

**Institute for International Economic Policy Working Paper Series  
Elliott School of International Affairs  
The George Washington University**

**“Drill, Baby, Drill!” The Correlates of “Energy Independence” Policy in the United States**

**IIEP-WP-2012-4**

**Llewelyn Hughes  
Assistant Professor of Political Science & International Affairs  
George Washington University**

**Francisco Flores-Macias  
Research Associate  
LCM Commodities**

**March 8, 2012**

**Institute for International Economic Policy  
1957 E St. NW, Suite 502  
Voice: (202) 994-5320  
Fax: (202) 994-5477  
Email: [iiep@gwu.edu](mailto:iiep@gwu.edu)  
Web: [www.gwu.edu/~iiep](http://www.gwu.edu/~iiep)**

# “Drill, Baby, Drill!” The Correlates of “Energy Independence” Policy in the United States

“Our dangerous dependence on foreign oil has been 30 years in the making, and was caused by the failure of politicians in Washington to think long-term about the future of the country.”

(Barack Obama, August 5, 2008)

“The chant is ‘drill, baby, drill.’ And that’s what we hear all across this country in our rallies because people are so hungry for those domestic sources of energy to be tapped into.”

(Sarah Palin, October 2, 2008)

What explains the persistence of support for autarky in petroleum markets? Since the 1980s and 1990s, countries across the industrialized world abolished barriers to trade and investment in manufacturing and agriculture (Simmons, Dobbin and Garrett, 2006). Yet despite this, governments in a number of oil importing states continue to frame the political economy of oil in terms of self-sufficiency. In the United States, every president since Richard Nixon—joined by prominent Senate and House members—has justified government intervention in petroleum markets with the explicit goal of attaining “energy independence.”

The support for petroleum autarky extends beyond rhetoric. In the 1970s quotas on oil imports provided domestic producers with extraordinary rents. Today, billions of dollars in tax incentives continue to be offered to the fossil fuels industries in order to promote domestic oil production (EIA, 2011*a*).

Policy support for energy independence is also not confined to the United States. Brazilian governments invested vast sums in the 1970s and 1980s in the national oil company, Petrobras, in order to enhance security of oil supplies and decrease the amount of foreign exchange used to import crude oil (Randall, 1993). Until 1992, France shaped trade in oil

and oil products to favor national oil companies (Nowell, 1994). Japan continues to subsidize national flag-firms operating in exploration and production internationally in the name of increasing security of oil supplies. More recently, state-owned enterprises from the newly emerging industrial powers of China and India are supported by the state under the premise of reducing the reliance on international markets for the supply of oil (Lee and Shalmon, 2008).

This support for autarky is puzzling for two reasons. First, the search for energy independence in oil defies the norm of national non-discrimination that stands at the heart of the liberalized international trading system (Jackson, 1997). Indeed, it rejects the idea that external markets are the best way of obtaining supplies of oil. Instead, it proposes that the optimal strategy for managing perceived oil supply risks is to internalize markets by either producing more oil domestically or by supporting oil firms' attempts to secure oil located outside national borders.

Second, pursuing self-sufficiency has a limited impact on oil prices. Untapped petroleum reserves in the United States are small compared to global demand, meaning that increasing global supply via higher domestic production would only have a marginal effect on prices even in the long-run (Cleveland and Kaufmann, 2003).<sup>1</sup> Attempts to alter global supply balances and prices in the short-run with exploration incentives are similarly ineffective, given the long lags between exploration success and the beginning of commercial production.

From a geopolitical perspective, the rhetoric of petroleum autarky also exaggerates the risk of a physical disruption in supply. The impact on the U.S. military of a temporary shock to global crude production is bounded for two reasons. First, the two largest suppliers of foreign oil to the United States have traditionally been Canada and Mexico—two countries unlikely to present serious geopolitical challenges.<sup>2</sup> Second, a disruption in the Middle East

---

<sup>1</sup>Even after considering the potential of unconventional “shale oil” resources in the United States, incremental production would not significantly alter global supply and demand balances.

<sup>2</sup>For reference purposes, suffice it to mention that, in 2010, U.S. foreign imports amounted to 49% of total oil consumption. Of those imports, 49% came from the Western Hemisphere

would raise the price of oil but would not prevent the U.S. from importing actual supplies if it paid the added premium.<sup>3</sup> Since the world market for crude oil and refined products is integrated, with supertankers transporting vast volumes around the world at any given point in time (Adelman, 2004), petroleum can easily flow to the clients willing to bid more for contracts (Hamilton, 2009). Furthermore, if a supply shock led to higher oil prices around the world, U.S. companies would have to pay similarly high prices for oil produced domestically than for foreign oil. Otherwise, arbitrage opportunities would lead domestic producers to export their crude and obtain higher prices in the market.<sup>4</sup>

Why, then, has there been persistent interest in pursuing petroleum autarky in the United States and elsewhere? The conventional wisdom—echoed in the popular press—holds that “Big Oil” is the most important cause of legislative support for providing subsidies and drilling incentives to the oil industry (Learsy, 2011). The strong version of this theory, proposed by Stigler (1971), holds that firms provide policymakers with votes and monetary contributions in exchange for different kinds of economic rents. Indeed, Stigler motivates his seminal article on economic regulation citing the example of the capture of policymaking by the oil industry.<sup>5</sup> The proposition makes intuitive sense: the oil industry is powerful and can influence public officials—via legal and extra-legal means—to provide beneficial legislation and regulation. It was not surprising, from this angle, that members of the Minerals Management Service, the U.S. regulatory body that used to be in charge of allocating leases for oil exploration, were found to have unlawfully accepted monetary and in-kind gifts from oil industry representatives in 2008 (Savage, 2008).

In this paper we argue that support for the policy of petroleum autarky cannot be and only 18% originated in the Persian Gulf (EIA, 2011*b*).

---

<sup>3</sup>See Talmadge (2008) for an assessment of the risks of the curtailment of oil supplies in the Strait of Hormuz due to war.

<sup>4</sup>Transportation costs are small compared to the price per barrel and do not change the main conclusion.

<sup>5</sup>“The ‘protection of the public’ theory of regulation,” says Stigler (1971), “must say that the choice of import quotas is dictated by the concern of the federal government for an adequate domestic supply of petroleum in the event of war—a remark calculated to elicit uproarious laughter at the Petroleum Club” (p. 4).

fully understood by relying on an “industry preferences” model, or on explanations rooted in electoral politics that emphasize the economic interests of constituents in oil-producing regions. While these variables likely play an important role, we sustain that the framing of oil as an issue of national security is a determining factor in shaping policy outcomes.

We demonstrate the importance of the framing of oil as a strategic resource by investigating policymaking within the United States Congress. To examine what shapes the collective will of Congress towards energy autarky we conduct an econometric study of every relevant vote in the U.S. Senate related to enhancing domestic oil production between 1992 and 2007. Our analysis shows that, after controlling for relevant confounding factors, the politicians’ foreign policy position is a strong and significant determinant of domestic oil policy views. In other words, support for petroleum autarky legislation is a function of legislators’ beliefs regarding the reliability of the international milieu to supply a strategic resource. Thus, “hawkish” legislators, who view international relations primarily in terms of confrontation, seek to maximize independence and reduce interdependence by expanding fiscal and regulatory support for domestic oil production. This result is robust to instrumental variables and misclassification-corrected estimation.

## **Contribution**

This article advances the literature on the role of ideas in shaping political economic outcomes in two ways. First, we provide robust empirical evidence in support of the contention that ideas, in addition to material interests, influence economic policymaking by controlling for endogeneity problems that can reduce confidence in the estimates of the relative importance of each of these factors in shaping outcomes. Econometric studies on the impact of industry-funded campaign contributions on legislative voting face the challenge that contributions can plausibly be caused by, as well as cause, voting decisions. In this paper, we employ an instrumental variables approach where we select instruments from particular characteristics of the oil industry.

Second, in showing that ideas about autarky matter, we propose that rather than holding consistent views about the proper role of the state in economic markets, a legislature can simultaneously hold dramatically different ideas about state-market relations. Scholars of the role of ideas in economic policymaking suggest that governments shifted away from supporting greater intervention in economic markets in the 1980s-2000s, and towards less intervention. Yet by demonstrating the importance of the idea of “energy independence” in oil markets we show that legislatures simultaneously retained a belief in autarky as an effective response to the perceived risks in oil markets. This difference, we propose, lies in the framing of oil as a national security—in addition to an economic—policy problem.

The remainder of this article is structured as follows. In the next section we briefly outline the history of intervention in the domestic oil market in the United States, describing how Congress has a central role to play in shaping oil policymaking. We then move on to outline the plausible explanations for U.S. legislative behavior in greater detail, focusing on the role of industry, constituency interests, and legislator ideology in shaping outcomes. In the fourth section we introduce our theoretical model. In section five, we describe the data and estimation approaches used in the empirical analysis. In section six we present the results, and we discuss the implications of the findings in the seventh and final section.<sup>6</sup>

## **Explaining Petroleum Autarky in the United States**

Government incentives to increase the domestic production of oil benefit firms. Oil is a capital intensive business, with physical assets specific to its extraction, refining, and distribution and marketing. Firms substantially benefit from gaining greater access to federal lands, as well as from receiving tax credits to offset the technological, geological, and financial risks of drilling for oil. Further, oil extraction generally provides high rents to the producer because of the high barriers to entry that exist in the oil business worldwide. As a result, oil

---

<sup>6</sup>We have also included three appendices for reviewers, which we plan to make available online should the manuscript be accepted.

companies should have strong preferences towards specific policy outcomes that allow them to obtain private benefits (Alt et al., 1999).

The Stiglerian view of policymaker capture suggests that legislators use the rhetoric of petroleum autarky to mask their true intentions: exchange their support to the industry for contributions to finance their political campaigns. A natural conclusion, in this line of reasoning, is that the more that “Big Oil” contributes to a politician’s campaign fund, the higher the likelihood that he or she will vote to expand incentives for domestic production. In addition, the two industry peak associations in the United States, the American Petroleum Institute (API) and the Independent Producers Association of America (IPAA), consistently lobby before Congress on the merits of providing subsidies to oil firms. Perhaps as evidence of the influence that the oil industry can wield on politics, in 2008 both Republican candidate John McCain and Democratic candidate Barack Obama accused the other of including initiatives to promote the domestic drilling of oil and gas as a quid-pro-quo for receiving campaign funds.

