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Evolution, Uncertainty, and the Asymptotic Efficiency of Policy

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Abstract

Politics, like any social process, involves selection mechanisms that determine whether the outcomes of the process are efficient. This paper presents a model of politics as an evolutionary process. The decisions of interest groups to enter politics determines the selected policy. Our model leads to three main results. First, the political process selects for efficient policies in the long run. This mirrors how markets select for efficient firms. We call this attribute *asymptotic efficiency*. Second, the bargaining of interest groups bounds the level of inefficiencies that can exist in the short run. The bound decreases when organizing interest groups becomes less costly. Finally, policies that appear inefficient in a static analysis can be efficient once economists consider the dynamic nature of political decisions. We argue that viewing the political process as a selection mechanism allows political economists to use efficiency as a tool for positive economics. In our approach, applied political economy involves looking for relevant costs that make the policy efficient. However, our approach does not rob political economists of the ability to make meaningful normative statements, but only constrains the type of statements made.

Keywords Real Option, Political Coase Theorem, Evolution, Efficiency, Alchian

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"Individuals belong to particular groups—defined by occupation, industry, income, geography, age, and other related characteristics—that are assumed to use political influence to enhance the well-being of their members. Competition among these pressure groups for political influence determines the equilibrium structure of taxes, subsidies, and other political favors." – Becker (1983, p. 372)

". . . the common allegation that special interest groups and political lobbies significantly deteriorate the quality of a democracy are too narrowly conceived. If such political associations really did so detract from the efficiency of the democracy, their victims would rationally payoff their potential members as long as the potentially injurious association remains dormant." – Thompson and Hickson (2001, p. 117)

Introduction

Do inefficient policies exist? Surely, some economists tend to think so. For example, Michael Clemens (2011) argues that there are "trillion-dollar bills on the sidewalk" for immigration policy, making current policy extremely inefficient. Less extreme, but along the same lines, Bassetto and Sargent (2006, p. 1167) estimate that a simple budgeting rule that is non-currently used by the U.S government "substantially improves efficiency." Recently, no economist polled by the Chicago Booth's IGM forum agreed with the statement "Imposing new US tariffs on steel and aluminum will improve Americans' welfare."[1] Nevertheless, the tariffs became policy. At a microeconomic level, Chetty, Hendren, and Katz (2016, p. 898) argue that "The common practice of putting families on wait lists to receive a housing voucher may be particularly inefficient." At an institutional level, Douglass North argues in his Nobel lecture that "Institutions are not necessarily or even usually created to be socially efficient..." (North 1994, p. 360). Boettke, Coyne, and Leeson (2007, p. 130) summarize this viewpoint succinctly when they say that "when we examine policy reality in light of that economic theory we see inefficient policies all the time."[2]

Yet, there is an important political economy tradition, identified most notably with George Stigler, Gary Becker, and the Chicago School of Political Economy that suggests that in liberal representative democracies the political process essentially reflects the preferences of interest groups, which are themselves of made up of individual voters. According to this view, interest groups push for transfers and

[1] See http://www.igmchicago.org/surveys/steel-and-aluminum-tariffs.

[2] While there are many definitions of "efficiency" and it is not always clear which one each author has in mind, we mean Kaldor-Hicks efficiency, whereby something is efficient if the benefits outweigh the costs and could, in principal, involve transfers to make the policy Pareto efficient, whether or not those who benefit actually compensate anyone.

policies to accomplish particular goals. This process of competition among interest groups leads to efficient transfers and the most effective policies for accomplishing these goals. The only way that inefficient policies exist is if these policies are *efficiently inefficient* in the sense that while a more effective policy might be known, the cost of switching to the more effective policy would be more costly than the inefficiency of the current policy. The policy is only inefficient if we ignore actual costs.

For policy to be always efficient, the political process must *select* for efficient policies. As a nonpolitical analog, in a market setting the profit mechanism selects for firms who have made relatively better choices concerning profit-making (Alchian 1950). Firms that do not use the lowest cost alternatives will be run out of the market and the market will tend toward efficient production. In a representative democracy, what might be considered obvious selection mechanisms (e.g., voting) are much more crude mechanisms, although still clearly a selection mechanism. To what extent do political mechanisms select for efficient policies like markets select for efficient firms?

In this paper, we study politics as a selection mechanism to assess the efficiency properties of political decision-making within democratic societies. In addition to Alchian (1950), we draw on the work of Stigler (1971), Peltzman (1976), Posner (1974), Becker (1983), and Tollison (1988) by focusing on the role of interest groups and, in particular, the decisions of these groups to enter politics. For any policy that exists, there are groups of individuals who have the option to enter the political sphere and bear the cost of changing the policy. Furthermore, the costs and benefits might vary over time. New interest groups will tend to emerge when the costs associated with existing policies are sufficiently high that potential members can justify paying the necessary organizational costs to form a political coalition to overturn the existing policy. The observation that changing policy requires a sufficiently interested party that is willing to pay a fixed cost resembles the evolutionary analyses of the common law by Rubin (1977), Priest (1977), and Gennaioli and Shleifer (2007). In our paper, we argue that, like the common law, there is an evolutionary force towards efficiency for *legislation* by interest groups. Because we assume in the model that it is feasible for interest groups to enter the political sphere and change policy, we focus our broader discussion—like the papers mentioned above—on democratic societies where it is feasible for interest groups to form.

Our model suggests that over the long run, the endogenous entry of interest groups creates the necessary conditions for the political process to select for efficient policies (Proposition 1). This mirrors how the

entry of competing firms into a market drives the price down to marginal cost. In the long run, entry is sufficient and policies are efficient. In the short run, inefficient policies persist only if these policies are not too inefficient (Proposition 2). In other words, inefficient policies are efficiently inefficient in the sense that the cost to the prospective interest group of entering and eliminating the policy is greater than the cost of the policy itself. For example, if the economist could snap his fingers to get rid of tariffs with appropriate transfers, there may be an efficiency improvement. However, once we account for organizational costs the policy may or may not be efficient if it survives in the short run. In contrast, any policy must be efficient if it survives in the long run. What this suggests is that longlasting policies are either efficient or inefficient with moderate costs relative to the organizational costs, as suggested by Stigler (1992, p. 459). These organizational costs bound the level of inefficiency within an economy. Finally, we show that our dynamic, evolutionary approach leads to different conclusions than a static analysis of political bargaining. In particular, policies that appear inefficient in a static model are efficient in a dynamic model (Proposition 3). When there is uncertainty about the costs and benefits of a policy and there is a fixed cost of changing policy, there is value for interest groups to wait for some uncertainty to resolve before overturning the policy. Therefore, static models that ignore the value of learning about the current policy—or ignore the fixed costs as pointed out in the case of regulation by McCormick, Shughart, and Tollison (1984)—will over-diagnose inefficient policies.

From both a positive and normative perspective, our approach is a middle-ground between "efficiency always" implied by the Chicago School of Political Economy (Stigler 1971; Becker 1983; Wittman 1989, 1995; Peltzman 1990) and "inefficiencies all over" implied by standard market failure theory in public finance or government failure theory in public choice. We see several benefits of our middle-ground. For doing positive economics, our approach retains the power of "efficiency always" and forces the economist to search for the relevant costs, such as information costs or transactions costs, in order to explain how the world does not match the simple model. As Cheung (1998, p. 518) explains, efficiency becomes a tool for deriving testable implications. However, our evolutionary approach, rather than using efficiency as a bludgeon to force the world to fit our models, forces economists to treat efficiency as a driver of the search for the relevant constraints that serve as selection mechanisms. These selection mechanisms promote some behaviors and institutions while discouraging others; the continued iteration of constraints

shaping the competitive environment constitute the basic data to be interpreted in light of economic efficiency. The "inefficiencies all over" approach does not have such positive implications.

Unlike the "efficiency always" approach, our approach still allows for meaningful normative statements. The "efficiency always" view, as its proponents admit, leaves no room for efficiency as a normative criterion.[3] In the "efficiency always" approach, also referred to as the "tight prior" (Reder 1982), to claim something is inefficient is non-sensical. The statement "X is inefficient" has no meaning within the approach.

