Information distortion and competitive remedies in government transfer programs: The case of ethanol

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Abstract. This paper reconsiders the analogy between competitive markets and the political process that is central to much of the literature on the efficiency of government transfers. The key problem is that property rights in politics are much less well defined than they are in competitive markets. As the paper outlines, obtaining accurate information about the benefits and costs of transfers is likely to be much more difficult than envisioned in the literature. Investigators, as well as general voters, often must rely on the government and competing parties for provision of information about underlying program parameters and functional relationships. We argue that politicians and the affected interest groups have incentives to limit and distort the information that is released to voters and that political competition is unlikely to be an effective counter. In developing the argument, a theoretical framework is provided and applied in a case study of the ethanol transfer. The documented efforts to disguise the actual costs and benefits of the program are important for gaining a broader understanding of the functioning and costs of government transfers in the economy.

Key words: efficiency, government, information, ethanol, transfers

JEL classification: H3, L14

1. Introduction

The view that government programs often are merely masked efforts to transfer wealth via the political process is a prominent part of the rent-seeking literature (Buchanan and Tullock (1962), Stigler (1971), Krueger (1974), and Tullock (1967)). More recently, however, these rent-seeking arguments, which imply that government transfer programs reduce wealth, have been criticized as ignoring the incentives of politicians in representative democracies to promote wealth-maximizing outcomes. Representative is Donald Wittman (1995), who claims that democratic politics are inherently efficient. Using an analogy with competitive markets, Wittman argues that entry by entrepreneurial politicians and competition between them and incumbents generates sufficient information about the benefits and costs of government transfer programs to allow voters to reward efficient behavior.[1]

Wittman's argument extends Gary Becker's (1983) claim that the political process will favor the most efficient policy instruments for affecting a transfer. Becker's point is a natural application of the standard Pareto conditions: if a given wealth transfer to a special interest group can be obtained under different policies, then the policy instrument that imposed the least costs on the general electorate would be chosen. Although Becker does not claim that redistribution enhances aggregate wealth, his argument is the cornerstone for Wittman's more general assertion that political institutions in a representative democracy work as well as markets.[2] The notion is that market-like pressures provided by competing politicians discipline government policies and institutions, and those that survive over time are presumed to be reasonably efficient, given the transaction costs of changing them: "to the extent that rent seeking exists, rents will be shifted efficiently and the seeking of these rents will involve minimal social cost," Wittman (1995, p. 34).

This paper questions the close analogy between competitive markets and the political process in a representative democracy.[3] The focus of the analysis is on the extent and basis of voter information about transfers and the role of political competition in providing that information. It is our contention that obtaining accurate information about transfers is likely to be much more difficult than envisioned by Wittman and others. Investigators, as well as general voters, must often rely on the government for provision of information about underlying program parameters and functional relationships. We argue that politicians have

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[1] There are differences of opinion as to how far Wittman's underlying paradigm of competition and resulting optimization can be applied to the political arena. Good examples of this debate appear in the reviews of Donald Wittman's book. See, for example, Buchanan (1996), Lott (1997), and Rowley (1997).

[2] Wittman (1995, p. 5) uses the terms *efficiency*, *Pareto optimality* and *wealth maximization* interchangeably.

[3] In his various writings, Douglass North also has doubted that the institutional structure of government encourages the type of competition that maximizes welfare. For example, "The point is that formal political rules, like formal economic rules, are designed to facilitate exchange but democracy in the polity is not to be equated with competitive markets in the economy. The distinction is important with respect to the efficiency of property rights." North (1990, p. 51).

incentives to limit and distort the information that is released to voters and that competition for elective office alone is unlikely to be an effective counter. Our approach builds on Gordon Tullock's (1989, p. 19) insight that politicians engage in information obfuscation because direct transfers "...would be just too raw. The voters would not buy it."

The analysis we offer distinguishes between competition among politicians for political office and competition between powerful competing interest groups as a means of policing the flow of information.[4] We argue that although competition among politicians may not generate sufficient information to allow voters to assess the welfare effects of transfers, competition among interest groups might. That is, if a transfer to one constituency seriously disadvantages another cohesive group, then it will be in the latter's interest to organize to counter the policy. It is this process, competition among concentrated interests and the spill over incentives of aligned politicians, that is most apt to release information to general voters. Even then, however, voters will be faced with assessing the relative claims of competing parties, and if the issues are complex, voters may not have sufficient unbiased information to make informed judgements.

In politics, there are incentives to provide focused benefits to influential constituents and to spread the costs among all taxpayers. As we argue, obfuscation or the opportunistic distortion of information about program benefits and costs by sponsoring politicians makes such transfers more likely. Although government programs are usually aimed at specific constituents, typically there are important external effects whereby costs and some benefits are spread to other voters. Politicians have incentive to take advantage of these externalities by overstating benefits and understating costs. The emphasis on the external benefits of programs increases demand from general voters for what otherwise might seem to be blatant special-interest legislation. As such, information obfuscation can enhance the re-election prospects for politicians.

Information obfuscation by politicians raises the costs of program evaluation by general voters. The incentives to distort information and the opportunities provided by the political process to do so, explains the commonly-viewed phenomena whereby politicians wrap narrow, special-interest legislation with broad external benefits.[5] Consistent with this view are the preambles of major enabling legislation that describe how programs and policies improve safety, provide na-

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[4] Wittman (1995, pp. 20-30) focuses mainly on competition in the electoral market. Indeed, he downplays the influence of pressure groups (pp. 76-86).

[5] The political selling of the US oil import quota in the 1960s as providing national energy security instead of primarily benefitting high-cost domestic producers and the justification of the subsidized space shuttle program with emphasis on technology spinoffs, many of which were subsequently not realized, are two examples. See Cohen and Noll (1991) for analysis of government subsidies for R&D programs for the private sector. Banks, Cohen and Noll (1991a) discuss allegations of important technological spillovers from government assisted R&D programs have been a vital element in the political process underlying them. Banks, Cohen and Noll (1991b) discuss the externality arguments for and subsequent assessments of the space shuttle. With regard to the politics of the oil import quota, see Isser (1996), Burrows and Domencich (1970, pp. 73-126), Bohi and Russell (1978, pp. 1–6, 212–213), Barzel and Hall (1977, pp. 7–10, 72–74).

tional defense, or protect the environment.[6] We argue that linking narrow transfers to broad externalities is more than mere window dressing. It is an integral part of the political process whereby politicians provide transfers to key constituents, while distorting information on the broad benefits and costs involved.

The institutional structure of the political system allows politicians to engage in information obfuscation with few negative electoral consequences. This condition challenges the analogy between competitive markets and the political process in a representative democracy. Whereas in competitive markets, firm shareholders capture the benefits and costs of adhering to or cheating on product quality, in politics property rights to program benefits and costs are poorly defined. Given the property rights structure in the political arena, the resort to information obfuscation by politicians as a means of advancing special-interest programs appears to be wide spread, and competition among politicians alone likely will have little impact in reducing the use of information distortion. Where competition exists amongst two or more powerful interests groups, information distortions are more apt to be revealed. But that form of competition is far from ubiquitous, and even where it occurs, voters may not be able to successfully disentangle the claims made by the competing interests. The resulting uncertainty may facilitate the provision of special interest benefits.

We develop our arguments in the following two sections and then illustrate them with reference to the ethanol program, a long-standing subsidy that benefits corn farmers, but is advertised as having significant benefits to the environment, rural development, and national security.[7] The documented efforts to disguise the actual costs and benefits of the program are important for gaining a broader understanding of the functioning and costs of government transfers in the economy. In the final section, we consider the usefulness of labeling transfer programs as "efficient" or "inefficient" once information costs, which are the basis for transaction costs, are included.

2. The competitive market analogy and information distortion

The notion that there is competition among politicians and political institutions and that their actions can be analyzed by applying the same tools used to explain the behavior of individuals and firms is widely accepted, certainly by the two authors of this paper. We question, however, how far the underlying paradigm of competition and resulting optimization can be applied to the political arena.

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[6] For example, P.L. 74-461, February 29, 1936, "An Act to provide for the protection of land resources against soil erosion and for other purposes; P.L. 74-835, June 29, 1936, "An Act to further the development and maintenance of an adequate and well-balanced American merchant marine, to promote the commerce of the United States, to aid in the national defense; P.L. 8444, May 23, 1958, "An Act to promote the national defense by authorizing the construction of aeronautical research facilities by the National Advisory Committee for Aeronautics necessary to the effective prosecution of aeronautical research;" or P.L. 95501, October 21, 1978, "An Act to strengthen the economy of the United States through increased sales abroad of United States agricultural commodities."

[7] Links to speeches and excerpts by legislators supporting the subsidy for ethanol can be found at the home page of the Renewable Fuels Association, http://www.ethanolRFA.org/.

According to the market analogy, competitive entry and exit among office holders and seekers is a necessary condition for directing political outcomes towards aggregate wealth maximization. It generates the desire among politicians to invest enormous funds in campaigning, in learning constituent demands, and in mobilizing resources to satisfy those demands. Politicians who fail to be responsive to influential constituents will not be re-elected. Further following the market analogy, competition among politicians also can mitigate the problems commonly associated with rationally-ignorant voters (Wittman (1995, Chapter 2)).[8] Since most models of government failure are premised on voter ignorance, this is an important point. Although voters may not be fully informed, competition in the political arena is argued to release information about program benefits and costs. Entrepreneurial politicians are rewarded for assessing program effectiveness and for finding new funding sources or ways of reducing taxpayer burdens. Fraudulent claims and behavior by some politicians will be revealed by other politicians because they will be rewarded by voters for doing so. The process of information generation and revelation provides voters with sufficient insights that they will not be swayed by mere rhetoric.