Government incentives to increase the domestic production of oil can also benefit constituents. This means that the private benefits that may accrue to industry are not the only plausible causes of legislative support for petroleum autarky. This view is supported by models in political economy propose that policymakers have an autonomous set of preferences associated with the general welfare, in addition to their willingness to represent industry interests (Grossman and Helpman, 1994). In the case of oil, support for energy independence could therefore reflect the positive distributional implications for electoral districts. In turn, legislators are rewarded with votes for their work on behalf of their constituents.

The United States has many oil-producing and prospective oil-producing areas. Regional distributional questions are therefore relevant to many legislators and constituents.<sup>7</sup> Of the 50 states in the United States, 33 have some level of oil and gas production on federal lands, with 53,584 exploratory, development, and dry wells drilled in 2008. Royalties and

---

<sup>7</sup>The U.S. retains the third largest share by country of production in the international oil market; in 2009 national production stood at 7.2 million barrels per day.

other fees paid on mineral leasing stood at over 24 billion dollars in the same year, with total employment in oil and gas extraction, refining, distribution, retail, and other oil and gas-related employment standing at 1.95 million people in the same year (Lawrence, 2009). In short, the details of domestic oil policy can impact local economies significantly and legislators can respond through domestic measures that have positive distributive effects for states in terms of employment and economic growth.

There is a third plausible cause of legislative support for energy independence: that it reflects the role of ideas in shaping views of appropriate forms of intervention in economic markets. In foreign policy Goldstein and Keohane (1993) note that ideas can "provide road maps that increase actors' clarity about goals or ends-means relationships." Similarly, scholars of American politics have shown plausible evidence that ideas matter in congressional voting on foreign policy and other issues (Bernstein and Anthony, 1974; McCormick and Black, 1983; Fleisher, 1985)

Investigating the role of ideas in shaping economic policy has also been an important focus of studies in comparative and international political economy. Blyth (2002), for example, argues that the dynamics of institutional change can best be understood if we "pay attention to how people think about the world" (p. viii). Thus, several authors have argued that, under conditions of uncertainty, ideas led governments in the advanced industrialized states to reject more interventionist forms of economic policy in favor of a neoliberal economic program in the 1980s and 1990s. Hall (1993), for example, shows that the rise of monetarism in the United Kingdom was driven by the failure of Keynesianism to account for the twin problems of inflation and unemployment. Goldstein (1988) argues that liberalization was influenced by the diffusion of beliefs claiming that the allocation of resources through arms-length contracting is more efficient than centralized planning. Moreover, McNamara (1999), Abdelal (2007), and Quinn and Toyoda (2007) find that capital market liberalization globally has been primarily driven by the rise of neoliberalism as the dominant ideology rather than by legislative or regulatory capture by powerful industry lobbies.



The validity of these different viewpoints in petroleum legislation, however, has never been subject to rigorous statistical analysis. Before proceeding with the econometric section, we explain how the petroleum question has been framed in the U.S. political debate over time and how this has influenced some legislators to perceive oil primarily as a strategic resource rather than as an economic commodity.

## **Framing Petroleum in the United States**

We argue that while it is an economic commodity, oil stands in contrast to manufactured products because it is a non-renewable resource that is distributed unevenly around the world. Further, the domestic depletion of reserves has historically generated fears of military vulnerability for policymakers in countries that import large quantities of oil. This framing of oil as a strategic resource rather than an economic commodity, we propose, conditions the positions that legislators take on votes about oil.

In the case of the United States, concerns about an impending exhaustion of domestic reserves, and the risks this causes for national security, have existed since the rise of oil as an important fuel in military operations (Yergin, 1993). In the wake of World War I, a 1918 study by the United States Geological Survey estimated that recoverable reserves in the United States would be exhausted by 1928 given the pace of demand growth (Williamson, 1959). Hornbeck and Grigg (1924) of the State Department argued that U.S. production would peak by 1929 according to geologists' estimates. This view that oil scarcity was a national security risk led the State Department to support U.S. firms' attempts to increase their participation in oil field development internationally.

The framing of oil as a national security problem was also a core component of the decisions made in oil policymaking in the 1950s. The Eisenhower administration emphasized the national security risks of depending on international markets for the supply of oil in establishing first voluntary, and then mandatory, quotas on the import of oil and oil products

(Vietor, 1984). These quotas remained in place for 14 years. This link between oil and national security was re-emphasized in the 1970s when national oil policies were adjusted in response to the United States becoming a price taker in the international oil market following the nationalization of a large share of global oil production (Parra, 2004). This change prompted President Carter to argue that the challenge of managing increasing oil scarcity was the “moral equivalent of war,” and prominent industry and government leaders warned that domestic sources of oil would be depleted by the middle of the 1980s, compromising U.S. national security. (Parra, 2004) Today, debate over oil policy continues to be framed in terms of reducing the dependence of the United States on imported oil in the name of national security.

In this article, we argue that the framing of oil as a national security issue, rather than an economic commodity, leads some policymakers to perceive the issue through the prism of ideology as much—or perhaps even more so—than through the prism of material interests. More specifically, policymakers’ views will differ according to their beliefs of the position that the country should have within the broader international milieu. Thus, “hawkish” legislators—who tend to understand international relations primarily in terms of confrontation—will be skeptical of the reliability of the international trading system to provide the strategic commodity and will seek to maximize “energy independence.” In contrast, “dovish” legislators—who tend to perceive international relations in terms of cooperation—will be more inclined to trust that the international trading system can deliver the oil that the country needs for its economic and military needs and will be less likely to give additional incentives for domestic oil production.

Before testing this claim, we first need to identify how the U.S. government can act to shape oil market outcomes. In practice, the federal government has three types of instruments to alter the level of domestic production as a percentage of total consumption.<sup>8</sup> First, it can

---

<sup>8</sup>Historically, state governments have also played an important role in regulating the oil industry in the United States. The Texas Railroad Commission, for example, played a central role in monitoring and enforcing oil prorationing agreements since the 1930s, taking

increase or decrease the share of federal lands and the outer continental shelf (OCS) that are available for exploration and production—critical areas that include sizable untapped domestic reserves. Second, the government can use fiscal incentives—allowances, tax credits, and subsidies—to increase domestic oil production. In 2007 alone, depletion allowances worth \$1.2 billion annually were in place for oil, gas, and coal, in addition to tax benefits associated with drilling costs worth \$1.1 billion, enhanced oil recovery tax credits of \$200 million, among others. Third, the government can impose trade barriers—tariffs and quotas—that raise the cost of foreign oil or actually restrict imports.<sup>9</sup>

## Theoretical Model

In this section we posit that a legislator’s vote on a bill can plausibly depend on three factors: (i) the ideological predisposition of legislators, (ii) constituency characteristics, and (iii) the preferences of the oil industry. Each reflects one of the major theoretical possibilities outlined in the previous section. “Ideological predisposition” for example, recognizes that representatives may have distinct beliefs about the relevance of oil to national security, which they try to transform into policy. “Constituent characteristics” recognizes that elected politicians—out of self-interest or conviction—may be willing to vote according to their constituents’ views even if these diverge from their own. Finally, the “industry preferences” factor acknowledges that oil industry representatives may seek to influence legislators to support favorable policies. This part of the model accounts for the possibility of legislative advantage of the preeminent role of oil production from Texas in U.S., and indeed global, oil production prior to the 1950s (Prindle, 1984).

<sup>9</sup>The federal executive can set quotas and tariffs on crude oil imports by virtue of the 1953 Trade Agreements Adjustment Act and of Section 232 of the Trade Extension Act. In fact, Section 232 specifically authorizes the president to restrain trade for reasons of national security, and it has been repeatedly invoked as justification for intervening in oil markets in order to promote domestic production: between 1962 and 2004, eight of the 26 investigations conducted under Section 232 focused on the national security implications of oil imports. While administrations since the 1970s have chosen not to reimpose import quotas or tariffs, in every case oil imports were determined to be a threat to national security (of Industry and Security, 2004).

capture by “Big Oil.”

We state our model formally in the following terms:

$$y_{i,j} = \mathbf{x}_{i,j} \mathbf{B} + \mathbf{z}_{i,j} \mathbf{\Gamma} + \mathbf{q}_{i,j} \Psi + c_i + d_j + \epsilon_{i,j} \quad (1)$$

The dependent variable,  $y_{i,j}$  is a binary indicator that equals 1 if the legislator from seat  $i$  supports legislation to increase domestic production in vote  $j$ ;  $\mathbf{x}_{i,j}$  is a vector of legislator characteristics;  $\mathbf{z}_{i,j}$  is a vector of constituents’ characteristics; and  $\mathbf{q}_{i,j}$  is a vector of industry characteristics. The dummy variables  $c_i$  and  $d_j$  capture unobserved characteristics at the district level or at the time when each vote takes place.

## Empirical Strategy

### Dependent Variable and Sample Selection

Policies to shift the incentives to produce oil within national borders are implemented through legislation in addition to bureaucratic rule-making. Following Kalt (1982), we therefore use congressional voting to assess the correlates of energy independence. We gathered panel data for 18 votes on domestic oil production policy in the United States Senate between 1992 and 2007. A binary dependent variable is used to account for each senator’s vote, where 1 denotes support for increasing incentives for domestic oil production and 0 signifies lack of support (including abstentions).<sup>10</sup>

Identifying votes that offer a clean measure of preference for higher domestic oil production incentives presents several challenges. Some of these policies are included in broader fiscal legislation unrelated to the question of energy independence. In addition, some senators may on occasion vote strategically, rejecting a bill close to their policy preference on

---

<sup>10</sup>We recognize that the analysis of the House of Representatives would be a natural complement to this study. We have focused on the Senate first since many of our variables are available at the state-level but not at the district-level. Moreover, redistricting in the House across time complicates a panel data study like the one provided here.

the grounds that “it does not go far enough” in their direction or as a negotiation tactic.