Our approach can be characterized not as "efficiency always" but "asymptotic efficiency" or "bounded inefficiency." This allows us to retain efficiency as a normative benchmark, although in a very different way than those theorists who use it in service of market failure and political failure arguments. We can distinguish between efficient and (efficiently) inefficient policies. In our framework, an inefficient policy is a policy that would change if organizational costs were zero. However, even with positive organizational costs, the policy's existence says the policy must not be too inefficient. Our evolutionary analysis leads to a *pre*sumption of efficiency for policy, to take Breton's (1993) phrasing, compared to an *as*sumption of efficiency that is axiomatic and unquestionable within the analysis. Thus we still have normative ground upon which to judge alternative institutions and can say (within the model at least) that these institutions with low organizational costs lead to more efficient policies than those institutions with high organizational costs.

Our benefit for normative economics over "inefficiencies all over" is that our approach puts constraints on our normative theorizing. We deem inefficient a policy simply because it does not match the simple model. From our perspective, (1) a particular inefficiency will tend to be eliminated in the long run and (2) the level of the inefficiencies that can persist in the short run depends on the institutional structure. There is a presumption of efficiency for long-lasting policies and any inefficiencies cannot be too inefficient.

Our conclusion should give pause to economists, pundits, and policy advisors who argue for an urgent need to replace long-lasting policies they deem to be inefficient. Our model suggests that the very fact that these policies are long-lasting reflects either a policy's efficiency or its moderate net cost relative to the organizational costs. Persistent policies are therefore likely to be because (a) the inefficiency cost is

[3] For a clear statement of this, see Cheung (1998, p. 518). We discuss this later.

substantially below those suggested by the economist's model or (b) the organizational costs are sufficiently large.

The rest of the paper is organized as follows. We first summarize and elaborate on Armen Alchian's insight about evolution in economics and how this relates to our approach (Section 2). We then walk through an example and give an intuitive explanation of how we apply this evolutionary approach to interest-group politics (Section 3) before moving onto the formal model and our main propositions (Section 4). With the formal model in mind, we place our approach within the literature, especially as a middle-ground between modeling politics-as-cooperation or politics-as-conflict (Section 5). We discuss some of the cross-sectional implications of our model in Section 6. Then we discuss the role of political entrepreneurship in reducing organizational costs for interest groups (Section 7). Finally, we conclude by discussing the implications of our model for how we do political economy (Section 8).

Alchian's Evolutionary Framework

One of the most interesting things about economics is how often investigations into its history of thought result in new and exciting research programs. Dead debates become the source of living scholarship. Such is the case with Armen Alchian's (1950) article on evolution, selection, and adaptation in economic theory. Alchian wrote his essay, which propelled him to national attention as an economist, in response to a debate within the economics literature during the 1940s. This debate was over whether it was appropriate to model economic agents, and in particular firms, as rational optimizers. Both sides of the debate had framed it in terms of firms' motivations and they argued about whether firms tried to maximize profits. Alchian (1950, p. 212) put forth a different way of thinking about the problem: instead of motivation, the behavior of firms could be best understood in terms of adaptation and selection.

Alchian noted that the existence of uncertainty made genuine profit maximization impossible. Because the probability distributions for various outcomes overlap, the concept of profit maximization by firms had no meaning. But this did not imply, Alchian argued, that profit maximization ought to be jettisoned. Instead, Alchian contended that the competitive market process selected for firms that, over time, realized the largest profits. Thus profit maximization was a feature not of firms as decision makers, but of the competitive environment within which firms operated. Firms that were successful at realizing positive

profits would find it easier to attract labor and capital, increasing their market share. Unsuccessful firms, those that realized smaller or even negative profits, would find themselves at a disadvantage. If they continued to incur lower profits than their competitors (implying negative economic profit), they would find their future action possibilities increasingly circumscribed. This process culminates in continuously unsuccessful firms being forced to exit the marketplace.

Profit maximization by firms is ultimately a market-level, rather than a firm-level, characteristic. Alchian was among the first to recognize that an agent's objective function derives from the institutional environment within which it acts. Note that this entails more than the tautologous statement that agents are always "doing the best they can." It means that the content of agents' objective function is derived from institutions because those institutions—the "rules of the game" (North 1990, 1994)—make concrete the incentives agents face and the information agents have at their disposal. Again using firms as an example, the appropriate institutional context is competitive (contestable) markets characterized by welldefined private property rights. The market process acts as a selection mechanism, promoting some outcomes while discouraging others. The most fruitful way to view agents' constrained maximization problems is in terms of the selection processes governing the relevant feedback loops. Agent motivation is not a determining factor of this process. The "analytical concepts usually associated with such [maximizing] behaviors are retained because they are not dependent upon such motivation or foresight" (Alchian 1950, p. 211).

Alchian's insight has been extended in many ways.[4] Recently, the literature on contextual or ecological rationality recognizes that rationality is an interactive process between the agent and the environment (Smith 2007; Todd and Gigerenzer 2012). But an evolutionary approach to behavior has not been widely applied to politics. In a sense, one could view the logic of minimum winning coalitions (Riker 1962) or bureaucracies (Niskanen 1968) as institutional-evolutionary approaches to non-market decision-making. But in these seminal contributions, social selection and adaptation occur in the analytical background. In contrast, we place selection and adaptation in the analytical foreground, making these processes the cornerstone of an economic theory of politics. This enables us to strike a balance between rational choice

[4] A similar issue was the crux of the Becker-Kirzner debate over the rationality postulate (Becker 1962, 1963; Kirzner 1962, 1963). See also Langlois (1986) on the connection between Alchian (1950) and the Becker/Kirzner debate.

theorists of politics who argue that whatever is, is efficient, and those who argue that in politics, inefficiencies are everywhere.

In his Nobel Prize lecture, James Buchanan (1987, p. 246) argued that the "relevant difference between markets and politics does not lie in the kinds of values/interest that persons pursue, but in the conditions under which they pursue their various interests." This statement is true, but it implies a much more radical reconsideration of rationality and efficiency in political settings than currently exists in the literature. In particular, it requires we think much more carefully about the implications of policy durability and longevity. Our project pursues a different line of inquiry by transposing the analysis of political compensating bargains to the institutional level. Our formal model, presented in Section 4, explicitly incorporates the institutional selection mechanism generated by the process of political bargaining among interest groups. First, however, we provide the intuition and a sketch of the mechanism.

Interest Groups and Efficiency: A Sketch of the Selection Mechanism

According to the interest group theory of public policy, legislation should be considered in the context of supply and demand. The demand for legislation comes from groups that seek to use legislation to generate value and/or a wealth transfer for the group. On the other hand, "those who 'supply' wealth transfers are individuals who do not find it cost effective to resist having their wealth taken away. In other words, it costs more than one dollar to resist having one dollar taken away" (Tollison 1988, p. 343).

Political actors are the specialist middlemen in this scenario that match up interest groups with suppliers. Nonetheless, this is a statement of what political actors do; the statement does very little to describe how they accomplish this task. Similar to Alchian's (1950) model of firms, political actors can be thought of as entrepreneurs who experiment and imitate to achieve their desired objectives. We model political actors as those seeking to acquire wealth through the political process.[5] This need not imply that political actors are crooks or otherwise disreputable. To the contrary, political actors attempt to acquire wealth through a successful political career that can only be accomplished by implementing policies that keep them employed as political actors. Thus, political actors have an incentive to view particular interest group policies as objectives to accomplish. Politicians, therefore, have an incentive to not only implement

[5] We could similarly assume that political actors maximize some measure of "political success," such as votes. However, for simplicity, we assume they maximize wealth, since the rest of our analysis is framed in terms net of simple cost and benefits.

policies that achieve the objectives of existing interest groups but also to identify possible policies that potential interest groups would be willing to support. Politicians can achieve success by imitating policies that have been implemented successfully elsewhere and experimenting with new policies that achieve the particular objectives of supporting interest groups.

In keeping with Alchian's (1950) discussion of evolution and survival, the efficiency of public policy is dependent on the selection mechanism. In a market setting, the profit mechanism selects for firms that are relatively better at earning a profit than their competitors. In a political setting, the selection mechanism for relatively efficient policies is hardly obvious. In what follows, we present a sketch of the selection mechanism and then a formal model representation.

