



The efficiency of regulatory arbitrage

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Abstract

Classic public choice skepticism about the regulatory state, based on theories of rent-seeking, rent extraction and regulatory capture, is based on the unrealistic, and usually unstated, assumption of a monopolist regulator. In practice, the regulatory state is polycentric, involving numerous quasi-independent agencies with overlapping responsibilities. This has led to a more optimistic picture based on the idea of regulatory arbitrage: when firms can, to some extent, pick and choose their preferred regulator, regulatory agencies are constrained to deliver relatively efficient regulatory policies. In our view, this optimism is also unrealistic. We build a family of models that explores the possible regulatory outcomes, and use some aspects of Gordon Tullock's critique of the common law as a conceptual foundation for the analysis of the efficiency of a polycentric regulatory system.

Keywords Regulatory capitalism · Polycentricity · Common law · Rent-seeking · Certification markets

JEL Classification D72 · H77 · P16

1 Introduction

Gordon Tullock's 1967 paper describing the phenomenon of rent-seeking has generated a large follow-up literature, both empirical and theoretical (Buchanan et al. 1980; Tollison 1982; Tullock 2005b; Congleton et al. 2008; Congleton and Hillman 2015). The associated theories of rent-extraction (McChesney 1987, 1997) and regulatory capture (Stigler 1971; Peltzman 1993; Bó 2006) further help paint a more complete picture of why democracies often adopt economically inefficient regulatory policies.

Part of this literature attempts to draw systemic, large-scale predictions about the inherent long-term consequences of accumulating such inefficient regulatory policies and

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makes constitutional political economy recommendations about how to limit the problem (Buchanan and Tullock 1962; Buchanan 1980; Olson 1982; Ostrom 1997; Buchanan and Congleton 1998).¹ The main economic prediction is that, if the problem is not addressed, economic growth is gradually undermined, leading to stagnation and eventual collapse, while the main political concern is that the growth of the regulatory state creates positions of power that eventually threaten and undermine democracy. Some authors recently have claimed that the productivity slowdown experienced by advanced economies since the mid 1970s is at least partly caused by this very mechanism (Cowen 2011, 2017; Broughel 2017; Lindsey and Teles 2017), but that hypothesis is challenged by Goldschlag and Tabarrok (2018).

The typical recommendations to counter observed rent-seeking trends are (a) to strengthen the rule of law, i.e., limit policies that target special interest groups instead of adopting universal rules, (b) reduce the scope of government, as democracy is expected to work more efficiently if voters need to keep track of fewer policy details, and (c) decentralize in order to enable stronger Tiebout competition as a countervailing force. The rule of law recommendation has been criticized as largely meaningless, as discriminatory policies can and often are written in language that sounds universal (Rajagopalan and Wagner 2013). Recommendations to reduce the scope of government and to decentralize strike many as politically unrealistic, and, perhaps, also undesirable for other reasons. For example, owing to technological and other factors, interjurisdictional externalities are greater today than in the past, providing a justification for more centralized policymaking across a variety of issues. But, if such measures are indeed politically unrealistic, that conclusion also means that the rent-seeking problems are more difficult to address.

As explained by Ostrom (1991) and Aligica and Tarko (2012), recognizing the polycentric nature of different institutional systems can help us draw non-ad hoc analogies from one to another. We are attempting to do precisely that here by building parallels between the polycentricity of the common law and of the regulatory system, and using Tullock's critique of the former as a source of insight for the assessment of the latter. In what follows, we first explain why the typical pessimistic view regarding the Olsonian rent-seeking spiral is based on a flawed (unrealistic) assumption about the structure of the regulatory system, namely that it assumes a monopolistic regulator, and discuss the consequences of having a polycentric regulatory system. Such a system can either create an anticommons problem, making the inefficiency significantly worse, or, on the contrary, can enable regulatory arbitrage and Tiebout-like competition between regulatory agencies, leading to an emergent quasi-efficient regulatory environment. Which of those scenarios occurs in practice is often difficult to tell, requiring a highly detailed case-by-case analysis, but we describe some broad empirical patterns showing that regulatory arbitrage may indeed provide a form of de facto deregulation despite a de jure expansion in regulations and regulatory agencies. Second, we develop a family of simple mathematical models showing that different assumptions about regulatory harmonization can lead to significantly different regulatory outcomes, either enabling the anticommons problem or enabling regulatory arbitrage. Third, we build upon Tullock's critique of the common law system in order to develop a theoretical framework for assessing the efficiency of regulatory arbitrage. The common law system has many features that are similar to the polycentric regulatory environment. The bottom line of both the mathematical modeling and of the analogy to Tullock's critique is

¹ Such concerns were anticipated partly by Hayek (1944), see Boettke (1995) and Boettke and López (2002).

Table 1 Air transportation

| Agency | Restrictions |
|--|--------------|
| Federal Aviation Administration, Department of Transportation | 211,059 |
| Department of Transportation Board of Contract Appeals | 35,047 |
| Civil Aeronautics Board | 16,498 |
| United States Customs Service, Department of the Treasury | 14,820 |
| Bureau of Customs and Border Protection, Department of Homeland Security; Department of the Treasury | 10,219 |
| Office of the Secretary of Defense | 8815 |
| Department of Health and Human Services | 3517 |
| Research and Special Programs Administration, Department of Transportation | 2444 |
| Bureau of Transportation Statistics, Department of Transportation | 2417 |
| Unattributed | 1785 |
| Panama Canal Commission | 1686 |
| Animal and Plant Health Inspection Service, Department of Agriculture | 1284 |
| Other | 23,142 |

Cumulative restrictions from 1970 to 2014. Table includes only the agencies that created more than 1000 restrictions

Source of data: RegData 2.2

that regulatory arbitrage is an important phenomenon but its power to generate an efficient regulatory environment should not be overstated.

2 The regulatory system is polycentric

The typical view regarding the long-term structural impacts of rent-seeking and regulatory capture is based on the false premise that the government is a monopolistic regulator. A more realistic picture, however, is that of a polycentric regulatory environment: most areas of activity are regulated by multiple quasi-independent agencies with overlapping responsibilities (see some examples in Tables 1, 2, 3 and 4). Depending on its organization, such a polycentric system can, theoretically, either make matters even worse than the monocentric one, if it creates a tragedy of the anticommons among regulators, or, on the contrary, it can foster a Tiebout-like process of regulatory discovery leading to a more efficient emergent regulatory system. When assessing a real-world regulatory system, it is critical to properly account for both possibilities.

2.1 Between anticommons and regulatory arbitrage

In the hypothetical case of a monopolistic regulator, no inherent countervailing mechanism to the Olsonian rent-seeking spiral exists, apart from its rather weak accountability to voters, and the threat to democracy associated with increasing the scope and power of the regulator would be very serious indeed. However, the pessimistic anticommons scenario leads to even greater economic inefficiencies (Heller 1998, 2008; Buchanan and Yoon 2000; Mitchell and Stratmann 2015; Mitchell and Koopman this issue). According to that

