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Gina M. Riekhof and Michael E. Sykuta

Contracting and Organizations Research Institute
and Department of Agricultural Economics
University of Missouri-Columbia
135 Mumford Hall, Columbia, MO 65211-6200
Tel. 573-884-9459
sykutam@missouri.edu

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Gina M. Riekhof and Michael E. Sykuta[†]

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Abstract

In 1986, the State of California passed legislation restricting the direct importation of wine from another state by California residents unless the originating state allowed the reciprocal privilege of direct shipment from California wineries to residents in that state. This proved to be the opening salvo in a series of legislative and judicial battles across the country. State direct shipment regulations that were uniform across 47 of the 50 states prior to 1986 now constitute a patchwork of regulations. This raises unique interstate trade questions due to the special treatment of alcohol in the U.S. Constitution. While the Commerce Clause forbids states from discriminating against interstate commerce, the 21st Amendment affords states the right to regulate alcohol within their borders. Courts are divided in their opinions on direct shipment regulation; some find that prohibiting direct shipment unconstitutionally restricts interstate commerce while others find the regulations consistent with the public interest rationale of the 21st Amendment. This paper attempts to shed light on the motivations for the various forms of regulation adopted across states in response to California's adoption of reciprocity. Using a competing risks hazard model, we examine how various economic and public interest factors affect the speed with which a state adopts a change in its direct shipment regulation and that nature of that change. Our results suggest that economic considerations, not public interest factors, lie at the root of direct shipment regulations in the wine industry.

Keywords: direct shipping, interstate commerce, political economy

JEL Codes: K2, L51, L66

[†] Gina M. Riekhof, Dept. of Agricultural Economics and School of Law, University of Missouri-Columbia. Michael E. Sykuta, Dept. of Agricultural Economics and Contracting and Organizations Research Institute (CORI), University of Missouri-Columbia, e-mail: sykutam@missouri.edu.

I. Introduction

In 1986, the State of California passed legislation restricting the direct shipment of wine from other states to California citizens unless the originating state allowed California wineries to direct ship to that state's citizens. This "reciprocity" restriction on direct shipment marked a change from California's previously unfettered direct shipment regime. Although California made the direct shipment of wine to California residents more difficult, the legislation's intent was to open up direct shipment to wine markets across the country.

Prior to 1986, direct shipment of wine to consumers was a misdemeanor crime in 47 states. In addition to California, only Alaska and Rhode Island permitted direct shipment of wine. California's reciprocity legislation required that states prohibiting direct shipment of wine to their citizens open their markets to direct shipping in order for wineries in those states to be able to ship directly to California consumers. In effect, California attempted to leverage its large wine consuming population to pry open access to the rest of the country for the state's wine industry.

The response has been mixed. In the past 17 years, 43 states have considered a total of over 160 bills proposing changes to their direct shipment laws. Twenty-five states have adopted some form of direct shipment allowance, ranging from reciprocity regulations to permitting systems to special handling provisions. Four states elected to retain their prohibition, but increased the severity of the penalty by making direct shipment a felony.

Because direct shipment laws specifically regulate interstate commerce, the courts have been drawn into the battle. Proponents of direct shipping have filed suits arguing that state restrictions on direct shipment violate the Commerce Clause (Article I, Section 8) of the U.S. Constitution, which grants the federal government the right to regulate trade “among the several states.” However, states point to the Constitution’s 21st Amendment, which gives states the sole authority to regulate the sale and distribution of alcoholic beverages within their borders. As in the legislative arena, the court’s rulings are mixed. Direct shipment cases have been heard in seven of the 12 federal circuits. At the District Court level, five of seven courts have found direct shipment restrictions unconstitutional. The two appellate court decisions in the 7th and 4th Circuit Courts of Appeal resulted in split decisions; the 7th Circuit found direct shipment restrictions constitutional while the 4th Circuit ruled them unconstitutional.

At the heart of the debate in both the legislative and judicial arenas is a question of public interest. In analyzing the enforceability of state laws under both the Commerce Clause and the 21st Amendment, courts consider the public welfare concerns addressed by the state regulation. In the case of the Commerce Clause, the regulation must be shown to advance state health, safety, and welfare. In addition to this public interest requirement, the courts also require that the social gains exceed the burden on interstate commerce and that no less-restrictive alternative is available to achieve the social objective. Courts’ analytical framework under the 21st Amendment is less restrictive; the purpose of the regulation may be to 1) promote temperance, 2) raise revenue, or 3) “ensure orderly market conditions.” There is no requirement for evaluation of the net benefit or the availability of less-restrictive alternatives.

Our purpose in this paper is to shed light on the motivating factors for regulations on the direct shipment of wine among states. In particular, we use a competing risks hazard model to estimate how various measures of economic and public interests in each of the 47 prohibition states affect the likelihood of a state changing its laws to allow direct shipment of wine, the nature of the direct shipment allowance, and the speed with which the state adopts the new legislation. We find that economic interests play a significant role in determining a state's adoption of direct shipment, but no evidence supports general public interest motivation.

The paper proceeds with a brief review of the literature in Section 2. Section 3 provides an overview of the wine industry, the economic forces at work in the industry over the last two decades, and the resulting push for direct shipment legislation. Section 4 contains a discussion of the data and methods used to examine the political economy of direct shipment legislation. The empirical results are discussed in Section 5, followed by the conclusion and discussion of possible extensions.

II. Previous Research

Little has been published in the economics literature on the domestic U.S. wine industry. Most research focuses on various dimensions of demand for wine products including price and quality (Krasker; Jaeger; Blaylock and Blisard; Buccola and VanderZanden; Landon and Smith) and liberalization of North American trade (Heien and Sims). Consequently, most published reports are found in trade journals such as *Wines & Vines* and *Wine Spectator*.