The problem with the analogy between a representative democracy and a competitive market is that the property rights structures are so different. For example, though there are similarities in the relationships between stockholders and firm managers and between a constituency and its elected officials, there are important differences in the recourse general voters have with elected officials compared with that available to consumers in dealing with firms. Consider the incentives and penalties a firm manager faces when contemplating whether to lie to customers about product quality. If the deception goes undiscovered, at least for a substantial period of time, the stockholders will likely support management. The competitive process of new firm and product entry, however, generates needed information for evaluating firm quality claims. Discovery of quality deception can be extremely costly for the manager because stockholders will turn on management if asset prices plummet. Firm reputational costs seem to be substantial compared to civil penalties Karpoff and Lott (1993). Accordingly, there are market forces for assuring contractual performance between a firm and its customers.[9] Moreover, the U.S. legal system allows consumers to sue for damages, including punitive damages, and agencies like the Federal Trade Commission monitor fraud and false advertising. At the very least, consumers can cease buying the product. Accordingly, consumers have recourse and thus, discovery of deception posses a threat to both managers and stockholders in private markets.

Now consider the incentives faced by an elected official to deceive general voters about special-interest program costs and benefits. In contrast to consumers,

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[8] In a recent book, Lupia and McCubbins (1997), also challenge conventional claims about voter ignorance. Although they concede that there is ignorance about many issues, Lupia and McCubbins argue that voters can and do make sufficiently reasoned choices and that delegation works.

[9] Certain forms of advertising are similar to posting a performance bond. See Klein and Leffler (1981).

the general populace who often pay the bulk of program costs have little direct recourse against deception. If they do not reside in the politician's district, they can not vote directly against him, nor is it clear that they would be in any position to inflict much harm against the constituents in the politician's district. In a federal system such action would require a considerable degree of collective behavior on the part of general voters. Unlike consumers who can discontinue purchasing a commodity, the comparable option for general voters is a high-cost one, leaving the country.[10] Thus, under a federal system in a representative democracy a politician may be largely immune from any penalty so long as the deception benefitted the local constituency.

The standard market analogy also glosses over the structure of district-based representation and the weak property rights that exist over tax revenues and program costs and benefits in the political arena. Competitive market outcomes result in wealth maximization when property rights are well defined and enforced. When they are not, competition among agents results in rent dissipation. The classic example is the open-access fishery where entry by fishers is free.[11] Once there, they compete to harvest prior to other fishers, resulting in the dissipation of the rental value of the fishery. The weak property rights conditions that result in the wastes associated with open-access fisheries seem more like those that exist in politics than the fully-defined rights that underlie standard competitive models.

Consider tax revenues. Tax revenues are not a pure open-access resource with complete rent dissipation since there is only a limited number of politicians in a representative democracy to compete for them. Even so, no individual politician has a clear property right to tax revenues. Politicians and their programs compete for budgets in order to satisfy constituent demands. As in the fishery, the rule of capture defines property rights to the budget at any point in time, and funds migrate, like fish, to the most effective competitor. Politicians who are particularly skillful in securing taxpayer largess for their districts become locally-notorious and typically, are rewarded with repeated re-election by grateful constituents.[12] Majority voting rules for funds allocation require logrolling and other exchanges among politicians. These trades result in program benefits being concentrated on certain constituencies while the costs are dispersed to general taxpayers and voters. Hence, the underlying property rights structure in politics neither equates constituent program benefits with relevant tax costs, nor constituent benefits with overall social costs that would account for externalities. As in markets, the failure

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[10] This point was emphasized by Alchian (1965).

[11] One of the classic articles on rent dissipation in the fishery is Gordon (1954). For a general discussion of the relationship between the lack of property rights and rent dissipation, see Cheung (1974).

[12] Levitt and Snyder (1997) provide empirical evidence that pork barrel projects enhance re-election chances. Transportation and Infrastructure Committee Chairman Bud Schuster, for example, is considered one of the top pork getters in Congress and is popular in his home district. See Del Valle (1995). For a discussion of the strategies involved in shifting the burden on to other districts, see Weingast et al (1981).

to equate private benefits and costs with social benefits and costs leads to non-optimal resource allocation.

In politics, the lack of a well-defined residual claimant fosters information distortion. It is, of course, in the interest of the sponsoring politicians to make sure that key constituents recognize how much they are served by their actions. In contrast, however, those bearing the program costs will typically be less informed, and it is in the interest of sponsoring politicians to keep it that way. Elected officials have substantial control over the flow of information that could expose deception. We argue that if narrow-interest programs can be portrayed as providing positive externalities across jurisdictions, it may not be in the interest of other politicians to reveal the information distortion by one of their colleagues. The incentive to jointly engage in obfuscation is reinforced by each politician's desire to be a repeat bargainer in log-rolling trades to advance special-interest legislation. Thus, politicians have the incentive and opportunity to engage in obfuscation in order to distort the information available to general taxpayers about the size and incidence of special-interest program benefits and costs. Only if a well-defined constituency is negatively impacted is there likely to be a counter to the claims of generalized benefits from specialized transfers. But this is a special case and one that politicians would seek to avoid. Further, the information generated by competing interests may not turn out to be particularly useful for voters in evaluating the conflicting arguments.

3. The model

This section explains the incentives for politicians to take advantage of information asymmetries and distort information, and why competition for political office is unlikely to deter such behavior.[13] The nature of many government-provided goods and services generally creates externalities and information problems. These information problems create uncertainty for voters in the assessment of program benefits and costs. As voters' agents, politicians are expected to provide public goods and information about their benefits and costs. But, politicians seeking re-election also have incentives to provide transfers to key constituents and to shift the costs to others. By distorting information about the true social value or cost of those transfers, such as by linking them to public goods, politicians can provide more private benefits to the targeted constituency. Through exaggerating the social benefits or minimizing the social costs of transfers, politicians can increase demand for a particular program or reduce opposition to it. Rather than resolving the information uncertainties facing general voters, politicians take advantage of the situation and further distort and manipulate information flows in order to provide more transfers to favored constituents.

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[13] Coate and Morris (1995) also examine the impact of imperfect information on policy choice. While their model differs substantially from the one presented here, they conclude that inefficient methods of redistribution will be employed to obfuscate voters.

3.1. The single political jurisdiction

We start with the bench mark case of a single political jurisdiction wherein all the benefits and costs of a program accrue to the voters within that jurisdiction. Assume two groups of voters. The first group is composed of the direct beneficiaries of the program. These may, for example, be agricultural producers benefitting from subsidies, or manufactures benefitting from import restrictions. The program benefits accruing to this group, net of their share of taxes, is a function of the program's policy instrument, *P*, which can be thought of as the level of subsidy, price support, tariff, or regulatory stringency imposed on foreign competitors. Net benefits are assumed to be a positive function of *P*, but may have a maximum value as in the case of a quota. The second group is composed of voters who experience spill-over effects from the program. While spill-over effects may be positive or negative, we simplify and assume they are positive. Net program benefits to the spill-over group are assumed to be a concaved single peaked function of *P*.

Now consider an incumbent politician who attempts to maximize expected votes in the next election.[14] The incumbent faces an opposing candidate and will be judged, in part, on the positions taken on various bills. While voters decide to vote for or against the politician on the basis of an array of issues, the focus here is on a single issue, the level of *P*. The probability that members of the direct beneficiary group vote for the incumbent is denoted as *f*, and it is a positive function of how close actual program benefits match that group's maximum potential net benefit. Accordingly, *f* is a positive function of *P*. The probability that the group experiencing the positive spill-overs votes for the incumbent is denoted as *g*. This probability is also a function of *P,* and has a maximum value. Let *N* be the total number of votes in the jurisdiction, and *n* be the number of those voters in the direct beneficiary group.

The vote maximizing objective function for the incumbent is

$$V = nf(P) + (N - n)g(P). \tag{1}$$

The elected official selects *P* to maximize *V*,

$$\frac{\partial V}{\partial P} = nf' + (N - n)g' = 0. \tag{2}$$

If the first-order conditions for Eq. 2 are to hold, either f' and g' must both equal zero, an unlikely outcome given the different objectives of these groups, or one of the marginal probabilities must be positive, while the other is negative. This condition suggests that neither group will be fully satisfied.[15] If f' is positive, the politician has incentive to increase *P* to gain even more political support from the direct beneficiary group. Doing so, however, when g' is negative invites stronger opposition from the other constituency with associated lost political support. To

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[14] In assuming that elected officials attempt to maximize votes, we are following the lead of Mayhew (1974), Peltzman (1976) and others.

[15] This result is similar to Peltzman's (1976, p. 211) point that politicians will not exclusively serve a single economic interest.

maximize votes under these circumstances, politicians can turn to information distortion and obfuscation.