Table 2 Food manufacturing

| Agency | Restrictions |
|---|--------------|
| Food and Drug Administration, Department of Health and Human Services | 149,367 |
| Food Safety and Inspection Service, Department of Agriculture | 94,568 |
| Food and Consumer Service, Department of Agriculture | 87,712 |
| EPA - General | 38,740 |
| Agricultural Marketing Service (Standards, Inspections, Marketing Practices), Department of Agriculture | 17,400 |
| Animal and Plant Health Inspection Service, Department of Agriculture | 15,771 |
| Grain Inspection, Packers and Stockyards Administration (Federal Grain Inspection Service), Department of Agriculture | 6498 |
| Foreign Agricultural Service, Department of Agriculture | 3191 |
| Food and Nutrition Service, Department of Agriculture | 2503 |
| Minerals Management Service, Department of the Interior | 2309 |
| Mine Safety and Health Administration, Department of Labor | 1539 |
| Internal Revenue Service, Department of the Treasury | 1347 |
| Bureau of Land Management, Department of the Interior | 1245 |
| Wage and Hour Division, Department of Labor | 1242 |
| Bureau of Alcohol, Tobacco and Firearms, Department of the Treasury | 1180 |
| Drug Enforcement Administration, Department of Justice | 1129 |
| National Highway Traffic Safety Administration and Federal Highway Administration, Department of Transportation | 1083 |
| Other | 41,887 |

Cumulative restrictions from 1970 to 2014. Table includes only the agencies that created more than 1000 restrictions

Source of data: RegData 2.2

perspective, each firm is regulated by multiple independent regulators, and each of the regulators has veto power over allowing the firm to operate. That scenario is similar to the case of a land developer who faces an anticommons hold-up problem when trying to buy land from multiple owners, each of whom has effective veto power over the developer's project by refusing to sell, or to the case of complex products that make use of multiple patents, leading to each patent holder having effective veto power over the new product. Analogously, it is possible that when “[m]ultiple overlapping public regulators ... govern the market, ... each has the power to limit or exclude access to the market” (Mitchell and Koopman this issue). In the case of the land ownership anticommons, the price of each remaining piece of land increases as the developer buys more of them. In case of a patent anticommons, the price of each necessary patent will increase.² In our case, the rise in price is analogous to an increase in the rent extracted by each regulatory agency. As noted by Mitchell and Koopman (this issue), “[w]ith limited ability to coordinate, each [agency] fails to fully account for its effect on the others”. For example, in the case of regulations

² The problem can be ameliorated by so-called patent trolls that buy packages of many patents and act as intermediaries between patent users and the original patent holders. Without the patent anticommons problem, such “patent trolls” simply would raise production costs without any economic benefits. In the presence of the patent anticommons trolls actually may increase economic efficiency.

Table 3 Chemical manufacturing

| Agency | Restrictions |
|--|--------------|
| Food and Drug Administration, Department of Health and Human Services | 280,544 |
| EPA—General | 255,259 |
| Animal and Plant Health Inspection Service, Department of Agriculture | 110,850 |
| Research and Special Programs Administration, Department of Transportation | 37,942 |
| Office of the Secretary of Defense | 24,884 |
| Food Safety and Inspection Service, Department of Agriculture | 19,165 |
| Bureau of Land Management, Department of the Interior | 18,041 |
| Drug Enforcement Administration, Department of Justice | 16,335 |
| Food and Consumer Service, Department of Agriculture | 13,713 |
| Consumer Product Safety Commission | 10,740 |
| Bureau of Alcohol, Tobacco and Firearms, Department of the Treasury | 6617 |
| Commodity Futures Trading Commission | 4645 |
| Federal Transit Administration, Department of Transportation | 4104 |
| Minerals Management Service, Department of the Interior | 3274 |
| Department of Justice | 3193 |
| Bureau of Indian Affairs, Department of the Interior | 2795 |
| Selective Service System | 2583 |
| Internal Revenue Service, Department of the Treasury | 1951 |
| Federal Trade Commission | 1746 |
| Nuclear Regulatory Commission | 1578 |
| Federal Railroad Administration, Department of Transportation | 1123 |
| Bureau of Prisons, Department of Justice | 1069 |
| Farm Service Agency, Department of Agriculture | 1036 |
| Other | 29,957 |

Cumulative restrictions from 1970 to 2014. Table includes only the agencies that created more than 1000 restrictions

Source of data: RegData 2.2

Table 4 Credit intermediation and related activities

| Agency | Restrictions |
|--|--------------|
| Board of Governors of the Federal Reserve System | 72,970 |
| Bureau of Consumer Ficial Protection | 17,006 |
| Farm Credit Administration | 15,887 |
| Office of the Secretary, Department of Housing and Urban Development | 8591 |
| Farm Service Agency, Department of Agriculture | 1434 |
| Office of Thrift Supervision, Department of the Treasury | 1107 |
| Other | 3642 |

Cumulative restrictions from 1970 to 2014. Table includes only the agencies that created more than 1000 restrictions

Source of data: RegData 2.2

concerning food safety in United States, “FDA [Food and Drug Administration] inspects shelled eggs, while the USDA [U.S. Department of Agriculture] is responsible for egg products, including liquid, frozen and dehydrated eggs. The FDA regulates the feed chickens eat, but the laying facility falls under USDA jurisdiction” (Goetz 2010).

In such a case, a monopolistic regulator might improve economic outcomes by reducing rent extraction, although political concerns regarding having a single discretionary power would persist. A classic historical example of that phenomenon relates to the tariffs commercial ships had to pay to each individual port along the Rhine, which added up to a prohibitive cost of commerce. The cost of commerce was reduced by means of political integration, which eliminated the capacity of individual ports to impose tariffs and, hence, eliminated the anticommons problem. An early example of regulatory anticommons in the United States involved the regulation of industrial equipment, such as pressure vessels, in the late 19th century. Following a series of accidents, each state created its own set of regulatory rules, which hampered interstate commerce in industrial equipment severely, as a producer in one state had to obtain a license from all other states to which it wanted to ship its products. The problem was solved by the creation of the American Society of Mechanical Engineers (ASME), a private non-profit organization that promulgated a comprehensive industrial safety code and lobbied the states to abolish their own statewide regulations (Aligica et al. 2019). That action created nationwide regulatory harmonization by replacing the heterogeneous state regulations with a minimal (generally non-binding) safety standard and, what is more important, a single certification market (in which ASME remains a major player).

As noted by Vogel (1996), the regulatory activities of quasi-independent, overlapping agencies are not always additive. They often are substitutes, which opens the possibility for *regulatory arbitrage*, i.e., of firms choosing their preferred regulator. The most obvious example is that of different jurisdictions in a federal system, or even of different countries, with firms choosing their locations based on a variety of factors, including regulatory factors. The most common concern about regulatory arbitrage under such circumstances is of an institutional “race to the bottom”, e.g., with respect to environmental regulations, but such institutional races to the bottom turn out to be quite rare.³

Regulatory arbitrage can occur even within the same geographical area, e.g., at the federal level. If multiple agencies can issue regulations with respect to a given issue, the following dynamic can occur: If a firm receives an undesirable assessment from one agency, the firm will contest that assessment with another agency or in court, potentially leading to a different result; by contrast, if the firm receives a favorable assessment, that assessment can be used as a legal shield against other possibly encroaching agencies or as a viable defense in possible lawsuits. In other words, the ability of a firm to choose between multiple overlapping regulatory agencies will bias the overall regulatory outcome in favor of whatever any particular firm desires.

An interesting such example involved the regulation of the construction of a new gas pipeline in Southern California in the 1980s (Ellig 1995). Usually pipelines are regulated at the state level, and when the pipeline goes over state borders, each state regulates the part of the pipeline on its own territory. In this case, the customers of the gas company joined the company in requesting that the new pipeline be regulated by the federal government—which happened to involve less hassle and, predictably, lead to lower gas prices.

³ See Geradin and McCahery (2004) for an overview of the evidence, including a contrarian argument claiming that the possibility of races to the bottom still needs to be taken seriously.

The overlap in regulatory duties by the federal and the local government allowed in this case an arbitrage opportunity.

