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Abstract

We propose a mechanism that eliminates the incentive for risk-averse agents to influence government policy via political contributions. The mechanism requires the government to create a political insurance exchange where agents can insure against the outcome of a government decision and firms selling insurance announce and commit to a price of insurance and their political contributions. If the exchange contains actuarially fair priced insurance, then the agent fully insures and neither the firm nor agent lobbies the government. The exchange is better than contribution limits because it is welfare-enhancing, more fair, and does not restrict speech.

Keywords: campaign finance, complete markets, futures, insurance, lobbying, political contributions

JEL Codes: D72, G22, M37

1 Introduction

When discussing ways to improve the political system in the United States, a common suggestion is that the U.S. needs to take money out of politics. This money, it is claimed, helps tilt political outcomes away from the public's best interests. The suggestion to reduce the influence of money on politics typically comes in one of two forms. In the first, proponents argue for campaign finance reform. In the second, proponents argue for policies that reduce lobbying. Along each dimension, proponents have seen both progress and setback.

The U.S. Congress has approached campaign finance reform mainly through legislation mandating greater disclosure or through caps on the size of political contributions. The first of these regulations, the Federal Election Campaign Act of 1971, restricted the amount of 'hard money' that is given directly to a particular candidate by either individuals or political action committees. The act, however, remained silent on the amount of 'soft money' given to national political parties. This gap was covered by the Bipartisan Campaign Reform Act of 2002 (often referred to as the McCain-Fiengold Act).

Attempts to mitigate the influence of lobbying have focused both on greater disclosure and restricting who can become a lobbyist. The Lobbying Disclosure Act of 1995, later updated through the Honest Leadership and Open Government Act of 2007, requires lobbyists to register with Congress and to disclose an estimate of the lobbyist's total expenditures. This information was then to be put online for public viewing. More recently, President Obama issued an executive order in 2009 that prevented lobbyists from working in the administration and barred federal appointees from lobbying upon leaving the government.

These efforts towards limiting the influence of money on political outcomes have faced some setbacks. The movement towards campaign finance reform, in particular, was seemingly reversed in 2010 when the US Supreme Court came to its decision in *Citizens United v. Federal Election Commission*. In its ruling, the Justices decided that limits on corporate funding of political broadcasts were against the Freedom of Speech clause in the United States Constitution. This decision has likely made future legislation on campaign finance reform more difficult. Now, it is argued, a Constitutional amendment is required in order to place restrictions on campaign finance.

Looking at the total levels of contributions to political campaigns and lobbying, it is evident that both campaign finance reform and restrictions on lobbying have not prevented a dramatic rise in the amount of money spent on funding campaigns or lobbying politicians. The Federal Election Commission (2009) states total U.S. Presidential campaign receipts increased from $478 million in 1996 to $1.83 billion in 2008, or 280%. Ornstein, Mann, and Malbin (2008) summarizes expenditures for the U.S. House of Representatives and finds total expenditures increased

from $423 million in 1996 to $751 million in 2006, or 78%. According to the Center for Responsive Politics, the amount of money spent lobbying the U.S. legislature and government agencies increased from $1.44 billion in 1998 to $3.3 billion in 2008, or 129%. Whatever the statistic or source, campaign contributions and lobbying have been increasing rapidly.

Fundamentally, we posit, these efforts at political reform have been less than successful because they do not get at the heart of the issue: agents continue to use their resources to influence political outcomes because their welfare is sensitive to those outcomes. Imposing limits on political contributions does not reduce the underlying risk borne by agents. Because of this risk, agents will continue to seek to influence elections and policy votes.

Taking this into account, we propose in this paper a novel mechanism whose goal is to reduce the influence of money on politics. In particular, we propose that the Federal government allow the creation of a political insurance exchange. Using this exchange, risk-neutral insurance firms will sell political insurance to risk-averse agents. If priced correctly, the agents will fully insure themselves, eliminating their incentives to influence political outcomes. The Iowa Electronics Market, as documented in Robert Forsythe and Wright (1992), is an example of such an exchange. However, the market alone is not sufficient to take the money out of politics because the insurance firms' profits are now sensitive to political outcomes. As a consequence, the insurance firms will use their resources to influence political outcomes. In fact, this insurance system could exacerbate the issue because the insurance firms will pool the agents' risk, and so mitigate the free-riding problem faced by agents.