We adopted two strategies to counter these problems. First, we developed a clear decision rule to identify relevant votes. Initially, we selected votes on legislation—legislative amendments—over a longer period of time (1980-2008) that specifically focused on increasing or decreasing the incentives for oil production domestically. This entailed increasing the availability of federal lands and the Outer Continental Shelf (OCS) for exploration and drilling, expediting the allocation of licenses to firms in areas already made available, and increasing the fiscal incentives for firms deciding to invest in new or existing areas.<sup>11</sup> Subsequently, we selected only those votes that showed variation on the dependent variable. In other words, unanimous or nearly unanimous votes were excluded.<sup>12</sup>

Applying this criteria yielded a total of 18 votes focusing on adjusting the incentives for exploration and production within the United States. The first vote took place in 1992 and the last in 2007, rendering a total of 1800 observations. We were unable to identify votes between 1981 and 1991 that satisfied the two criteria outlined above. While the Omnibus Tax Legislation passed in 1986 did provide incentives for domestic oil production, for example, we concluded that the large number of industries and issues affected by the bill made it unrealistic to isolate preferences related to the oil industry in particular. We also excluded a vote from 1980 from the dataset due to the lack of availability of several key explanatory variables for that year. [A full list of the votes in the study is included in Appendix for Reviewers A.]

Our second strategy was designed to account for the possibility of strategic voting by legislators. Evidently, this behavior cannot be readily observed and may introduce measurement error in the dependent variable. Hence, as a measure of robustness, we also estimated

---

<sup>11</sup>Each of the authors and a research assistant then identified the bills that specifically addressed increased domestic production and compared results for intercoder reliability. There was discrepancy in only three instances, which led to an in-depth analysis of the legislation in order to determine whether they should be included or not.

<sup>12</sup>The decision rule required variation in at least 10% of the votes in order for them to be included. This is the same strategy adopted by Poole and Rosenthal (1997), p. 27.

results using the Hausman, Abrevaya, and Scott-Morton (1998) technique to account for potential misclassification error in a binary dependent variable. In simple terms, the Hausman, et al. (1998) approach is a data-driven procedure to assess the percentage of times, in the entire dataset, where senators appear to have voted contrary to his or her preferences. While “strategic” behavior by legislators is a concern in any study of legislative voting, this paper is the first to explicitly address this source of measurement error. More details on this approach are presented in due course.

## Operationalization of the Explanatory Variables

### *Legislator’s Ideology*

We have argued above that ideology is a plausible driver of petroleum autarky. Ideology has been operationalized in two ways. First, we have used the legislator’s party identification to control for overall ideological positioning. In this regard, Republicans are scored as “1” and Democrats are scored as “0.” Independent senators are coded along with the party with which they caucus.

Our second measure of ideology measures the legislators’ voting record on foreign policy issues. We operationalize this variable using the rankings published by the *National Journal* on legislators’ foreign policy votes.<sup>13</sup> We have conceptualized this variable as “hawkishness,” since it addresses whether a senator views foreign policy primarily in terms of confrontation rather than cooperation. The National Journal index of conservative versus liberal voting focuses on whether legislators support enhancing the freedom of action of the United States in international relations. If the framing of oil as a national security issue matters, we argue that more conservative or “hawkish” senators should be less willing to rely on the international market to supply crude oil not to constrain U.S. freedom of action. In consequence, they should be more likely to support increased incentives for domestic production.

---

<sup>13</sup>We collected the *National Journal* rankings from 1981—the first year the rankings were created—to 2007. The authors wish to thank Charlie Green, Editor of the National Journal, for providing the data that was not publicly available.

The *National Journal* rankings are calculated annually using a selection of votes on key economic, social, and foreign policy issues. Votes are categorized as conservative (liberal), and legislators are then ranked according to how conservative (liberal) they are relative to the rest of the chamber using a 0 – 100 scale, where higher values represent more conservative senators. We posit that the measure of ideology in foreign policy is preferable, for the question at hand, over general ideology indices that include votes on economic and social issues related to the size of government, abortion rights, or gun control. These policy positions, we argue, bear less relevance to the ideological frame we are interested in examining. Indeed, it is our contention that support for autarky can exist simultaneously with economic and social views that emphasize a reduction in government intervention. In the model specification, party identification is intended to capture these additional social and economic policy positions.

One additional clarification is in place. The foreign policy votes that compose the *National Journal* rankings—and, hence, the “ideology” variable—do not include legislation on oil production. This is important to ensure that the “hawkishness” construct is not directly related to the dependent variable.

#### *Constituency Characteristics*

We expect constituents to have economic and political preferences that may influence the vote choices of their elected representatives. From an economic standpoint, constituents in states with substantial oil and gas production are presumed to be more supportive of increased incentives for domestic production, as it is likely to raise state revenue and increase employment opportunities in the community. From an environmental standpoint, on the other hand, constituents in oil-rich areas could instead oppose additional incentives for drilling. We measure this variable as the percentage of the gross state product (state GDP) coming from oil and gas production, using data from the Bureau of Economic Analysis of the U.S. Department of Commerce.<sup>14</sup>

---

<sup>14</sup>It is worth clarifying that only oil and gas production, and not refining or distribution and marketing, is included in this variable. This provides a cleaner measure of state charac-

Additionally, we expect constituents' views on the desirability of increased domestic production to be influenced by the price of gasoline in their districts. In fact, gasoline prices are arguably the most important signal for constituents on the conditions of the petroleum market. This variable was collected at the state level from the data published by the Energy Information Administration (EIA) of the U.S. Department of Energy,<sup>15</sup> and it was adjusted for inflation using the consumer price index made available by the Bureau of Labor Statistics.

In the case of the price of gasoline, the effects on the propensity to expand domestic drilling could feasibly point in either direction. On the one hand, we suspect that legislators worry that price increases are politically unpopular and will indicate their concern about high gasoline prices by increasing drilling opportunities and, in consequence, raising the supply of oil.<sup>16</sup> On the other hand, constituents may perceive higher gasoline prices as a source of "windfall" profits for the oil industry, pressuring legislators not to appear to pander to "Big Oil" and thus restrict subsidies for oil companies. To capture any non-linearity of these effects, we squared this variable and also included it in the model.

State-level characteristics include political variables in addition to economic ones. In this regard, we aim to analyze the enthusiasm among a state population for increasing domestic oil production. However, it is difficult to find surveys that are representative at the state level and that include the necessary question to operationalize this variable.

Fortunately, the Cooperative Congressional Electoral Study (CCES) (Ansolabehere, 2006) conducted in 2006 does provide a close approximation to the information that we need. That survey sampled respondents from each of the fifty states on the question: "Would you support the use of U.S. military force in order to secure sources of oil?" While the construct does not specifically ask about domestic sources, we argue that it does capture a general sentiment, since the location of refineries and gasoline stations is not directly related to the question of increasing incentives for domestic oil production.

---

<sup>15</sup>The data is available at <http://www.eia.gov> (accessed on 15 August 2011).

<sup>16</sup>As mentioned earlier, increasing incentives for domestic production has only a marginal impact on the price of gasoline. Nevertheless, this fact does not preclude politicians from adopting that rhetorical stance.



timent regarding the reliability of the international system to supply petroleum. Given the lack of availability of alternative data, in this instance we are forced to make the additional assumption that the political preferences of constituents in each state are time-invariant in the 1992 - 2007 period.<sup>17</sup>

We also include two state-level control variables to account for differences in education and income across states. These are operationalized as the percentage of the state population ages 25 and over with at least a bachelor's degree and the state's median income, and they were obtained from U.S. Census data. Furthermore, several of our estimation models include specifications that account for the presence of unobserved heterogeneity across states.

### *Industry Preferences*

The inclusion of industry-level characteristics recognizes that variables specific to the oil industry may affect voting decisions. Following past research, we measure the influence of business as the amount of campaign contributions that legislators receive from political action committees (PACs) associated with that industry (Bergan, 2010; Ansolabehere, Figueiredo and Snyder, 2003; Strattman, 2002; Evans, 1988). Accordingly, we collect the data on campaign contributions from oil industry PACs (in thousands of dollars) provided by the Federal Election Commission.<sup>18</sup>

Scholars have noted that industry influences legislative outcomes not only, or even primarily, through campaign funds (Wright, 1990). Instead, the provision of information to legislators that reflects industry views is at least as important as a source of industry influence (Ansolabehere, Snyder and Tripathi, 2002). Our measure of political contributions is a strategy for capturing this effect, as we assume that there is a strong correlation between the level of contributions and the amount of "face time" that an industry is likely to be able

---

<sup>17</sup>At this point, we are constrained due to the lack of representative surveys at the state level. A more precise measurement of constituents' views on petroleum trade policy should be a main area for improvement in future studies.

<sup>18</sup>The data is available at <http://www.fec.gov/finance/disclosure/ftpdet.shtml>. In order to identify precisely which PACs are affiliated with the oil and gas industry, we relied on the list of PACs compiled by the Center for Responsive Politics, which is available at <http://www.opensecrets.org>.

to obtain with a legislator. In consequence, the expectation would be to observe a positive relationship between industry contributions and increased support for domestic oil production. Nevertheless, since previous research on legislative voting has consistently found that campaign contributions are not a statistically significant predictor of voting (Grenzke, 1989; Wawro, 2001; Ansolabehere, Figueiredo and Snyder, 2003; Bergan, 2010), our null hypothesis is to find no significant effects.

One difficulty with identifying the effects of industry interests has been dealing with the endogeneity problem. Several authors have pointed out that interest group campaign contributions may be given to “friendly” legislators who would have voted to support the industry to begin with. (Ansolabehere, Figueiredo and Snyder, 2003; Bergan, 2010; Bronars and Lott, 1997). In that case, the PAC contributions variable would not be exogenous to the error term since it would be partially determined by the votes themselves. In addition, we acknowledge potential endogeneity in another explanatory variable: the ratio of oil production to state GDP. If legislators are voting in favor or against increasing domestic oil production, then the oil-to-GDP ratio may also be partially determined by the dependent variable. We address these issues in the Estimation Methodology section below.

## **Estimation Methodology**

We exploit the panel nature of our data in order to account for unobserved heterogeneity across legislative districts and time periods. Our unit of analysis is the Senate seat of each legislator, rather than specific individuals. If the legislator leaves the seat, the voting model specified in equation 1 is still used to estimate the propensity of the person occupying the seat to vote to expand domestic drilling. In a way, the model is analogous to analyzing seats as “vote producing” firms, where the chief executive officer may be replaced over time but other firm-level and contextual characteristics can remain. [Descriptive statistics for the dependent and the explanatory variables used are omitted due to page constraints, as requested in the style guide. They are shown in the Appendix for Reviewers B].