The optimistic version of the regulatory arbitrage hypothesis suggests that overlapping regulatory bodies are engaged in a Tiebout-type competition with one another. This suggests that the de jure regulatory burden may look heavy or appear to be increasing while the de facto regulatory burden may become lighter or smaller. Paradoxically, the possibility of regulatory arbitrage can mean that de facto deregulation can occur *as a consequence* of the de jure expansion of the set of regulatory rules and as a consequence of the simultaneous mission creep of various individual agencies. In particular, a larger set of regulations and greater degree of overlap between agencies leads to more opportunities for regulatory arbitrage.

According to this perspective, the emergent outcome is not determined strictly by the de jure content of regulations but also, to an important degree, by the independent and largely uncoordinated decisions of various regulatory agencies. It also means that discretionary executive guidelines to regulatory agencies, whether to be more or less strict, matter. The argument does not mean, however, that the emergent result will be a de facto regulatory environment that neither overburdens the economy and unnecessarily restricts competition, nor one that allows too many negative externalities to go uncorrected. We need a better account of regulatory arbitrage to be able to fully understand its likely efficiency. The existing public choice and political science literature on regulations (see, e.g., Jordana and Levi-Faur 2004; Dudley and Brito 2012) largely neglects this issue because it is quite unusual to conceptualize the overall set of de facto regulations as an unplanned emergent order (resulting from the workings of a polycentric system), rather than as an outcome that is the conscious and intended result of “top-down” political and administrative decisions.⁴

On one hand, the typical pessimistic public choice view bemoans the Olsonian rent-seeking spiral and worries that regulations originating from multiple sources are additive—leading to an anticommons problem. On the other hand, the optimistic view assumes that regulatory arbitrage and other entrepreneurial regulatory avoidances keep the regulatory environment roughly efficient (e.g., Vogel 1996; Meltzer 2012; see also Aligica and Tarko 2014, Chapter 4). One can see the optimistic view regarding regulatory arbitrage as a close cousin of the optimism regarding the efficiency of Tiebout competition. Although regulatory arbitrage within a federal system is indeed just a special case of Tiebout competition, the broader concept of regulatory arbitrage, including overlapping regulatory agencies operating within the same territory, can also be modeled as a quasi-market similar to the one described by the Tiebout model (Tiebout 1956; Ostrom et al. 1961). Hence, the possibility of a quasi-market failure (Boettke et al. 2011) with respect to regulatory arbitrage needs to be considered.

Tables 1, 2, 3 and 4 show four examples of industries that are regulated by numerous overlapping federal agencies: air transportation, food manufacturing, chemical manufacturing, and credit intermediation services.⁵ Those regulatory domains can be seen as

⁴ Notable exceptions are Ostrom (1997) and Wagner (1989, 2009, 2016).

⁵ The tables were produced using data from RegData 2.2. RegData provides several datasets, including one identifying which federal agency produced each piece of regulation (identified by year, title, part) and others estimating the probability that each piece of regulation affects each specific industry (three industry datasets are available, based on the NAICS 2017 industry identification codes, 2-digit, 3-digit, and 4-digit). We used the 3-digit identification industry dataset, and, for each piece of regulation, we kept only the industries that had an assigned probability greater than 90%. For more details about how RegData’s probabilities are calculated, see Al-Ubaydli and McLaughlin (2015) and Goldschlag and Tabarok (2018). The R code

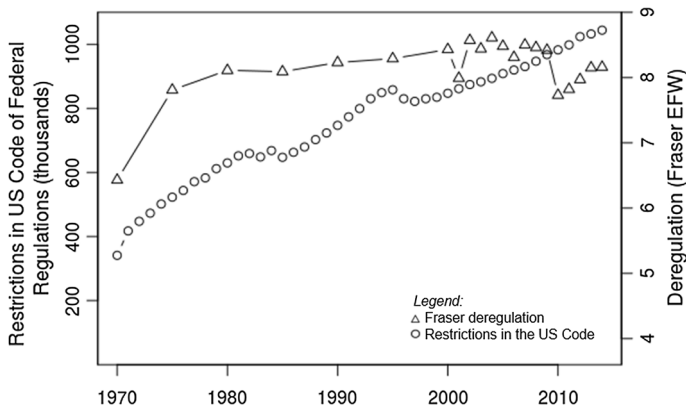


Fig. 1 The paradox of “freer markets, more rules” for United States. *Note:* The deregulation axis is drawn from the lowest value for a Western capitalist country (3.6) to the highest (9)

plausible examples of areas wherein regulatory arbitrage might happen even at the federal level, although we cannot fully exclude the possibility that the anticommens scenario also plays an important role. Part of the difficulty in distinguishing the two possibilities is that very finely grained details determine which scenario is in play—thus creating a fuzzy border between the scenarios. For example, although fish generally is inspected by the FDA, the 2008 Farm Bill moved catfish under the USDA’s much stricter jurisdiction, largely as a protectionist measure against imports of Vietnamese catfish.⁶ Unsurprisingly, the dividing lines between agencies become objects of rent-seeking. Similarly, an apparent overlap often exists between the Food Safety and Inspection Service (FSIS) and the FDA, but “FSIS inspects 100 percent of all imports under its jurisdiction, and tests 5 percent of these for pathogens and residues, while the FDA does not inspect imports without cause” (Goetz 2010). The overlap means that it matters if the agencies carefully separate their tasks. If they don’t, they enable regulatory arbitrage as firms will prefer the weaker regulatory burden of the FDA.

2.2 Freer markets, more rules

Figure 1 shows the simplest, although, by itself, not entirely convincing, piece of evidence showing the discrepancy between de facto deregulation and the de jure increase in regulatory restrictions. The regulatory burden can be measured in various ways. In Fig. 1, we show the discrepancy between the regulatory burden in the United States over the course of time as measured by (a) the regulation component of the Fraser index of economic freedom (Gwartney, Lawson and Hall 2018), and (b) the actual number of restrictions in the US Code of Federal Regulations (Al-Ubaydli and McLaughlin 2015).

Footnote 5 (continued)

for producing all of the industry-agency interaction tables (similar to Tables 1, 2, 3 and 4) is available at: <https://github.com/vladtarko/regulation-of-industry>.

⁶ Health concerns are used as a justification (Guy 2016).

Fraser's measure of regulations can be understood as a measure of the de facto situation, as opposed to a description of mere legal rules.⁷ Some of the underlining measures describe economic outcomes, e.g., the private credit sub-component measures "the extent of government borrowing relative to private sector borrowing" (Gwartney et al. 2018, p. 212) or the costs of starting a business measure is based on "World Bank's *Doing Business* data on the amount of time and money it takes to start a new limited liability business" (Gwartney et al. 2018, p. 224), while others are based on the World Economic Forum's (WEF's) *Global Competitiveness Report* opinion polls, e.g., "administrative requirements" are based on the WEF question "Complying with administrative requirements (permits, regulations, reporting) issued by the government in your country is (1=burdensome, 7=not burdensome)" (Gwartney et al. 2018, p. 223). Some of those underlining measures are more objective than others, but they all ultimately refer to outcomes.⁸ Even where, at first glance, they seem to refer to legal rules, as in the case of the labor market regulations, they are weighted by an estimate of the extent to which the rules actually are applied.

According to Fraser's index, the United States has experienced significant deregulation relative to the 1970s. The country deregulated slowly between 1980 and 2000, maintained roughly that same level of regulation over the 2000s, and experienced a sharp increase in regulation increase after the 2008 financial crisis (but returned nowhere near the regulatory stringency of 1970). Remarkably, over the same period, the restrictions in the US Code of Federal Regulations have *increased* continuously. In 1970, the number of federal restrictions was around 340,000, while in 2014 the count surpassed one million. That is what Vogel (1996) has referred to as the paradox of "freer markets, more rules" or, to use Levi-Faur's (2005) words, we have "more capitalism, more regulation".