Similarly, economic research on interstate commerce is primarily focused on transportation industries and the role of the Interstate Commerce Act (ICA) of 1887. Childs documents the adversarial nature of federal versus state regulation of railroads post-ICA and the evolution of a “pragmatic federalism” that grew to characterize federal-state relations in a variety of regulated industries. Elmslie and Milberg hold up the Commerce Clause of the U.S. Constitution as model for regulation of international trade, likening international commerce to commerce between U.S. states. O’Driscoll, on the other hand, provides a brief overview of how interstate restrictions on trade circumvent Commerce Clause issues for a variety of commodity and service industries. Direct shipment of alcoholic beverages, however, is not mentioned. Although economists have paid little attention the direct shipment of wine, the number and diversity of court cases and opinions described above as well as the plethora of legislation considered in the past 15 years have spurred legal scholars to address the issue (see Martin (2000, 2001); Foust; Douglass; and Kozusko for examples).

A much larger literature exists concerning the political economy of regulation. This literature can be broadly broken down into two competing camps: the public interest and private interest theories of regulation. The public interest theory purports that government intervention maximizes social welfare by correcting market failures (Joskow and Noll), particularly in the presence of positive transaction costs (Coase, 1960; Noll). The private interest or economic theory of regulation argues that regulations result from a political competition among private interests in attempt to gain or protect economic rents (Stigler; Posner; Peltzman; Becker). In their analysis of bank branching deregulation, Kroszner and Strahan argue that private interest theory has been more successful in

explaining a wide variety of regulatory interventions, while public interest arguments better explain the removal of such regulations. They go on to conclude that, in the case of bank branching restrictions, private interests appear to drive deregulation.

This paper is similar to Kroszner and Strahan's in that we are examining the drivers of deregulation of interstate direct shipment of wine. However, this paper has broader implications due to the nature of the regulations being considered and the unique constitutional question surrounding such restrictions. Since public welfare interests are the sole redeeming feature of state restrictions on interstate commerce, determining whether public or private interests are the primary drivers of direct shipment laws is of immediate consequence beyond validation of regulatory theories. This paper also provides a rare glimpse into the economic underpinnings of a rapidly growing, and highly regulated, sector of the agricultural economy.

III. Structural Change in the Wine Industry and the Direct Shipment Response

3.1 Structural Change in Wine Production

The past 25 years have witnessed tremendous growth in the wine industry. In 1975, there were 800 wineries in 34 states. By 2002, over 3,180 wineries were in operation across all 50 states (*Wines & Vines Annual Buyer's Guide*, 1974, 2002). Most of this growth has come in the form of small wineries. "Free the Grapes!," a wine industry trade association, reports that the 50 largest wineries account for 95% of U.S. wine production.

One reason for the growth among small wineries is the capital required to open a winery. Folwell, Ball and Bale estimate the capital cost of starting a small (2,000 annual cases) winery to be \$700,000. Increasing the scale to 10,000 annual cases requires a total

investment of \$2.7 million. These amounts do not include the cost of developing vineyards to supply grapes. For several reasons, some of which will be addressed below, investors may wish to enter at a smaller scale and retain the option to expand as their product and consumer base becomes established.

Some producers may not wish to be large at all. In their study of wine producer motivation, Scott-Morton and Podolny find a large segment of small wine producers, which they refer to as “utility-maximizers” or hobbyists, that enjoy producing high-quality wines and charge higher quality-adjusted prices, even at the expense of increased revenues and profits. They find that profit-oriented producers are less likely to produce high quality wines.

That is not to suggest that small wineries are necessarily less profitable. Folwell, Bale and Ball conclude that small wineries (with output levels of between 2,000 and 10,000 annual cases) can be more profitable than 50,000, 200,000 and 500,000 annual case production wineries. This conclusion is based on the assumption that small wineries tend to produce super premium wines that are sufficiently differentiated to command a higher price and to sell most of their product either through tasting rooms or winery-operated retail stores instead of through distributors. The higher margins obtained by direct sales offset the higher per-case cost of production.

In summary, the past 25 years have seen an enormous growth in the number of U.S. wineries. A relative few, very large wineries comprise 95% of U.S. production, operating primarily through traditional distribution channels, while a host of small wineries operate primarily through direct sales in their local markets. For smaller wineries to access a larger geographic market, they must develop relations with

distributors to carry their products or find alternative means for directly accessing distant markets.

3.2 Structural Change in Distribution and Retail

During this time, the number of licensed wine and spirits distributors in the U.S. decreased dramatically, from over 1600 in 1984 to less than 600 in 2002 (*National Beverage Marketing Directory*). This consolidation trend resulted from a U.S. Supreme Court decision in *California Retail Liquor Dealers Assoc. v. Midcal Aluminum, Inc.*, which struck down an alcoholic beverage price posting law in California. The law had prohibited distributors from selling alcoholic beverages to retailers at prices below official posted prices, thereby forcing distributors to compete on service rather than price. Similar laws were in place in virtually every state. Everett argues that when the Supreme Court found such laws in violation of the Sherman Act, distributors were freed to compete on price, thereby driving out less efficient distributors and spurring drastic consolidation.

This consolidation is particularly significant given the traditional three-tier distribution system adopted by most states following the repeal of prohibition. The three-tier system requires alcoholic beverages to be sold to a state licensed distributor that in turn sells the product to a state licensed retailer before consumers purchase the product. In some instances, the state owns and even operates distribution activities in the state; occasionally, the state also owns or franchises the retail operations. For most states, however, private firms are licensed to perform these activities within the state. A reduction in the number of distributors means fewer distribution outlets for wineries to get their products into other markets.

Moreover, since few distributors have licensed operations in all 50 states, wine producers may have to develop relations with several different distributors to gain access to a broad geographic market. Thus, there are potentially high transaction costs for wineries in identifying and negotiating marketing agreements with distributors across several states. These costs are exacerbated by “franchise laws” in some states that make it difficult, if not impossible, for producers of alcoholic beverages to unilaterally terminate relations with a distributor (Everett).

From the distributor’s perspective, carrying small volume wine products also creates transaction costs. Unlike many wholesalers, alcohol distributors do not simply resell or direct product to established retail outlets. Alcohol distributors are frequently responsible for developing and implementing promotional activities for the products that they carry. Distributor-sponsored wine tastings, advertising, and physical displays are just some of the expenses typically incurred. Small volume products may not justify marketing costs on the part of the distributor.