A crucial insight of the Coase theorem (Coase 1960, Stigler 1966, p. 133) is that organizational costs, including any bargaining costs, are the source of inefficient actions.[6] In politics, that means inefficient legislation and wealth transfers. To understand this point, consider the following example. Suppose that the world is free of bargaining and organizational costs. One interest group, let's call them Group 1, wants to enact a policy that would provide a benefit, B, to the group. The cost to the rest of society is C. If the net benefit of the policy is positive, $B > C$, the policy will become the law. However, if $C > B$, then the rest of society will organize into Group 2. An entrepreneurial political actor will then negotiate on behalf of this new interest group to effectively offer to pay Group 1 an amount $B + \epsilon < C$ not to enact the policy. In this scenario, the only policies that would be enacted are those in which the benefits exceed the costs. This leads to a straightforward proposition. If we define efficient policy as any policy for which the benefits exceed the costs, then in the absence of organizational costs, the political process will select for efficient policies. The proof is obvious and follows from the example above and, again, is nothing more than the Coase theorem applied directly to a politics. If any interest group proposed legislation in which the costs exceeded the benefits, an opposition interest group would form to effectively bribe the interest group proposing the legislation to abandon their proposal. These bribes would result in a Pareto improvement relative to the implementation of the policy and inefficient policies are prevented from emerging.

A corollary of this proposition is that inefficient policies can only result if there are external costs, such as organizational and bargaining costs, associated with forming opposition interest groups and negotiating

[6] While it is referred to as the "Coase" theorem, the theorem is due to George Stigler and bares little resemblance to Coase's interpretation of his own paper. See Medema (1994), McCloskey (1998), and Albrecht and Kogelmann (2018).

the bribe. We can illustrate this with an example. Suppose that the cost of organizing for Group i is given as O_i. If $B - O_i > 0$, there is an incentive for an interest group to form since the net benefit of entry is positive. In keeping with our previous example, let's call this interest group, Group 1. Now suppose that $B < C$. It follows that the cost to society is greater than the benefit to the group and therefore the policy is inefficient, by definition. In order for the rest of society to prevent this policy, a competing interest group would have to emerge to bribe the original interest group. Again, let's call this Group 2. The cost of the bribe is $B - O_1 + \epsilon + O_2$. If $B < C$, but $B + \epsilon + (O_2 - O_1) > C$, then Group 2 will never materialize and the inefficient policy will be enacted. It is not worth it for those members of society who will bear the cost of the policy to organize in opposition to the policy.

What this illustrates is that inefficient policies will exist if the costs of organizing are sufficiently large that the group harmed by the policies would be better off living with the costs of the policies than organizing against them. Furthermore, this example is an illustration of the idea described by Olson (1965) of concentrated benefits and dispersed costs. If the benefits of a particular policy are concentrated within a small number of firms in an industry, but the costs of the policy are dispersed across thousands of consumers, the organizing costs for consumers are likely to be substantially higher than for the firms $0_2 \gg 0_1$. All else equal, this makes inefficient policies more likely to be enacted.

Nonetheless, in this section, we are concerned with evolution and selection. The examples presented above are static. Thus, while these examples are useful for explaining the emergence of inefficient policies, these examples cannot explain why the inefficient policy should persist. The example is like a one-time, eternal vote. Actual political processes are not like this. In order to discuss evolution and selection, we need a dynamic analysis. For example, suppose that firms in a particular industry earn a total flow of profits each period and have successfully used their interest group to obtain a benefit, B, each period. The present value of this wealth transfer over an infinite horizon is B/r where r is the real interest rate. In order to bribe this interest group to give up this flow of benefits, an interest group would have to enter the political market and pay the existing group $B/r + \epsilon$ to get rid of the policy. Under what conditions would another group emerge? Consider that the per period cost of the policy is once again given by C. However, suppose that C follows a random walk. An example consistent with this idea would be a tariff on steel. Thus, B would be the marginal flow of profits each period to domestic firms that comes from restricting foreign competition. If the productivity of steel manufacturing (or the quality of steel) in

foreign countries follows a random walk and the tariff is set sufficiently high, then the relative costs of domestic steel will follow a random walk as well. Under this scenario, once these costs get sufficiently high, the consumers bearing the cost of the tariff will have an incentive to organize and bribe steel producers to eliminate the tariff. In other words, there is a threshold, C^* that is a function of B, ϵ, O_2 and the time series properties of C, such that consumers will be willing to pay the organizational cost.

There are several important implications, which will be more explicit in the formal model and propositions in the next subsection. First, in the long run, inefficient policies should tend to be eliminated unless the benefiting interest group does everything it can to keep the costs of the policy moderate (Proposition 1). Second, there is an upper-bound on the level of inefficiency, formalized. The only inefficient policies that persist over time are those with moderate costs (Proposition 2). Third, the threshold is increasing in the cost of organizing (Corollary 2.1). Thus, any institutions or policies that reduce organizational costs will tend to accelerate the elimination of inefficient policies. Combined, these results imply that long-lasting policies will either be those with moderate costs or those that are efficient. An argument that a particular long-lasting policy is inefficient must take into account this selection process. In other words, the longer the policy has lasted, the more willing the economist observing the policy should be to carefully reconsider the assumptions of their model conjecturing inefficiency. All else equal, a long-lasting policy is either efficient or only moderately costly.

A Formal Model

Time is continuous and lasts forever. Suppose that a policy is already in place that generates a flow of benefits, B, for the interest group and a flow of costs for other members of society, C. The cost of organizing an interest group is O. If a new interest group is formed, this group will bribe the beneficiaries of the existing policy to eliminate the policy. It follows that the net benefit of entry for the new interest group at time t is:

$$\text{Net benefit} = \underbrace{E\int_t^{\infty} e^{-\rho t}C(t)dt}_{\text{Expected Cost Saving}} - \underbrace{\left(E\int_t^{\infty} e^{-\rho t}B(t)dt + \epsilon\backslash bigg\right)}_{\text{Expected Bribe}} - \underbrace{O}_{\text{Entry Cost}}$$

Or, alternatively,

$$\text{Net benefit} = \underbrace{E\int_t^{\infty} e^{-\rho t}[C(t) - B(t)]dt - \epsilon}_{\text{Expected Net Cost Saving}} - \underbrace{O}_{\text{Entry Cost}} \quad (1)$$

Let $N = C - B$ denote the net cost of the policy. Furthermore, suppose that from the perspective of the prospective interest group, the net cost of the policy varies exogenously over time (i.e. beyond the control of the prospective interest group) and is specifically assumed to follow a geometric Brownian motion:

$$\frac{dN(t)}{N(t)} = \mu dt + \sigma dz \quad (2)$$

where $\mu \geq 0$ is the expected rate of change in the net cost, σ is the conditional standard deviation, dz is an increment of a Wiener process (i.e., $dz = \epsilon\sqrt{dt}$, where ϵ is drawn from a standard normal distribution), and $N(0) = N_0$. The choice of a geometric Brownian motion to model the net costs of the policy is designed to capture two key assumptions. The first assumption is that the net cost of the policy is exogenous to the prospective interest group because they cannot have any control over the net costs of the policy without entry into the political, or legislative, market. The second assumption is that Brownian motion implies that the time path of the cost of the policy is unpredictable with the possible exception of a general drift (μ) over time.[7]

To model the entry decision of the prospective interest group, it is important to note that this group has the option to enter the political, or legislative market, and put an end to the costly policy. This option to enter has value in the same way that a financial option has value. Thus, we can determine when a prospective interest group will enter the market in two steps. First, we can derive the value of this option as a function of the net cost of existing legislation. Second, we can determine the precise value for the net cost at which the prospective interest group will decide to enter the market.