The same paradox occurs in many (although not all) other OECD countries (see Aligica and Tarko 2015, Chapter 3, for details). Overall, according to Fraser's index, as well as other economic freedom indices (e.g., Heritage Foundation), the general trend is towards deregulation. That assessment is true especially with respect to the regulation of credit and labor markets (less so with respect to business regulations). However, over the same period, the number of regulatory agencies, their staffing and budgets have increased dramatically. What are the regulatory agencies doing, if *deregulation* occurs as their numbers, budgets and staffing increase? It is beyond the scope of this paper to explore that question thoroughly, but let us mention the most common hypotheses, before focusing on the main topic of this paper, regulatory arbitrage.

Three hypotheses sound somewhat plausible, but do not fit the empirical observations very well. These are: (1) regulatory capture in favor of deregulation, (2) out-of-control capitalism, i.e., markets outcompeting government attempts to regulate them and (3) the spread of neoliberal ideology.

The first hypothesis holds that while in the past firms may have benefited from more regulated markets, perhaps now, at least some of them, benefit from deregulation due to some technological changes and lobby for deregulation (Peltzman 1989). For example, Peltzman

⁷ The regulation component of the index is an average of the following: (A) Credit market regulations: (i) Ownership of banks; (ii) Private sector credit; (iii) Interest rate controls/negative real interest rates; (B) Labor market regulations: (i) Hiring regulations and minimum wage; (ii) Hiring and firing regulations; (iii) Centralized collective bargaining; (iv) Hours regulations; (v) Mandated cost of worker dismissal; (vi) Conscription; (C) Business regulations: (i) Administrative requirements; (ii) Bureaucracy costs; (iii) Starting a business; (iv) Extra payments/bribes/favoritism; (v) Licensing restrictions; (vi) Cost of tax compliance.

⁸ See the Appendix in Gwartney et al. (2018, pp. 213–225) for the full explanation of their sources.

lists the entry of MCI Communications as a cause of the breakup of AT&T's monopoly of long-distance and local telephone markets. The deregulation of the US commercial airline industry might be another example (Douglas and Miller 1974). However, apart from such occasional examples, this explanation doesn't generally fit the facts very well, because (a) the initiative to deregulate was often taken by governments and was opposed by the regulated firms (e.g., financial deregulation in France was opposed by banks) and, secondly, "interest groups alignments were roughly similar across countries and yet policy outcomes were strikingly different" (Vogel 1996, p. 16).

The second hypothesis holds that an arms race takes place between markets and government and governments always lose that race because of a fundamental incentive discrepancy: While the owners of firms that successfully evade regulations are the residual claimants of the profits resulting from such evasions, the workers in the public administration who create regulations are not the residual claimants of the benefits or rents (presumably) generated by the regulations. Consequently, "[l]awyers and bureaucrats regulate. Markets circumvent regulation.... Regulations are static. Markets are dynamic. If circumvention does not occur at first it will occur later" (Meltzer 2012, p. 9). That hypothesis, however, predicts that regulations increase predominantly in the most dynamic areas of the economy. If governments were in a regulatory arms race with markets, they would be most busy trying to regulate those areas of the economy that change the most. Again, while some occasional examples exist, e.g. the anti-trust cases against Microsoft or Google, in general we observe the exact opposite. For example, as Jordana and Levi-Faur (2004, p. 21) have documented, "regulatory innovation occurs often in policy sectors where technological evolution is so slow that significant increases in economic efficiency cannot come from incremental regulatory intervention; under certain conditions, the very inertia of this situation creates maneuvering room for new regulatory-political initiatives".

The third hypothesis holds that scholars like Friedrich Hayek and Milton Friedman, and the efforts of the Mont Pelerin Society to influence the climate of ideas, have indeed been successful. That conjecture also does not fit the facts very well. For example, financial deregulation in France was started by a socialist government and in United States it was started under Jimmy Carter. Some of the most deregulated economies are the Scandinavian countries, which likewise are typically invoked examples of successful social democracies. Despite the wishful thinking of pro-market advocates, on one hand, and of the fanciful conspiracy theories of the far left, on the other hand, there is actually very little evidence that classical liberals significantly influenced policy. Although that conclusion makes for a far less gripping narrative, the reality behind the *de facto* deregulation documented by economic freedom indices is messier and more complex.

Two hypotheses that seem to hold well are (4) regulatory arbitrage, and (5) political entrepreneurship under budget constraints. The idea of regulatory arbitrage was described in the previous section. It indeed looks like the most plausible explanation for the "freer markets, more rules" paradox. *De facto* deregulation occurred precisely *because* more regulatory agencies were created, with overlapping responsibilities and, also, because institutional competition flourished as a result of the creation of the European Union and as a result of the post-Cold War new age of globalization. Both developments expanded firms' opportunities for regulatory arbitrage and undermined the rent-extraction capacities of individual governments or individual agencies.

The fifth hypothesis also is hard to deny. It is the alternative explanation to hypotheses (1) and (3). For example, when the socialist government in France decided to deregulate financial markets, it was because they expected liberalized credit markets to lead to more investment, faster growth and, hence, higher tax revenues. Deregulation was a measure of

last resort in order to avoid cutting public spending and curbing the welfare state. In other words, far from being a neoliberal measure, it was a (somewhat successful) attempt to preserve the core promises of social democracy. Similarly, Sweden deregulated and reduced the size of its welfare state only after the nation almost went bankrupt in the early 1990s. The change was not driven by neoliberal ideology or by regulatory capture in favor of deregulation; it was a matter of necessity created by their budget constraint.

2.3 The quasi-market of a polycentric regulatory system

Parliaments and regulatory agencies may create *de jure* regulations with some conscious aim toward certain desired outcomes. But the existence of regulatory arbitrage makes the *de facto* regulations an emergent, and somewhat unpredictable, outcome. That outcome depends on the entrepreneurial activities of many firms engaged in regulatory arbitrage, on the somewhat discretionary case-by-case decisions of various regulatory agencies, and on various court decisions. As argued earlier, growth in the number of regulations, expansions in the number of largely independent regulatory agencies, and the way in which the remit of regulatory agencies appears to expand because of mission creep, all work to strengthen firms' ability to engage in regulatory arbitrage. Nevertheless, to what extent can we trust the polycentric regulatory system ultimately to generate a roughly *efficient* set of *de facto* regulations as its emergent outcome?

The close analogy to Tiebout competition suggests that the result probably is not entirely arbitrary. Furthermore, the usual critiques of the Tiebout competition rest on high interjurisdictional moving costs and ordinary citizens' ignorance with respect to policy differences among jurisdictions.⁹ Neither of those critiques translate into a critique of the efficiency of regulatory arbitrage. When regulatory agencies overlap, firms can engage in regulatory arbitrage without relocating to different states. And, unlike ordinary citizens, firms spend a lot of resources to obtain accurate information about policies that potentially affect their profits. If that was the end of the story, and races to the bottom were indeed not a realistic concern, we would indeed have to conclude that regulatory arbitrage leads to efficient *de facto* regulations.