While distribution became more concentrated, national retail systems also became more concentrated. Although the number of retail outlets has grown, both in grocery and in hotel and restaurant service sectors, the number of companies controlling those outlets has decreased. Centralized purchasing for these retail systems has created further pressure for higher volume wine products. Moreover, competition for shelf space at the retail level places pressure on both the retailer and the distributor to offer recognized brands with established consumer bases. Although space is typically allocated for smaller specialty runs, shelf space is not proportional to the number of small wine

producers, adding to the difficulty small wineries may have in acquiring a distributor relationship.

Anecdotal evidence supports the assertion that distribution is difficult and costly to access, even for larger producers. Ernst & Julio Gallo, by far the largest producer in the U.S., has developed its own national distribution company. Fosters Brewing of Australia, primarily a beer producer, acquired Beringer, another large California winery, in 2001 to leverage Beringer's established distribution system for Foster's expansion in the U.S. market. Canandagua, a large Canadian distributor with facilities in much of the U.S., has purchased a portfolio of medium-sized wineries to take advantage of its distribution capacity. Such acquisitions and vertical integration suggests the costs of market transactions to achieve the same market access must be substantively high (Coase, 1937).

3.3 The Direct Shipment Response

As seen in Figure 1, California has the most wineries of any state in the U.S. Between 1980 and 1986, the number of wineries in California grew by 60%. Given the favorable economics of direct shipment for small wineries and continuing consolidation in the distribution and retail sectors, lobbying for direct shipment of wine to consumers is a logical response for small wineries seeking to increase their volume, consumer base, and geographic market.

Prior to 1986, 47 states prohibited the direct shipment of wine to consumers. Other than California, only Alaska and Rhode Island—not very large wine-consuming markets—permitted direct shipment. Unlike Alaska and Rhode Island, however, California also boasted the largest wine consuming market in the U.S., to which wineries

in other states had ready access given California's liberal direct shipment allowance. In what might be described as a "tit-for-tat" strategy, California passed legislation in 1986 that effectively shut out direct shipments from wineries in other states unless those states would allow California wineries to direct ship into those states. This reciprocity standard created incentives for other states to open their borders to California wines in order to gain access to the largest consuming market in the country for their own wine industries.

As noted earlier, the response has been varied. In the first seven years following California's move, 11 states adopted reciprocity direct shipment legislation, thereby opening their borders to California wines. In the ten years since, 18 states have enacted new legislation regarding direct shipment. Of those, only two adopted simple reciprocity laws. Ten states moved to allow direct shipment, but require some form of permitting on the part of the consumer, the winery, or both prior to shipping. These permitting schemes also vary in cost, with some states offering free permits while others require fees that make direct shipment unappealing for most wine purchases. Three states elected to allow consumers to special order wine through the state's three-tier system, with delivery either to the distributor or a retailer. Finally, three other states chose not to relax their prohibitions against direct shipment, and increased the penalty for violations from misdemeanor to felony offenses. Figure 2 illustrates the resulting patchwork of state regulations on interstate direct shipment of wine that currently exist.

3.4 Public v. Private in Direct Shipment Regulation?

As discussed in Section 2, the economics literature on regulation assumes two general rationales for regulation: public interests and private interests. If direct shipment prohibitions prior to 1986 were in place solely for public welfare reasons, it would be

difficult to explain why California's decision to adopt reciprocity would have its intended effect of opening up access to no-shipment states. The reciprocity incentive only affected wine producers in no-shipment states that desired to direct ship their wines to California consumers. Thus, the fact that 23 states moved to allow direct shipment under either reciprocity or some form of permitting system suggests that, at some margin, the economic interests of wine producers in those states outweighed whatever public interest allegedly supported the original direct shipment prohibition.

However, the time it took states to adopt direct shipment and the varied forms in which direct shipment was enacted suggests that whatever interests were driving the move toward direct shipment varied across states. What is not obvious is the degree to which public versus private interests determined those differences. While adopting direct shipment (and thereby gaining access to other reciprocity states) may be good for a state's wine industry, distributors and retailers in the state may object to the possibility of lost sales as consumers shift their purchasing of higher priced, higher margin wines to direct shipping channels. Moreover, a state with a relatively infant wine industry may delay adoption of direct shipment until its industry is in a better position to compete with direct shipment competitors. To the extent the state is a player in the industry, either in terms of ownership of distribution and/or retail operations or in terms of revenues generated by taxes and licenses, the state itself may have economic incentives to support or prohibit direct shipment. Thus, failure to adopt direct shipment allowances or delays in adoption might result from either public interest concerns or contrary economic interests.

We attempt to assess whether public or private interests were the driving factors in the adoption of direct shipment legislation, and which private interests were most influential in determining states' decisions. The following section describes the data and methods used to examine these factors and to test whether direct shipment regulation is determined by public welfare concerns or private economic interests.

IV. Data and Methods

As noted above, at least 160 bills have been introduced across 43 states to change states' regulation of direct shipment of wine. In the 17 years since California's opening salvo, 23 states have passed legislation allowing direct shipment. These direct shipment rules fall under two categories: straight reciprocity and permitting systems. Thus, the issue involves three questions. First, what factors affect the likelihood that a state will pass direct shipment legislation? Second, are those factors different when states choose reciprocity versus permitting systems? Finally, why do some states respond quickly with legislation while others take longer?

In order to address the questions, we collect information for all 47 non-direct shipment states for the period 1986 to 2001. We collect information on the size and structure of the states' wine production, distribution, and retail sectors, as well as wine consumption. In order to capture the economic interests of the state, we collect information on the states' wine-based tax revenues and overall fiscal health. We also collect information concerning public welfare issues related to alcohol, general ideology measures, and the nature of states' incumbent alcohol regulatory philosophy. In order to provide a better context for understanding the details of our data collection and variable construction, we begin with a discussion of our modeling technique.