We will start by deriving the value of the option to enter the political market as a function of the net cost of the policy. Let $V(N)$ denote the value of the option of entering the political market. The value of this option satisfies the following recursive representation:

$$V(N,t) = \frac{1}{1+\rho\Delta t} EV(N', t+\Delta t)$$

[7] . Note that we have assumed that $\mu \geq 0$. If $\mu < 0$, then the net costs of the policy would have a negative drift over time and would eventually be insignificant without any action needed.

where ρ is the rate of time preference, E denotes the expectations operator, and N' is the net cost of the policy after a time interval of length Δt. This formula states that the value of the option today is equal to the expected discounted value of the policy next period. Note that this equation has the following continuous time representation:[8]

$$\rho V(N) = \frac{1}{dt} EdV$$

Using Ito's Lemma this can be written as

$$\rho V(N) = \frac{1}{dt} E\left[V'(N)dN + \frac{1}{2}V''(N)(dN)^2\right]$$

Substituting equation (2) into this equation and simplifying yields:

$$\tfrac{1}{2}\sigma^2 N^2 V''(N) + \mu N V'(N) - \rho V(N) = 0 \tag{3}$$

This type of second-order differential equation has a known solution of the form:

$$V(N) = \alpha_1 N^{\beta^+} + \alpha_2 N^{\beta^-} \tag{4}$$

where α_1 and α_2 are positive constants and β^+ and β^- are the positive and negative solutions, respectively, to the quadratic equation:

$$\tfrac{1}{2}\beta^2 + \left(\mu - \tfrac{1}{2}\sigma^2\right)\beta - \rho = 0 \tag{5}$$

We can use economic intuition to simplify the solution shown in equation (4). To do so requires two assumptions. First, we assume that the value of the option to enter the political market becomes worthless as the net cost becomes arbitrarily close to zero. Formally, this implies that

$$\lim_{N \to 0} V(N) = 0$$

[8] Multiplying both side of the discrete time representation by $1 + \rho\Delta t$ and re-arranging yields where $EdV := EV(N0, t + \Delta t) - V(N, t)$. Taking the limit as Δt goes to zero yields the continuous time representation.

For this condition to hold, it must be true that α_2 in equation (4) is equal to zero. This reduces the solution to

$$V(N) = \alpha_1 N^{\beta+} \tag{6}$$

Second, let N^* denote the net cost at which the interest group decides to enter. At this entry point, the interest group will be indifferent between holding the option and entering the market. Furthermore, recall that upon entering the market the interest group receives a benefit consistent with equation (1). It follows that when the interest group enters:

$$V(N^*) = \alpha_1 (N^*)^{\beta+} = \frac{N^*}{\rho - \mu} - O$$

where, for simplicity, we assume that $\epsilon \approx 0$. Solving this expression for α_1 yields:

$$\alpha_1 = (N^*)^{-\beta+} \left(\frac{N^*}{\rho - \mu} - O \right)$$

Plugging this solution for α_1 into equation (6) yields:

$$V(N) = \underbrace{\left(\frac{N}{N^*}\right)^{\beta+}}_{\text{Stochastic Discount Factor}} \times \underbrace{\left(\frac{N^*}{\rho-\mu} - O\right)}_{\text{Value at the Exercise Point}} \tag{7}$$

We now have a solution for the option value with a straightforward economic interpretation. As shown, the value of the option is the product of a stochastic discount factor and the value of the option at its exercise point. The trade-off faced by the prospective interest group is as follows. Holding the current net cost of a particular policy as given, the decision to enter when net costs are high yields a greater benefit when they form their interest group. This increases the value of the option. However, waiting for a higher net cost threshold means that, on average, the prospective interest group will wait longer to enter. This reduces the discount factor and therefore the present value of the option. In order to optimally balance this trade-off, the prospective interest group can choose N^* to maximize the option value of entry. The value of N^* that maximizes equation (7) is given as

$$N^* = \left(\frac{\beta}{\beta-1}\right)(\rho - \mu)O \tag{8}$$

where the superscript on β has been suppressed for notational convenience. The threshold for the entry of the prospective interest group is therefore directly proportional to the organizational cost. Whenever $N \geq N^*$, the interest group will enter the political market and bribe the existing interest group to overturn the inefficient policy. Since N is stochastic, the amount of time that an inefficient policy will last is also stochastic. Let $\tilde{T}$ denote the time period when the interest group enters. It follows that

$$\tilde{T} = \inf\{t \geq 0 \,|N \geq N^*\}$$

The inefficient policy will last until the earliest point in time at which the net cost meets or crosses the threshold. Assuming that the analysis begins in period $t = 0$, it follows that inefficient policies will last for $\tilde{T}$ periods before prospective interest groups enter and overturn the policy.

Discussion

The model in the previous section is sufficiently broad that it is easily generalizable to any policy. For example, for any policy *j*, the entry threshold can be written as

$$N_j^* = \left(\frac{\beta_j}{\beta_j - 1}\right)(\rho - \mu_j)O_j \tag{9}$$

where

$$\beta_j = \frac{(\sigma_j/2) - \mu_j + \sqrt{\left(\mu_j - \frac{\sigma^2}{2}\right)^2 + 2\sigma_j^2\rho}}{\sigma_j^2}$$

Given that we have already solved for the threshold, N_j^*, the following proposition comes almost immediately.

Proposition 1 (Asymptotic Efficiency)**.** *The probability that any inefficient policy j survives goes to zero as time goes to infinity.*

Proof. Recall that the stopping time is given as $\tilde{T} = inf\{t \geq 0 \,|N \geq N^*\}$. The proposition is equivalent to stating that the stopping time is finite, or $P(\tilde{T} < \infty) = 1$. This is a known result for Brownian motion with a constant barrier, such as N^*. See Stokey (2009, Theorem 5.1).

There are several important implications that follow from the model. First, since prospective interest groups will enter whenever $N_j \geq N_j^*$, it follows that there is a *selection mechanism* that eliminates inefficient policies. How quickly a particular society is able to eliminate inefficient policies through the endogenous entry of interest groups depends on the initial net cost of the policy $N(0) = N_0$ in comparison with the threshold for entry. Taking the initial cost as given, inefficient policies will tend to be eliminated faster as N_j^* declines. Proposition 1 is a mathematical formulation of George Stigler's famous remark that "every durable social institution or practice is efficient, or it would not persist over time" (Stigler 1992, p. 459).

The second important result, which is of more practical relevance, is that there is an upper-bound on the net cost of every inefficient policy. Since new interest groups will enter whenever the net cost of a current policy exceeds some threshold, it follows that the only policies that can persist over the very long run must either be efficient or inefficient policies with moderate costs relative to organizational costs. This is stated formally in Proposition 2. Again, given the work we did above, the proof is straightforward.

Proposition 2 (Bounded Inefficiency)**.** *For any parameters* ρ, μ_j, σ_j, *there is an upper bound on the level of inefficiency.*

Proof. If a policy is still in place at time *t*, this implies that the net cost to society $N_j(t)$ is below N_j^*. Using this and by rearranging equation (9) we have

$$\frac{N_j(t)}{\rho - \mu_j} \leq \left(\frac{\beta_j}{\beta_j - 1}\right) O_j.$$

This provides the upper bound on the level of inefficiency.

What this suggests is that the expected discounted net cost of the policy over an infinite horizon is equal to a multiple of organizational costs at the optimal entry point for prospective interest groups. Thus, any policy that exists over the long run must either have moderate costs associated with inefficiency or the organizational costs must be very large. This implication is important for policy analysis. In light of this

point, economists who want to argue that a particular long-lasting policy is inefficient and costly should be willing to reconsider the magnitude of the cost of the policy or even the inefficiency of the policy solely on the basis of the fact that the policy has lasted a sufficiently long time. Otherwise, they must explain why the organizational costs for this prospective interest group are so high.

Corollary 2.1 (Comparative Inefficiencies)**.** *The bound on the inefficiencies is increasing in the organizational costs,* O_j.

Thus, societies with lower organizational costs will tend to have more efficient policy regimes. We examine the cross-sectional predictions of this result in Section 6.

At the same time, it is important to understand the difference between a static analysis and the dynamic analysis of our model.