Consider how the politician can exploit the situation through the control and manipulation of information. We assume that the direct beneficiary group carries out their transactions in the market place, and knows with certainty what their net gains are. On the other hand, voters in the spill-over group may find it difficult to measure the benefits of the external effects, especially when they involve claims of national defense, or health and environmental benefits requiring risk assessment.[16] Accordingly, we assume that the group benefitting from the spill-over effect is uncertain about the true level of benefits associated with varying levels of P. If the incumbent can control the information that group has about that relationship, there is a potential for increasing V. For example, with f' positive and g' negative, an increase in the perceived level of benefits accruing to the spill-over group could reduce opposition and allow for an increase in V. Indeed, if the incumbent could costlessly shift perceptions, it is conceivable that a solution where both f' and g' were equal to zero could obtain. But, there is likely to be a cost if the incumbent is discovered lying to his own constituents.

Let the probability that the politician is discovered lying, $D(\alpha)$, be a positive function of the degree of deception, where α is the extent to which perceptions about the benefits to the spill-over group have been shifted away from their "true" levels. Discovery lowers the probability that the spill-over group votes for the politician. The new objective function is

$$V_{\max(p,\alpha)} = nf(P) + (N-n)g(P,\alpha,D(\alpha)). \tag{3}$$

The first-order conditions are

$$\frac{\partial V}{\partial P} = n\frac{\partial f}{\partial P} + (N-n)\frac{\partial g}{\partial P} = 0, \tag{4}$$

and,

$$\frac{\partial V}{\partial \alpha} = (N-n)\frac{\partial g}{\partial \alpha} + (N-n)\frac{\partial g}{\partial D}\frac{\partial D}{\partial \alpha} = 0. \tag{5}$$

While Eq. 4 has the same interpretation as Eq. 2, Eq. 5 indicates that the incumbent will balance the gains from information obfuscation against the increased probability of detection. Much depends on how good the politician is at avoiding detection, suggesting that political rhetoric matters.

A major focus of attention in the public choice literature has been on the imperfect knowledge of voters. While some voters are well informed, politicians are likely better informed about the consequence of polices than are many voters, and they can exploit that advantage by selectively sorting information for release. But there is another important dimension to this issue: Although many voters may be uniformed about the true consequences of a policy, that does not imply they are irrational. National defense issues are a genuine concern, as are public good

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[16] For a discussion of the benefits of as well as the problems with risk assessment, see Hahn (1996).

and externality problems. As long as politicians do not always lie, and they will not if they hope to remain effective, voters will place a positive value on the probability that the politician is telling the truth. Rationally ignorant voters will shade their bets, but will not totally dismiss political rhetoric, which suggests why it exists. Moreover, if we treat the spill-over effect as an experience good so that the truth will eventually come out, the group experiencing the spill-over effect has an incentive to monitor the information flow. But, the true level of benefits may not become apparent until well after the election. Much will depend on the incumbent's ability to block information flows and the length of time to the next election.

Although it would seem that the political challenger would also have an incentive to expose the incumbent, there are complications. By exposing the incumbent, the challenger gains support from the group experiencing the spill-over effect, but suffers the displeasure of the other group because future levels of P will be lower. Whether this suffices to deter the challenger depends on the reactions of the two groups of voters, but it should be clear that competition among politicians can differ substantially from competition for control of a firm. Compared to a political jurisdiction, stockholders in a firm are likely to have very narrow and similar objectives.[17] Though management may attempt to fool the stockholders, there is really only one group the challenger need address, not two as in the political model offered here. Thus, the incentives for the challenger to expose an incumbent's obfuscation seems greater in contests over the control of a firm compared to contests in the political arena.

We emphasize that it is the diversity of interests that provides the underlying incentives for the type of obfuscation addressed in this paper. If instead of two distinct groups, we assume there is only a single group, composed of both the direct beneficiaries and the group experiencing the spill-over effect, the challenger would now have a clear incentive to expose the incumbent. This appears to be the condition that those who rely on the role of competition in the political market place have in mind, but it fails to capture much that goes on in representative democracy.

3.2. Multiple political jurisdictions

Consider a system that more closely resembles representative democracy. Let there be two districts, one that contains all the members of the direct beneficiary group while the other district contains the group experiencing the spill-over effect. The incumbents in each of these district will attempt to maximize votes by selecting the level of P that maximizes the net benefits of the group in their district. Again, only under extremely remote conditions would there be a transfer level where both f' and g' are equal to zero.

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[17] There are some notable exceptions such as where stockholders own shares in numerous firm's. In that case, they may be interested in join maximization of profits rather than the performance of just one firm. See Hansen and Lott (1996).

From the standpoint of the incumbent in the direct beneficiary group's district, the level of P preferred by the incumbent in the other district will be either too high or too low. The two incumbents, however, must reach agreement on the appropriate level of P. But, by engaging in information obfuscation, the incumbent in the direct beneficiary group's district can attempt to influence perceptions in the district experiencing the spill-over effects. The goal would be to shift perceptions so that the preferred level of P in the district experiencing the spill-over approaches or equals that of the direct beneficiary group's district.

While the incentive for the incumbent in the direct beneficiary group's district to engage in obfuscation is clear, the reaction of the incumbent in the other district is not as apparent, but with obfuscation, g increases. That is, the politician representing the spill-over district might want the obfuscation to take place, or simply be ambivalent about it, because it raises the perception of benefits from this particular government activity. Much will depend on the incentives of the challenger in the district experiencing the spill-over effect to expose the distortion. A political challenger in that district might choose to expose the information distortion as a means of attracting voter support, but if the challenger is to benefit from the exposé, the incumbent must be made culpable. That may be difficult. First, it is the incumbent in the direct beneficiary group's district who will take the lead in distorting the information flow, while the incumbent in the district experiencing the spill-over effect can simply act passively. Second, as soon as it is recognized that a challenger is about to expose the distortion, the incumbent could preempt the challenge with his own attack on obfuscation, thus reducing the rewards to the challenger. Importantly, the incumbents in both districts can have an incentive to block information flows that would reveal the obfuscation. Together they will attempt to control the flow of information and win re-election.

The simple model presented here can readily be expanded to include familiar aspects of distributive politics, such as logrolling or vote trading (Weingast et al (1981)). Logrolling is an integral part of the workings of a representative democracy, but requires that elected officials impose costs on their own general constituents in exchange for specialized or targeted benefits to specific constituents. That is, in negotiations politicians trade off support for narrowly-based programs that impose costs on other, typically broader, constituents. Since obfuscation reduces the perceived cost by convincing the voters in the paying districts that they are actually benefitting from the transfer, it facilitates logrolling. Moreover, if the benefits of a program remain concentrated, while the number of electoral districts expands, costs will become dispersed. While both obfuscation and discovery require effort, the rewards to the latter will decline as program costs become dispersed. Thus, elected representatives may have only a very limited incentive to expose the obfuscation of fellow representatives because the rewards of doing so are likely to be small and they too benefit from engaging in that same practice.

Politicians, then, are motivated to act collectively and adopt policies that reduce access to information. Indeed, if a politician stridently exposes obfuscation by politicians in other districts sufficiently to attract wide-spread voter attention

and negative reaction, the logrolling trades among many politicians that depend on it may be disrupted. While the politician may gain broad voter approval across many districts, as a whistle blower he may not be invited to engage in logrolling trades of his own. Hence, he may not be able to deliver to specialized constituents within his own district, jeopardizing his re-election. Accordingly, the returns to obfuscation for politicians suggests that they will attempt to control the flow of information that may weaken or bolster their claims. In particular, the use of information from neutral, scientific agencies can be very important in adding credibility to political rhetoric. Hence, if agency reports, which are often vague, can be interpreted and presented as consistent with the political rhetoric, politicians will do so. Clear reports that are inconsistent with the rhetoric will be suppressed through a variety of means.[18]

The arguments presented thus far should not be taken to imply that elected officials have no incentive to expose information obfuscation by their colleagues. In some situations the incentives could be very large, but as we have indicated these are likely to be cases where certain well-organized interest groups are adversely affected by a distributive program and know that they have been harmed. Indeed, we should expect that when competition amongst relatively powerful interest groups occurs, there should be a substantial amount of conflicting information generated and studies inaugurated aimed at offsetting or discrediting the information advanced by the opposing group. This process may provide useful information to general voters, if they can evaluate the competing claims. But absent those circumstances, there will be little in the way of systematic cross examination of political claims about transfer program benefits. The ethanol story illustrates both of these scenarios.

4. Obfuscation of information in the political arena: The ethanol subsidy

The Arab oil embargo of 1973 and the related oil price shocks made the United States' growing dependence on foreign oil supplies a political issue, and politicians searched for ways to promote domestic, renewable energy sources.[19] Subsidies for ethanol were an integral part of these early efforts to promote energy independence. The Energy Tax Act of 1978 authorized the first federal excise tax exemptions for biomass derived fuels, chiefly gasohol, a mixture of 90 percent gasoline and 10 percent ethanol. The Energy Security Act of 1980 set a goal for alcohol fuels production equal to 10 percent of motor fuel consumption by

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[18] The Freedom of Information Act or FOIA (5 U.S.C. Sec 552, 1966) would seemingly provide voters with the opportunity to defend themselves against obfuscation. Analysis of the administration of the FOIA, however, suggests the law provides little real access to information on policy making and details essential to benefit/cost analysis. For example, see Katz (1970), Miles (1989), Sobczak (1989), Andrussier (1991) and O'Reilly (1994).

[19] As an example of the studies emphasizing the role of ethanol as a means of reducing energy dependence on foreign sources, see Bolet et al (1983). For a general discussion of the relevancy of ethanol tax incentives to agriculture, see Kane and LeBlanc (1989).