4.1 *The Model*

We use a competing risks hazard model to determine the likelihood that a state will choose to deregulate by adopting either reciprocity or a permit system at time t , given that the state has not yet deregulated and given a set of explanatory variables. The competing risks hazard model is an event history, or duration model that seeks to explain both the timing of regulatory adoption and the type of regulation adopted. Such event history models are often used in the political science literature, where “the duration spent in one social state affects the probability some entity will make a transition to another social state” (Box-Steffensmeier and Jones). Duration models have also been employed in economics to study the duration of unemployment spells (Keifer; Meyer) and rates of deregulation (Kroszner and Strahan), and in finance to estimate the effects of bond characteristics on the likelihood of default versus calls (McDonald and Van de Gucht).¹

The hazard function, $\lambda(t)$, is composed of two parts.² The first is a baseline hazard function that varies exclusively as a measure of time, $\lambda_0(t)$. The second part of the hazard function is a function of the explanatory variables, and is commonly noted as $\exp(X'\beta)$, where X is a vector of the explanatory variables for a given observation and β is a parameter vector. The model allows for either static or time-varying explanatory variables. Therefore, the hazard function can be written as (Kennedy):

$$\lambda(t) = \lambda_0(t) \exp(X(t)'\beta)$$

Duration models differ based on the assumed form of the baseline hazard, $\lambda_0(t)$.

The baseline hazard may be estimated using a specified form (parameterized) or an

¹ Box-Steffensmeier and Jones provide a concise, reader friendly summary of event history models in political science. Keifer explains the relevance of duration models in economics primarily in the context of unemployment, but also discusses several other areas in which

² For a discussion of the statistical properties of hazard functions, see Keifer, Meyer, McDonald and Van de Gucht, or Han and Hausman.

unspecified (nonparametric or semi-parametric) form. Parametric forms frequently include exponential forms, log-logistic forms, and Weibull distributions. Han and Hausman and Meyer show that, when the baseline hazard rate is unknown, a semi-parametric approach yields more efficient results than parametric specifications. This is particularly true in competing risks hazard models, where subjects may exit the pool by more than one type of “hazard” that may be characterized by different baseline rates.

In our study, non-direct shipment states may exit the pool by adopting either reciprocity or permitting systems. Given the different patterns of adoption over time, as illustrated in Figure 3, we have good reason to believe the baseline hazard rate may differ for the two different types of hazards. Consequently, we follow Meyer and McDonald and Van de Gucht, and use a semi-parametric specification that includes a vector of time-varying dummies to estimate the effect of time on the baseline hazard. Thus, our estimated hazard model has the form:

$$\lambda(t) = \lambda_0(t) \exp(X(t)' \beta) \exp(D(t)' c)$$

where λ_0 , X , and β are as defined above, D is the vector of time-varying dummies, and c is a coefficient parameter vector.

4.2 *Dependent Variable*

Our sample begins in 1986 with all 47 non-direct shipment states and continues through 2001. We use a polytomous dependent variable for each state equal to 0 if the state does not pass direct shipment legislation in the observation year. If the state passes reciprocity legislation, the dependent variable assumes a value of 1; if it passes a permit system, a value of 2. We assume that states can only move from non-direct shipment to direct shipment once. Thus, if a state’s dependent variable takes on a non-zero value in a given

year, the state is dropped from the hazard pool and is not observed in the rest of the sample period. States that do not adopt any direct shipment legislation remain in the pool throughout the sample. Such right-censored observations are an additional reason for employing the hazard model framework.

4.3 *Explanatory Variables*

As described above, we attempt to capture economic versus public interests as they influence the adoption of direct shipment laws. We collect information on private sector economic interests, public sector economic interests, and proxies for public welfare related to alcohol consumption. Table 1 provides summary statistics.

4.3.1 *Private Sector Economic Interests*

The primary private sector interests we identify relate to the size and structure of the state's wine industry at the production, distribution, retail, and consumer levels. For wine production, we determined the number of wineries in each state by listings in various issues of *Wines & Vines Annual Buyers Guide*. The number of wineries in each state was scaled by the gallons of wine consumed in the state, as reported in *Adam's Wine Handbook*. We also calculate the Herfindahl-Hirschman Index (HHI) and the Gini Coefficient for the state wine industry in each year based on winery storage capacity as reported in *Wines & Vines Annual Buyer's Guide*. Although the two are related, they address fundamentally different aspects of market structure. The Gini coefficient is primarily a measure of dispersion, or inequality, among industry participants. The HHI is primarily a measure of industry concentration; although it does pick up dispersion across firms.

Consider, for example, a market with two equally sized duopolists and a market with a dominant firm controlling 70% of the market and a competitive fringe of 30 firms each comprising 1% of the market. The HHI measures for these two markets would be 5,000 and 4,930, respectively. Conversely, the Gini coefficient for the former would be zero while for the latter it would be 0.67. We may well expect these markets to behave differently. Reliance upon only the HHI or the Gini would not necessarily capture the nature of the market structure. We do check the correlation coefficient to assure no statistical problems, and it in fact is quite low (0.16).

We expect the number of wineries relative to state consumption to be positively associated with adoption of direct shipment regulation. A larger number of wineries suggests not only a larger industry lobby, but a greater need to seek out markets in other states. We also expect the winery HHI to be positively related to direct shipment. Previous research shows more concentrated industries are generally more politically effective (for example, see Kroszner and Strahan). The winery Gini, on the other hand, we expect to have a negative relationship. The Gini value ranges from zero (an evenly distributed market) to one (an extremely unevenly distributed market). The greater the Gini value, one would infer an industry made up of many disproportionately small producers with a few relatively large firms. A greater dispersion of economic interests is likely to make the wine industry less politically effective.

We use the same measures of sector size and structure for distribution in the state, namely, the number of distributors per gallon of wine consumed, the distributor HHI, and the distributor Gini coefficient in each state in each year. The number of distributors was determined by listings in the “Wines and Spirits Distributors” section of the *National*

Beverage Marketing Directory, and was scaled by gallons of wine consumption as with the wineries. The HHI and Gini measures are calculated based on distributors' sales revenue as reported in the *National Beverage Marketing Directory*. Because distributors are the obvious victim of direct shipping, we expect the signs to be opposite those on the winery variables. In particular, we expect the number and concentration of distributors to be negatively related to adoption of direct shipment legislation, while we expect the Gini (dispersion) measure to be positively related to passage.