However, unlike ordinary citizens, who individually have no influence on the policy of a jurisdiction, firms often successfully rent seek and capture the policies of various regulatory agencies or of the legislative process. Is the outcome more efficient if regulated firms lobby at the local level or at the federal level (Miller et al. 1984)? The possibility of rent-seeking makes the question about the efficiency of regulatory arbitrage quite different from one about the efficiency of Tiebout competition, meaning that *if* rent seeking, regulatory capture and revolving doors problems could be somewhat taken off the table, the possibility of regulatory arbitrage would indeed constrain regulatory bodies to generate efficient regulatory policies as the emergent outcome. The problem, thus, is not that regulatory arbitrage by itself generates a quasi-market failure, but that it arises in conjunction with rent seeking and other related inefficient political economy phenomena. In other words, the service provided by regulatory agencies is not just the public good of an efficient regulatory framework, but also the private good of rent creation for various firms.

To assess the efficiency of a polycentric regulatory system we need to assess the incentives of regulatory bodies to satisfy rent seekers, under the constraints created by

⁹ See for example Buchanan and Goetz (1972), Lowery and Lyons (1989), Donahue (1997), Caplan (2001), Powell (2004), Howell-Moroney (2008). See McPhail and Tarko (2017) for an overview and a critique of those objections to Tiebout competition.

regulatory arbitrage. Suppose that agency A creates *de jure* policy a which, if it becomes de facto regulation (i.e., if it will not be evaded by various regulatory arbitrage schemes by other firms), would create rent $r_X(a)$ for firm X . For example, suppose that A grants X an exclusive monopoly right. If A were a monopolist regulator, the standard rent-seeking story would apply. Suppose, however, that A is overlapping with agency B . If A grants X a monopoly right, and firm Y can obtain a license to operate from B , that action annuls agency X 's de jure policy. As a result, anticipating this, firm X is unwilling to spend any resources seeking a monopoly grant from A . Consequently, the constraint created by the existence of the overlapping agencies eliminates the capacity of any one agency to grant de jure monopoly rights and eliminates the incentive to engage in rent-seeking behavior. The only way to get a monopoly right (or similar favor) is for *all* regulatory agencies to cooperate for that purpose (i.e., to harmonize their regulatory policies) or for the firm simultaneously to obtain a monopoly grant from both agencies. The cost of such collective coordination among regulators or simultaneous multiple rent-seeking efforts hamper the expansion of the rent-seeking society. Generalizing the above idea, we can say that if firm X estimates that policy a has probability $\psi_X(a)$ of becoming the de facto policy, firm X will pay agency A a maximum amount of $\psi_X(a)r_X(a)$ to receive the favor. The entire literature about so-called “efficient rent seeking” (Buchanan et al. 1982; Higgins et al. 1988; Mueller 2003, pp. 331–338; Tullock 1991, 2005b) now applies to that *expected rent*, in the process providing a neglected answer to Tullock’s paradox—given the potential size of available rents, why don’t firms spend more on rent seeking than they seem to do? The existence of regulatory arbitrage makes the de facto *expected* rents lower than the would-be rents corresponding to the hypothetical case of de jure policies being fully enforced.

What exactly the probability $\psi_X(a)$ is depends on the nature of the competition between the regulatory agencies (or, alternatively, on the likelihood of their collusion on certain regulatory rules). The regulatory agencies have a vested interest in harmonizing their policies, as doing so increases their potential revenues from the rent-seeking behavior of firms (by increasing the probability $\psi_X(a)$ for all a), but the typical Prisoners’ Dilemma problem that makes cartels fragile occurs here as well, hence hampering the policy harmonization process. Although all agencies may agree to grant firm X a monopoly, any single defector from the regulatory cartel subsequently could sell firm Y a license to operate at a higher price than would be the case if the regulatory cartel had not formed. In other words, harmonization of a regulatory policy increases the incentive of any individual agency to defect and undermines that harmonization. For example, if European Union countries harmonize their tax policies, it becomes even more profitable for Switzerland to be a tax haven. That said, the anticommons scenario makes the agencies’ gains from harmonization greater—if regulatory agencies collude and create an anticommons in which each has holdup power, they all can strengthen their rent-extraction abilities. For example, the antitrust law enforcement cooperation between the Federal Trade Commission and the Department of Justice has remained in force since 1936. What matters is, thus, the difference between the gains from rent extraction and the gains from defecting from collusion.

Because the cost of coordination among regulatory agencies is critical, it is important that, in practice, regulatory agencies are not fully independent, but operate under the direction of the broad policies decided by the legislature. But, within such a broad policy framework, the agencies have many opportunities for creating rents, as the rents often flow from highly specific regulatory details. The regulatory agencies are competing with one another in the sense that they are trying to attract rent seekers, while also trying to provide a credible commitment that their policies will not be evaded. Although the regulatory system departs sharply from the assumption of pure monopoly, the agencies still have significant

quasi-market power. As a result, $\psi_X(a) > 0$, meaning that the de facto emergent regulatory outcome nonetheless continues to embed a certain level of rent seeking.

To the rent-seeking social cost we also need to add the cost of regulatory arbitrage itself. The Coasian logic behind the theory of the firm applies here as well. As Coase (1937) noted, firms emerge because using the price system is not costless. As long as transaction costs such as search costs and the costs associated with contractual uncertainty are larger than managerial costs, it is efficient to organize activity as part of the firm (Williamson 1996). The cost of regulatory arbitrage simply is another type of search cost and, hence, the effect is to increase the size of firms. More specifically, larger firms can more easily bear the search costs of regulatory arbitrage, while smaller firms are less likely to be able to take advantage of regulatory polycentricity. In other words, the social benefits of the polycentric regulatory system, in terms of reducing rent seeking, are accompanied by a social cost in the form of expanding the sizes of firms (and probably making markets less competitive). The recent trend to industrial concentration has been documented (Kwoka 2014; Autor et al. 2017; Grullon et al. 2017; Azar et al. 2018), but the possible connection to the industrial organization effects of regulatory arbitrage rarely has been explored.

3 A mathematical illustration

To illustrate the idea better, let us introduce three simple analytic models conveying the logic described above. In the first model, regulatory agencies harmonize some of their policies and no possibility of defection from the regulatory cartel is available. As such, the regulatory system creates the anticommons that maximally benefits the agencies but also maximally reduces economic efficiency. The second model includes the simplest analytical case for the risk of one agency defecting. In that model, the incentive structure of rent seekers changes in such a way that the regulatory system implements perfect Tiebout competition (although the number of regulatory agencies is limited)¹⁰ and rent-seeking behavior vanishes. The third model introduces a slightly more complex (and perhaps more realistic) incentive structure in which the regulatory system imperfectly implements Tiebout competition and a certain amount of rent-seeking behavior persists.

Consider the optimization problem of one regulatory agency for a given policy. Each agency tries to maximize its profit, $\pi = R - C$, where the revenues come from rent seekers, and the costs relate to the expense per firm, c , of enforcing the policy. Let $C = cN$, where N is the total number of rent-seekers who benefit from the policy. As mentioned before, one rent seeker will be willing to spend a maximum of ψr , where ψ is the probability that the regulatory favor (e.g., a de jure monopoly) will indeed be granted (despite the fact that one agency does not control the entire polycentric regulatory system); r is the size of the rent. For simplicity, we assume a transitional gains trap leading each rent seeker to pay the full sum ψr . The expected rent hence ultimately is captured by the regulatory agency. As

¹⁰ The result is similar to how Bertrand competition can generate the same outcome as perfect competition even with only two firms.

such, the revenues a given agency can earn by providing rent-seeking firms with a de jure monopoly are $R = \psi rN$.¹¹ The profit function of the agency is

$$\pi(N) = \psi rN - cN. \quad (1)$$

3.1 Model 1: A pessimistic scenario

We assume that the probability (as estimated by a would-be rent seeker) that the regulatory favor will indeed be enforced is inversely proportional to the cost of enforcing it for one firm, i.e.,

$$\psi = \frac{\alpha}{c}, \quad (2)$$

where $\alpha \in (0, c)$ denotes the highest cost for which the policy still gets enforced with certainty.