1990 and provided over a billion dollars in loan guarantees for ethanol plants.[20] But even as the energy crisis waned in the early 1980s, the subsidization and the promotion of ethanol continued. The ethanol subsidy has amounted to more than $7.1 billion between 1979 and 1995, and is projected to equal an additional $3.3 billion between 1996 and 2000.[21] The largest component of the subsidy are exemptions from federal excise taxes that have ranged from $.50 to $.60 per gallon of ethanol or $.05 to $.06 per gallon of gasoline blended with 10 percent ethanol (U.S. General Accounting Office (1997)).

This section describes how the ethanol subsidy was linked by sponsoring politicians to a variety of externalities that were positively viewed by general voters-energy independence, environmental benefits, and rural economic development. Importantly, the ethanol subsidy was also tied to an alleged reduction in government support payments to farmers. Since 95 percent of ethanol is made from corn, ethanol production became a convenient alternative source of demand for corn stocks to reverse the fall in domestic corn prices that began after 1980.

Because ethanol's actual contributions to energy independence, clean air, and rural economic development were tenuous, politicians had to control the flow of information to the public so that supportive information was released and negative information was suppressed. As a result of these efforts, voters received a distorted assessment of ethanol's broad contributions to the economy that went largely unchallenged until the late 1980s, in large measure because no competing interest group was seriously harmed. Though the major oil companies may have viewed the subsidization of ethanol as a potential threat, there was no plan to promote ethanol to the extent practiced in Brazil and the energy crisis was viewed broadly as a serious problem. A criticism of the ethanol subsidy by oil companies would have appeared as self-serving as those firms were also developing their own alternative fuels, such as methanol, with government encouragement.[22] Methanol, made from natural gas, was less costly to produce than was ethanol, and it captured a larger share of the alternative fuels market.

In the late 1980s, however, competition among interest groups began to develop, with more information about the nature of the ethanol subsidy being generated for voters. Stricter air quality standards and requirements for the use of reformulated gasoline (RFG) under the Clean Air Act Amendments, proposed in 1987 and adopted in 1990, opened new markets for oxygenate additives (U.S. Senate, 1987a). Corn-state politicians sought to mandate a share of this new mar-

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[20] The loan guarantees of more than $482 million were administered by the Department of Energy and the USDA, Farmers Home Administration. See *New York Times*, January 12, 1980, p. 27; October 11, 1980, p. 37; October 13, 1980, p. 2. The Energy Security Act of 1980 authorized loan guarantees of $1 billion. By 1989, 6 of 10 guarantees were in default. For a chronology of events and discussion of loan guarantees, see U.S. Senate (1994c, pp. 5-8).

[21] This figure represents the loss in federal motor fuels excise tax revenues, which are partially waived for ethanol and ethanol based fuels. See U.S. General Accounting Office (1997).

[22] Legislation was enacted in Congress to promote the use of liquified natural gas and methanol in public transportation and in government agency fleets. Other legislation was enacted to promote the use of alternative fuels, such as methanol and ethanol, in private vehicles by relaxing mileage requirements and through other means. See U.S. Senate (1985) and U.S. House of Representatives (1984a).

ket for ethanol at the expense of MTBE (methyl tertiary butyl ether), a natural gas derivative. Legislation and administrative rulings on behalf of ethanol were introduced. These efforts led to the mobilization of the natural gas and chemical industries to protect MTBE. Congressional hearings and other public testimony contained the claims and counter claims of the proponents of ethanol and MTBE, and through this process the external benefits of ethanol were challenged systematically for the first time. As a consequence, ethanol supporters were unable to secure preferential treatment in the new developing market for oxygenated fuels. Even so, given the scientific nature of the claims and counter claims made by ethanol and MTBE proponents and the absence of neutral bodies to assess the arguments, it is not obvious that this conflict among interest groups has released useful information to voters for weighing the social benefits and costs of the ethanol subsidy.

4.1. Externalities and the ethanol subsidy

Although the cost of producing ethanol in 1980 was nearly twice that of gasoline, forecasts of high future gasoline prices (as high as $4.00 per gallon) by 1990-91, issued by the U.S. National Alcohol Fuels Commission, made ethanol seem like a reasonable alternative.[23] The nineteen congressional members of the fuels commission were predominately from agricultural states, most likely to benefit from greater ethanol production.[24] They repeatedly stressed externalities as justification for a ethanol subsidy.[25] Foremost on their list were a). energy independence, b). environmental benefits linked to the Clean Air Act of 1970 and its mandate for cleaner burning fuels, and c). rural economic development and reduced farm program costs, achieved through lower domestic corn stocks and higher corn prices as corn was diverted to ethanol production. These concerns were heightened by President Carter's embargo of grain sales to the Soviet Union in 1980.

Although those external benefits were described in 1980, eighteen years later, in 1998, political proponents of the ethanol subsidy have continued to tout the same benefits. The claims made by Representative Richard Gephardt of Missouri in May 1998 are typical: "ethanol is good for our environment, our nation's energy security, and for American farmers."[26]

The feasibility of ethanol as an alternative fuel in 1980 was strengthened by expected technological advances that would further close the gap between (rising) crude oil prices and (falling) ethanol prices. Further, the potential for

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[23] U.S. National Alcohol Fuels Commission (1980) and Schnittker Associates et al (1980, p. iv). See also U.S. General Accounting Office (1990).

[24] Members included Senators Birch Bayh of Indiana, Henry Bellman of Oklahoma, Robert Dole of Kansas, and George McGovern of South Dakota; Representatives Bill Alexander of Arkansas, Dan Glickman and Keith Sebelius of Kansas, and Toby Roth of Wisconsin; as well as Phil French of the Indiana Farm Bureau and Sharon Peterson of Women Involved in Farm Economics from Montana, U.S. National Alcohol Fuels Commission (1981, p. iii).

[25] See, for example, U.S. National Alcohol Fuels Commission (1980).

[26] Quoted in, Renewable Fuels Association (1998, p.2).

correcting externalities in energy security, air quality, and agriculture meant that government intervention in the market was appropriate. If the externalities were substantial, a subsidy for ethanol could have broad economic benefits beyond transfers to corn growers, and hence, the subsidy could merit support among general voters. Farm state politicians continually re-emphasized these external effects throughout the 1980s, and for the most part were successful in obtaining favorable legislation, because no other constituency had incentive to critically evaluate their claims.

Comments stressing the benefits of ethanol beyond the pecuniary gains to corn farmers were especially important to corn growers because they helped camouflage larger direct transfer payments to that group. As such, externality assertions are part of information obfuscation in the political arena. But politicians have gone beyond mere rhetoric. They have also taken actions designed to control or distort potentially damaging counter information and to circumvent administrative processes that might reveal such information.

4.2. The ethanol subsidy to corn growers: Masking the transfer

To illustrate the nature of the ethanol subsidy to corn producers, we consider how feed grain programs operated prior to the Federal Agricultural Improvement and Reform (FAIR) Act of 1996.[27] These programs used several policy instruments, including target prices and deficiency payments, an acreage reserve program, and nonrecourse loans.[28] When market prices were below the target or support price, farmers who met the eligibility criteria (usually participation in whatever supply control program existed) received payments equal to the difference between the target price and the higher of the average market price or the nonrecourse loan rate. The total payment received by each farmer was a function of the difference in those prices, multiplied by the number of eligible acres times the normal yield for each participating farm, and most corn producers participated.

Throughout the 1950s and 1960s the target price typically exceeded the market price. In the early 1970s, increases in foreign demand drove corn prices above target levels. As shown in Table 1, however, this situation was relatively short-lived. By 1982 target prices once again exceeded market prices and large deficiency payments were a mainstay of the farm program.[29]

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[27] The FAIR Act largely removed the link between income support programs and farm prices and provided instead, direct payments to farmers. The current ethanol subsidy increases the demand for corn and that action increases the price received by farmers. Thus, the ethanol subsidy continues to provide clear benefit to corn producers.

[28] For a discussion of farm programs, see Gardner (1987) and Hallberg (1992). Gisser (1993) argues that the use of acreage controls along with a price support leads to a more efficient scheme of redistribution than use of a price support alone.

[29] Eligibility also allowed farmers access to Commodity Credit Corporation (CCC) nonrecourse commodity loans whereby their crop could be placed as collateral. If the market price rose above the loan rate farmers could pay off the loan plus accrued interest and sell the corn at the market price. If the market price fell below the loan rate the farmers would simply forfeit their crop plus interest; farmers did not have to repay the full dollar amount of the loan. Upon default, the government

Table 1. Corn prices, target prices, and deficiency payments

Year	U.S. Corn Prices ($/bu)	Target Price ($/bu)	Deficiency Payments ($millions)
1975	2.54	1.38	0
1976	2.15	1.57	0
1977	2.02	2.00	0
1978	2.25	2.10	88
1979	2.48	2.20	0
1980	3.12	2.35	0
1981	2.47	2.40	0
1982	2.55	2.70	291
1983	3.21	2.86	0
1984	2.63	3.03	1,653
1985	2.23	3.03	2,480
1986	1.50	3.03	6,195
1987	1.94	3.03	5,910
1988	2.54	2.93	2,163
1989	2.36	2.84	3,504
1990	2.28	2.75	3,014
1991	2.37	2.75	2,080
1992	2.07	2.75	3,625
1993	2.50	2.75	1,502
1994	2.26	2.75	3,199
1995	3.24	2.75	0,096

Sources: Lin, Riley, Evans (1995, pp. 51, 52); U.S. Department of Agriculture (1997, Tables 1-37 and Table 1-44); and USDA, Farm Service Administration, Economic Policy and Analysis, Seed Grains and Oil Grains Group, Washington, DC.