For retail, no reliable figures are available for the number and sales of wine retail outlets by state for the entire sample period, so we cannot construct similar measures. Instead, we use the ratio of retail wine sales as a share of gross state product to measure the size of the retail wine industry. This is not a perfect measure, since it could capture either retailers' interests in protecting wine flows through their outlets or consumers' demand for wine, which might suggest greater demand for access to difficult-to-find out-of-state labels. Not surprisingly, retail sales, even as a percentage of gross state product, are highly correlated with per capita wine consumption, so there is no clear way to account for which force might be reflected in this measure. Consequently, we cannot sign this demand measure *ex ante*.

4.3.2 *Public Sector Economic Interests*

The state is not necessarily an independent agent in regards to direct shipment of alcoholic beverages. States generate revenue both from excise taxes on alcohol and from licensing fees charged to alcohol distributors and retailers. We include variables for both alcohol revenue sources (excise taxes and licensing fees) as a percentage of total state

revenue. The data were collected from the U.S. Department of Commerce's annual *Government Finance Series*.

Most state reciprocity laws expressly allow wineries and consumers to avoid the excise tax. States that are more reliant on those funds may be less likely to pass such legislation. In the case of licensing fees, the argument is less clear. Because direct shipment is not likely to change the number of licensed distributors or retailers in a state, there may be less concern regarding licensing fees. Moreover, a fee-based permitting system may increase total licensing fee revenues. Consequently, the effect of licensing fee revenue on reciprocity is unclear, and may actually increase the probability of adopting a permit system.

4.3.3 Public Interests

As discussed earlier, courts evaluating Commerce Clause cases generally consider whether the state has a compelling public interest in restricting interstate commerce. In the instance of the Twenty-First Amendment cases, public interest in promoting temperance is typically prime consideration. Since we do not have good direct measures of public interest in the case of direct shipping, we employ a variety of variables to proxy different ways in which such public interests might be reflected or determined.

One measure of a state's alcohol regulation philosophy is whether the state has a control or license distribution system. In control systems, the state government acts as the distributor, and in some cases also as the retailer. In license jurisdictions, private parties are licensed to act as distributors or retailers. We employ a dichotomous variable that takes a value of 1 for license jurisdictions and 0 for control states. Since control states have demonstrated a preference for more regulatory control of alcohol, we expect

license state to be more likely to pass direct shipment regulation (i.e., we expect a positive sign on the license variable).

We also use a measure of government ideology originally created by Berry, et. al., and now available from the Inter-university Consortium for Political and Social Research. This measure is meant to capture the political conservatism or liberalism of states' governments. The government ideology measure is essentially a weighted index of the political affiliation of elected state officials, adjusted for voting record scores produced by the Americans for Democratic Action and the AFL-CIO Committee on Political Education. A weighted average score is generated for each body of the state legislature and the governor, which are then weighted by 25% for each legislative house and 50% for the governor to arrive at a final score. The score ranges from 0 to 100, with 0 being most conservative (Republican) and 100 being most liberal (Democratic). Although we have no strong *a priori* argument that one political party would necessarily be more likely to pass direct shipment regulation, Republicans are generally viewed as being more supportive of free trade, suggesting a negative relation between this index and direct shipment. However, Republicans are generally more supportive of states' rights and are more likely influenced by conservative groups that promote temperance. Unfortunately, these data are only available through 1999.

Finally, we include variables reflecting negative social impacts of alcohol consumption, namely DUI arrests and violations of existing liquor control laws, such as minor possession, distribution to minors, etc. We use data from the U.S. Department of Justice's *Handbook of Criminal Justice Statistics* to calculate the percentage of DUI and liquor law violations relative to all arrests, each year by state. Unfortunately, the

Handbook occasionally omitted data for a given state and was available only through 1999. However, for those observations where available, we expect higher incidences of alcohol-related arrests would decrease the likelihood of passing direct shipment legislation.

V. Empirical Results

We collect the above data for each state beginning in 1986 and continuing either until the state adopts direct shipment legislation or until 2001. This results in 610 total state-year observations. We estimate the competing risks hazard model described in Section 4.1 using a maximum likelihood multinomial logistics regression with robust standard errors clustered by state. The multinomial logistic model produces two sets of parameter results; one for the “hazard” of adopting reciprocity legislation and one for permit system. Both sets of parameters are relative to the default outcome of not passing direct shipment legislation of either sort.

As noted above, a few of our public interest variables are not available past 1999. Consequently, we estimate the model over the restricted time period (1986-1999), which reduces the possible sample to 557 observations. Due to missing observations in the arrest data, the final sample includes 529 observations. The results are presented in Table 2 as Model A. The time-varying dummy variables used to flexibly parameterize the baseline hazard function all had signs and magnitudes consistent with the respective trends illustrated in Figure 3. They are omitted from the tables for brevity’s sake and can be obtained from the authors upon request.

Panel A of Table 2 shows results for the reciprocity hazard. As expected, the number of wineries relative to state wine consumption is positive and strongly significant. Winery concentration (HHI) has the expected positive sign but is not significant. Winery dispersion (Gini) significantly reduces the likelihood of adopting reciprocity, as expected. All of the distributor industry variables are significant at the 5% level or better and have the expected signs. More distributors and higher concentration reduce the likelihood reciprocity direct shipment will be passed, while greater dispersion increases the likelihood of reciprocity. Thus, economic interests appear to affect regulatory outcomes in expected ways.

Of the public interest variables, dependence on excise taxes is weakly significant and negatively related to the likelihood of adopting direct shipment, suggesting states' financial interests play a role in direct shipment. Whether the state operates a control or license distribution system has the expected positive sign, meaning license states are more likely to adopt reciprocity, and is significant at the 1% level. Similarly, Democratic state legislatures are less likely to adopt reciprocity, suggesting Republican pro-trade leanings affect interstate commerce as well. The one puzzle in the public interest variables is a positive and strongly significant coefficient on DUI arrests. We have no good rationale for such a result, but we note it is certainly inconsistent with the idea that states with high DUI arrest rates would be more permissive with reciprocity legislation. Perhaps lawmakers think that, by having wine shipped directly to one's home, the incidence of drunk driving would decrease.