Figure 1 presents the distribution of votes in a sample of the Senate seats included. The bottom dots represent “nay” votes and the top dots depict “yae” votes (the dots are “jittered” in order for them to be more clear). These nine seats were selected at random to show the evolution across time of positive or negative votes within cross-sectional units.<sup>19</sup> Senate seats in each state are labeled as the first or the second seat only to simplify keeping track of changes in the holder of the seat across time. In some instances—Kerry in Massachusetts or Lott in Mississippi—little variation exists across time, as the senators reliably vote either against or in favor of enhanced domestic production legislation. In other cases, votes within a cross-sectional unit varied more across time. This occurred even when the same senator held the seat throughout the sample, as in the cases of Dodd from Connecticut and Mikulski from Maryland.

[FIGURE 1 HERE]

We are mindful, however, that the use of panel data models for a binary dependent variable presents challenges that do not exist for continuous dependent variables. For example, as Greene (2008); Wooldridge (2002), and others summarize, fixed-effects probit is biased and should be avoided, and random-effects logit is less efficient than random-effects probit. In addition, fixed-effects logit and random-effects logit can render coefficients that vary significantly from each other in unexpected ways, making Hausman (1978) specification tests unreliable. In other words, no approach is accepted as necessarily superior to others. Thus, the best way to proceed with the analysis and ensure robustness in the findings is to estimate the theoretical model in a variety of ways and to compare the results.

First, as a baseline, we estimate a pooled probit for every observation in the sample. In order to account for serial correlation of the errors due to the clustering of observations for each Senate seat across time, we estimate a cluster-robust variance-covariance matrix (model 1). Next, for comparison sake, we run a pooled probit model using dummy variables for each state (model 2). It is a well known result that fixed-effects probit estimation is biased due

---

<sup>19</sup>A simple computer program was used to select the sample at random.

to the “incidental parameters” problem (Wooldridge, 2002). Heckman (1981) conducted a series of Monte Carlo studies with samples of  $n=100$  and 8 time periods and found that the regression coefficients were biased downwards in the order of 10%. Thus, we used this as a reference of potential bias in model 2, although with the caveat that the small-sample properties of this estimation are rather suspect. Subsequently, we estimate a random-effects logit model (model 3), a fixed-effects logit model (model 4), and a random-effects probit model (model 5).

An alternative way to analyze the data consists in explicitly recognizing that senators are “nested” within states and thus introducing a hierarchical model. This approach, known as mixed-effects logit, has an important advantage: it allows controlling for state-level unobserved heterogeneity (as a fixed-effects estimation would) without the need to eliminate time-invariant explanatory variables (Gelman and Hill, 2006).<sup>20</sup> The results are presented in model 6.

Model 7 addresses the potential endogeneity of two explanatory variables—PAC contributions and oil-to-GDP ratio—with an instrumental variables (IV) approach. We have leveraged specific characteristics of the petroleum industry to select two reasonable instruments: the total operable petroleum refining capacity in each state and the size (in squared miles) of each state as a percentage of the total size of the United States. Refining capacity is a reasonable instrument because refineries do not rely on domestic oil production for their successful operation. In fact, decisions concerning the location of refineries tend to respond to the characteristics of consumer markets for oil products and not the location of crude oil production.

Moreover, it is not unusual that increased domestic production in one part of the country hurts the profitability of refineries in other regions of the United States, as they must pay relatively more expensive inputs (due to the slightly smaller transportation costs enjoyed by

---

<sup>20</sup>The mixed-effects estimation, besides allowing for varying intercepts for each state, also allows for varying coefficients. We do not have a strong theoretical justification, however, for a varying-coefficients model.

competitors.<sup>21</sup> Accordingly, Senate votes on domestic oil production should not affect the level of refining capacity in a state. Higher refining capacity in a state is likely to increase the overall attention of oil and gas industry PACs to that state, however, and raise the amount of their contributions to the respective senators.<sup>22</sup>

Similarly, the relative size of a state—as a share of the total size of the United States—is a valid instrument for the oil production-to-GDP ratio for two reasons. First, senatorial votes on domestic oil production, evidently, do not affect the size of a state. Second, the size of a state is positively correlated to the amount of oil production by virtue of the fact that larger states have a greater probability of containing oil reserves. The greater probability of containing oil reserves operates in two ways. More obviously, a larger territory provides more squared miles to explore. In addition, the areas with better geological prospects for oil production happen to be in the central and western United States (plus Alaska), and states in this part of the country are larger for historical reasons unrelated to present-day senate votes.<sup>23</sup>

One additional estimation challenge remains, however, as no standard approach exists for instrumental variables estimation for panel data binary response models. We address this issue by running IV pooled probit estimation. Since there is more than one endogenous explanatory variable, we use the minimum chi-squared two-step IV estimator (Newey, 1987),

---

<sup>21</sup>A strong example of this disconnect between refiners' and domestic producers' interests took place through most of 2011 in the United States, when increased shale oil production in North Dakota—along with constraints in pipeline capacity around the storage hub in Cushing, Oklahoma—greatly improved the profitability of refineries in the middle of the country at the expense of those along the East Coast.

<sup>22</sup>The major industry association in the oil sector—the American Petroleum Institute—has numerous corporate members focused on the refining segment of the petroleum supply chain, in addition to oil and gas producers. There are also national and regional industry associations that focus on representing the interests of refiners.

<sup>23</sup>Not all policies are immediately relevant to changing production today, somewhat weakening the need to instrument for votes and oil production-to-GDP. We nevertheless include it, given that increasing (decreasing) subsidies for enhanced oil recovery, or increasing (decreasing) depletion allowances affect the short-term performance of small and medium-sized oil producers and hence their willingness to increase (decrease) production, given their common reliance on retained earnings to finance production.

and we are able to adjust the standard errors for the clustering of observations at the “seat” level using the jackknife method.<sup>24</sup>

Model 8 accounts for the possibility that we have misclassified the voting intention of the legislator. Some legislative bills include several items in addition to the provisions to expand domestic drilling. It is conceivable that a legislator was opposed to additional drilling but voted in favor of the bill anyway because the bill included other elements that were more desirable. Alternatively, it is possible that legislators supported the drilling legislation but voted against it in a “strategic” fashion, hoping to defeat a bill on the floor and replace it with one with even stronger support for drilling.

In this instance, we apply an estimation technique to correct for the misclassification of the dependent variable in a binary probit, first proposed by Hausman, Abrevaya and Scott-Morton (1998) and introduced to the political science literature by Hug (2010).<sup>25</sup> As in model 1, we run pooled probit and estimate cluster-robust standard errors to account for the serial correlation across Senate seats. The idea behind the Hausman, Abrevaya and Scott-Morton (1998) technique is to estimate both the regression coefficients and the probabilities that “ones” were incorrectly classified as “zeros” and viceversa. The expected value of a positive vote, then, is as follows:

$$E(y_{i,j} | x_{i,j}) = Pr(y_{i,j} = 1 | x_{i,j}) = \alpha_0 + (1 - \alpha_0 - \alpha_1)\Phi(x_{i,j}'\beta), \quad (2)$$

<sup>24</sup>As a check against the use of “weak instruments,” it is generally advisable to report the results of the first-stage regression or include a robust test for the coefficient of the instrumented variable (e.g., (Sovey and Green, 2011)). However, to the best of our knowledge, no procedures have been developed to check against “weak instruments” in the presence—as is our case—of more than one endogenous explanatory variable. First-stage regression results can be presented for cases of only one endogenous variables, but in the present context they would not be helpful as the second endogenous variable would remain in the model—preserving the problem of biased coefficients that we were seeking to resolve in the first place. As a result, we must rely on the theoretical justification for the instruments. Fortunately, our model is just-identified—a situation that has been found less likely to lead to “weak instrument” bias (Angrist and Pischke, 2010).

<sup>25</sup>A Stata code for the Hausman, et al. (1998) misclassification-corrected probit model and for estimating cluster-robust standard errors is available from the authors upon request.

where  $\alpha_0$  is the probability that  $y_i$  is incorrectly classified as a one and  $\alpha_1$  is the probability that  $y_i$  is incorrectly classified as a zero.

This misclassification-corrected probit model, however, cannot distinguish between the parameters  $(\alpha_0, \alpha_1, \beta)$  and  $(1 - \alpha_0, 1 - \alpha_1, -\beta)$ . Thus, Hausman, et al. (1998) propose the following identification condition:  $\alpha_0 + \alpha_1 < 1$ . under the assumption that it is unlikely that the data will have such high misclassification that  $\alpha_0 + \alpha_1$  is greater than one.<sup>26</sup>

## Results

Table 1 presents the results of these eight models. Starting with Model 1, pooled probit with cluster-robust standard errors, several of the coefficients are statistically significant and operate in the expected direction. A more “hawkish” ideology, a Republican Party identification, a higher oil-to-GDP ratio, and greater oil PAC contributions are all statistically significant and increase the probability that a senator will vote to raise incentives for domestic oil production. Interestingly, neither gasoline prices nor constituents’ support for military action to secure source of oil is significant.

[TABLE 1 HERE]

Looking across all models, the results show the following conclusions. First, the “ideology” variable is highly robust across different estimation techniques. It is statistically significant in all except for the fixed-effects logit and its coefficient generally hovers around similar values.<sup>27</sup> Party identification is also highly significant in most models, although not in the IV probit estimation. The oil-to-GDP ratio also has significance in most models, and it barely misses significance at the 10%-level when using instrumental variables. The range

<sup>26</sup>If that is the case, misclassification may be too severe to continue with the project.

<sup>27</sup>Evidently, probit and logit coefficients are not directly comparable. Among probit estimations, coefficients range from 0.011 in the random-effects estimation up to 0.019 in the misclassification corrected one. The dummy-variable probit is lower, but the expectation is that it is biased downwards.

of values that the point estimate takes, however, is much larger, with a coefficient four times greater in the misclassification-corrected probit than in the IV probit.<sup>28</sup> The coefficient for the oil industry PAC contributions is also positive across all estimations, and it is significant at least at the 10%-level in most of them. However, it is not significant in the IV or the misclassification-corrected approaches.

We are somewhat puzzled by the results of the CCES variable, which has a small, negative, and insignificant coefficient across the board with the exception of the fixed-effects logit estimation, where it is large, positive, and highly statistically significant. From one perspective, it underscores the lack of reliability of fixed-effects estimates with binary dependent variables. Perhaps more generally, it may also suggest that the assumption of time-invariance may not be a valid one. We ran the models excluding this variable and results did not change.