Proposition 3 (Dynamic Efficiency vs. Static Efficiency)**.** *There exist policies that are dynamically efficient that are statically inefficient.*

Proof. In a static environment, interest groups will enter the market if

$$E\int_0^\infty e^{-\rho t}C_j(t)dt \geq E\int_0^\infty e^{-\rho t}B_j(t)dt + O_j$$

Or, alternatively,

$$E\int_0^\infty e^{-\rho t}\left[C_j(t) - B_j(t)\right]dt = E\int_0^\infty e^{-\rho t}N_j(t)dt = \frac{N_j}{\rho - \mu_j} \geq O$$

In other words, if the cost of organizing an interest group to oppose the policy is less than or equal to the net cost of the policy, the prospective interest group should enter the political market. In the dynamic model, it follows that the prospective interest group should enter if

$$N_j^* \leq N_j(t)$$

Or, using the solution for N_j^*,

$$O_j \leq \left(1 - \frac{1}{\beta_j}\right)\frac{N_j(t)}{\rho - \mu_j}$$

Note that since $\beta_j > 1$, it follows that organizational costs must be lower in the dynamic model to overturn the inefficient policy than in the static model.

From a practical perspective, Proposition 3 means that economists who do not consider the dynamic nature of policy reform will over-diagnose inefficiencies. Proposition 3 is due to the uncertainty of the net costs. In the dynamic model, since organizing an interest group is costly, prospective members of the interest group would prefer to wait and see if the net costs are moderate before paying the organizational costs. So long as the costs remain moderate, members of the prospective group will be willing to tolerate them. What this implies is that it is possible to observe more inefficient policies in the short run than the static model would suggest. Nonetheless, Proposition 1 ensures there is a selection mechanism in the dynamic model to overturn the inefficient policies if the costs exceed moderate values.

Overall, what the model suggests that any inefficient policies that exist are "efficiently inefficient" in the sense that the net costs of the policy are either moderate or the organizational costs are so high that it would be more costly to eliminate the policy than to live with it.

Modeling Politics: Between Conflict and Perfect Cooperation

Now with our model explicit, it may be helpful to relate our approach to others in the literature. Acemoglu (2003) distinguishes between two approaches. The first is the "political Coase theorem," whereby political trades lead to efficient policies.[9] Through this lens, any differences in policy are a result of different preferences, technologies, or beliefs. Politics is just another form of social cooperation, like wellfunctioning economic markets. To a lesser degree, the political economy approach following Buchanan (1987) that models politics-as-exchange could also be called politics-as-cooperation, although not necessarily perfect.

In contrast to politics-as-cooperation, Acemoglu (2003) argues for modeling politics as *social conflict*. In this approach, "societies choose different policies, some of which are disastrous for their citizens, because those decisions are made by politicians or politically powerful social groups that are interested in maximizing their own payoffs, not aggregate output or social welfare" (p. 621). In Acemoglu's preferred

[9] Instead of Coasean bargaining, similar efficiency results can be rigorously justified by Tiebout (1956) sorting. For recent treatments, see Bierbrauer and Boyer (2016) and Jehiel and Lamy (2018). We focus on a single political community with bargainingbut conjecture that Propositions 1 and 2 hold in a sorting model where switching communities involves a fixed cost for each agent.

formulation, politics is social conflict—and the political Coase theorem does not hold—because of commitment problems inherent in the political system. Politicians cannot commit to not abusing power and citizens cannot commit to rewarding politicians who do not abuse power.

Our approach is distinct for two reasons. First, we focus on interest groups, as in the Becker (1983) and Stigler (1971) tradition. This mirrors how market transactions often operate through firms and allows us to discuss the evolutionary process of interest groups. Second, and more substantive, we explicitly model the dynamic political process which selects for policies through time. The friction that prevents politics from being perfectly cooperative is the organizational transaction cost and it is the cause of the conflict. Group A is able to benefit at the expense of Group B because it is costly for Group B to organize, especially for the first time.

In addition to changing the focus to the selection mechanism, our approach is a middle-ground between the two extremes of politics-as-cooperation and politics-as-conflict. When the benefits to cooperation are sufficiently large, cooperation will occur and the policy will change. However, we are not committed to a tight prior equilibrium (Reder 1982) that politics *must* be efficient by definition, i.e. whatever is, is efficient. Leeson (2018, p. 4) summarizes the tight prior that "all institutions in Ghana, in the United States and in North Korea—indeed, *every* institution we observe—reflects the best that people can do given extant relative prices and constraints."

The middle-ground espoused here allows us to determine when politics will be more like conflict and more like cooperation. When the organizational costs are *lower*, the bound on inefficient policies is *lower* and politics is *more* cooperative. The analysis is comparative; politics is not categorically one or the other but has attributes of both. Like Acemoglu and Robinson (2013, p. 174),

> our argument is that economic analysis needs to identify, theoretically and empirically, conditions under which politics and economics run into conflict, and then evaluate policy proposals taking into account this conflict and the potential backlashes it creates... Faced with a trade union exercising monopoly power and raising the wages of its members, many economists would advocate removing or limiting the union's ability to exercise this monopoly power, and this is certainly the right policy in some circumstances. But unions do not just influence the way the labor market functions; they also have important implications for the political system.

Sometimes there is a conflict. Sometimes there is not. The next section lays out examples of how we can use the model to think through such ideas and comparisons.

Institutions and Efficiency

The model above relies on the option of interest groups to organize and enter the political sphere. Because of this assumption, the model is meant to capture a feature of democratic societies. In this section, we consider how some complementary institutions interact with and govern the rules of the democracy itself, where interest groups are directly making decisions. These surrounding institutions, as we will argue, affect the parameters within which the interest groups make decisions and therefore the efficiency of the outcomes.

As we said in the introduction, our model has positive and normative implications. From a normative perspective, our model implies that the optimal role of these complementary institutions is to minimize the costs associated with organizing interest groups. To understand this point, note that the model implies that the net cost of an inefficient policy is bounded from above. Yet this upper bound depends on the organizational costs of interest groups. In the limit, as organizational costs go to zero, inefficient policies would disappear. More interestingly from a positive perspective, the ability of a democratic society to select for policies that increase the gains from trade will depend on complementary institutions. Any institutions that reduce the cost of search, bargaining, and organization will be more likely to select for efficient policies. In this section, we discuss some institutional characteristics that might be important in lowering costs. In doing so, we highlight potential explanations of the cross-sectional variation in interest group formation and efficiency.

An Independent Judiciary

One way to interpret legislation is as a contract between the legislature and interest groups. By framing legislation in this way, we can illustrate two dimensions along which legislation generates value. The first source of value of legislation is the size of any per period benefit that the legislation provides. The second source of value is the duration of the benefit or the durability of the contract (Crain and Tollison 1979a, 1979b; Landes and Posner 1975). If one legislature passes a particular type of legislation, the benefiting interest group will prefer that the legislation is durable. If interest groups perceive that beneficial legislation is likely to be overturned by subsequent legislatures, then their willingness to pay for the legislation will be lower, all else equal.

This can be understood in the context of our model as follows. In any contract between two parties, there are penalties for non-performance. In the case of a democratically elected legislature, however, the composition of the legislators changes with each election. Newly elected representatives are unlikely to feel any obligation for contracts (legislation) agreed to prior to their arrival in the legislature. In fact, newly elected representatives, especially if they represent a majority, might have an incentive to overturn existing legislation without any need to compensate the benefiting interest group. This tendency weakens the durability of legislation and therefore interest groups' expectations thereof. Less durable contracts reduce the incentive for potential members of a prospective interest group to pay the organizational costs to enter the political market.

As Landes and Posner (1975) argue, this creates an important role for the judiciary. If the durability of legislation has value, then legislatures will have an incentive to institute rules that make it difficult to overturn legislation through the legislature. Nonetheless, if the judicial system is subservient to the existing legislature, compared to the original legislature, then the current legislature might influence the court to interpret the law differently. This could be done, as Landes and Posner (1975, p. 879) point out, because ambiguities in the language of the legislation all judges to "utilize their considerable interpretive leeway to rewrite the legislation in conformity with the views of the current rather than the enacting legislature."

A judiciary that is able to make decisions independently from the existing legislature would behave differently and, in particular, "interpret and apply legislation in accordance with the original legislative understanding" (Landes and Posner 1975, p. 879). Judicial independence does not guarantee that judges will behave in this manner. Rogue judges might rule against particular forms of legislation and might ignore the original intent of the legislation in making their decisions. Nonetheless, these judges can be given an incentive to interpret the original intent of the law. Anderson, Shughart, and Tollison (1989) find evidence that legislatures tend to reward judges who display independence with higher salaries. Independent judges, therefore, earn a wage premium.