Figure 1 helps to illustrate the ethanol subsidy. The curve D_0 represents the aggregate pre subsidy demand function for corn in the United States. The domestic supply curve for corn without government intervention is denoted as S_0. With implementation of the government's price support program, accompanied by an acreage reduction requirement, the supply function shifts to the left. The target price is denoted as P_T and intersection with the restricted supply function, S_1, determines output under the program, Q_1. Note that the restricted supply function is a function of P_T, with the market price, P_{M0}, determined ex-post. As drawn, Q_1 is the same output that would prevail in the absence of government intervention.[30]

The per unit deficiency payment is the difference between the target price and the market clearing price, P_{M0}. Assuming that all producers are eligible, the federal government's total outlays for deficiency payments is area $P_{M0}baP_T$. Even though output is the same as in the nonintervention case, this program results in an increase in the cost of production, generating a deadweight loss equal to area

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assumed ownership of the corn. In years when the loan rate was above the market rate, stocks typically expanded. Since the1985 farm bill, the average market price has generally been above the loan rate (but below the target price). Accordingly, in the analysis that follows, the complexities added by the presence of the nonrecourse loan program will be ignored.

[30] There is an on going debate as to whether agricultural programs increase or restrict output, thus the outcome depicted is arbitrary. Whether the program expands or contracts output, however, is largely irrelevant to the key points developed here.
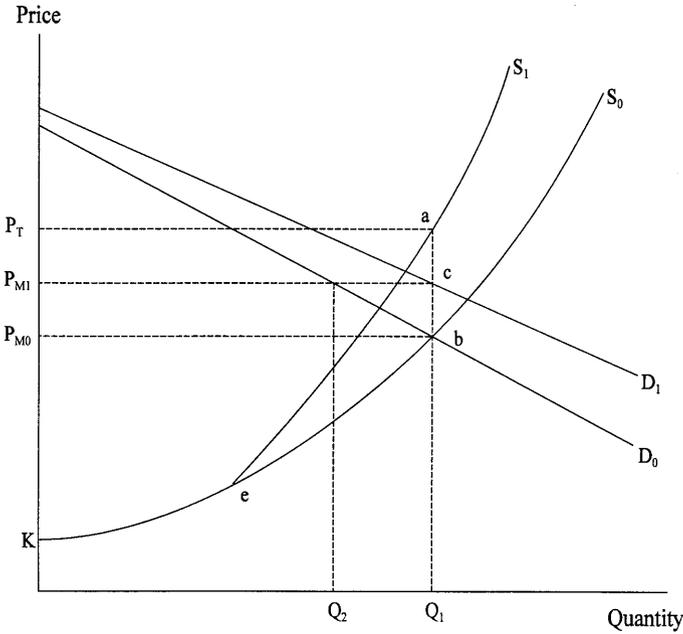
Fig. 1. The market for corn

eba. It is assumed, of course, that the gain to producers under the program, area $KeaP_T$, is larger than would have prevailed in the absence of intervention, area KbP_{M0}. In the long run, these gains are typically capitalized into the value of farm land.[31]

Now consider the introduction of a subsidy on ethanol and how it affects the demand for and supply of corn. Although the actual shape of the new demand curve will depend on how the subsidy is implemented and conditions in the industry, the primary effect is an increase in the demand for corn to D_1. The market price increases to P_{M1}, but given our assumptions, the output of corn is the same. Unless the demand for ethanol is sufficiently high so that the market price exceeds the target price, there is likely to be little effect on output.[32] Between 1950 and 1985, for example, the average market price for corn was greater than the target price in only 13 of those 36 years.

But, if the ethanol subsidy had at most a minor impact on the output of corn that would seem to suggest that corn producers did not directly gain from the ethanol subsidy. There was, however, a clear political benefit to corn producers from the ethanol subsidy. It *masked* the costs of the federal farm program by reducing deficiency payments. With the ethanol subsidy, deficiency payments

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[31] Although other input suppliers may benefit to some extent it is a long established principle in agriculture that the bulk of net returns go to land. See Rosin and Helmberger (1974).

[32] LeBlanc and Reilly (1988, p. 37) comment that "[s]ignificant changes in aggregate income for grain producers who participated in farm programs occur only when the market price for their commodity approaches and then exceeds the target price." Also see Kane and Reilly (1989).

could be reduced from $P_{M0}baP_T$ to $P_{M1}caP_T$. Continuing the subsidy for ethanol was important if agricultural program costs were to be kept in check.

The political importance of concealing deficiency payments is indicated by the data in Table 1. Deficiency payments ballooned in the 1980s, rising from $88 million in 1978 to $25.8 billion in 1986, and became one of the largest components of agricultural commodity program costs.[33] At the same time, the federal budget deficit was increasing and a source of considerable political and financial concern (Congressional Budget Office (1981, pp. 512; 1984a, pp. 42-3)) . In 1985, the Congressional Budget Office (CBO) estimated that elimination of deficiency payments would save taxpayers $28,900 million over five years.[34]

Most studies of ethanol acknowledged that absent a subsidy for the fuel, there would be little or no production of ethanol.[35] Even at the subsidized price, there are a number of competing alternative fuels, and ethanol is confronted by a somewhat lower priced and easier-to-use substitute in the oxygenate market, MTBE. These other products set a limit on the price that can be charged for ethanol. Despite the subsidy, ethanol has managed to obtain only a small fraction of the alternative fuels market, and barely a third of the larger oxygenate market in the 1990s.[36] But as farm deficiency payments grew, a U.S. General Accounting Office (1984) report suggested that the cost of ethanol subsidies might be offset by the reduced costs of agricultural price support programs. Though such an outcome is possible, the GAO report was not conclusive, and the trade off between ethanol subsidies and agricultural program costs remained unanswered. Moreover, even if that trade-off proved positive it would not have amounted to a full cost-benefit analysis.

A full cost-benefit analysis would involve accounting for numerous potential trade-offs. For example, there may be rents that accrue to firms engaged in the production of ethanol, and purchases by foreigners should be accounted for. If the latter are not considered part of the welfare calculations, the higher market prices they pay for corn represents a gain to the United States. But there are other factors that work in the opposite direction. The production of ethanol yields feed byproducts and these compete with soybean meal and other feeds. Increased

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[33] Paarlberg (1988, pp. 109-10). Government stockpiles of corn grew to 1,443 million bushels in 1986/87 as farmers chose to release corn held by the Commodity Credit Corporation (CCC) as collateral in lieu of paying off their nonrecourse loans. CCC outlays for corn jumped from $2.1 billion in 1980 to $10.1 in 1986, adding to pressures to reduce output through acreage reduction. See Lin et al (1995, pp. 20, 32-40) and Hoffman et al (1990, p. 21).

[34] Congressional Budget Office (1985a, p. 159). Congressional Budget Office (1984b, pp. xiii, l, 30-43) outlined other modifications of farm policy including changes in deficiency payments as a means of reducing program costs. Recommendations to reduce or eliminate commodity deficiency payments are issued annually by the Congressional Budget Office, see for example Congressional Budget Office (1985b, p. 159). Also see comments in U.S. General Accounting Office (1990) and Lipton (1989, p. 10).

[35] See Tyner and Bottum (1979), Meekhof et al (1980, pp. 408-415), and U.S. General Accounting Office (1997, p. 10). Most USDA studies have, in one way or another, also admitted that absent the subsidy the market for ethanol would be very small. See, for example, LeBlanc and Reilly (1988, p. v).

[36] There is little indication that the price for methanol or MTBE would rise significantly if the ethanol subsidy were eliminated. U.S. General Accounting Office (1997, p. 12).

ethanol production will lower the price of these other feeds. The potential for these types of interactions suggests that a full fledged cost-benefit analysis would require an enormous amount of information and faith in the modeling of these complex interactions.[37] As we show, in an environment of political information obfuscation, the challenge of completing such a study would be even more difficult. Because any results would have important implications for corn growers, the studies were unlikely to be done without political intervention to control the information released.

4.3. Information obfuscation in the absence of competing interest groups: 1978–1986

In the early 1980s, congressional hearings and other sources of information enthused about the potential contribution of alternative fuels, such as ethanol, methanol, and liquified natural gas to energy independence, cleaner air and rural development.[38] Because no cohesive constituency was disadvantaged by the transfer, the claims made on behalf of ethanol were not seriously disputed by outside parties. The most damaging challenge came from an internal 1986 USDA cost-benefit analysis of the subsidy.

The 1986 USDA study was headed by career civil service employee and Director of the USDA's Office of Energy, Earle Gavett. It was undertaken specifically to address the question of whether a positive trade-off existed between price support program costs and the ethanol subsidy (Gavett et al (1986)). The 1986 study also was a prerequisite to further programs regarding the feasibility of a strategic ethanol reserve as required by Section 1774 of the Food Security Act of 1985. When the report was issued, however, its findings came as a shock to ethanol proponents.