We believe that it is helpful to assess models 6, 7, and 8 in combination before passing judgment on the results. In this sense, the following comments are in order. First, the multilevel model, which is best for controlling for unobserved heterogeneity across units, suggests that our model specification is valid. Comparing the mixed-effects logit and the random-effects logit (which does not account for unobservables), we can see that (with the exception of median income) coefficients are remarkably similar between the two. Second, the misclassification-corrected probit suggests that measurement error in the dependent variable is minor. The coefficient for  $\alpha_1$ , which is estimated rather precisely, suggests that approximately 7% of “yae” votes were strategically cast as “nay.” The coefficient for  $\alpha_0$ , which measures the number of “0s” incorrectly classified as “1s,” is very small and not significantly different from zero.

Consequently, we have greater confidence in the instrumental variables estimation of model 7, since it addresses the endogeneity of the explanatory variables. The “ideology” variable is still highly statistically significant, and its point estimate is relatively similar to

---

<sup>28</sup>Given the strong a priori expectation for a positive coefficient, we believe that a 5%-level one-tailed test is warranted.



that of the misclassification-corrected probit. Party identification and oil-to-GDP ratio are no longer significant, although they are close to significance at the 10%-level—warranted, we believe, given the strong a priori expectation that they will be positive. Additionally, the Oil PAC variable is now estimated rather imprecisely and is far from achieving significance.

It is customary to illustrate the results of probit and logit models plotting the change in predicted probabilities that ensue from varying the explanatory variable of interest while holding other variables constant. In the present context, such analysis is not readily feasible given that we rely on the simultaneous interpretation of models 6, 7, and 8 to arrive at our conclusions. Furthermore, standard statistical software does not provide predicted probabilities for all of these estimation techniques.

Nevertheless, in order to provide a general sense of the effects of the ideology variable of legislators’ propensity to vote “yae,” Figure 2 presents the estimates of the predicted probabilities based on the random-effects probit model (model 5).<sup>29</sup> The left panel shows the effect for Republican senators, along with the 95% confidence intervals. The dashed line indicates the mean value of the “vote” variable for republicans, which stands at 0.77. The right panel displays the analogous information for democrats, with a mean value of the “vote” variable of 0.32.

[FIGURE 2 HERE]

Several conclusions readily stand out. First, Republican senators are considerably more likely to support increasing incentives for domestic drilling. When the “ideology” score stands at its mean value of 46, democrats have less than a 50% chance of voting yes, while republicans are considerably above that threshold. Second, an increase in “hawkishness” in foreign policy produces an almost linear increase in the probability to support raising domestic production. Third, large changes in ideology actually push the 95% confidence

<sup>29</sup>For the reasons outlined above, this estimation approach is not the most reliable—in fact, it is likely to be biased downwards and thus should offer a conservative measure of the impact of this variable.

interval beyond the mean value of the “vote” variable for both republicans and democrats. For example, if ideology stands at 60, still within one standard deviation of the mean, the entire confidence interval of the probability of voting yae is above 0.32 for democrats.

## Discussion

Energy self-sufficiency remains an important public policy goal of the United States, and this rhetorical support for autarky in oil has real distributional effects. For decades, Congress has consistently enacted legislation that supports “energy independence” by increasing the incentives for the domestic production of oil. In this paper we hypothesize on three different drivers of support for petroleum autarky, drawn from our expectations about the distributive effects of domestic oil production, as well as the role of ideas, that could plausibly explain the outcomes. Taken together, what do our results suggest about the origins of the supply of policies promoting oil autarky in the United States?

First, this analysis suggests that the ideological predisposition of legislators is an important determinant of their support for petroleum autarky. Legislators whose foreign policy preferences can be characterized as “hawkish” tend to vote in favor of increasing domestic drilling, relative to less hawkish members, even when controlling for party membership, district characteristics, unobserved heterogeneity, and a host of other factors. Additionally, members of the Republican Party are also more likely to vote in favor of oil production. This result is robust across a variety of different estimation approaches.

Constituents’ views on questions of oil and national security, on the other hand, appear to have little effect on the likelihood that a legislator will support or oppose domestic drilling. Legislators are either not aware, or tend to ignore, local opinion on the relationship between national security and oil. The economic characteristics of the state, on the other hand, appear to be a more important predictor. As expected, senators from states with larger oil-to-GDP ratios show greater propensity to support higher incentives for domestic oil production.

Moreover, the evidence presented here provides only weak support for the proposition that industry preferences influence outcomes, as the statistically significant relationship between oil PAC contributions and voting outcomes virtually disappears in the more sophisticated estimation techniques.

Once the role of foreign policy ideology is accounted for, the puzzle of support for “energy independence” is more easily explained. Petroleum economists and other energy industry experts have often expressed frustration with a political process that continues to speak about petroleum autarky as a desired goal of national policy. From an economic standpoint, autarky is an inefficient way to allocate resources, leading to a zero-sum interaction among countries. Hence, they lament the behavior of politicians who succumb to industry pressures and do not take advantage of the gains from trade.

Based on our findings, however, we argue that politicians observe events in the international political economy through different lenses, and that these different paradigms have important consequences. More hawkish legislators, for example, perceive the international milieu primarily in terms of conflict. Therefore, they are naturally reluctant to rely on foreign sources to supply the country’s petroleum needs, and economic efficiency arguments carry less weight. For them, economic analyses showing the benefits of trade or the inefficiency of subsidies on an industry that already earns high rents is unable to undermine their high risk aversion towards relying on global petroleum markets.

By contrast, more dovish senators are inclined to understand world events in terms of cooperation. For them, energy security arguments carry less weight and are more easily persuaded by free trade efficiency considerations. As a result, they are less willing to support petroleum autarky even after important confounding variables—most notably party identification and district and industry characteristics—have been controlled for. In other words, at the root of the policy of “energy independence” lie not necessarily “Big Oil” contributions, but rather a fundamentally distinct understanding of the reliability of petroleum markets in world politics.

This finding has practical applicability as well to analyze policy debates that are likely to arise in the United States over the question of “energy independence.” Arguably a pressing question in the next decade, given the sharp rise in domestic production from unconventional sources in North Dakota and elsewhere—i.e., shale oil—concerns whether Congress could consider enacting a ban on oil exports. This policy debate is feasible since a significant share of the country’s refining capacity in the U.S. Gulf Coast is optimized to process crude streams different from those produced domestically, raising the possibility that shale oil will be exported while millions of barrels of foreign oil will continue to be imported.<sup>30</sup>

A simple “Big Oil” explanation would argue that legislators would not vote to implement such a ban on exports because the domestic oil industry would be significantly affected by it.<sup>31</sup> However, once the role of “hawkish” foreign policy preferences is taken into account, it becomes apparent that for some legislators, economic arguments or industry pressure may not suffice to overturn their lack of trust in the international petroleum market and will refuse to allow domestically produced oil to leave the country while foreign crude is still being imported. Whether or not an export ban is eventually put in place would depend on the balance between hawkish and dovish legislators—along with the confounding factors mentioned above.

While this study has focused on the United States, there are good reasons to suppose that similar ideological effects are responsible for oil policies implemented in other countries. The link between oil, national security, and energy independence has been made in numerous countries historically, as it has in the United States. In the last century policymakers in

---

<sup>30</sup>The historical precedent for such congressional action is the ban on exports of oil produced in Alaska that existed between 1977 and 1995. See Bradley (1996) for additional information.

<sup>31</sup>Banning exports of shale oil would lead to a supply glut of light, sweet crude in the middle of the country, depressing prices. Most of the foreign crude imported by U.S. Gulf Coast refineries would continue to be heavy and sour, which generally sells at a discount to light, sweet crude—such as U.S. shale oil—due to its lower quality. Thus, importing some foreign oil would continue to make economic sense for refineries until the supply glut depressed prices enough to make domestic oil cheaper than the lower quality foreign crude. Evidently, domestic oil producers would benefit more if they could simply export their crude at international prices.

France, Japan, Italy, and elsewhere, promoted energy autarky as a rational response to relying on the international market for the supply of petroleum. Evidence shows that these policies partially represented the interests of industry in securing greater market share in oil and oil products. Yet the findings here suggest that ideology may also have been an important driver of the decisions of policymakers in these countries to promote the interests of national oil companies in order to secure greater control over the supply of oil internationally.

Finally, despite the trend of privatization and liberalization that also occurred in oil markets in these countries, China and other countries in the Asia-Pacific continue to support self-sufficiency by promoting the interests of national oil companies internationally. The continued influence of ideology may therefore also be leading policymakers in these countries to view oil through the lens of national security, rather than economics, as their oil imports rise markedly, with important implications for international security.

## References

- Abdelal, Rawi. 2007. *Capital Rules: The Construction of Global Finance*. Cambridge, MA: Harvard University Press.
- Adelman, Morris A. 2004. "The Real Oil Problem." *Regulation* 27(1):16–21.
- Alt, James E., Fredrik Carlsen, Per Heum and Kare Johansen. 1999. "Asset Specificity and the Political Behavior of Firms: Lobbying for Subsidies in Norway." *International Organization* 53(1):99–116.
- Angrist, Joshua and Jörn-Steffen Pischke. 2010. The Credibility Revolution in Empirical Economics: How Better Research Design is Taking the Con out of Econometrics. Working Paper 15794 National Bureau of Economic Research.
- Ansolabehere, Stephen. 2006. *CCES Common Content, 2006*. Cambridge, MA: Available online at <http://projects.iq.harvard.edu/cces/>.
- Ansolabehere, Stephen, James M. Snyder and M. Tripathi. 2002. "Are PAC Contributions and Lobbying Linked? New Evidence from the 1995 Lobby Disclosure Act." *Business and Politics* 4(2):131–155.
- Ansolabehere, Stephen, John M. De Figueiredo and James M. Snyder. 2003. "Why is there so little money in U.S. politics?" *Journal of Economic Perspectives* 17(1):105–130.
- Bergan, Daniel E. 2010. "Estimating the Effect of Tobacco Contributions on Legislative Behavior using Panel Data." *Social Science Quarterly* 91(3):635–648.
- Bernstein, Robert A. and William W. Anthony. 1974. "The ABM Issue in the Senate, 1968–1970: The Importance of Ideology." *American Political Science Review* 68(3):1198–1206.
- Blyth, Mark. 2002. *Great Transformations: Economic Ideas and Institutional Change in the Twentieth Century*. New York, NY: Cambridge UP.