We assume further that the size of the rent is inversely proportional to the number of firms receiving the favor, i.e.,

$$r = \frac{\rho}{N}, N \geq 1, \quad (3)$$

where ρ is the size of the monopoly rent.

Profit thus is

$$\pi(N) = \frac{\alpha\rho}{c} - cN, \quad (4)$$

Equation (4) is a decreasing function that attains its maximum for the smallest value of N , i.e., $N=1$. Hence, the agencies will cooperate and grant the regulatory favor to a single firm.

3.2 Model 2: An optimistic scenario

We now include the possibility that the policy might not be enforced because at least one agency might defect from regulatory harmonization. We assume that the probability of such defection is proportional to the size of the rent. In other words, if the agencies have created a large rent for one favored firm, other firms have an incentive to try and enter the market by inducing at least one agency to defect from the policy of regulatory harmonization and grant them licenses to operate as well. Moreover, the larger the rent, the stronger is the incentive of other would-be rent seekers to try to enter the market, and, hence, the greater the probability that one agency will indeed be induced to defect. And so, the favor might not be enforced either because enforcement is too costly or because of defections from regulatory harmonization. The probability that a favor will be enforced thus is

$$\psi = \frac{\alpha}{c} + \frac{\beta}{r} = \frac{\alpha}{c} + \frac{\beta N}{\rho}, \quad (5)$$

¹¹ As noted by Tullock (1980a), the amount paid by rent-seekers ultimately depends on the ease of entry in the rent-seeking market (see also Higgins et al. 1988). Aligica and Tarko (2014) also argue that “crony capitalism” is built on this logic, limiting access to rent-seeking based on “crony” relations, in order to secure larger rents. If the number of rent seekers affects the individual rent-seeking investment in accordance with the formula $r(N-1)/N$ (see Mueller 2003, pp. 331–338, for a discussion), which we weight by probability ψ , we obtain the revenue $R = \psi r(N-1)$ instead of $R = \psi rN$.

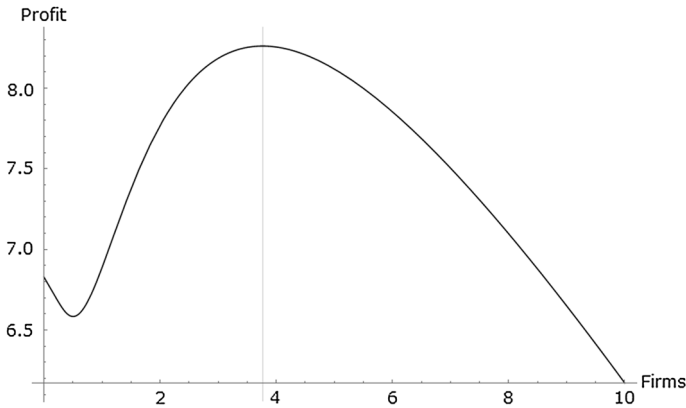


Fig. 2 The profit of one regulatory agency

where $\beta \in (0, r)$ denotes the highest rent for which it remains certain that no agency will defect.

Substituting Eqs. (5) and (3) in Eq. (1), the profit function becomes:

$$\pi(N) = \frac{\alpha\rho}{c} + (\beta - c)N. \tag{6}$$

If $\beta > c$, the prediction changes: The agencies now will have an incentive to defect from the harmonization policy and, as a result, the number of firms granted the favor—e.g., a license to operate—heads towards the total number of firms in the market, i.e., rent-seeking de facto disappears and a completely open market is created.

3.3 Model 3: A more realistic scenario

Let us now consider a slightly more complex mechanism for the probability of enforcement. Instead of simple proportionality, let us assume an exponential decline (i.e., two linear differential equations as the underlining mechanisms):

$$\psi = \exp\left(-\frac{c}{\alpha}\right) + \exp\left(-\frac{r}{\beta}\right). \tag{7}$$

The two terms have the same meaning as in Model 2. The first corresponds to the idea that the probability of enforcement is a decreasing function of the cost of enforcing a policy; the second illustrates the idea that the risk of one agency defecting from the harmonization policy is an increasing function of the rent generated by the regulation. Consequently, parameters α and β are now half-life-type parameters defining how rapidly the probability of enforcement declines as the cost of enforcement or the size of the rent increase. We maintain the earlier assumption about the inversely proportional relationship between r and N .

The profit function becomes (Fig. 2):

$$\pi(N) = \rho \exp\left(-\frac{c}{\alpha}\right) + \rho \exp\left(-\frac{\rho}{\beta N}\right) - cN, \tag{8}$$

which has a maximum at

$$N^* = -\frac{\rho}{2\beta W\left(-\frac{1}{2}\sqrt{\frac{c}{\beta}}\right)}, \quad (9)$$

where W is Lambert's W function (also known as product-log).

Under this more realistic scenario, we are led to a more efficient situation than in Model 1, but rent-seeking behavior still persists—the outcome is more competitive than monopoly, but less competitive than free entry.

3.4 The regulatory paradox and the inefficiency of regulatory arbitrage

One can, of course, specify many other models, but the three described above capture the logic of the various possibilities. If regulatory harmonization is not an issue (i.e., $\beta < c$ in Model 2), rent extraction is pervasive. By contrast, when regulatory harmonization creates large rents it also creates a temptation for individual agencies to defect from the regulatory cartel, which leads to a less restrictive regulatory environment. It is that possibility that leads to the apparently paradoxical conclusion that an increase in the number of regulatory agencies can lead to more open economies. Nonetheless, unless one considers a model like Model 2 (with $\beta > c$) to be realistic, Model 3 suggests that this particular path to a more open economy is still far from empty of rent-seeking behavior. We thus can say that the optimism created by regulatory arbitrage is premature.

4 Tullock's critique of common law

The above skepticism about regulatory arbitrage is similar to Tullock's critique of the efficiency of common law. In many ways, the common law system is just another polycentric regulatory system, and the debate about the relative merits of common versus civil law finds an analogue in the debate about the merits of having a system of politically quasi-independent regulatory agencies versus keeping these regulatory powers at the level of the legislature. This is also interesting because, in a twist of mood affiliation, supporters of the common law system are also often skeptics of the independent regulatory agencies. We suggest that this might be an inconsistent position.

There are important similarities between the optimistic view of regulatory arbitrage—the claim that the ability of firms' to pick their preferred regulatory body ultimately leads to the de facto emergence of an efficient set of regulatory policies—and Posner's (1973) assessment of the way in which the common law facilitates the attainment of economic efficiency. Accordingly, we suggest that Gordon Tullock's analysis of the common law may provide insights which are useful when we try to assess the efficiency claims associated with the optimistic view of regulatory arbitrage.