While falling short of a full cost-benefit analysis, the 1986 USDA study utilized a general equilibrium approach to estimate the non-environmental benefits and costs of the subsidy to ethanol. The report concluded that the industry could not survive through 1995 without "massive Government subsidies, given the outlook for petroleum prices" (Gavett, et al (1986, p. iv)). Further it suggested that "[i]f the principle argument for subsidizing ethanol is to boost farm income, we conclude from this analysis that it would be more economical to burn straight gasoline in our automobiles and pay corn growers a direct subsidy equal to the amount they would receive as a result of ethanol production" (Gavett, et al (1986, p. 45)).

The response from ethanol subsidy advocates was quick. Industry representatives asked the Secretary of Agriculture to repudiate the report's findings and

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[37] Gardner (1995) presents results showing conditions under which a fuel ethanol subsidy would be preferable to a target price support program.

[38] See U.S. Senate (1980), U.S. House of Representatives (1984b) and U.S. House of Representatives (1984c). Other support was voiced in U.S. National Alcohol Fuels Commission, (1980); U.S. National Alcohol Fuels Commission (1981); and U.S. Department of Energy, Energy Research Advisory Board (1980).

to fire Gavett.[39] Secretary of Agriculture Lyng agreed to have another study pre-formed, ostensibly to examine the costs of state-of-the-art plants, to determine whether new technology would reduce ethanol's costs, and to determine whether commodity program cost savings, largely corn deficiency payment savings, might exceed federal ethanol subsidies. The Gavett report had already concluded that any program savings would not offset the costs of the ethanol subsidy. Accordingly, the charge to the new study was to determine whether or not that outcome might be reversed. Senator Robert Dole of Kansas added an amendment (Section 13) to the Farm Disaster Assistance Act of 1987 (P.L. 100-45) that required that the Secretary of Agriculture establish a seven-member panel to conduct a study of the cost-effectiveness of ethanol production, the likelihood of new cost-saving technology, and the impact on agriculture and government farm programs. Dole sought specifically to dilute the input of USDA researchers with ethanol industry representatives:

> There has been one study done by the USDA, showing a rather distorted view because the study was done solely by USDA. Under this amendment there would be other representatives who would be part of the a seven-member panel that would make the study: feedgrain producers, feedgrain processors, members of associations involved in the production and marketing of ethanol, and other industry or university related authorities. The panel would consist of four members representative of the ethanol industry, and then two members shall be employed by the Federal Government. I believe this seven-member panel would present a more objective study (U.S. Senate (1987b, p. 9394)).

The "bias" of concern to Dole clearly was the relatively neutral position presented in Earle Gavett's study. Ultimately, the panel members included the Executive Vice President of the Ohio Farm Bureau Federation, the Energy Chairman for Women Involved in Farm Economics, the V.P. for Government Relations for the National Corn Growers Association, the Administrator for the Nebraska Gasohol Committee, the Staff V.P. for the American Soybean Association, the Director of the Office of Mobile Sources, EPA, and in what may have been an attempt to show that everybody was now aboard, Earle Gavett of the USDA (National Advisory Panel on Cost-Effectiveness of Fuel Ethanol Production (1987)). The Department of Agriculture, feeling the political heat from the Gavett report, decided to conduct another study of its own, but this time it would be conducted by the Economic Research Service, rather than the Office of Energy.[40]

Before any of the new reports were released, however, ethanol proponents were already discrediting the Gavett report. For example, in June 1987 Representative Richard Stallings of Idaho speaking in support of H.R. 2052 to mandate ethanol blending requirements in gasoline, stated: "Incidentally, the USDA has

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[39] Gavett (1988). Firing a career civil servant is no easy matter, although they may be reassigned to less interesting or favorable projects or locations. See Johnson and Libecap (1994).

[40] The report produced an ERS study by LeBlanc and Reilly (1988).

acknowledged that a previous study done of the viability of ethanol as an alternative fuel was *seriously flawed* and will conduct a new study as required by recently passed legislation" (U.S. House of Representatives (1987a, p. 138; emphasis added). The USDA had made no such assessment of the Gavett report, but this is but one case where claims were made by politicians that did not fit with the facts.

The panel report was issued in November 1987, but it did not provide the cost-effectiveness analysis as mandated. Rather, the report's conclusions were optimistic generalizations, including the statements that innovation likely would lower ethanol production costs, that there were environmental benefits, and that ethanol production would raise corn prices and farm incomes. The study did not determine whether or not any fall in farm program costs and other benefits would offset the cost of the ethanol subsidy, the point of contention raised by the 1986 Gavett report (National Advisory Panel (1987, pp. xv-xxii)).

The conclusions of the 1986 USDA study clearly dealt a blow to ethanol supporters and their congressional backers. The emphasis of further studies was not to be on the benefits and costs of the ethanol subsidy, but rather on reductions in deficiency payments and increases in farm incomes. The ethanol subsidy provided a convenient cover for rising corn deficiency payments in the late 1980s, and corn-state politicians were not about to lose or weaken that cover from publication of critical new information by a reputable government team of researchers. The flurry of reports that followed and subsequent repeated emphasis of the environmental and rural development benefits of ethanol by politicians successfully blunted the effects of the 1986 report.[41] Finally, a 1988 USDA report argued that with ethanol production reaching 2.7 billion gallons by 1995, corn prices would increase substantially, reducing deficiency payments to such an extent that there would be a net savings to the government.[42]

Ethanol supporters viewed the Gavett report as a threat, and acted quickly to reduce the potential damage it could cause. There is no evidence that the report caused lasting damage. It was successfully glossed over, in part, because there was no competing powerful interest group to take advantage of it. This episode reveals the extent politicians, backed by a powerful interest group, will go to mold the information the public holds about the benefits and costs of a transfer program.

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[41] Other potentially negative government studies also were sharply criticized. See Associated Press (1994). At the same time, government reports that emphasize the specific gains of ethanol to a particular sector have been released. For instance, see House et al (1993) and Petrulis et al (1993).

[42] LeBlanc and Reilly (1988, p. 39). But despite the continuation of the ethanol subsidy, production barely reached 1.4 billion gallons in 1995, substantially less than 2.7 billion gallon figure used in the 1988 USDA study to estimate the benefits of reduced program costs. U.S. Department of Energy (1996, p. 20) reports ethanol consumption not production. Their figure, however, is very close to the Renewable Fuels Association (http://www.ethanolRFA.org) production figures for 1995. Since each bushel of corn yields about 2.5 gallons of ethanol, ethanol production accounted for about 7 percent of U.S. corn production in 1995.

4.4. Competing constituencies and the generation of information about the ethanol subsidy: 1987–1998

Despite tax exemptions and loan guarantees, ethanol did not become the major fuel proponents claimed it would be in 1980. Moreover, ethanol did not become the predominate oxygenate additive. Less costly MTBE, made from natural gas, became more common with about two-thirds of the oxygenate market. By 1992, despite predictions of new technological breakthroughs, the ratio of the cost of producing a gallon of ethanol to a gallon of gasoline had changed little since 1980 so that absent the subsidy, ethanol was not competitive with gasoline.[43] In 1997 ethanol accounted for less than one percent of transportation fuels consumed in the U.S., clearly a minuscule amount in terms of providing security against foreign oil interruptions (U.S. General Accounting Office (1997, p. 36)).

Amendments to the Clean Air Act, introduced in 1987 and adopted in 1990, required the use of gasoline blended with oxygenates, reformulated gasoline or RFG, to reduce Volatile Organic Compounds (VOCs) and air toxic emissions in regions where air quality was low. These amendments provided an opportunity for proponents to extend demand for ethanol. They did so through legislative and administrative mandates for ethanol use at the expense of MTBE (U.S. Senate (1987a)). With MTBE and natural gas producers largely concentrated in states outside the corn belt, for the first time there were incentives for a cohesive interest group to challenge ethanol.[44] This competition among interest groups would generate more data to general voters about the costs and benefits of ethanol.

Any environmental benefits of oxygenated fuels came through reduced carbon monoxide emissions. But ethanol or MTBE could be added to gasoline to reduce those emissions (U.S. Environmental Protection Agency (1995), U.S. General Accounting Office (1996)). To insure that ethanol secured a larger share of the oxygenate market, legislation was introduced mandating that "renewable" (ethanol) sources be included in reformulated gasoline: H.R. 2031, Clean Air Act Amendments of 1987, required that one half of all U.S. gasoline have at least 10 percent ethanol and the other half have 5 percent methanol and 1.5 percent ethanol and H.R. 2052, the Ethanol Motor Fuel Act of 1987, required that 10 percent of all gasoline sold in 1988 be gasohol, 15 percent in 1989, 25 percent in 1990, 35 percent in 1991, and 50 percent by 1992.[45] This legislation was introduced by Representative Durbin of Illinois and 71 co-sponsors, 43 of whom came from major corn growing states.[46] Hearing testimony from Representatives Alexander (Arkansas), Madigan (Illinois), Durbin (Illinois), Stallings

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[43] The cost of a gallon of ethanol ranged from $0.90 and $1.50; a gallon of gasoline was approximately $0.55 to produce. See U.S. General Accounting Office (1997).

[44] MTBE generally is derived from methanol and 87 percent of methanol production came from plants in Texas and Louisiana with the rest coming from Florida, Wyoming, Delaware, Oklahoma, Colorado and Tennessee. See American Methanol Institute at AmMethInst@aol.com.

[45] See U.S. House of Representatives (1987b).