- Bradley, Robert L. 1996. *Oil, Gas, and Government: The U.S. Experience*. Washington, DC: Cato Institute.
- Bronars, Stephen G. and John R. Lott. 1997. “Do Campaign Contributions Alter How a Politician Votes? Or, Do Donors Support Candidates Who Value the Same Things They Do?” *Journal of Law and Economics* 40:317–350.
- Cleveland, Cutler J. and Robert K. Kaufmann. 2003. “Oil supply and oil politics: Deja Vu all over again.” *Energy Policy* 31(6):485–489.
- EIA. 2011a. *Direct Federal Financial Interventions and Subsidies in Energy in Fiscal Year 2010*. Washington D.C.: EIA.
- EIA. 2011b. *Petroleum Supply Monthly (February 2011)*. Washington D.C.: EIA.
- Evans, Diana. 1988. “Oil PACs and Aggressive Contribution Strategies.” *Journal of Politics* 50(4):1047–1056.
- Fleisher, Richard. 1985. “Economic Benefit, Ideology, and Senate Voting on the B-1 Bomber.” *American Politics Research* 13(2):200–211.
- Gelman, Andrew and Jennifer Hill. 2006. *Data Analysis Using Regression and Multi-level/Hierarchical Models*. New York, NY: Cambridge UP.
- Goldstein, Judith. 1988. “Ideas, Institutions and American Trade Policy.” *International Organization* 42(1):179–217.
- Goldstein, Judith and Robert O. Keohane. 1993. Ideas and Foreign Policy: An Analytic Framework. In *Ideas and Foreign Policy*, ed. Judith Goldstein and Robert O. Keohane. Ithaca, NY: Brookings Institution Press pp. pp. 3–30.
- Greene, William H. 2008. *Econometric Analysis*. Upper Saddle River, N.J: Pearson/Prentice Hall.

- Grenzke, Janet M. 1989. "PACs and the Congressional Supermarket: The Currency is Complex." *American Journal of Political Science* 33(1):1–24.
- Grossman, Gene M. and Elhanan Helpman. 1994. "Protection for Sale." *The American Economic Review* 84(4):833–850.
- Hall, Peter A. 1993. "Policy Paradigms, Social Learning, and the State: The Case of Economic Policymaking in Britain." *Comparative Politics* 25(3):275–296.
- Hamilton, James D. 2009. "Causes and Consequences of the Oil Shock of 2007-2008." *Brookings Papers on Economic Activities* 2009(1):215–261.
- Hausman, Jerry A. 1978. "Specification Tests in Econometrics." *Econometrica* 46(6):1251–1271.
- Hausman, Jerry A., Jason Abrevaya and F. M. Scott-Morton. 1998. "Misclassification of the dependent variable in a discrete-response setting." *Journal of Econometrics* 87(2):239–269.
- Hornbeck, Stanley K. and Edward Grigg. 1924. "The Struggle for Petroleum." *Annals of the American Academy of Political and Social Science* 112:162–173.
- Jackson, John M. 1997. *The World Trading System: Law and Policy of International Economic Relations*. Cambridge, MA: MIT Press.
- Kalt, Joseph P. 1982. "Oil and Ideology in the United States Senate." *Energy Policy* 3(2):141–166.
- Lawrence, Frederick J. 2009. *2009-2010 IPAA Oil & Gas Producing Industry in Your State*. Washington D.C.: IPAA.
- Learsy, Raymond J. 2011. *Oil and Finance: The Epic Corruption*. Bloomington, IN: iUniverse.



- Lee, Henry and Dan Shalmon. 2008. Searching for Oil: China's Oil Strategies in Africa. In *China into Africa: Trade, Aid, and Influence*, ed. Robert I. Rotberg. Baltimore, MD: Brookings Institution Press pp. pp. 109–136.
- McCormick, James M. and Michael Black. 1983. "Ideology and Senate voting on the Panama Canal Treaties." *Legislative Studies Quarterly* 8(1):45–63.
- McNamara, Kathleen. 1999. "Consensus and Constraint: Ideas and Capital Mobility in European Monetary Integration." *Journal of Common Market Studies* 37(3):455–476.
- Newey, Whitney K. 1987. "Efficient estimation of limited dependent variable models with endogenous explanatory variables." *Journal of Econometrics* 36(3):231–250.
- Nowell, Gregory P. 1994. *Mercantile States and the World Oil Cartel, 1900-1939*. Ithaca: Cornell University Press.
- of Industry, Bureau and Security. 2004. *Section 232 Investigations Guide: The Effect of Imports on the National Security*. Washington D.C.: Department of Commerce.
- Parra, Francisco. 2004. *Oil Politics: A Modern History*. London and New York: I.B. Taurus.
- Poole, Keith T. and Howard Rosenthal. 1997. *Congress: A Political-Economic History of Roll Call Voting*. New York: Oxford University Press.
- Prindle, David F. 1984. *Petroleum Politics and the Texas Railroad Commission*. Austin, TX: University of Texas Press.
- Quinn, Dennis P. and A. Maria Toyoda. 2007. "Ideology and Voter Preferences as Determinants of Financial Globalization." *American Journal of Political Science* 51(2):344–363.
- Randall, Laura. 1993. *The Political Economy of Brazilian Oil*. New York, NY: Praeger.
- Savage, Charlie. 2008. "Sex, Drug Use and Graft Cited in Interior Department." *The New York Times* 11 September 2008:p. A1.

- Simmons, Beth A., Frank Dobbin and Geoffrey Garrett. 2006. "Introduction: The International Diffusion of Liberalism." *International Organization* 60(4):781–810.
- Sovey, Allison J. and Donald P. Green. 2011. "Instrumental Variables Estimation in Political Science: A Reader's Guide." *American Journal of Political Science* 55(1):188–200.
- Stigler, George J. 1971. "The Theory of Economic Regulation." *Bell Journal of Economics and Management Science* 2(1):3–21.
- Strattman, Thomas. 2002. "Can Special Interests Buy Congressional Votes? Evidence from Financial Services Legislation." *Journal of Law and Economics* 45:345–373.
- Talmadge, Caitlin. 2008. "Closing Time: Assessing the Iranian Threat to the Strait of Hormuz." *International Security* 33:82–117.
- Vietor, Richard H. K. 1984. *Energy Policy in America since 1945 : A Study of Business Government Relations*. New York: Cambridge University Press.
- Wawro, Gregory. 2001. "A Panel Probit Analysis of Campaign Contributions and Roll-Call Votes." *American Journal of Political Science* 45(3):563–579.
- Williamson, Harold Francis. 1959. *The American Petroleum Industry*. Northwestern University Press.
- Wooldridge, Jeffrey M. 2002. *Econometric Analysis of Cross-Section and Panel Data*. Cambridge, MA: The MIT Press.
- Wright, John R. 1990. "Contributions, Lobbying, and Committee Voting in the U.S. House of Representatives." *American Political Science Review* 84(2):417–438.
- Yergin, Daniel. 1993. *The Prize: The Epic Quest for Oil, Power, and Money*. New York, NY: The Free Press.

Table 1: Estimation Results

	(1) Pooled Probit	(2) Dummy Probit	(3) RE Logit	(4) FE Logit	(5) RE Probit	(6) ME Logit	(7) IV Probit	(8) Miscas. Probit
Ideology	0.016*** [0.004]	0.006* [0.003]	0.020*** [0.006]	0.007 [0.006]	0.011*** [0.003]	0.017*** [0.006]	0.015*** [0.004]	0.019*** [0.005]
Party (Republican)	0.707*** [0.213]	1.455*** [0.218]	2.046*** [0.320]	2.684*** [0.382]	1.128*** [0.179]	2.132*** [0.299]	0.651 [0.426]	1.167*** [0.327]
Oil-to-GDP Ratio	10.334*** [2.271]	0.861 [4.574]	19.410*** [4.735]	0.696 [11.739]	10.647*** [2.482]	17.163*** [5.313]	10.034 [6.077]	40.769 [29.330]
State Education	-0.028 [0.018]	0.396*** [0.141]	-0.087** [0.042]		-0.046** [0.023]	-0.099* [0.052]	-0.029 [0.022]	-0.051** [0.024]
Median Income (ln)	-0.940* [0.529]	3.249*** [1.185]	-0.267 [1.262]	0.712*** [0.225]	-0.191 [0.698]	0.974 [1.510]	-0.763 [1.173]	-0.788 [0.824]
CCES	-0.026 [0.020]	-0.438*** [0.074]	-0.032 [0.043]	5.880*** [2.188]	-0.019 [0.024]	-0.021 [0.054]	-0.025 [0.022]	-0.017 [0.027]
Oil PAC (Thousands)	0.009** [0.004]	0.007* [0.004]	0.016** [0.007]	0.014* [0.008]	0.009** [0.004]	0.013* [0.007]	0.024 [0.084]	0.010 [0.008]
Gas Prices	-0.483 [0.903]	-0.932 [0.919]	-1.342 [1.524]	-1.419 [1.713]	-0.815 [0.845]	-1.324 [1.554]	-0.479 [1.088]	0.731 [1.129]
Gas Prices (squared)	-0.067 [0.117]	-0.095 [0.120]	-0.176 [0.198]	-0.176 [0.208]	-0.088 [0.109]	-0.199 [0.196]	-0.071 [0.131]	-0.158 [0.160]
$\alpha_0$								0.007 [0.006]
$\alpha_1$								0.066*** [0.020]
Log Likelihood	-698.07	-563.07	-647.95	-405.09	-654.97	-640.29		-679.88
Observations	1800	1800	1800	1800	1800	1800	1800	1800

Cluster-robust standard errors in brackets.

All estimations include time dummy variables for each bill or amendment.