To get around this, we must modify the structure of the insurance exchange and the type of competition allowed. Specifically, we propose an insurance market that has the following characteristics. First, in order to sell political insurance, insurance firms must announce a price of insurance and political contribution pair. Each firm is committed to its announced level of political contribution (lobbying and campaign contributions), regardless of whether any agent purchases insurance from it, i.e., an all pay auction. Then, agents select the pair that maximizes their utility. Given this chosen pair, the agents choose their optimal level of political insurance and the amount of resources they want to spend influencing political outcomes. Finally, the firms follow through with their announced levels of political contributions.

Assuming that the impact of political contributions on the election or the policy vote is sufficiently insensitive, we show an equilibrium exists and is unique in which insurance firms offer actuarially fair political insurance, agents purchase full insurance at this price, and neither the agents nor the insurance firms seek to influence political outcomes through contributions. Thus, our mechanism effectively takes the money out of politics.

There has been substantial recent work to estimate the impact of lobbying on political outcomes. Richter, Sam-

phantharak, and Timmons (2009) find that corporate lobbying is associated with lower effective tax rates. Frank Yu and Xiaoyun Yu (2007) find that firms that lobby more are less likely to be caught for fraud. Alexander, Mazza, and Scholz (2009) find that the degree of lobbying is positively correlated to the amount of money repatriated under the American Jobs Creation Act of 2004, even after controlling for other firm characteristics. Even American universities, as documented by de Figueiredo and Silverman (2006) , obtain large returns from lobbying. The studies examining the link between campaign finance and the likelihood of being elected are less conclusive, as discussed by Ansolabehere, de Figueiredo, and Jr. (2003).

In Section 2, we formulate our model. Even though we believe that this political insurance mechanism applies equally to both campaign finance reform and to lobbying, we focus our model on the influence of lobbying. In this section, we also posit and prove our key proposition. In Section 3, we discuss the merits of our mechanism relative to the more typical policy of placing caps on the amount of money that can be used to influence political outcomes. We also discuss some practical issues associated with our insurance mechanism.

2 Model

Consider a one-period model with one source of randomness: the outcome of a policy vote by the government. For simplicity, suppose that there are two possible outcomes to the policy vote. With probability q, the policy passes, and with probability $1-q$, the policy fails.

The economy is populated by a representative agent and at least two firms. The agent receives a payoff dependent on whether the policy passes. If the policy passes, then the agent is rewarded with a payoff of y_1; if the policy fails, then the agent receives a payoff of y_0; $y_1 > y_0$. The agent values these payoffs according to the strictly concave function $u(\cdot)$.

The agent has two decisions to make. The agent must decide the degree to which she lobbies the government. Her political contribution, $c_A \geq 0$, increases the probability that the policy passes. This assumed ability follows both empirical and theoretical research; see, for example, Fellowes and Wolf (2004). Also, the agent must decide how many units of political insurance to purchase. This insurance has the following payout profile: if the policy passes, the agent receives nothing; if the policy fails, the agent receives 1 unit of income for each unit of insurance held. Let $x_A \geq 0$ represent the agent's demand for insurance, and let p be the price of each unit of insurance.

In addition to the representative agent, we assume that there exists at least two identical, risk-neutral insurance firms. These insurance firms, just like the agent, can lobby the government in order to influence the probability of

the policy passing. Let $c_{F,i} \geq 0$ represent the political contributions made by firm i to lobby the government, and let $c_F = \sum_i c_{F,i}$ be the total contribution made by all firms. Further, the insurance firms sell political insurance to the agent. Let $x_{F,i} \geq 0$ be the amount of insurance sold by firm i, and $x_F = \sum_i x_{F,i}$ be the total level of insurance sold by all the firms.

The function $q(C)$ describes the link between political contributions and the likelihood of the policy passing, where $C = c_F + c_A$. We assume $\frac{\partial q}{\partial C} > 0$ and $\frac{\partial^2 q}{\partial C^2} < 0$. If neither the agent nor the firms contribute money, then $q(0) \equiv q_0 \in (0,1)$.

