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## The political economy of labeling

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## ABSTRACT

Labeling arrangements are introduced to provide information and affect market outcomes. Mandatory labeling of products like genetically-modified organisms (GMOs) is subject to controversy and political debate. The exact outcome depends on the specific public decision-making process (direct vote by the public vs. voting by representatives), the political power distribution among groups, and the workings of legislative and regulatory processes. This paper presents a conceptual framework to assess the welfare implications of labeling decisions that are decided by political processes. We identify conditions under which there are gains from mandatory labeling compared to no labeling, and find that the gain from passing a mandatory labeling proposition is larger if the voluntary labeling option is not available. The conclusions suggest that when mandatory labeling is not feasible politically, promoters of labeling will introduce voluntary labeling. The paper uses the results of this conceptual framework to analyze different case studies of labeling propositions, including Proposition 37 that was voted on in California in 2012. The findings suggest that labeling decisions may evolve with new scientific knowledge, new information technologies, and changing attitudes.

### 1. Introduction

A key condition for efficiency of markets is availability of full information, and one role of government is to establish a legal framework that assures this (Mirrlees, 1974). Not only does this include price information, but has also recently expanded to include information about product contents and quality, especially as the share of packaged goods and complex equipment continues to increase (Dimara and Skuras, 2005). A key mechanism to providing information is labeling, and establishment of labeling policies and guidelines have been a major topic of debate for centuries (Kolodinsky, 2012). The nature of information sought by consumers is always changing, and industry and activists have used labeling as a mechanism to affect market outcomes and resource allocation. Thus, to understand labeling, one needs to view it from a political economic vantage point, where markets and political mechanisms interact in establishing a final outcome (Vigani and Olper, 2015). One of the areas in which labeling policy is playing a major role is in the bioeconomy, where labeling strongly affects the economics of GM technologies, organic farming, and ultimately the viability of other new technologies in the future.

This paper develops a conceptual model to understand voting outcomes about labeling and to assess their welfare implications. We address the welfare effects of both mandatory and voluntary labeling schemes on different groups of consumers. We use this model to identify conditions under which social welfare increases or decreases under

different labeling arrangements. The welfare model is based on the notion of relative willingness-to-pay for “green” products vs. “brown” products. The brown products produce more perceived environmental and human health costs, and the consumer cannot distinguish between the two different products unless there is explicit information or they are labeled as such. Under reasonable assumptions, we are able to use the differential in willingness-to-pay between these two products to derive welfare outcomes under different labeling scenarios. We then use the results of this model to inform a discussion about several case studies relating to regulation of GM products, including Proposition 37, which was voted on in California in 2012.

The first section of the paper will review the evolution of the use of labeling and major considerations affecting private and public labeling choices, followed by a discussion of alternative mechanisms of political economy and their implications for labeling. This will be followed by an analysis of how political economic considerations have affected the economics of agricultural biotechnology. Finally, the paper will conclude.

### 2. Labeling over time

The need for labeling stems from the basic asymmetry of information about product quality between consumers and producers, which may lead to suboptimal resource allocation without intervention (Akerlof, 1970). The design of labeling policies balances considerations

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of consumer protection, industry profitability, consumer capacity to absorb information, and ability to monitor and enforce. As food technologies and product choices evolve, labeling mechanisms and enforcement have evolved as well.

Food labeling in the US and globally has evolved over time. From the 19th century until the 1970s, the focus of labeling policy was on food safety and packaging. Historically, consumers would purchase fresh products and process them at home. However, increased processing of foods introduced packaging and adulteration of products (for example, replacement of butter with margarine and grape sugar with beet sugar). A major political debate about food safety between activists and industry in the early 20th century resulted in the passage of the Pure Food Act of 1906. The publication of Upton Sinclair's *The Jungle* further steered the food safety debate, and contributed to the passage of the Federal Meat Inspection Act of 1907 (Kolodinsky, 2012). The Pure Food Act made it illegal to issue deceiving labels in terms of content, weight, and serving measures. However, implementation of the law was challenging and led to build-up of a bureaucracy that included the Food and Drug Administration (FDA), which is responsible for regulating food safety, and the Federal Trade Commission (FTC), which regulates food advertising, including labeling. The FTC initially emphasized regulation of commerce, not consumer protection, but this changed after the 1960s, especially with the passage of the 1966 Fair Packaging and Labeling Act (Golan et al., 2001).