[46] Iowa, Illinois, North and South Dakota, Minnesota, Missouri, Michigan, Ohio, Nebraska, Kansas, Indiana, Wisconsin, and Arkansas. The other representatives were from a scattering of states New York, Pennsylvania, California, Virginia, Washington, New Mexico, North Carolina, Georgia, New

(Idaho), Glickman (Kansas), and Eric Vaughn, President of the Renewable Fuels Association stressed the environmental benefits of ethanol and the desirability of reducing U.S. dependence on foreign oil (U.S. House of Representatives (1987b, pp. pp.105, 118, 127-8, 140-155, 161)). Opposing testimony was provided by officials from Conoco, Chevron, ARCO, Marathon, UNOCAL, Amoco, National LP-Gas Association, Service Station Dealers of America, National Petroleum Refiners Association, and other groups.[47] Dixon Smith, General Manager of Operations for Chevron, representing the American Petroleum Institute, argued that the ethanol mandates would involve high investment costs with little gain in energy security or clean air advantages (U.S. House of Representatives (1987b, pp. 305-486)).

Until these debates, there had been no serious challenge to the environmental claims made on behalf of ethanol. The bills were not enacted. Instead, legislation was passed to promote both ethanol and methanol-based fuels through government purchase of vehicles using alternative fuels, creation of an Interagency Commission on Alternative Motor Fuels, and raising the DOT corporate average fuel economy rating of automobiles using alternative fuels.[48]

The Clean Air Act Amendments of 1990 provided another opportunity for ethanol producers. To reduce emissions of VOCs by 15 percent, gasoline sold in 39 carbon monoxide (CO) non-attainment areas was required to contain 2.7 percent oxygen. Additionally, only reformulated gasoline (RFG) could be sold in the nine worst ozone non-attainment areas.[49]

In promoting ethanol use proponents had to get around new problems regarding the environmental impact of ethanol that were surfacing.[50] New information indicated that ethanol, when mixed with gasoline, did not reduce emissions of VOCs to the same extent as did MTBE. Further, the use of ethanol could also increase emissions of nitrogen oxide and other pollutants such as carcinogenic aldehydes. Finally, any alcohol additive increased the volatility of the gasoline blend, making it difficult to meet the newly established VOC standards unless the base gasoline were made less volatile or the rules changed. Despite all the claims made that ethanol was good for the environment, VOC standards would have to be relaxed to encourage its use.

Given their earlier legislative defeats, ethanol proponents used more obscure administrative rulings rather than the more open legislative process. This action made it more difficult for methanol/MTBE supporters to counter and it raised the costs to voters of monitoring the costs and benefits of the ethanol subsidy. In

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Jersey, South Carolina, Florida, Massachusetts, Montana, Arizona, Tennessee, and Louisiana. Only Holloway of Louisiana and Jones of Tennessee came from states with methanol production.

[47] U.S. House of Representatives (1987b, pp. III, IV, 154, 350, 385, 388, 451-466, 490) for critical discussion of ethanol.

[48] Alternative Motor Fuels Act of 1988, P.L. 100-494.

[49] The nine were areas within and surrounding, Los Angeles, San Diego, Hartford, New York, Philadelphia, Chicago, Baltimore, Houston, and Milwaukee. Numerous other areas have since "opt-in." A number of other areas like Denver have their own gasohol programs.

[50] For discussion of the politics behind the 1990 Clean Air Act Amendments, See Adler (1992, pp. 116-131).

1994, the EPA issued a renewable oxygenate rule or ROR that required at least 30 percent of the oxygenates used in RFG come from *renewable* sources.[51] The rule was clearly aimed at expanding ethanol's market share of oxygenate additives. Carol Browner, the EPA Administrator emphasized the gains to farmers from the ethanol program as well as its ability to reduce oil imports and to provide environmental benefits, particularly reduced emissions of green house gasses.[52] The Clinton Administration was applauded by corn-state senators for initiating the 30 percent mandate.

The ROR led to another round of congressional hearings on ethanol. The farm program and the environment were again emphasized by leading advocate, Senator Daschle of South Dakota: "If successfully implemented, the RFG program has the potential to reduce air pollution, reduce our dependence on foreign imports and petroleum and create domestic jobs" (U.S. Senate (1993, p. 2)). Senator Kerrey of Nebraska added that "ethanol production currently raises the price of corn by about 15 cents a bushel, and is expected to raise the price even more by the year 2000. Not only....would this give vital financial help to our Nation's farmers, but it will also help to reduce the Federal farm outlays. Each one cent increase in the price of corn saves the taxpayers $55 million in lower corn program costs. Thus, the current benefits of ethanol production saves about $825 million in annual USDA expenditures."[53] Senator Harkin of Iowa dismissed questions about ethanol and ETBE's environmental effects as "misinformation and misrepresentations,"and claimed that: "Without the renewable oxygenate rule, it is clear that the reformulated gasoline market would be monopolized by MTBE" (U.S. Senate (1994b, pp. 1-2)). Similar statements were submitted by Senators Grassley of Iowa, Exon of Nebraska, Lugar of Indiana, and Wellstone of Minnesota (U.S. Senate (1994b, pp. 8-16)). John McClelland of the USDA Office of Energy testified that the 30 percent mandate would save $3 billion in farm program outlays between 1995 and 2000, largely through lower deficiency payments.[54]

In other hearings, methanol proponents, such as Senator Johnston of Louisiana, challenged the EPA's action. He argued that, "a 54 cent a gallon Federal tax subsidy seems a sufficient boost for market penetration [for ethanol]," disputed assertions that MTBE use involved significant foreign sources of supply, and denied there were air quality benefits from "the use of ethanol over MTBE" (U.S.

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[51] 59 Federal Register 39258, 1994. See also National Research Council (1996, p. 4).

[52] Adler (1994). See the chronology in U.S. Senate (1994a, p. 8). Also in 1993, the Clinton administration exempted ethanol from its proposed BTU tax.

[53] U.S. Senate (1993, p. 11). David Gushee of the Congressional Research Service estimated that ETBE would cost blenders 10 to 15 cents more per gallon than MTBE because of the higher costs of ethanol relative to methanol, even with existing subsidies. See U.S. Senate (1993, pp. 23-25). With sufficient supplies of ethanol, production of ETBE and conversion of refineries that blended gasoline with MTBE to ETBE could be accomplished relatively easily according to William Piel of ARCO, U.S. Senate (1993, pp. 20-22). Indeed, California saw production of ETBE as way of using southern California refineries and creating new jobs during the recession of 1992-94 in California. See statements by Leo McCarthy, Lt. Governor, U.S. Senate (1993, pp. 3-9).

[54] U.S. Senate (1994b, pp. 19-22). During the Presidential campaign of 1994, Bush and Clinton competed in farm states around a theme of an expanded ethanol role, U.S. Senate (1994b, p. 18).

Senate (1994c, pp. 1-3)). Other rebuttals were provided by representatives of the Methanol Institute, the Natural Gas Council, and the National Petroleum Refiners Association (U.S. Senate (1994c, pp. 35-40)). Steven Berlin, Senior V.P. of CITGO Petroleum called for an open congressional debate on oxygenate policy rather than a "crisis of implementation by EPA" (U.S. Senate (1994c, pp. 45-51)).

During the policy debates over ROR, environmental groups became actively involved in the ethanol subsidy for the first time, and they opposed the oxygenate mandates. Representatives of the Sierra Club, the Environmental Defense Fund, and Resources for the Future, argued that neither the alleged benefits nor the environmental and health costs were sufficiently established to justify the EPA's action (U.S. Senate (1994c, pp. 69–80), Early (1994), Miller (1994), Stagliano (1994)). A. Blakeman Early, Washington Director for Environmental Quality Programs of the Sierra Club argued that greater ethanol production could increase the release of global warming gasses, such as nitrous oxide (U.S. Senate (1994c, pp. 69–75)).

The EPA's 30 percent renewable oxygenate rule was challenged in the United States Court of Appeals for the District of Columbia by the American Petroleum Institute and National Petroleum Refiners Association in February 1995. The administrative ruling was reversed by the court as exceeding the EPA's authority (U.S. Court of Appeals for the District of Columbia (1994)).

During this time, the debate over the relative merits of ethanol, ETBE, methanol, and MTBE led to scientific studies by the EPA, National Academy of Sciences, the White House National Science and Technology Council, and the Committee on the Environment and Natural Resources of the National Science and Technology Council. None of these or other studies found conclusive air quality benefits from the use of *any* oxygenate additive.[55] The General Accounting Office reported in 1997 that removal of ethanol subsidies (and hence, the end of costly ethanol production) would have little environmental impact or little effect on petroleum imports (U.S. General Accounting Office (1997)). Hence, these and other studies, based on the best available data, provided no basis for the strong claims and fervent advocacy of ethanol and ETBE's air quality benefits made by corn-state politicians.

Although the EPA's renewable oxygenate rule was rejected in 1995, efforts by proponents to advance ethanol through regulation have continued (U.S. Senate (1995, p. 2); U.S. Senate (1996)). Further, in May, 1998 Congress overwhelmingly agreed to extend the ethanol tax incentive through 2007 as part of the six-year federal highway re-authorization bill.[56]

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[55] For study results see, U.S. Environmental Protection Agency (1993); National Research Council (1996 pp. 4, 24, 32); National Science and Technology Council (1997, p. iii); Tennessee Valley Authority (1985, pp. 1, 6, 55-6); National Research Council (1991, pp. 1, 4, 13). See also, Mannino and Etzel (1996, pp. 20-4); Mayotte et al (1994a); Mayotte (1994b); Kirchstetter et al (1996); and Anderson (1995, pp. 75-101).