Panel B of Table 2 presents results for the permit system "hazard." In general, few estimates are significant at even the 10% level. Of those that are significant, wine

industry concentration, distribution industry dispersion, and excise tax dependence have the expected signs, as in the reciprocity results. Interestingly, the number of wineries is negatively associated with adoption of permit systems. This is counter to our original expectations, but is not necessarily counter-intuitive. Given that new legislation represents a certain degree of “lock-in”, wineries may oppose permit-based direct shipment if they believe a reciprocity alternative might otherwise be available. If wineries thought passage of a permit system would preclude the opportunity to pass simple reciprocity, they may opt to retain that legislative option by opposing a permit bill.

On the whole, the results from Model A are largely consistent with an economic interest theory of regulation and show little evidence of public interest factors playing a significant role in determining interstate direct shipping regulation. Indeed, the results on alcohol-related arrests indicate a positive, and in the case of reciprocity a significantly positive, effect on allowing direct shipment, counter to a public interest rationale.

Because the above specification has missing observations resulting from flaws in the arrest data, we re-estimate the model without the liquor law and DUI arrest variables. The results are reported as Model B in Table 2. Comparing the results to Model A, there are no substantive changes in the direction of relationship, only the level of significance. By and large, the results are consistent across the board. Private economic interests appear to significantly affect the likelihood of regulatory change in direct shipment. A log-likelihood ratio test fails to reject the hypothesis that the constrained model performs significantly differently.

Finally, we omit the government ideology and arrest variables and re-estimate the model using the full sample from 1986 to 2001. The results of this specification are

reported in Table 3. Once again, the number of wineries has a strong positive association with passage of reciprocity legislation and dispersion among wineries has a negative, though weakly significant, effect. Increased concentration among distributors reduces the likelihood of passage, though more dispersed distribution industries increase the likelihood of passage. States with license distribution systems continue to appear more likely to adopt reciprocity. Results on the permit system are likewise consistent with earlier results, both in their relatively poorer performance and also in the direction and significance of economic interest factors.

VI. Conclusions

California's 1986 passage of reciprocity direct shipment regulation represented a tightening of California's borders with respect to wines from other states. The purpose of that legislation was to pry open the borders of the 47 states that prohibited interstate direct shipment of wine to their citizens. In the 17 years that follow, a flurry of legislation has been considered in at least 43 states, with 23 states adopting some form of direct shipment allowance. Our purpose in this paper is to identify the factors that drive the adoption of direct shipment. Using data on private and public interests regarding direct shipping, we estimate a competing risks hazard model and find that private economic interests appear to play a dominant role in determining the adoption of direct shipment laws.

These results have immediate consequence for the legal battles raging across the country contesting the constitutionality of direct shipment laws. To the extent that public welfare interests are required by courts to justify states' restrictions on interstate

commerce, our results cast a shadow of doubt on public interest arguments in the area of direct shipment of wine.

The patchwork of direct shipment regulation also suggests opportunities for further research on the nature and structure of distribution relationships. To the extent small wineries find alternative means for accessing consumer markets through direct shipment, do distribution contracts in those markets change and do they differ from those in states that continue to prohibit direct shipment? The lessons of direct shipment of wine may also have consequence for other alcoholic beverages, particularly specialty microbrew beers that face similar distribution hurdles to small wineries.

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Figure 1. Total Number of Wineries, 1984-2002

This figure depicts the growth in U.S. wineries over the period as well as the relative growth in California versus the rest of the country.

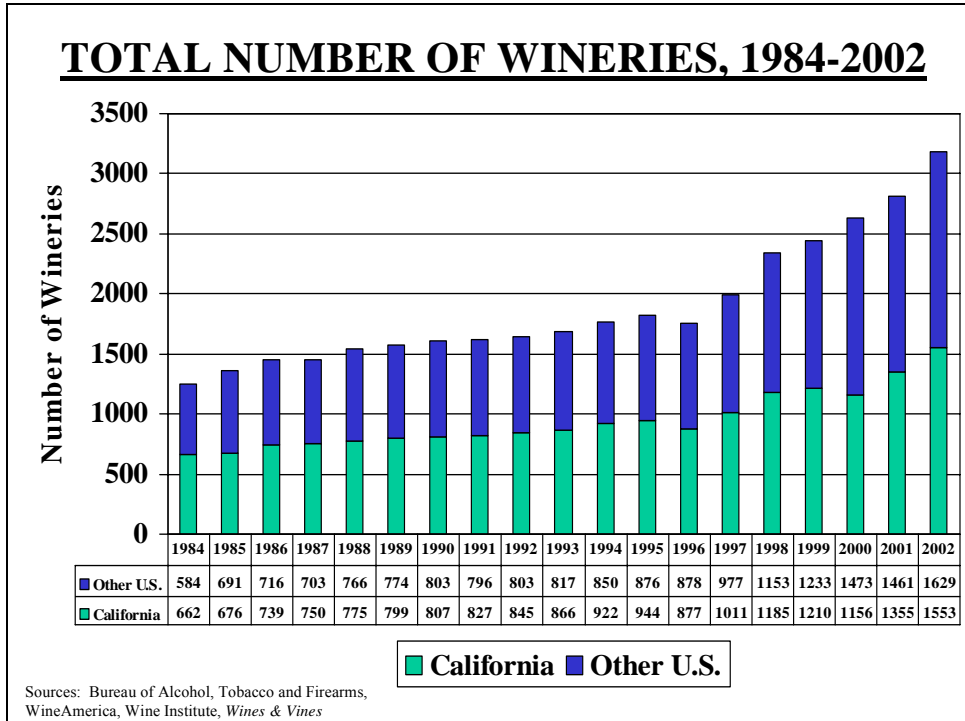


Figure 2. Current State Regulations on Interstate Direct Shipment of Wine

This figure illustrates the current array of state regulations on interstate direct shipment of wine and graphically offers an indication of the direction and relative restrictiveness of the different regulatory regimes. Within permitting, there is an additional degree of restrictiveness related to the cost of permits, who has to purchase the permit, and how easy it is to receive. We make no distinction among these states here.