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

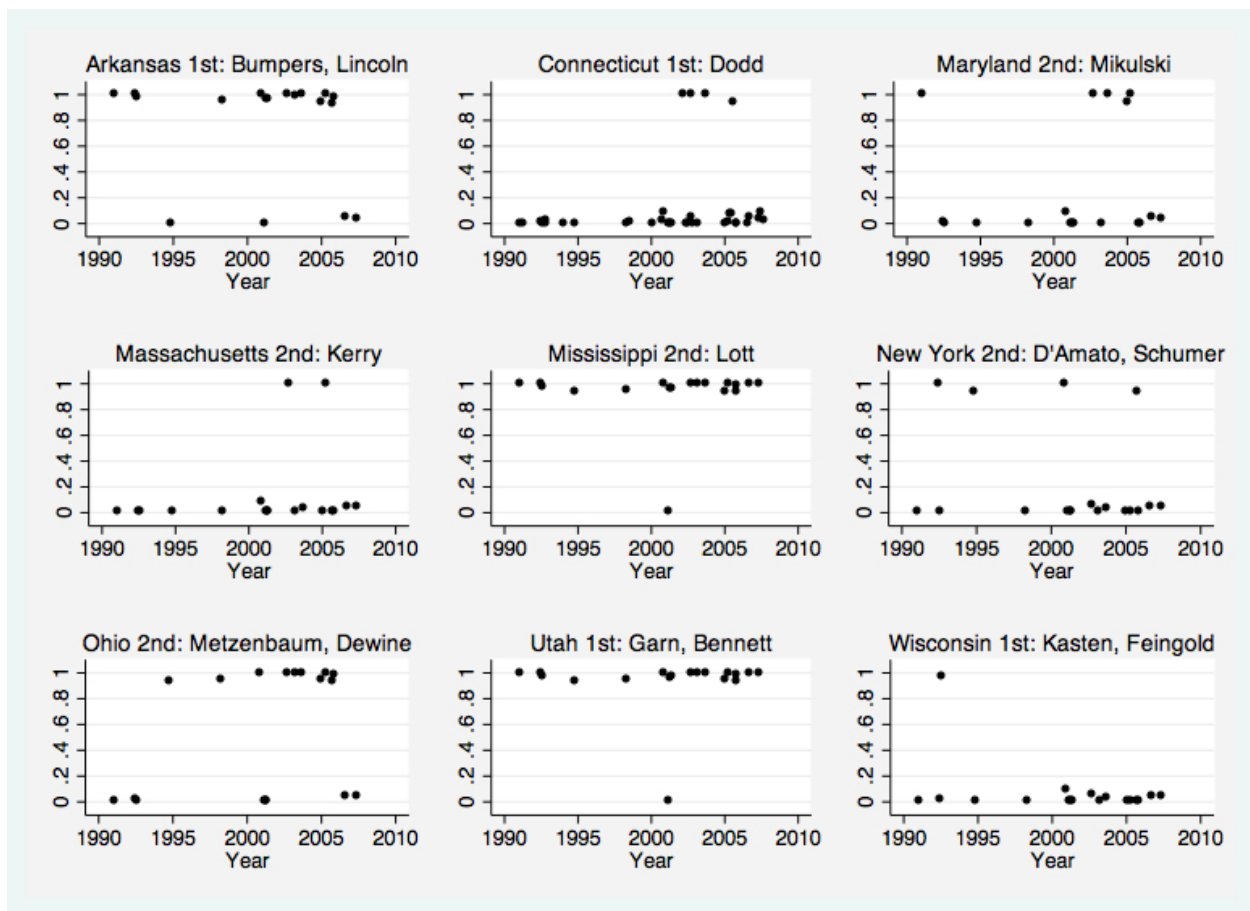


Figure 1. Sample of votes by selected senators across time

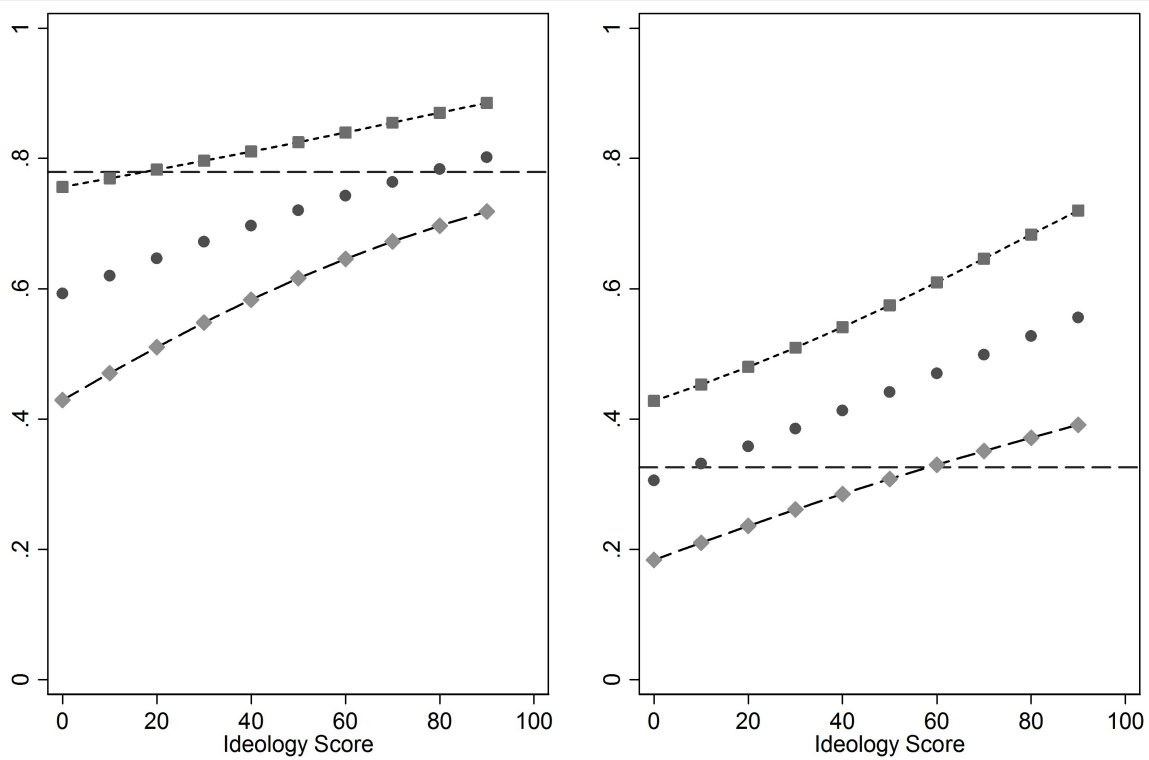


Figure 2. Probability of Yae Vote (GOP and Dem Senators)

## Appendix A: List of Votes

### Vote 1

*Vote Date:* February 19, 1992

*Question:* On the Amendment (Johnston Amendment No. 1647)

*Vote:* Senate Amendment 1647 to Senate Amendment 1646 to S. 2166 (National Security Act of 1992)

*Vote Number:* 24

*Statement of Purpose:* To provide for a leasing moratorium off Southern Florida, and for other purposes.

### Vote 2

*Vote Date:* February 19, 1992

*Question:* On the Motion to Table (Motion To Table Amendment No. 1648)

*Vote:* Senate Amendment 1648 to S. 2166 (National Security Act of 1992)

*Vote Number:* 25

*Statement of Purpose:* To restore balance to the Outer Continental Shelf Lands Act.

### Vote 3

*Vote Date:* July 29, 1992

*Question:* On the Motion to Table (Motion To Table S.Amdt. 2782)

*Vote:* Senate Amendment 2782 to H.R. 776 (National Energy Efficiency Act of 1991)

*Vote Number:* 159

*Statement of Purpose:* Striking repeal of minimum tax preferences for depletion and intangible drilling costs.

### Vote 4

*Vote Date:* October 27, 1995

*Question:* On the Motion to Table (Motion to Table Baucus Amendment No. 2988)

*Vote:* Senate Amendment 2988 to S. 1357 (Balanced Budget Reconciliation Act of 1995)

*Vote Number:* 525

*Statement of Purpose:* To strike the provision authorizing oil and gas development in the Artic National Wildlife Refuge while preserving a balanced budget by 2002.

### Vote 5

*Vote Date:* September 23, 1999

*Question:* On the Amendment (Hutchison Amendment No.1603)

*Vote:* Senate Amendment 1603 to H.R. 2466 (Department of the Interior and Related Agencies Appropriations Act, 2000)

*Vote Number:* 290

*Vote Purpose:* To prohibit the use of funds for the purpose of issuing a notice of rulemaking with respect to the valuation of crude oil for royalty purposes until September 30, 2000.

### Vote 6

*Vote Date:* July 11, 2001

*Question:* On the Motion to Table (Motion to Table Durbin Amdt. No. 879)

*Vote:* Senate Amendment 229 to H. Con. Res. 83

*Vote Number:* 229

*Statement of Purpose:* No Statement of Purpose on File. (Motion related to prohibiting the use of funds for the conduct of preleasing, leasing, and related activities within national monuments established under the Act of June 8, 1906, with the goal of disallowing drilling in these areas.

## **Vote 7**

*Vote Date:* July 12, 2001

*Question:* On the Motion to Table (Motion to Table Nelson (FL) Amendment No. 893)

*Vote:* Senate Amendment 893 to H.R. 2217 (Department of the Interior and Related Agencies Appropriations Act, 2002)

*Vote Number:* 231

*Statement of Purpose:* To prohibit the use of funds to execute a final lease agreement for oil and gas development in the area of the Gulf of Mexico known as "Lease Sale 181".

## **Vote 8**

*Vote Date:* April 18, 2002

*Question:* On the Cloture Motion (Motion to Invoke Cloture on the Murkowski Amendment No. 31323)

*Vote:* S.Amdt. 3132 to S.Amdt. 2917 to S. 517 (National Laboratories Partnership Improvement Act of 2001)

*Vote Number:* 71

*Statement of Purpose:* To create jobs for Americans, to reduce dependence on foreign sources of crude oil and energy, to strengthen the economic self determination of the Inupiat Eskimos and to promote national security. Murkowski Amendment sought to allow gas and oil development in a portion of the Arctic National Wildlife Refuge.

## **Vote 9**

*Vote Date:* April 23, 2002

*Question:* On the Cloture Motion (Motion to Invoke Cloture on the Daschle Amdt. No. 2917 ) *Vote:* S.Amdt. 2917 to S. 517 (National Laboratories Partnership Improvement Act of 2001)

*Vote Number:* 77

*Statement of Purpose:* To provide for the energy security of the nation.

## **Vote 10**

*Vote Date:* April 25, 2002

*Question:* On Passage of the Bill (H.R. 4, as amended)

*Vote:* H.R. 4 (Energy Policy Act of 2002 )

*Vote Number:* 94

*Statement of Purpose:* A bill to enhance energy conservation, research and development and to provide for security and diversity in the energy supply for the American people, and for other purposes.

**Vote 11**

*Vote Date:* July 31, 2003

*Question:* On Passage of the Bill (H.R. 4, as amended)

*Vote:* H.R. 6 (Energy Policy Act of 2003 )

*Vote Number:* 317

*Statement of Purpose:* A bill to enhance energy conservation and research and development, to provide for security and diversity in the energy supply for the American people, and for other purposes.

