, however, is that habits are slow to change. Inertia creates a role for expert paternalism, which attempts to substitute expert heuristics for the uninformed heuristics of the typical consumer. Formal attempts to change heuristics are now a major part of legal and structural political reform (Sunstein 2011). In his book *Thinking Fast and Thinking Slow*, Daniel Kahneman (2011) describes this process by referencing two levels of reasoning. Fast thinking relies on shortcuts for understanding the world, or heuristics. If, for example, I believe that orange juice is healthier for me than Mountain Dew soda, I might simply drink more juice and just assume that my health will improve. The choice between the options is determined by a precognitive commitment to viewing soda as bad and juice as good. At a higher level of analysis, a better way to differentiate between the two options might be to compare sugar content, and especially to consider other alternatives, such as water, when formulating deliberate choice.

Fast thinking, therefore, is associated with common mistakes that individuals make in public health. By leveraging expert versions of slow thinking, choices can be reframed to present healthier options. This is unlikely to occur at the individual level since it requires an intensive commitment to considering complex issues. Expert-informed policy aims to improve the choice set. Public health officials have rightly latched onto the ample descriptive quality of behavioral psychology, but description is not always a good input for prescription. It is important not to jump between description and prescription too readily. Policy makers' knowledge that a healthier

¹⁴ The researchers discovered that roughly 90 percent of nutritional inequality between high- and low-income households simply results from demand, while the remaining 10 percent is due to differences in exposure to foods and prices between the demographics.

alternative exists is not the same thing as the practical knowledge of how to create individual behavior change.

C. Information: Food Labeling to Influence Choice

Ideally, once the supply chain and habits have been influenced, food labeling can help consumers make healthier choices. The way food labels change behavior is to provide more information. If consumers want to be healthier but cannot afford the time to investigate, low-cost clear information will dramatically improve choice. To this end, food labeling aims to provide consumers better information about what is and what is not healthy. By labeling the amount of sugar in orange juice, consumers might make better choices about where their calories are coming from. Food-labeling legislation was first introduced in the United States in 1973 and has been updated many times since (Golan et al. 2001, p. 122). Each time, the information has been refined in terms of clarity and scope of information (Mayne and Spungen 2017).

Food labeling is of limited success in changing behavior, generally. This has resulted in calls for better food labeling to make it clearer to consumers which foods are consistent with healthy choices. One proposal is the “traffic light” system for food labels (Scrinis and Parker 2016). A food with a green label is healthy. One with yellow or red components is significantly less healthy in the areas highlighted for concern. While food labeling should increase information, the persistence of unhealthy eating despite these interventions has led some to advocate more dramatic interventions including restricting certain types of food based on objectionable content per serving. When, despite more information about available substitutes, the demand for unhealthy food remains inelastic, consumers are revealing that they do not consider the alternatives to be close substitutes.

D. Other Methods for Changing Demand

Even after supply chains, habits, and information have changed, demand for unhealthy food may still persist. Some have suggested that the use of fear is necessary to motivate change in habits. Batchelder and Matusitz (2014) invoke an Extended Parallel Process Model (EPPM) designed in the 1990s by Kim Witte that relies on fear of possible outcomes of unhealthy habits to impact long-term demand change. The greatest success of this approach might be the use of smoking ads over the span of decades to create an association

between smoking and its likely negative health outcomes and thereby reduce the demand for tobacco products. Batchelder and Matusitz (p. 462) suggest that fear of later negative health outcomes is an important factor in changing habits and increasing the effectiveness of campaigns such as Michelle Obama's "Let's Move" campaign. This campaign famously integrated the use of better school lunches with a new exercise campaign and the EPPM to send simultaneous messages through multiple channels about healthy behavior and the consequences of unhealthy behavior.

This is best described as the use of coordinated propaganda in public health campaigns. It is justified by comparison to the use of advertising by marketers of the unhealthy food (Batchelder and Matusitz 2014, p. 468). The presumption here is that commercial sources of information have a net tendency and even an incentive to direct consumers to unhealthy consumption patterns. More likely, commercial interests simply take advantage of existing unhealthy habits by giving people more of what they want at ever-lower resource cost. There is no reason, were demand to change, that cheaper and healthier options would not be made available through this same commercial process. Regardless, the use of ever-more-coordinated media messaging to push a healthy lifestyle is confirmed through the experience of past public health campaigns such as the antismoking campaign. This should be compared to less successful messages such as Drug Abuse Resistance Education (DARE), among other public health campaigns.

Cooksey-Stowers et al. (2017) suggest that the obesity problem is bad enough that a zoning requirement barring fast food establishments within three kilometers of any low-income housing would be warranted. This seems rather extreme, but in fitting with the goals of behavioral change, these are the kinds of policy extremes likely to achieve the intended result. Ultimately, acknowledging that these public health goals require dramatic interventions emphasizes the likelihood that demand will remain inelastic for a wide variety of consumer products in the longer term and suggests taxes alone would never be enough to change behavior.

V. Conclusion

The practical advice for those seeking to use behavioral taxes to influence public health is to note where the conditions prevail to induce medium- and longer-term increases in elasticity of demand through substituting alternative goods and services. In order for this

to happen, individual consumers must discover available consumption alternatives. When switching does not occur, policymakers should review their use of behavioral taxation. Excise taxation to modify behavior assumes that consumers are facing an information problem and need prompting to switch to alternative goods and services. This is usually not enough to explain inelastic demand. Policymakers cannot simply assume that behavioral taxes will be effective, without looking at elasticity over time. The factors influencing substitution reflect determinants of preferences and therefore consumer demand. Given the revenue-seeking critique, there is a high likelihood that behavioral justifications will be used to pass taxes that would not pass without the cover behavioral justifications provide. This concern over opportunism emphasizes the tendency for middle-income preferences to be satisfied while the tax burden falls mainly on those in the lowest income quintile. As a result of this analysis, policymakers should be highly critical of efforts to use taxes to change behavior.

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