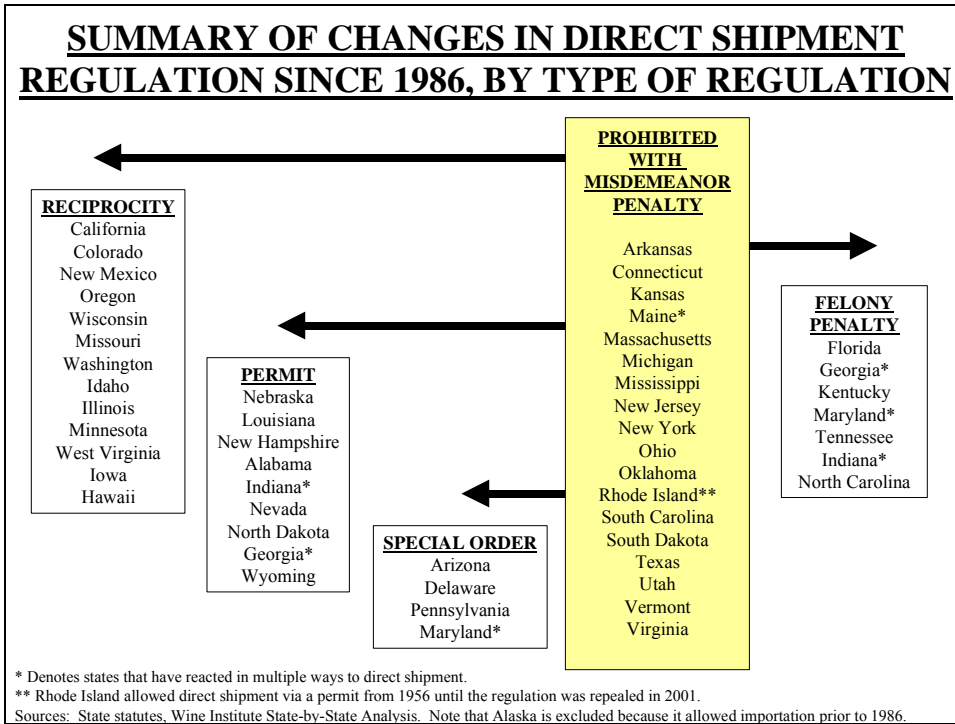
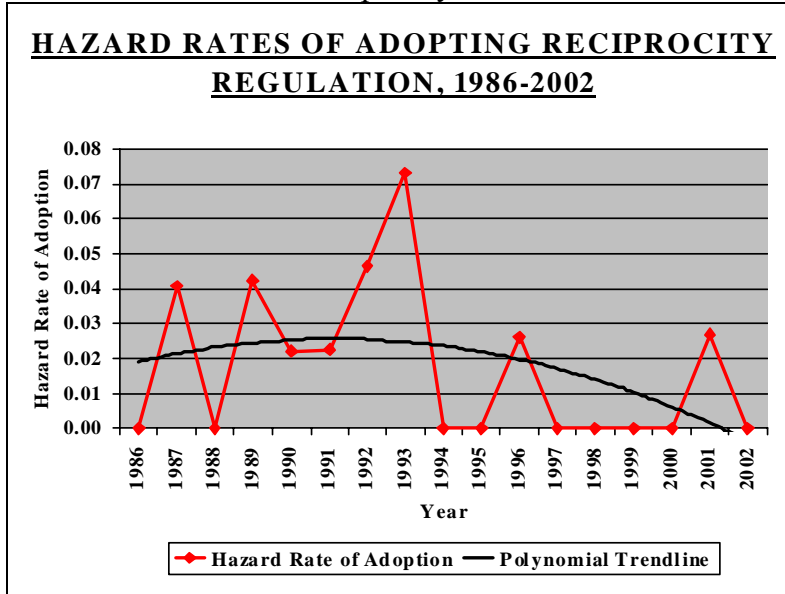


Figure 3. Cox-Proportional Hazard Plots for Adoption of Direct Shipment

The Cox-Proportional Hazard is calculated by dividing the number of hazard events in a given time period by the number of states remaining in the risk pool in that time period (i.e., states that had not yet adopted direct shipment legislation).

Panel A. Reciprocity Hazard Rate



Panel B. Permit Regulation Hazard Rate

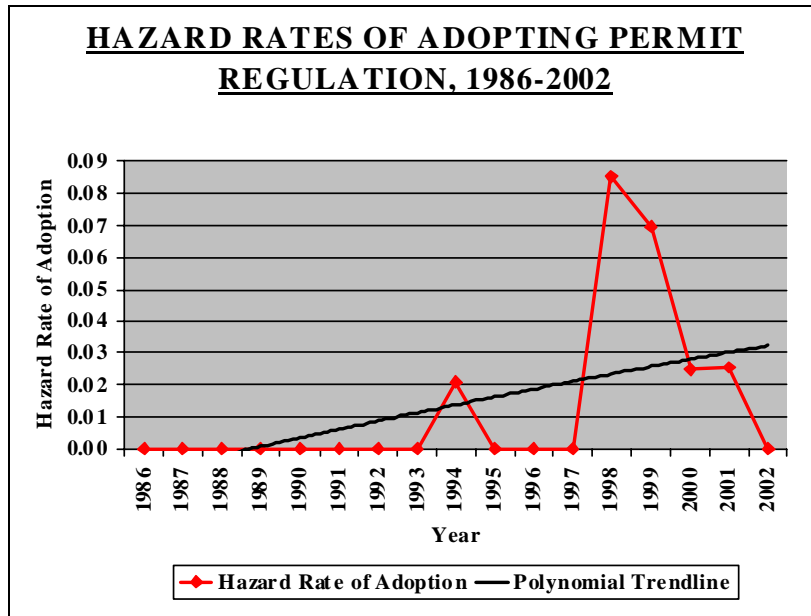


Table 1. Summary Statistics for Explanatory Variables

The following table reports summary statistics for the set of variables used in the empirical estimation. Where the number of observations is less than 610, it reflects a lack of available data for the particular variable in certain years. In the case of government ideology, liquor law violations, and DUIs, data were not available past 1999. HHI and Gini values were calculated by the authors using the same data that generated the number of operators per gallon of wine consumed in each state. Both liquor law violations and DUIs are reported as proportions of all arrests in the state.