The agent's objective is to choose c_A and x_A to maximize the following function:

$$U = q(C)\,u(y_1 - px_A - c_A) + (1 - q(C))\,u(y_0 + (1-p)\,x_A - c_A),$$

where the agent takes as given the price of the insurance and the political contributions made by the insurance firms. Firm i's objective function is

$$\Pi_i = px_{F,i} - (1 - q(C))\,x_{F,i} - c_{F,i}.$$

At this point, we need to make two critical assumptions. First, we assume that the insurance firms compete using Bertrand competition, in which they announce a price and political contribution pair. This assumption will induce all firms to announce an actuarially fair price for the insurance. Second, we assume that the firms are committed to lobbying the government by the same amount that they announced. They cannot lobby the government by more or less than they have announced. This assumption eliminates "ex-post lobbying" by the insurance firms, in which the insurance firms have the incentive to deviate from their announced contribution level after they have sold insurance to the agent. The all pay option eliminates the firms from offering some lobbying to the agent as such lobbying can be in the agent's best interests.

Given these assumptions, the market operates in the following manner. Initially, each insurance firm announces the pair $\{p_i, c_{F,i}\}, \forall i$. Presented with many pairs of prices and political contributions, the representative agent selects the best combination for her preferences. Call this pair $\left\{p_i^*, c_{F,i}^*\right\}$. (If there are many firms with the same pair that is chosen by the agent, then the agent randomly chooses one of those firms to deal with.) The agent then decides how much insurance to purchase and how much money to spend lobbying the government. Finally, the insurance firms supply the amount of insurance demanded, and they make the political contributions that they have committed to making.

We now define the equilibrium.

Definition 1 *An equilibrium is the set of political contributions* $\left\{c_A^*, c_{F,i}^*\right\} \forall i$*, insurance quantities* $\{x_A^*, x_{F,i}^*\} \forall i$*, and prices* $\{p_i^*\} \forall i$ *such that*

1. *For the pair* $\left\{p_i^*, c_{F,i}^*\right\}$*,* c_A^* *and* x_A^* *solve the representative agent's utility maximization problem,*
2. *The pair* $\{p_i, c_{F,i}\}$ *solves firm i's profit maximization problem,* $\forall i$*, and*
3. *The insurance market clears:* $x_A^* = x_F^*$.

As discussed in the introduction, we will show that with the above assumptions, the insurance firms announce an actuarially fair price for the insurance, the representative agent chooses full insurance, and both the agent and the firms reject lobbying the government.

Proposition 1 *If* $\frac{\partial^2 U}{dx_A^2}\frac{\partial^2 U}{\partial c_A^2} - \left(\frac{\partial^2 U}{\partial c_A \partial x_A}\right)^2 > 0$ *for* $p = 1 - q_0$*, then the equilibrium*

$$x_F^* = x_A^* = y_1 - y_0, \tag{1}$$

$$C = c_A^* = c_{F,i}^* = 0, \ \forall i, \text{ and} \tag{2}$$

$$p_i = 1 - q_0, \forall i. \tag{3}$$

exists and is unique.

Proof: First, consider the firm's decision problem. If firm i announces the pair $\{p_i, c_{F,i}\}$, then it knows that it is committed to making the political contribution $c_{F,i}$ regardless of whether the agent purchases insurance from that firm. If $c_{F,i} > 0$, then the firm must set its price above the actuarially fair price in order to make non-negative profits. But, if firm i does this, another firm could announce a lower price for the insurance and a lower political contribution, knowing that the agent would choose the pair that offers the lowest price. This means that firm i has negative profits, while the other firm could potentially make positive profits. This same process of undercutting keeps occurring until $p = 1 - q(C)$ and $c_{F,i} = 0$ for all firms. This pair yields zero profit for all firms.