4.1 Incentive problems in the common law system

Tullock's writings on the law are fairly wide-ranging in scope (see, e.g., Tullock 1971, 1980b) but our primary interest relates to Tullock's analysis of the "adversary proceedings" which typify the common law. Tullock defines the common law as the "development of law by means of judicial precedents" (2005a: 410). He has a distinct preference for

“inquisitorial proceedings” (2005a: 351), and charges that the majority of his colleagues in the law and economics movement writ large (e.g., Richard Posner) have a decidedly “Panglossian” view of the efficiency of the common law (2005a: 399).¹² Although Tullock has a clear preference for the “Napoleonic code” relative to the polycentric common law, he readily cedes that he does not think that the Napoleonic code “is any sense ideal” (2005a: 449). Indeed, Tullock’s analysis of the relative merits of the common law and Napoleonic code primarily seeks to provide a “case against the common law” per se rather than outline a “detailed” analysis in “favor of the civil law” (449).¹³

In the same way as we advise against jumping to conclusions about the market-like nature of the polycentric regulatory system, Tullock is also critical of the “zeal” with which Posner likens the common law to “a private market,” and persuasively argues that the common law system (the American legal system) is basically a

bureaucracy in which attorneys essentially lobby government officials—judges and juries—[in] much the same way that special interest groups lobby the legislature. The greater the rents at stake in an action, the more lavish will be the outlay of resources on attorney-lobbyists and on expert witness-lobbyists whose prime goal is to tilt the judgment of the judge-jury regulators in favor of their client. In some cases, *attorneys will engage in judge-shopping to secure a compliant judge and in jury manipulation to secure a compliant jury.* [emphasis added]

Consequently, the apparent “distinction between the common law courthouse and the legislature is far less than Posner is willing to admit (Tullock 2005a, p. 450). Tullock (2005a, p. 451) ultimately summarizes his assessment of Posner’s analysis of the common law as follows:

[The] invisible hand of the market does not have its counterpart in the disinterest of the [common law] judge. ... Competition between the parties does not convey information efficiently to the courtroom, because laws of evidence are designed deliberately to obfuscate the process. In consequence, the American legal system at best is extremely capricious, and at worst is a random lottery.

Although an “optimal system of dispute resolution” (legal system) would minimize the “joint error and administrative costs of the system” (Zywicki 2008: 39), Tullock is especially critical of the way in which the adversarial system of the Anglo-Saxon common law transforms legal proceedings into a rent-seeking contest writ large which generates dead-weight losses as the unintended and socially inefficient consequence of the effort to capture the “rent” associated with a desired verdict (see, e.g., Tullock 1980b: 87–104).¹⁴ Indeed, Tullock argues that the adversary system of the common law places “little or no value on searching for the truth” or the facts of a legal dispute per se. Consequently, the “smaller the role played by trial lawyers”—basically equivalent to “special interest lobbyists”—the more likely it is that the outcome will be in accordance with the facts” (2005a: 422). The adversarial system is basically a “combat system in which winning is the sole objective” (422).

¹² For a critique of Tullock’s view on common law see Shughart II (2018).

¹³ Tullock has a particularly iconoclastic and negative view of trial by jury (2005a: 345–346) and is especially critical of any claim that the average juror is adequately equipped to determine “factual or other information” (2005a: 350). This side of his argument is not particularly relevant for our purposes here.

¹⁴ Error costs are the sum of the costs associated with Type 1 error (the Court incorrectly finds a party to a dispute liable) and Type 2 error (the Court incorrectly fails to impose liability on a party to a dispute). Administrative costs are the sum of the various costs associated with legal proceedings (Zywicki 2008: 39–40).

Similarly, Tullock's analysis of the common law through the analytical lens provided by public choice theory (2005a: 411)—self-interest is ubiquitous and outcomes are emergent phenomena which are generated by the interaction of predominantly self-interested actors within any particular institutional framework—leads him to argue that the US court system is a “tragedy of the commons” writ large (2005a: 414) which necessarily generates inefficiency. For Tullock, the incentive structure of the Anglo-Saxon common law system—especially in the United States—necessarily generates a clash between private and social efficiency: The pursuit of what is privately efficient (“winning is the sole objective”) leads to a socially sub-optimal outcome (2005a: 411). Furthermore, a plethora of interest groups (e.g., lawyers and insurance companies) would actively resist any attempt to induce efficiency by introducing “market clearing prices” for court time (2005a: 414). By contrast, Tullock contends that the inquisitorial system largely internalizes these externalities (2005a: 355). In other words, in the same way that centralization could be an improvement over the anticommons regulatory problem, Tullock is arguing that the centralized civil law could be more efficient than the common law.

It is, nonetheless, worth noting that, while Tullock clearly prefers the inquisitorial system to the adversary system of the common law, he also largely cedes the primary point of a number of his critics (e.g., Zywicki 2008; Biser 2014): ideology matters. As Tullock himself notes, there has been an increasing “taste in America for wealth redistributionist litigation” and “[m]any Americans ... [pursue] the socialization of all risk through the legal process” (2005: 422). Indeed, Zywicki notes that Tullock himself argues that the common law is inferior to the Napoleonic code because of the unholy “*combination* of rent-seeking lawyers and socialist-minded judges.” Consequently, transferring some power from [the] former to the latter would be unlikely to fundamentally alter the underlying trends. Moreover, increasing the power of judges would also tend to simply push back the political battles one step, placing greater importance on the political and ideological battles involving judicial appointments ... This would not necessarily reduce the influence of lawyers, but simply change the location where they exert this influence. (Zywicki 2008).

4.2 Private arbitration as an efficiency benchmark

While Tullock has a clear preference for the inquisitorial system as compared to the common law, he also notes that the “closest duplicate of our normal court system is arbitration” and that while the parties who opt for arbitration have “considerable freedom in choosing their procedural method ... none of them [to Tullock's knowledge] has ever chosen a jury” (2005a: 348; see also Tullock [1971] 2005a: 82–83). Similarly, Tullock (1980b: 100–104) suggests that the growth of arbitration in Europe signifies that the “Continental [inquisitorial] procedure is not optimal, even if it is better than the Anglo-Saxon” common law (103). Although, unsurprisingly, Tullock thinks that the accumulation of a wealth of empirical evidence is the only way by which to adequately assess whether the Napoleonic code, common law, or commercial arbitration provides the “optimal” system of dispute resolution (1980: 104), his writings on law and economics provide a readily apparent defense of commercial arbitration.

Tullock defines arbitration as a “private procedure for deciding who has broken the contract in the event of a dispute” (82). Tullock appears particularly taken with the similarities between the inquisitorial system and arbitration: “In most cases an individual who is

thought to be particularly well qualified is selected as the ‘judge’ of the dispute” (82).¹⁵ Commercial arbitration provides an alternative and polycentric legal system whereby parties to a contract are able to choose among alternative providers of dispute resolution expertise. Consequently, there would appear to be a market penalty for any ‘expert’ who indulges their personal taste for ideological consumption which does not accord with the wishes of the parties to a contract.

Ultimately, Tullock views commercial arbitration as a dispute resolution system which makes use of the elements of the Napoleonic code which he views as conducive to efficiency and abjures the use of the particular aspects of the common law system which he views as inherently generating social waste: “Most commonly arbitration takes the form of a summary inquisitorial process. Lawyers are banned, juries are not part of the process ... expert witnesses are not called. Arbitrators are selected on the basis of their professional knowledge and their independence from the parties” (2005a: 454) Consequently, Tullock concludes that the inquisitorial system of the Napoleonic code is preferable to the rent-seeking waste which is inherent to the adversarial common law but suggests that in those particular “areas” where arbitration is “applicable,” it will probably “supersede the common law system” and thus introduce a “private code system by default” (455).

5 From Tullock’s critique of the common law system to the reform of the regulatory state

We are still missing an analytical framework that allows us to think about the rule of law in the context of regulatory heterogeneity (rather than monopoly). We suggest that one of the subtlest analyses of the idea of rule of law precisely along those lines was in fact developed by Gordon Tullock. As summarized by Biser (2014), Tullock proposed to evaluate the efficiency of a legal system based on four criteria: objectivity (as opposed to subjective discretion), legitimacy (coherence with common social norms and beliefs), replicability (the use of consistent methodology across different cases), and professionalism (as opposed to the process being “nudged” by either political or popular pressures). We can use the same criteria to evaluate the regulatory state.