[56] The vote was 297 to 86 in the House, 88 to 5 in the Senate. Congressional Quarterly, http://www.cq.com. The bill voted on was HR 2400 (H Rept 105–467; S Rept 105-95). The bill contains some modest reductions in the excise tax exemption from the current 5.6 cents per gallon of blended gasoline to 5.3 cents in 2001, 5.2 cents in 2003, and 5.1 cents 2005.

The competition between supporters of MTBE and ethanol has recently shifted to the debate over the health and water quality effects of MTBE in California. In March 1996, the California Air Resources Board implemented Phase II RFG and required that all gasoline be oxygenated during the four or five winter months. MTBE has been by far the most common oxygenate used in Phase II reformulated gasoline in California. Reformulated gasoline with ethanol could not meet the state's restrictions on oxygen content and volatility (VOC limits). In December 1997, the EPA issued a drinking water advisory regarding MTBE for its possible contamination of ground water (U.S. Environmental Protection Agency (1997)). In November 1998, the EPA announced creation of a Blue-Ribbon Panel to review use of MTBE and other oxygenates. Taking advantage of these ground water concerns, ethanol supporters such as the Renewable Fuels Association lobbied for legislation in Sacramento that would lift California's volatility limits and allow for ethanol's use in Phase II RFG (Renewable Fuels Association (1999b)). More broadly, Senator Durbin of Illinois called on President Clinton to change Phase II rules for RFG nationwide to open the market for ethanol:

"As you know, ethanol's most important market is as an oxygenate in RFG. Unfortunately, the federal RFG program has become an MTBE-dominated market. As a consequence, the RFG program is now under attack. From consumers to water quality officials to refiners Americans are expressing serious concerns about the health effects and safety of MTBE" (Renewable Fuels Association (1999a)).

Concerns about MTBE, however, also raised questions about the need for *any* oxygenates to meet the requirements of the Clean Air Act. H.R. 630 was introduced in the 105th Congress in 1998 to allow for the implementation of Phase II RFG without the use of oxygenates (U.S. House of Representatives (1998)). John Dunlap, Chairman of the California Air Resources Board, argued that no oxygenate was required to meet air quality standards. He was supported by some environmental groups.[57] But both MTBE supporter, Marvin Schlanger of ARCO, and ethanol supporter, Eric Vaughn of the Renewable Fuels Association, objected to rules that would allow elimination of oxygenate use (U.S. House of Representatives (1998, pp. 28-589)). Because of growing environmental concerns pertaining to ground water, however, in March of 1999 Governor Gray Davis ordered the phaseout of MTBE from California gasoline supply (California Energy Commission (1999)). It remains uncertain whether there will be sufficient supplies of ethanol to replace MTBE or whether ethanol will become the oxygenate of choice. California RFG regulations allow refiners to produce complying fuel without any oxygenates, but it is a costly process.

With all of the claims and counter claims about the environmental benefits or costs of ethanol and MTBE generated by the competing interest groups, it would be very difficult for voters to sort through the material. Indeed, this debate raises questions as to how much useful information is presented to voters even when

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[57] See http://www.oxybusters.com/casehist.htm.

there are competing interests. The information is provided by parties with biased points of view, and in this case, the issues are complex. Because of the scientific nature of the material and the mixed incentives of MTBE and ethanol producers to protect oxygenate use, much of the information released has been difficult for voters to assess, as there is little in the way of impartial bodies to weigh the conflicting claims and promote their findings.

As we have shown, federal agencies, such as the EPA and the Department of Agriculture are subject to extreme political pressure when much is at stake. For the most part, EPA and the USDA have become proponents of ethanol. When potentially damaging and apparently neutral information was released in 1986, corn-state politicians were able to suppress the results and have them countered with updated studies. Recent scientific studies by the National Academy of Sciences and other bodies have suggested that the clean air contributions of ethanol are likely small at best. Yet, those studies have remained obscure, largely out of the debate, and have not prevented corn-state politicians from repeating the claims in congressional hearings that ethanol is good for the environment and good for energy security. The emphasis on these externalities by ethanol's political advocates has provided an appealing cloak for regulations and subsidies among the public. Given the value of the ethanol subsidy to corn growers, over the years advocates have actively and successfully resisted challenges to the externality argument.

5. Concluding remarks

The history of the ethanol subsidy reveals that politicians took advantage of energy concerns in the 1970s to put the transfer in place and since then have engaged in deliberate attempts to distort information flows and to obfuscate the underlying objective of the ethanol program in order to sustain it. Ethanol is an example of special-interest transfers that are promoted by claims of positive spill-over effects. The ethanol subsidy was first used to camouflage farm program costs and facilitate the channeling of funds to corn producers. Today, under the FAIR Act, the objective is relatively more conspicuous and direct, to increase the demand for corn. Corn-state politicians remain intense proponents, and they continue to stress broad benefits of ethanol beyond what the evidence would warrant.

No penalty will be placed upon members of the corn-state congressional delegations by their voters for obfuscating the benefits and costs of ethanol, and no challenger in those states will gain through exposure of new evidence counter to the claims of ethanol supporters. Other than politicians from oil-producing states there is not much incentive for members of Congress from other states, where the impacts of the program are small and dispersed, to expend resources to uncover more accurate information about the underlying benefits and costs of the ethanol program. Even among MTBE producers, oxygenate programs are beneficial, only preferential treatment of ethanol is opposed. Transfers are sought

by all elected officials and to attack, or even demand closer scrutiny of some other member's program, would only invite retaliation. Indeed, these transfers are the glue that helps hold political coalitions together.

The systematic distortion of information available to voters by sponsoring politicians raises the transactions costs facing general voters in assessing the true benefits of transfer programs. These actions add to the information costs that general voters face. Although competition amongst relatively powerful interest groups will provide an expanded information set to voters, that set will be characterized by conflicting claims aimed at offsetting or discrediting the information advanced by the opposing group. This process may provide useful information if voters can evaluate the competing claims, but the sources are not neutral. Our analysis indicates that there may be no unbiased sources of information that would allow voters to evaluate the claims and counter claims of the competing parties. Hence, even when there is competition among interest groups there is information obfuscation in the political arena, and that activity can be interpreted as costly rent-seeking.

Once it is recognized that the competitive market analogy to politics is misplaced by its proponents, the notion that there is an automatic, corrective mechanism seems far too sanguine. Nor should a program's endurance be taken as justification for labeling the transfer as "efficient." Indeed, doing so not only confuses the standard meaning of the term, but diverts attention away from useful research on the origins, promotion, and magnitude of transfer programs in a democracy.

There is a tendency to presume that programs that survive over time must be reasonably efficient, given the transaction costs of changing them. Otherwise, it would be in the interest of politicians and constituent groups to adopt institutional changes and capture the resulting rents saved.[58] But an economy with rent seeking will have resource allocation patterns that do not fit with an idealized "optimal" standard. Criticizing the alleged wastes of existing government policies and institutions by comparing them to hypothetical, transactions costs-free alternatives, however, is viewed as engaging in a "nirvana" fallacy. According to this line of reasoning, the transactions costs of institutional change must be considered before labeling a particular program as wasteful or inefficient.[59] But, once transactions costs are introduced, the standard concept of Pareto efficiency loses meaning. The notion can be reduced to a tautology because by definition, all observed arrangements will be "efficient" if all of the transactions costs of adjustment are properly accounted for.[60] Proponents of the efficient redistribution hypothesis could avoid this tautology trap if they were to describe how their

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[58] For discussion of the efficiency of long-standing government transfer programs, in the context of the U.S. sugar subsidy, see Stigler (1992). The argument that institutional change will occur whenever there are net gains from taking such action is described by Demsetz (1967).

[59] For discussion, see Demsetz (1969).

[60] The problems raised by expanding the Pareto efficiency concept to include transactions costs have not gone unrecognized. See, for example, Cheung (1982), De Alessi (1983) and Furubotn and Richter (1997, pp. 458-62, 475-77).

efficiency assertions could be tested and falsified, but little progress has been made in that area.

Clearly, transaction costs in politics are positive and we should not expect outcomes in either the market place or the political arena to lie along the same frontier as they would in the absence of these costs.[61] Indeed, most practitioners of the efficient redistribution hypothesis compare a current policy with an alternative program they believe to be politically feasible rather than one that ignores transaction costs. But while such an exercise can be informative to both policy makers and voters, once transaction costs are considered it becomes imperative that we examine the extent and basis of the information endowments possessed by those doing the analysis, elected officials, and of course, the voters. The question is how much confidence can any of these parties place in the information set presented to them in the political arena. While competition exists within the political arena, the key question posed by this paper is whether the underlying institutions in which this competition occurs fosters the production and release of sufficient information to allow voters and others to make informed decisions about the efficacy of a particular program. Only after answering that question can we assess whether or not the program promotes general welfare in a representative democracy.

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[61] For discussion of some of the key issues regarding transactions costs and redistribution in politics, see Williamson (1996). Williamson attempts to resolve some of the conflicting issues regarding the efficiency of government policies by introducing a remediableness criterion for evaluating programs. See Williamson (1998, pp. 11-6).

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