We now turn to how the agent responds to the price and political contribution pair. If the agent buys insurance, then she purchases the cheapest insurance available. To determine the quantity of insurance purchased and contributions made, we note the agent's first order conditions are

$$x_A : 0 = \quad q(C)\frac{\partial u(y_1 - px_A - c_A)}{\partial x_A}(-p) + (1 - q(C))\frac{\partial u(y_0 + (1-p)x_A - c_A)}{\partial x_A}(1-p) \tag{4}$$

$$\begin{aligned} c_A : 0 = \quad & \frac{\partial q(C)}{\partial c_A}\left[u(y_1 - px_A - c_A) - u(y_0 + (1-p)x_A - c_A)\right] \\ & -q(C)\frac{\partial u(y_1 - px_A - c_A)}{\partial c_A} - (1 - q(C))\frac{\partial u(y_0 + (1-p)x_A - c_A)}{\partial c_A} \end{aligned} \tag{5}$$

Plugging in the restriction $p = 1 - q(C)$ into (4), we get that $\frac{\partial u(y_1 - px_A - c_A)}{\partial x_A} = \frac{\partial u(y_0 + (1-p)x_A - c_A)}{\partial x_A}$ or $u(y_1 - px_A - c_A) = u(y_0 + (1-p)x_A - c_A)$. This implies that the agent has chosen to fully insure herself against the political risk by setting $x_A = y_1 - y_0$. As a consequence, the agent can expect an income of $y_0 + q(C)[y_1 - y_0] - c_A$ in both states of the world. Plugging this into (5), we get that the first term on the left hand side is equal to zero. This implies $q(C)\frac{\partial u(y_0+q(C)[y_1-y_0]-c_A)}{\partial c_A} = (q(C)-1)\frac{\partial u(y_0+q(C)[y_1-y_0]-c_A)}{\partial c_A}$ or

$$\frac{\partial u(y_0 + (1-p)[y_1 - y_0] - c_A)}{\partial c_A} = 0$$

Since $y_0 + (1-p)[y_1 - y_0]$ is fixed, an increase in c_A only reduces income, meaning that the marginal utility rises. As a result, this last equation holds when c_A is as low as possible, which occurs at $c_A = 0$. Thus, $c_A^* = c_{F,i}^* = C = 0$, $q(C) = q(0) = q_0$, and $x_F^* = x_A^* = y_1 - y_0$.

The equilibrium described above is unique if the second order conditions hold. Specifically, we obtain uniqueness if $\frac{\partial^2 U}{dx_A^2}\frac{\partial^2 U}{\partial c_A^2} - \left(\frac{\partial^2 U}{\partial c_A \partial x_A}\right)^2 > 0$ for $p = 1 - q_0$. To see this, note $\frac{\partial^2 U}{dx_A^2} = q(C)p^2u''(y_1 - px_A - c_A) + (1 - q(C))(1 - p)^2u''(y_0 + (1-p)x_A - c_A) < 0$ for all p. The second condition is the standard sufficient second order condition (ssoc) to ensure concavity. It only needs to hold at $p = 1 - q_0$ because firms drive p to the lowest level with non-negative profits, the agent chooses the lowest price and the price is actuarially fair if the ssoc is satisfied as $c_A^* = 0$ at that point. ■

2.1 Examples

In this section, we will discuss two examples that will help clarify the proposition stated above. In both examples, the agent has a log utility function and $y_1 = 15$ and $y_0 = 10$.

Example 1:

Suppose the probability function is $q(C) = 1 - \frac{1}{2}e^{-\frac{1}{2}C}$. *If the agent is unable to purchase political insurance, then she chooses to lobby the government in order to raise the probability that the policy succeeds. Her optimal contribution of* $c_A = 0.478$ *would then yield an expected utility of* $u = 2.51$. *If, though, political insurance was available to the agent, then the proposition implies that the insurance firms would announce the pair* $(p, c_F) = (1 - q_0, 0)$ *and the agent would purchase full insurance. Importantly, neither the firm nor the agent would lobby the government. This equilibrium results in zero profits for the insurance firms and a utility of* $u = 2.53$ *for the agent. Thus, in this example, the "no-lobbying" equilibrium exists and is unique, since the ssoc is satisfied.*

Example 2:

Suppose that the probability function is $q(C) = 1 - \frac{1}{2}e^{-10C}$. *This function implies that q is more sensitive to the*

level of political contributions than the function in Example 1. This increased sensitivity induces the agent to forgo purchasing insurance in order to directly lobby the government. We can see this by comparing the no insurance equilibrium with the full insurance equilibrium. If the agent purchases no insurance, then her optimal political contribution is $c_A^* = 0.341$. *This results in a utility level of* $u = 2.68$. *If, though, the agent purchases full insurance, then her utility is* $u = 2.31$. *Intuitively, it is better for the agent to accept the political risk and lobby the government than purchase insurance because the marginal product of lobbying is large.*