What this suggests is that cross-sectional variation in factors related to judicial independence, such as whether the judge is elected or appointed, whether the judge receives lifetime tenure, and the extent to which the legislature can reward the judiciary should explain cross-sectional variation in interest group

formation and the efficiency of policy. All else equal, we would expect countries with an independent judiciary to have greater a prevalence of interest groups and more efficient policy.

Executive Veto Power

The power of the judiciary to nullify legislation is one reason for its independence, compared to simply being a tool of the legislature. As Crain and Tollison (1979b) point out, veto power gives an executive the same power to nullify legislation. An executive who has the ability to veto legislation can ensure the durability of legislation. Since new legislatures represent a threat to durable legislation, the veto is a way for the executive to maintain the durability of the legislation. As evidence to support this view of the executive veto, Crain and Tollison (1979b) point out that U.S. presidents like Franklin Roosevelt and Lyndon Johnson had legislatures with large majorities of members of their own political party, but frequently exercised their veto. They also find that executives at the state level are more likely to exercise their veto power when there are large majorities in the legislature. The reason that this is the case is that large majorities of one party face a lower cost of enacting legislation and might have an incentive to overturn previous legislation. This represents a threat to the durability of legislation. The executive, therefore, has an incentive to veto legislation that would represent non-performance of a contract with an interest group without just compensation.

As our theory illustrates, organizational costs are irreversible investments. The durability of legislation effectively reduces the organizational costs of forming interest groups and thereby brings about more efficient policies. All else equal, we would expect countries with executive veto power to have a greater prevalence of interest groups and more efficient policy.

A Means of Just Compensation

Our model implies that when an interest group enters and a policy is overturned, there is some sort of compensation paid to the interest group losing the benefit. This could be done through legislation, but there is no guarantee that this will occur. We would, therefore, expect that democracies that allow for other means of compensation to special interest groups to have more interest group activity and more efficient policy. It might help to provide a specific example.

In the United States, the executive branch's Department of Justice has settlement authority. This effectively allows the executive branch to punish wrongdoers by having them provide compensation to interest groups that have lost their legislative benefit. Since the Justice Department can require the wrongdoer to pay the interest group directly, it circumvents legislative oversight about where the funds are allocated. As Cutsinger (2018) notes, this sort of authority represents an insurance policy for interest groups. Every interest group knows that there is some durability risk associated with the new legislation. Executive settlement authority is an insurance policy because it represents a payout when legislation is overturned. As evidence that this is, in fact, how the executive branch uses this authority, Cutsinger (2018) provides a recent example. He points out that in 2010, the composition of the House of Representatives in the United States changed significantly. Following this change, the new legislature eliminated a housing counseling assistance program overseen by the Department of Housing and Urban Development. This program had given $88 million to non-profit organizations that provided these types of services. Ultimately, half of this funding was restored. Later, in 2014, when the Department of Justice reached a settlement agreement with large banks based on their conduct in the mortgagebacked securities market, the agreement required that these banks pay a combined $30 million to these non-profit counseling providers and gave the banks further incentive to provide even more funding.

Like the executive veto, the executive settlement authority in the U.S. makes contracts between interest groups and the legislature more durable. Like the executive veto power, we would expect that countries with similar sorts of rules and authority would promote greater interest group participation and more efficient policy outcomes.

The Industrial Organization of the Legislature

If the durability of legislation is valued by interest groups, then one would expect that variation in the industrial organization of the legislature would explain variation in the durability of legislation. Weingast and Marshall (1988) make this argument by pointing out that legislatures that want to promote the durability of legislation will have a committee system for determining what legislation is voted upon. According to Weingast and Marshall, an idealized system would have committees that specialize in a particular issue and the sole authority to determine what legislation gets voted on. In addition, committee membership would be based on seniority and replacement is subject to a bidding process. The basic idea

is that each of these characteristics serves to enhance the durability of enacted legislation. Specialization tends to align the committee membership with the interests of their constituents. A monopoly power over the decision to vote on relevant legislation effectively gives the committee a veto power over legislation. Furthermore, "agenda power allows committees to bias the outcome in favor of the alternative they most prefer" (p. 145). Since the durability of legislation will directly effect the entry and organizational costs of interest groups, then variation in the industrial organization of the legislature will affect the upper bound on the inefficiency of policies. Weingast and Marshall focus only on the U.S., but show that the U.S. system is consistent with many of the comparative statics implied by their idealized system.

Committees, however, are not the only form of organization. Leibowitz and Tollison (1980) point out that committees themselves are formed as a substitute for party-line voting. Democracies that have a high degree of party discipline or loyalty do not need to rely on committees since votes will be driven by party lines. Weingast and Marshall (1988) agree, arguing that political parties control positions of power in the British Parliament and therefore have some impact on the distribution of political benefits. Political parties invest in particular reputations—as in Caillaud and Tirole (2002)—and are rewarded for upholding (and punished for failing to uphold) the durability of legislative bargains.

What is not clear from this work is how legislatures end up evolving into one system or the other. Nonetheless, one would expect from this discussion that countries with legislatures organized by committee to produce more efficient legislation as the committee structure becomes closer to the idealized structure outlined by Weingast and Marshall (1988). Incorporating our model, in parliamentary systems, one would expect that a higher degree of party discipline and loyalty would be associated with more efficient policies.

Free Political Speech

One major factor that affects the organizational costs of interest groups is the freedom of speech. In order to form an interest group, it is necessary to be able to share their views freely. In addition, the success of interest groups not only requires direct work with legislators but also electing legislators that are willing to advocate and vote for such legislation. This latter goal is made easier when interest groups are free to get their message out to the general public. Much is often made about uninformed voters in a democracy.

Since information about issues and candidates is costly, some voters will not invest enough in information to be sufficiently informed. Nonetheless, a substitute for costly investment in information about the issues and the candidates is simply to look for an organization with common interests and values for voting advice (Wittman 1989).

Recently, the U.S. Supreme Court upheld freedom of speech for corporations, unions, and non-profits making explicit reference to interest groups:

> The law before us is an outright ban, backed by criminal sanctions. Section 441b makes it a felony for all corporations – including nonprofit advocacy corporations – either to expressly advocate the election or defeat of candidates or to broadcast electioneering communications within 30 days of a primary election and 60 days of a general election. Thus, the following acts would all be felonies under §441b: The Sierra Club runs an ad, within the crucial phase of 60 days before the general election, that exhorts the public to disapprove of a Congressman who favors logging in national forests; the National Rifle Association publishes a book urging the public to vote for the challenger because the incumbent U. S. Senator supports a handgun ban; and the American Civil Liberties Union creates a Web site telling the public to vote for a Presidential candidate in light of that candidate's defense of free speech. These prohibitions are classic examples of censorship. (*Citizens United v. Federal Election Commission*, 588 U.S. 20 (2010) (Justice Kennedy, Opinion)).

What this statement argues is not only that interest groups have a constitutional right to free speech in the U.S., but that interest groups play a role in providing information to voters that otherwise might not be available. Furthermore, the court argued that limits on free speech do not prohibit such entities from speaking, but rather make such speech more costly.[10] Couched in terms of our theory, this argument is tantamount to saying that restrictions on the speech of interest groups unnecessarily increases the organizational costs of interest groups to enter politics. If our theory is correct, the ruling is *efficiency enhancing* relative to the alternative.

The ability to freely communicate is important for determining organizational costs. If a prospective interest group knows that there are limits on when, where, or how they can distribute their message they will incorporate this into their decision to form and enter the political market. This raises the entry or organizational costs of the interest group. We would, therefore, expect countries with more liberal freedom of speech policies generally and free speech policies that apply to interest groups, specifically, to have more interest group activity and more efficient policies. We would also expect these effects to be

[10] The interested reader should refer to Justice Kennedy's discussion of political action committees.

most strong for countries that have some sort of constitutional rule supporting free speech since constitutions are often particularly durable contracts (Crain and Tollison 1979a).