**Vote 12**

*Vote Date:* November 21, 2003

*Question:* On the Cloture Motion (Motion To Invoke Cloture - H.R. 6 Conference Report )

*Vote:* H.R. 6 (Energy Policy Act of 2003 )

*Vote Number:* 456

*Statement of Purpose:* A bill to enhance energy conservation and research and development, to provide for security and diversity in the energy supply for the American people, and for other purposes.

**Vote 13**

*Vote Date:* June 21, 2005

*Question:* On the Amendment (Nelson (FL) Amdt. No. 783)

*Vote:* S.Amdt. 783 to H.R. 6 (Energy Policy Act of 2005)

*Vote Number:* 143

*Statement of Purpose:* To strike the section providing for a comprehensive inventory of Outer Continental Shelf oil and natural gas resources.

**Vote 14**

*Vote Date:* June 28, 2005

*Question:* On Passage of the Bill (H.R. 6 As Amended)

*Vote:* H.R. 6 (Energy Policy Act of 2005)

*Vote Number:* 158

*Statement of Purpose:* A bill to ensure jobs for our future with secure, affordable, and reliable energy.

**Vote 15**

*Vote Date:* July 29, 2005

*Question:* On the Conference Report (Conference Report H. R. 6)

*Vote:* H.R. 6 (Energy Policy Act of 2005)

*Vote Number:* 158

*Statement of Purpose:* A bill to ensure jobs for our future with secure, affordable, and reliable energy.

**Vote 16**

*Vote Date:* August 1, 2006



*Question:* On Passage of the Bill (S. 3711)

*Vote:* S. 3711 (Gulf of Mexico Energy Security Act of 2006 )

*Vote Number:* 219

*Statement of Purpose:* A bill to enhance the energy independence and security of the United States by providing for exploration, development, and production activities for mineral resources in the Gulf of Mexico, and for other purposes.

### **Vote 17**

*Vote Date:* June 21, 2007

*Question:* On the Cloture Motion (Motion to Invoke Cloture on the Baucus Amdt. No. 1704)

*Vote:* S.Amdt. 1704 to S.Amdt. 1502 to H.R. 6 (CLEAN Energy Act of 2007)

*Vote Number:* 223

*Statement of Purpose:* To amend the Internal Revenue Code of 1986 to provide for energy advancement and investment, and for other purposes.

### **Vote 18**

*Vote Date:* June 19, 2007

*Question:* On the Amendment (Kohl Amdt. No. 1519)

*Vote:* S.Amdt. 1519 to S.Amdt. 1502 to H.R. 6 (CLEAN Energy Act of 2007)

*Vote Number:* 215

*Statement of Purpose:* To amend the Sherman Act to make oil-producing and exporting cartels illegal.

## Appendix B: Descriptive Statistics

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Votes	1800	0.55	0.50	0.00	1.00
Ideology	1800	46.08	27.33	0.00	94.00
Party (Republican)	1800	0.50	0.50	0.00	1.00
Oil-to-GDP Ratio	1800	0.01	0.04	0.00	0.25
State Education	1800	22.93	4.94	12.30	39.07
Median Income (ln)	1800	10.50	0.36	9.59	11.09
CCES	1800	20.90	3.51	10.31	29.17
Oil PAC (Thousands)	1800	6.35	13.50	0.00	88.31
Gas Prices	1800	2.30	1.40	0.77	5.40
Gas Prices (squared)	1800	7.23	8.40	0.60	29.21

## Appendix C: Tests of Robustness

The results provided in Table 1 in the main text are robust to alternative ways to measure the dependent variable and to different model specifications. Table 3 shows the results from coding the dependent variable differently—with abstentions entered as “missing” instead of as “0s.” Otherwise, the same estimation approaches of Table 1 are used in Table 3 in columns 1 - 8, and the coefficients and significance levels are very similar.

[TABLE 3 HERE]

Table 4 presents the results obtained when the time dummy variables are excluded from the model. The coefficients and statistical significance of ideology, oil-to-GDP ratio, and PAC contributions are also very similar to those shown in Table 1 in the main text. First, we note that the state’s level of education is now statistically significant across all columns and, as expected, the coefficient always has a negative sign. The lack of significance for this coefficient in Table 1—which was expected theoretically—could have been due to the smaller number of degrees of freedom.

Second, gasoline prices are now statistically significant with a non-linear effect, likely “picking up” some of the effects previously captured by the time dummies. Higher gas prices increase support for domestic drilling but with diminishing effects. This result suggests that legislators initially back additional domestic drilling when gas prices rise—under the assumption that higher oil supply would lead to lower prices at the pump—but eventually begin to withdraw support when very high gas prices provide high profits for “Big Oil.” In that context, legislators may wish to avoid being perceived as pandering to the industry.

[TABLE 4 HERE]

In addition, we tested different ways to measure other variables—including, for example, using PAC contributions in logged form—and alternative models—for example, removing the CCES variable—and the results did not change in any discernible way. Across different

model specifications, the same pattern emerged. Ideology was generally significant across most models, while party identification, oil-to-GDP ratio, and PAC contributions had the expected (positive) sign but did not always achieve significance. This was especially true when addressing potential endogeneity through instrumental variables estimation.

Table 3: Alternative Measurement of Dependent Variable

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Pooled Probit	Dummy Probit	RE Logit	FE Logit	RE Probit	ME Logit	IV Probit	Misclas. Probit
Ideology	0.017*** [0.004]	0.004 [0.003]	0.018*** [0.006]	0.003 [0.007]	0.010*** [0.003]	0.015*** [0.006]	0.017*** [0.005]	0.019*** [0.005]
Party (Republican)	0.740*** [0.223]	1.683*** [0.234]	2.300*** [0.343]	3.033*** [0.411]	1.283*** [0.193]	2.427*** [0.322]	0.71 [0.535]	1.089*** [0.303]
Oil-to-GDP Ratio	14.199*** [3.388]	12.512* [6.743]	30.407*** [6.766]	15.122 [16.015]	15.584*** [3.232]	28.518*** [7.466]	12.428 [9.185]	40.057 [27.021]
State Education	-0.031* [0.018]	0.411*** [0.156]	-0.102** [0.045]	0.710*** [0.241]	-0.056** [0.025]	-0.121** [0.057]	-0.033 [0.022]	-0.047** [0.023]
Median Income (ln)	-0.957* [0.572]	4.628*** [1.129]	0.12 [1.362]	7.473*** [2.299]	0.028 [0.761]	1.749 [1.673]	-0.871 [1.366]	-0.769 [0.788]
CCES	-0.015 [0.021]	-0.426*** [0.082]	0.004 [0.047]		0.003 [0.027]	0.024 [0.062]	-0.011 [0.023]	-0.017 [0.027]
Oil PAC (Thousands)	0.006 [0.004]	0.002 [0.004]	0.011 [0.008]	0.01 [0.009]	0.006 [0.004]	0.006 [0.008]	0.013 [0.102]	0.008 [0.007]
Gas Prices	-0.166 [0.939]	-0.39 [0.962]	-0.837 [1.615]	-0.672 [1.787]	-0.474 [0.894]	-0.795 [1.655]	-0.119 [1.120]	0.62 [1.106]
Gas Prices (squared)	-0.1 [0.118]	-0.16 [0.129]	-0.249 [0.210]	-0.272 [0.219]	-0.134 [0.115]	-0.286 [0.209]	-0.092 [0.137]	-0.163 [0.156]
a0								0.007 [0.007]
a1								0.043** [0.018]
Log Likelihood	-649.49	-500.93	-594.14	-358.06	-600.39	-865.38		-630.73
Observations	1751	1751	1751	1751	1751	1751	1751	1751

Cluster-robust standard errors in brackets.

All estimations include time dummy variables for each bill or amendment.

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table 4: Estimation without Time Dummy Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Pooled Probit	Dummy Probit	RE Logit	FE Logit	RE Probit	ME Logit	IV Probit	Misclas. Probit
Ideology	0.013*** [0.003]	0.005* [0.003]	0.016*** [0.005]	0.007 [0.005]	0.010*** [0.003]	0.014*** [0.005]	0.010** [0.004]	0.019*** [0.005]
Party (Republican)	0.521*** [0.164]	0.875*** [0.177]	1.178*** [0.237]	1.422*** [0.281]	0.693*** [0.140]	1.287*** [0.231]	0.285 [0.333]	1.167*** [0.327]
Oil-to-GDP Ratio	7.545*** [2.039]	14.898*** [3.127]	14.853*** [3.195]	24.895*** [7.577]	8.030*** [1.648]	14.977*** [3.535]	3.888 [5.128]	40.778 [29.361]
State Education	-0.043*** [0.012]	-0.083*** [0.031]	-0.089*** [0.021]	-0.131** [0.056]	-0.053*** [0.012]	-0.095*** [0.025]	-0.038*** [0.014]	-0.051** [0.024]
Median Income (ln)	-0.161 [0.165]	0.221 [0.168]	-0.049 [0.337]	0.298 [0.359]	-0.016 [0.200]	0.04 [0.345]	0.178 [0.389]	-0.788 [0.824]
CCES	-0.008 [0.014]	-0.084*** [0.019]	-0.008 [0.025]		-0.004 [0.015]	-0.006 [0.032]	-0.004 [0.018]	-0.017 [0.027]
Oil PAC (Thousands)	0.005* [0.003]	0.003 [0.004]	0.008 [0.005]	0.007 [0.006]	0.004 [0.003]	0.006 [0.005]	0.071 [0.067]	0.01 [0.008]
Gas Prices	1.224*** [0.191]	1.228*** [0.244]	2.073*** [0.343]	2.056*** [0.429]	1.210*** [0.201]	2.036*** [0.352]	1.123*** [0.261]	0.732 [1.129]
Gas Prices (squared)	-0.209*** [0.030]	-0.216*** [0.038]	-0.358*** [0.052]	-0.361*** [0.064]	-0.209*** [0.030]	-0.354*** [0.053]	-0.206*** [0.037]	-0.158 [0.160]
a0								0.03 [0.048]
a1								0.103*** [0.025]
Log Likelihood	-938.44 1800	-852.07 1800	-920.57 1800	-689.31 1800	-921.69 1800	-910.57 1800		-928.77 1800
Observations								

Cluster-robust standard errors in brackets.

All estimations include time dummy variables for each bill or amendment.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1