Generalizing from these examples, we see that if the probability function $q(C)$ is sufficiently insensitive to political contributions relative to the agent's risk aversion, then the ssoc condition is likely to hold. This, in turn, implies that the full insurance solution in which neither agents nor firms lobby the government is the unique solution. The question, though, is whether in reality the function is insensitive or not. Levitt (1994) argues the effects of campaign spending on political outcomes in the U.S. House of Representatives is relatively small. Gerber (1998), using a slightly different technique, finds a bigger effect for the U.S. Senate: an increase of roughly 20% in spending leads to an increase of roughly 1% in vote share. The effect of lobbying on policy is discussed in the introduction. Note if the ssoc isn't satisfied, then the market simply will have not trades. It will not effect contributions either way.

3 Discussion

We have shown that a correctly designed insurance market can eliminate the incentives of risk-averse agents to lobby the government. Those conditions are that the agents must be price-takers, the price of insurance must be actuarially fair, and q must be sufficiently insensitive to changes in the level of political contributions relative to an agents risk aversion. Further, if we assume Bertrand-style competition in which firms must announce and commit to a price and contribution pair, then the insurance firms also have no incentive to lobby the government. Thus, the mechanism described above could be one step towards taking the "money out of politics."

It is important to note, however, that this solution assumes that no other type of political insurance system exists. If, for example, insurance firms allowed agents to choose their desired price conditional on the requirement that the insurance firms still earn zero profits, the agents would choose a different price than $p = 1 - q$. In fact, we can show that the agent would choose to lobby the government to some degree. This lobbying would not only improve the chances that the policy succeeds, but it would also lower the cost of the agent's insurance. Thus, in order to eliminate political lobbying, the government must ensure that the only political insurance system in place is the one we have described.

Two additional points are worth noting. First, throughout the paper, we use the term "agent" and never explicitly mention whether we mean that agent to be an individual or a firm. We have done this deliberately because we believe that our solution would apply equally well to any risk-averse individual or firm. Second, our discussion assumes that the agents lobby politicians in order to sway their vote on a particular policy. However, if we assumed that political candidates' policy platforms are fixed, the insurance solution could also apply to agents donating money to political campaigns in order to help get particular candidates elected. In this way, the insurance market is one possible method of achieving campaign finance reform.

Our insurance solution has some distinct advantages over the more common approach to limiting the influence of money on politics, which is to put arbitrary caps on political contributions. The first advantage is that this insurance mechanism is not subject to the same critique that the U.S. Supreme Court leveled at the McCain-Feingold Act of 2002. In its Citizens United decision, the Supreme Court argued that the government cannot punish firms engaging in political speech using "electioneering communications." This, the Court argued, would deny the firms' Freedom of Speech. The insurance mechanism, on the other hand, allows all agents to freely contribute money to politicians, but provides the agent with an alternative option to insure away the risk and not contribute. If all of the conditions are met, the incentives are sufficient to induce the agents to reject lobbying the government.

Second, while contribution limits seem to restrict all agents equally, in actuality some agents can make utility- or profit-maximizing contributions while others cannot. In fact, the shadow price of the limits is greatest for those who face the most political risk. This suggests that the agents are unequally penalized under the law. The insurance market described above does not suffer from this same critique. Under our solution, the amount of insurance purchased would depend upon the agents' characteristics: agents who face more political risk could purchase more insurance than those who face less. Thus, our mechanism increases the fairness of the system.

Third, contribution limits are inefficient because they don't allow agents to fully mitigate the costs of political risk. That is, with the limits in place, agents are still exposed to political risk. Contrary to this, our insurance solution eliminates the risk borne by the agents, while still reducing total political contributions. Therefore, contribution limits should lower the agents' welfare, while our insurance mechanism increases it.

An interesting implication of this insurance mechanism is that it introduces moral hazard into the market for campaign contributions. In other words, if individuals can insure against political risk, then they have no incentive to expend effort on reducing the likelihood of a negative outcome. In future work, we plan on exploring how this insurance affects the incentives of individuals to vote.

In conclusion, we believe that our proposal represents a serious and implementable strategy of reducing money in

politics without limiting free speech or reducing welfare.

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