The increased reliance on processed and packaged food driven by convenience and efficiency and the desire of businesses to differentiate their products led to proliferation of food products and increased uncertainty about their contents (Senauer et al., 1991). This, along with increased concern over healthy diets, led businesses to issue unsubstantiated health claims, resulting in the establishment of the Nutritional Guidelines in 1973 that over the years have grown to mandate specific nutritional contents and restrict health claims about food. The evolution of labeling policies during this period was affected by desire to reduce costs and reduce regulatory load, concern about information overload balanced with the desire to reduce negative side effects, as well as new discoveries in terms of food science and measuring technologies. In the 1980s there were attempts to deregulate food safety as well as emphasize precision in studying the health effects of different foods, culminating in the 1997 FDA Modernization Act, which emphasized the role of science-based policies in supporting health claims about food (Kolodinsky, 2012).

The 20th century has seen the build-up of the nutrition discipline, including the discovery of the role of vitamins and minerals in health. This led to nutritional and food labeling policies that emphasized improved health outcomes. During the first half of the century, much emphasis was devoted to preventing and controlling diseases attributed to nutritional deficiencies, while towards the end of the century, emphasis turned to chronic diseases. This was reflected in labeling policies that emphasized information about nutritional content and concern about carcinogens and toxins. Nutrition and labeling policies deserve some of the credit for preventing any major food catastrophe in the US during the second half of the century. However, newly discovered food pathogens have emerged as threats needing to be addressed (Nutrition Reviews, 1999).

Consumer concerns about the health attributes of food were augmented by concerns about food technology and production processes during the beginning of the 20th century. The food sector has been bifurcated, where most food production follows the industrial paradigm but with a growing emphasis on the naturalization paradigm that emphasizes concerns about climate change, animal welfare, labor conditions, and the environment. The naturalization paradigm is appealing to the more affluent segment of society and is growing as average income is increasing (Rausser et al., 2015). However, the attributes pursued by the naturalization paradigm lead to emphasis on credence goods whose quality attributes cannot be easily observed. Therefore, these goods often need to be identified using labels, and given asymmetric

information, require a network of monitoring and enforcement to avoid cheating (McCluskey, 2000; Hamilton and Zilberman, 2006). Because many of the attributes pursued by the naturalization paradigm, including organic, non-GMO, or Fair Trade, are not necessarily healthier and are not valued equally among one another (i.e. non-GMO may be valued more than Fair Trade), there has been an emergence of private labeling and a system of organizations that aim to monitor accurate labeling. Defining the role of firms, organizations, and government regulators in this new environment is becoming a major policy challenge (Huffman and McCluskey, 2014b; Huffman and McCluskey, 2015; Sheldon, 2017).

There are multiple decisions that need to be made about labeling (Hemphill and Banerjee, 2015). Should they be mandatory, and if not, should one establish voluntary labeling? What should be labeled, and what are the quantitative limits of labeling? For example, what is the degree of purity of GMO-free grain? Who will do the certification? How should compliance be regulated, and what are the penalties for violation? These are some of the key questions that are required in establishing labeling regimes. These questions receive different answers depending on political systems.

### 3. Alternative approaches to political economy and implications for labeling

Political systems and markets provide alternative mechanisms to allocate resources. The political system sets constraints on markets by regulations, and at the same time, market forces are affecting the determination of rules and regulations that are produced by politicians. Political economic models aim to understand the basic mechanisms that establish political parameters. However, there are many political mechanisms and systems, and each has their own decision rules that are analyzed by different political economic models. We will analyze the political economy of different mechanisms of policy-making with regards to labeling. In each case, we will analyze which major parties affect each outcome, and some of the welfare implications of each potential outcome. First, we will analyze the political economy of voting for labeling by the public. Then, we will consider the outcome of systems where elected politicians either vote or establish regulation.

#### 3.1. Voting for labeling by the public

A major mechanism for public decision-making is voting, where each voter decides whether or not to support a proposition, or abstain. Downs (1957) introduced the median voter model, which assumes that voters are heterogeneous and that results of a proposition are dependent on the median voter. The median voter model applies both to referendums, where the general public votes on a proposition, as well as parliamentary decisions, where politicians vote. Here, we will concentrate on referendums using a simple model of voting behavior and analyze the welfare implications.

Referendums have been used in various states in the US to make decisions about the introduction of mandatory labeling of GMOs. The literature on labeling assumes that there are two products: brown and green (Roe et al., 2014; Zilberman et al., 2014). The brown products produce more environmental and human health costs, but the consumer cannot distinguish between the two different products without additional information. Furthermore, there is heterogeneity among consumers in terms of their income as well as perception of damages from the brown vs. green products. We consider four potential institutional setups: the first is no labeling at all, the second is the introduction of a mandatory ban on brown products, the third is mandatory labeling on brown products, and the fourth is voluntary labeling on green products. We acknowledge that there may be a realistic scenario with both mandatory labeling on brown products and voluntary labeling on green products.

For simplicity, assume that there are  $N$  total consumers in the

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