Political Entrepreneurship

A critical, albeit implicit, assumption of our model is that politicians act as a representative of interest groups. In this section, we discuss the necessary role of political entrepreneurship. In a democratic system, politicians can be considered political entrepreneurs in the sense that they can achieve positive payoffs in one of two ways. The first is to identify policies that are either efficient or efficiently inefficient. By definition, efficient policies are those in which the benefits exceed the costs. Thus, the identification of efficient policies is likely to bring economic success. Similarly, the politician can generate electoral success by identifying polices that are efficiently inefficient. In other words, the politician can identify policies that are inefficient, but with costs that are modest relative to the organizational cost of forming an opposition interest group.

However, political entrepreneurs have a second way of achieving electoral success and that is to actively work to reduce the organizational costs of a prospective interest group. In other words, some political entrepreneurs are likely to be "alert" to the fact that there are potential interest groups that could form in order to eliminate the existing policy.[11] These types of entrepreneurs are likely to be political outsiders in the sense that their perceived path to political success is achieved by appealing to potential interest groups who have not yet formed. By focusing on particular issues, these types of political entrepreneurs are likely to substantially reduce the search cost component of total organizational costs. All else equal, this makes it more likely that the potential interest group forms. Of course, this type of entrepreneurship has the possibility of political destabilization since it represents a threat to the existing policy regime. By pursuing this strategy, the political entrepreneur is employing a high-risk, high-reward strategy in terms of their own electoral prospects but not necessarily for the issue they are championing. The reason that incumbent politicians are also entrepreneurial. As a result, they might use this source of disruption to negotiate between interest groups thereby engineering a payoff to the existing interest group to eliminate the offending policy opposed by the newly created interest group. While this strategy is high-risk, high-

[11] The term "alert" is used in the sense that Kirzner (1973) used to describe private sector entrepreneurship.

reward for the outside political entrepreneur, it is not for the entering interest group since they will now have both an incumbent willing to negotiate and an outsider advocating on their behalf.

This interpretation of political entrepreneurship represents an important rejoinder to arguments that emphasize the predatory nature of political entrepreneurs and the resulting inefficiencies. For example, Holcombe (2002, p. 147) notes a key difference between private and political markets:[12]

> In economic equilibrium, all profit opportunities are competed away. In politics, an equilibrium will also eliminate profit opportunities from productive political activities, because inefficiencies will be eliminated. However, potential profits from political predation always remain in a democracy.

He argues that this creates a tendency for predatory political entrepreneurship that creates inefficient transfers from one group to another. As a result, inefficient transfers become the norm and cyclical majorities can emerge as different coalitions form to shift these inefficient transfers between groups. However, the problems with this argument are that (1) he takes too narrow a view of political entrepreneurship, and (2) he fails to engage with the interest group theory on its own terms.

Holcombe (2002, p. 148) provides an example that purports to demonstrate the tendency toward inefficient policy: "Returning to the three person example, a majority would favor a program that provides $1 in benefits for two people while imposing a cost of $2.50 on a third." We clearly do not dispute this claim. However, this example impels the following question: why doesn't this third person offer $1.01 to each of these other individuals knowing that the alternative is to lose $2.50? This would be Paretoimproving relative to the implementation of the policy.

Holcombe provides two types of answers to this question. The first is that: "Political support, not economic efficiency, is the criterion for success in a democratic environment" (Holcombe 2002, p. 149). Implicitly Holcombe is assuming that majority rule determines electoral success. But wouldn't the third person be willing to lobby the elected representative to facilitate a direct, lump sum transfer that would be preferable to the alternative policy? Wouldn't a separate political entrepreneur have an incentive to emerge to broker such a deal if the incumbent is unwilling to do so? An appeal to a simple majority is not sufficient to rule out these alternative outcomes. Even an appeal to a simple majority in a direct

[12] . In what follows, we address the arguments of Holcombe specifically, because we believe Holcombe provides the clearest representation of a common view of political entrepreneurship that contrasts with our view.

democracy is not a sufficient response because *someone* has to determine what gets placed on the ballot in the first place. So there is always someone to lobby.

Holcombe (2002, p. 150) later provides a more direct critique of the interest group theory that is necessary to quote at length:

> "Becker (1983), who emphasizes the efficiency-enhancing aspects of political exchange, depicts the legislature as a marketplace where interest groups express their demands for and against political programs and policies, and the legislature clears the market by passing legislation up to the point where the marginal political benefits of legislation just equal the marginal political costs. If the Coase theorem applies, so that transactions costs do not keep anyone from registering their political demands, then the legislative market should clear efficiently, as Wittman (1989, 1995) suggests. However, most people have very limited access to political markets because the opportunity cost of expressing political demands on most issues is so high relative to the benefit. . . Thus, while in the aggregate, the benefits of opposing inefficient legislation exceed the costs, the public good nature of this opposition means it is not worthwhile for any one opponent to do so, allowing inefficient legislation to be passed."

This critique fails to meet the interest group theory on its own terms. Interest groups exist not only to communicate their objectives to political actors, but also to uninformed voters. For example, Wittman (1989, p. 1400) argues that for a voter to make an intelligent choice, it's "sufficient for the voter to find a person or organization(s) with similar preferences and then ask advice on how to vote." Furthermore, even critics of the so-called Becker-Stigler version of political economy concede that this approach suggests that either policies are efficient or that political constraints create transaction costs of achieving efficiency are greater than the cost of the inefficiency itself (Boettke, Coyne, and Leeson 2007, p. 130). In fact, our model demonstrates this very characteristic. Explaining how and why inefficient policies might emerge is straightforward from a transactions cost approach to politics. However, explaining why such policies persist is a separate question entirely. If the costs are sufficiently high, individuals will have an incentive to form an interest group to oppose the policy. Furthermore, political entrepreneurs who are alert to the cost of such policies and the corresponding political opportunity have an incentive to emerge as a focal point for this issue thereby reducing the search costs associated with organizing an interest group. In fact, the role of these political entrepreneurs is likely enhanced if we assume that some fraction of the voting public is uninformed. By being alert to and highlighting the costs of a particular policy, the entrepreneur might attract previously uninformed individuals to join or support the interest group.

To make our argument succinct, we do not dispute that *some* inefficient policies will be passed, nor do we dispute that *some* political entrepreneurs might have a tendency toward promoting inefficient policies. However, political entrepreneurs can also profit from being alert to the costs of policies that could be eliminated by reducing the organizational costs of the opposition. These sorts of political entrepreneurs tend to shorten the length of time that inefficient policies are in place. And, in fact, particularly adept entrepreneurs of this type might emerge early enough to prevent such policies from emerging in the first place.

In addition, it may be that some politicians intend to promote and implement inefficient policies—the bootleggers in Yandle's (1983) formulation—just as some politicians intend to promote and implement efficient policies (the baptists). Nevertheless, the outcome of the evolutionary process is separate from any intention, just whether or not firm managers intend to maximize profit is separate from whether the market selects for those firm's whose managers approximately maximize profit.

8 What Should Political Economists Do?

Instead of concluding by re-summarizing our results, we conclude by considering what implications our argument has for the role of political economists.

First, it calls into question economists' impulse to call certain policies inefficient. Just as economists would be hesitant to tell people in markets that they are leaving $20 bills on the ground, so should economists be hesitant to claim there are $20 political bills abounding. As stated in the introduction, our analysis leads to a presumption of efficiency (Breton 1993). In a political atmosphere with low organizational costs, the political process already has a process by which $20 bills are found. However, political economists need not be committed by assumption to the tight prior (Reder 1982) that policy *must* be efficient by definition. There are possible improvements relative to the current world, even if it is not as simple as picking up a $20 bill.

Our model suggests two possible roles for the economist. The first, as already pointed out by James Buchanan (1959), is simply to make policy suggestions. In this approach, the economist makes suggestions to a political entrepreneur, in a similar manner to how consulting economists can sometimes help firms increase profitability. By providing economic knowledge to the political entrepreneurs, "the activities of

economists can affect the relative prices and/or constraints that others face, which in turn influences the institutions that are efficient in their contexts and hence the institutions they adopt" (Leeson 2018, p. 8). If the proposed change is a $20 bill, the political entrepreneur can pick it up. This could be the economist's role in the policy process. This is the only role for political economists in the tight prior perspective.