Variable Name	Observations	Mean	Std. Dev.	Minimum	Maximum
Wineries per gallon consumed	610	0.0013	0.00123	0	0.0084
Winery HHI	610	4531.322	3310.455	0	10000
Winery Gini	610	0.3916	0.2958	0	0.9825
Distributors per gallon consumed	610	0.0036	0.0038	0.0001	0.0227
Distributor HHI	610	1168.575	1317.664	0	10000
Distributor Gini	610	0.4447	0.1982	0	0.8980
Retail Sales of Wine as % of GSP	610	0.0020	0.0010	0.0002	0.0071
Excise Taxes as % Total State Revenue	610	0.0118	0.0077	0.0004	0.0656
License Fees as % Total State Revenue	610	0.0008	0.0007	0	0.0044
License State (=1)	610	0.5836	0.49346	0	1
Gov't Ideology	557	50.6733	25.5857	0	97.9167
Liquor law violations	531	0.0636	0.0492	0	0.26357
DUIs	529	0.1215	0.0603	0	0.39627

Table 2. Competing Risks Hazard Results, 1986-1999

This table presents results from maximum likelihood multinomial logistic regressions for the likelihood of passing either reciprocity or permit-based direct shipment legislation during the period 1986 to 1999. The models were estimated with robust standard errors clustered by state. Coefficients on the time-varying dummies are not reported for brevity's sake; complete results are available from the authors upon request. ***, **, and * signify statistical significance at the 1%, 5%, and 10% levels, respectively

PANEL A

RECIPROCITY RESULTS				
Variable Name	MODEL A		MODEL B	
	Coefficient	RSE	Coefficient	RSE
	----- <i>Reciprocity Risk</i> -----			
Wineries Per Gal. Consumed	2561.61***	631.452	1923.65***	538.52
Wine Industry Concentration (HHI)	0.00009	0.0002	-0.00006	0.0002
Wine Industry Dispersion (Gini)	-10.06**	4.136	-6.73**	3.69
Distributors Per Gal. Consumed	-559.60**	241.32	-94.49	159.49
Distribution Industry Concentration (HHI)	-0.0048***	0.0011	-0.002***	0.0008
Distribution Industry Dispersion (Gini)	21.54***	7.79	17.63***	6.59
Retail Wine Sales % GSP	-579.68	1244.99	-237.02	969.31
Excise Taxes % Total Revenue	-211.98*	136.80	-87.94	135.04
License Fees % Total Revenue	532.19	1067.56	-476.21	1061.01
License Jurisdiction	5.56***	2.17	3.62*	2.52
Government Conservatism	-0.079***	0.024	-0.054**	0.025
DUI Arrests	38.98**	16.63		
Liquor Law Violations	1.956	17.53		

PANEL B

PERMIT SYSTEM RESULTS				
Variable Name	MODEL A		MODEL B	
	Coefficient	RSE	Coefficient	RSE
	----- <i>Permit Risk</i> -----			
Wineries Per Gal. Consumed	-1375.17*	1071.37	-1091.06	1033.82
Wine Industry Concentration (HHI)	0.00014*	0.00011	0.0001	0.0001
Wine Industry Dispersion (Gini)	-1.56	2.50	-2.54	2.43
Distributors Per Gal. Consumed	-110.64	152.36	-63.28	119.30
Distribution Industry Concentration (HHI)	0.00008	0.0003	0.0001	0.0003
Distribution Industry Dispersion (Gini)	7.57*	4.04	6.86**	3.79
Retail Wine Sales % GSP	-118.42	419.28	-143.79	449.91
Excise Taxes % Total Revenue	-223.70*	157.55	-228.57**	102.46
License Fees % Total Revenue	1163.25	1423.27	946.08	1000.00
License Jurisdiction	-0.379	2.08	-0.389	2.01
Government Conservatism	-0.008	0.02	-0.017	0.016
DUI Arrests	0.473	12.96		
Liquor Law Violations	11.16	12.64		
COMPETING RISKS HAZARD MODEL RESULTS				
	MODEL A		MODEL B	
Number of Observations	529		557	
Log Likelihood	-44.902		-49.205	
Pseudo R ²	0.9227		0.9196	

Table 3. Competing Risks Hazard Model, Full Sample

This table presents results from maximum likelihood multinomial logistic regressions for the likelihood of passing either reciprocity or permit-based direct shipment legislation during the period full sample, omitting some of our public interest variables. The models were estimated with robust standard errors clustered by state. Coefficients on the time-varying dummies are not reported for brevity's sake; complete results are available from the authors upon request. ***, **, and * signify statistical significance at the 1%, 5%, and 10% levels, respectively.

COMPETING HAZARDS RESULTS, FULL SAMPLE				
Variable Name	RECIPROCITY		PERMIT	
	Coefficient	RSE	Coefficient	RSE
Wineries Per Gal. Consumed	1219.21***	447.99	-642.88	536.57
Wine Industry Concentration (HHI)	-0.00005	0.0001	0.0001*	0.00007
Wine Industry Dispersion (Gini)	-3.84*	2.98	-0.741	1.41
Distributors Per Gal. Consumed	81.026	138.86	67.119	67.05
Distribution Industry Concentration (HHI)	-0.0010*	0.0006	-0.00002	0.0002
Distribution Industry Dispersion (Gini)	12.15**	5.65	1.076	2.741
Retail Wine Sales % GSP	-8.04	479.93	-157.69	350.50
Excise Taxes % Total Revenue	-75.79	90.07	-140.03*	102.75
License Fees % Total Revenue	-854.83	730.57	575.13	880.10
License Jurisdiction	2.09*	1.44	0.382	1.152
	MODEL			
Number of Observations	610			
Log Likelihood	-70.029			
Pseudo R ²	0.8955			