More importantly, our paper suggests an Alchian-esque approach to political economy. As outlined above, certain institutional features will result in a more effective selection mechanism: independent judiciaries, the veto power, etc. A focus on the political process as an evolutionary process moves the role of the political economist to a focus on constitutional rules of the game (Buchanan 1949, 1975, pp. 227-8,1987, p. 223, and more recently Aghion, Alesina, and Trebbi 2004; Barbera and Jackson 2004; Acemoglu, Egorov, and Sonin 2012). Given institutions X that have organizational costs Y, there is a particular bound on the level of inefficiency that can occur. However, if we consider a change of institutions to X^0 that lowers organizational costs to Y^0, then the original policy would change. More generally in our framework, the constitutional change that lowers the organizational costs allows the evolutionary process to more effectively select for efficient policies.

However, the political economist cannot simply point to a policy that does not match the efficient policy in some simple model and blithely assert inefficiency. Instead, the political economist needs to look to the political process as a whole and to the circumstances that led to a specific policy and allowed the policy to survive. In a world of the second-best, some policies that appear inefficient in a baseline model turn out to be an effective way to deal with other distortions in the world.

For example, capital taxation is often shown to be inefficient in canonical models (Diamond and Mirrlees 1971; Chamley 1986; Judd 1985). And yet, the taxation of capital is prevalent in reality. There are three approaches to such results. The first is to say the capital taxation we see in the world is inefficient and poor political incentives allow capital taxation to remain. The second is to construct a more elaborate model to rationalize capital taxation, such as by adding dynamics (Golosov, Kocherlakota, and Tsyvinski 2003) or international trade (Keen and Wildasin 2004). In this approach, the takeaway must be that those other, simple models which find capital taxation to be inefficient are missing an important part of the real world.

Our suggested approach is to look at the reasons throughout history for capital taxation to be instituted *and then survive*. If one does this, one finds that, historically, capital taxation is often used to correct other

distortions and was used extensively by economically successful societies (Thompson 1974; Thompson and Hickson 2001; Hendrickson, Salter, and Albrecht 2018). Those societies that failed to properly tax capital accumulation did not prosper, while those that set up an effective system for taxing capital did prosper. For example, Hendrickson, Salter, and Albrecht (2018) argue that Britain's superior ability to tax capital accumulation, relative to China, played a role the two countries' economic power reversal in the 18th and 19th centuries.[13]

In addition to the theoretical innovation that allows us to speak of asymptotic efficiency and bounded inefficiencies, our approach suggests an alternative perspective for more applied policy work, and the role of the economist in public discourse. James Buchanan (1959) argued that the way to "test" whether policy changes are improvements is whether the proposed changes can secure the consent of interested parties. Economists can contribute to crafting efficiency–enhancing policy at the margin by proposing political bargains that increase the size of the social product, while simultaneously containing distributional elements that make the proposals acceptable to existing stakeholders. These are essentially political buyouts and an application of the political Coase theorem (Acemoglu 2003; Parisi 2003).

We argue for applying and extending his framework. By proposing Pareto-improving policies and institutional changes, economists are neither shoehorning reality into our preconceived models nor binding ourselves to a stubborn Panglossianism. Economists can be political-institutional entrepreneurs who specialize in idea arbitrage: proposing ways to repackage side payments, loosen constraints, etc. in a manner that meets the requirements of all interested parties while increasing the size of the social product. Admittedly, this only works if economists are not themselves actively participating in the vagaries of day-to-day politics, qua economists. But this still leaves ample room for economists to be social *scientists* as well as *social* scientists.

[13] We think this point is generalizable. For example, we see four different ways to approach questions in the literature. The first two approaches come originally from public finance. In the first approach, economists write down a model with some sort of friction, solve for the equilibrium, and compare the equilibrium to the allocation that would maximize social welfare. This is the approach taken by standard market failure theory, but also somewhat by Acemoglu's (2003) politics-as-conflict. Here you compare an ideal to an equilibrium. In the second approach, economists start with the outcome and the constraints and work backwards to find the objective. For recent work, see Brendon (2013), Lockwood and Weinzierl (2014, 2015), and Heathcote and Tsujiyama (2016). The third approach is like the dual of the second approach and is found with the "efficiency always" people, as elaborated by Cheung (1998). In this approach, the economist starts with the outcome and the objective and searches for the constraints that make the outcome efficient. The fourth approach is identified with public choice and political economy, in which the economist models the behavior of the political actors in the process. Our approach is more in line with the second and third and suggests the first and fourth will over-identify inefficiencies.

Yet, how effective economists are in this endeavor crucially depends on the notion of efficiency that they bring to the bargaining table. The difficulty is this: unless one looks at efficiency in the sense we discuss it in this paper, economists will not know how to structure the buyout, or even what to buyout in the first place. This is because a policy that looks inefficient can be, and frequently is, efficient. Capital taxation can be a response to the wealth-defense externality (Thompson 1974; Hendrickson, Salter, and Albrecht 2018); tariffs can be a complicated form of redistribution to a politically important interest group, etc. Looking for the constraints that make these things durable, and hence asymptotically efficient, is necessary before we can even come to the table to talk about buyouts. If we fail to identify the proper constraints, economists will be fooled into proposing political Coasean bargains that do not secure consent among all the relevant parties and be left scratching their heads as to why.

In other words, the efficacy of a political Coase theorem presupposes agreement about *how* policy should change. But economists cannot meaningfully discuss *how* policy should change unless they have first correctly identified *what* policy should change. This involves grappling with hidden constraints that only a rational choice theory of politics can identify. Our framework in this paper helps to identify the *what*.

While the argument above shows how our framework helps for theoretical analysis of institutions, we argue it is fruitful for *applied* work in political economy. Other economists have long used this approach, although without the evolutionary emphasis. For example, our approach is closely related to Cheung (1998, p. 518) explains that he used Pareto optimality as a tool for positive economics:

> My reinterpretation of Pareto optimality renders the condition worthless in welfare economics, but significantly enhances its role in positive analysis. In specifying constraints to derive testable propositions, whenever the Pareto condition fails to hold we would immediately know that some constraints are missing: it would then be up to us to decide whether the omitted constraints are relevant to the observations we are seeking to explain.

Cheung mostly applied this approach to market settings, such as sharecropping, fisheries, and the market for bees (Cheung 1968, 1970, 1973).

However, the same logic can be applied to non-market settings, as has been shown by the work of Peter Leeson. Let us consider two examples. First, Leeson (2012) considers the use of "ordeals", a practice whereby "For 400 years the most sophisticated persons in Europe decided difficult criminal cases by asking the defendant to thrust his arm into a cauldron of boiling water and fish out a ring" (p. 691). Instead of accepting the conclusion that ordeals are part of an obviously inefficient system (as done by

other writers, see references therein) Leeson uses the systems survival success as a reason to search deeper for the hidden costs and benefits that existed for these institutions. From that, Leeson concludes,

> In a dramatically less technologically advanced state, such as that which prevailed in the Middle Ages, or even in a technologically advanced state where individuals believe strongly that trials of fire and water are *iudicia Dei*, medieval-style judicial ordeals could again be the efficient option. (p. 712)

As a second example, Leeson (2013) studies "vermin trials," whereby "For 250 years insects and rodents accused of committing property crimes were tried as legal persons in French, Italian, and Swiss ecclesiastic courts under the same laws and according to the same procedures used to try actual persons" (p. 811). Like ordeals, Leeson argues that the courts stuck with "vermin trials because they maximized their profit" (p. 833). The non-market mechanism of a medieval court still needed to (and did) survive a selection mechanism.

Notice Leeson does not derive normative conclusions; he does not argue that modern societies *should* use ordeals or vermin trials. Instead, he searches for the relevant institutional constraints that are missing from previously analyses. In our formulation, the fact that institutions are subject to a selection mechanism is used as a tool for applied work. Why was it selected? What we the relevant interest groups and organizational costs? We believe this approach is extremely fruitful, and in the tight prior tradition, we have highlighted a few ways forward for such an approach to non-market decision-making.

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