Furthermore, Tullock’s analysis resonates with our current problem. Tullock claims that the common law leads to excessive litigation because it creates the conditions for a tragedy of the commons in which courts are the resource commons and the lawyers are the users. For a variety of reasons, the common law’s excessive litigation departs from the four criteria mentioned above, undermining, rather than sustaining, the rule of law. Using a similar logic, we can see how a system of regulatory agencies leads to over-regulation. In that case, the regulators are the common resource while the firms engaged in regulatory arbitrage are the users of the commons. As in Tullock’s analysis, the services of the regulators are unpriced, and, hence, a tragedy of the commons occurs.

Tullock’s arguments about the common law system are relevant to our topic on several margins. First, the regulatory tragedy of the commons Tullock describes for the common law system likewise is a problem for the polycentric regulatory system. Second, Tullock argues that the adversarial nature of the common law has only a tangential connection to

¹⁵ Needless to say, Tullock views the “nonuse of the jury system by people who have a choice at the time they write their [arbitration] contracts” to provide strong evidence that juries are not highly valued by the parties to the contract (83).

truth-seeking. The regulatory systems in United States and Europe, unlike that of Japan, also are adversarial (Vogel 1996), and one can argue similarly that regulatory agencies are concerned with regulatory efficiency only tangentially. Third, Tullock's concern about ideology also is highly relevant for the present discussion. Even if the polycentric regulatory system may not be as efficient as the optimists of regulatory arbitrage assume, one cannot argue that moving those responsibilities to a centralized legislature would improve the situation. Finally, Tullock's emphasis of a private adjudication system as a benchmark for efficiency has a counterpart in our case with private certification markets providing such a possible benchmark for efficiency. Let us address each of these points briefly.

5.1 A regulatory tragedy of the commons

The inefficiency in Model 3 in Sect. 2 was described in terms of the inefficiency of rent-seeking behavior in conjunction with the incentive for agencies to defect and, hence, to some extent undermine the regulatory harmonization desired by rent seekers. But we can also interpret such inefficiency as a tragedy of the commons preventing the creation of an efficient regulatory order. Suppose that the regulatory agencies wanted to create an efficient regulatory order, and suppose that they knew somehow the parameters such an order would have. What Model 3 (and Model 1) shows is that, even under such favorable (and unrealistic) assumptions, efficiency would still not be achieved because each agency will be tempted to increase its gains by appeasing rent seekers, and regulatory arbitrage would not be able to eliminate that possibility fully. Furthermore, the tragedy of the commons is hard to avoid because, as described earlier, inter-agency cooperation mechanisms can themselves be hijacked for the purpose of preventing regulatory arbitrage and enforcing rents more credibly by means of regulatory harmonization, rather than being used as tools for discouraging rent seeking. In other words, the typical escape route from tragedies of the commons (Ostrom 1990), namely creating overarching rules for preventing free riding and defections, would in this case likely make matters worse rather better. Overarching rules likely would be hijacked for rent-creation purposes.

5.2 The problem of the adversarial system

Vogel (1996) notes that culture can affect the nature of formal institutions and claims that while Japan, the United States and Western Europe have similar regulatory systems in terms of outcomes, they differ substantially in how they reach those outcomes. In particular, he emphasizes that the adversarial attitude common in the United States and Europe is frowned severely in Japan. In the United States and Europe both firms and regulatory agencies expect decisions and regulations to be contested: "private sector actors and public officials understand that challenging the interpretation of the rules is part of the adversarial system of regulation" (Vogel 1996, p. 230). By contrast, in Japan such behavior is seen largely as unacceptable and "private actors rarely try to outmaneuver the system because they understand that ... they risk being sanctioned if they defy the authorities' intent" (Ibid.). Discussing how deregulation occurred in France and Japan in the 1990s, Vogel (p. 231) notes that, while in Japan "bureaucrats designed legislation as a general framework, leaving much of the detail of implementation to their own discretion", in France "authorities relied on much more extensive and formal regulations, but generated leverage over industry by selectively granting exemptions to these onerous regulations". As a result of such differences, US and European regulations are far more formalistic and many more

details end up being written down, while in Japan the lack of contestation makes it possible to promulgate broader and more general regulations.

It is hard to say which system better approximates a rule of law ideal. The US-European system undermines the rule of law by having an overly detailed and, hence, non-universal system of rules. That system creates opportunities for rent seeking by obscuring the law from the casual observer behind a complex labyrinth of details that only highly motivated rent-seekers have an incentive to understand. Note that it is the adversarial process that is responsible for creating this legalistic labyrinth in which rent seeking finds fertile ground for growth. By contrast, Japan undermines the rule of law ideal and possibly spurs rent seeking by giving too much unchallenged discretion to the agencies that apply the rules in actual practice. In light of the Tullock critique of the common law, one might speculate that Tullock would probably prefer the more inquisitorial Japanese system to the US-European adversarial one, but it is hard to see whether such a conclusion would be correct.

5.3 Why centralization would make matters worse

A common reaction among critics of independent regulatory agencies (IRAs) is to argue that the agencies should be abolished and their regulatory authorities returned to legislatures (Hamburger 2014). In the United States, a long debate has taken place about whether such delegation of regulatory authority is even constitutional (e.g., see Steele and Bowman 1987; Hamburger 2014; DeMuth 2016). An argument similar to Tullock's about ideology applies here as well. Most policy issues addressed by regulatory agencies are highly technical and bringing them into the midst of everyday political battles doesn't seem to be a very wise idea. For example, few economists, and even critics of central banking, would argue that things would improve if monetary policy decisions were taken away from the quasi-independent Federal Reserve and determined instead by Congress. The same holds true for most policies addressed by regulatory agencies.

As argued by Jordana and Levi-Faur (2004), one of the main reasons why legislatures delegated such responsibilities in the first place was to solve a credible commitment problem. Many of policy issues have widespread effects throughout the economy and society; bringing them into the ebbs and flows of political events would create too much regime uncertainty. For example, if the Environmental Protection Agency (EPA) were abolished and its responsibilities moved to Congress, the entire framework of environmental regulation would continuously be brought into question at the whim of everyday political battles. Such uncertainty would affect a wide range of investment plans throughout the economy. By contrast, by virtue of its relative political independence, the EPA provides a more stable regulatory environment. Furthermore, as argued by Aligica and Tarko (2015, p. 70), the issues addressed by IRAs usually are of large scale that cannot easily be decentralized *and* which often are highly controversial, such that, no matter the decision, many interests are bound to be negatively affected. In other words, regulatory issues are often such hot potatoes that politicians want to stay as far away from them as they can, and delegating the responsibility to experts is a natural solution.

5.4 Certification markets as a substitute for regulatory agencies

Tullock's identification of arbitration agencies as benchmarks of efficiency suggests that to find a standard for regulatory efficiency we would need to find a market-based substitute. Aligica et al. (2019) indeed argue that certification markets should be seen in that way.

To illustrate, consider the example of the Food and Drug Administration (FDA). A long-standing consensus exists among the economists who have studied the agency that medicine is overregulated (Viscusi 1996, pp. 79–102). In a nutshell, the FDA's incentives are badly misaligned so as to err on the side of caution. Any medicine that gets approved, but later proves dangerous to human health causes a public relations nightmare. By contrast, safe medicine that doesn't get approved or gets delayed fails to create similar outrage. Consequently, the agency delays approval of useful medicine and, hence, creates a large social cost by harming those who need the medicine, but cannot get it, and by increasing the cost of the medicine that eventually succeeds in passing through the approval process.

An alternative to the FDA is a certification market. Aligica et al. (2019) note that such certification markets exist and work well in other important areas of the economy, such as the safety of industrial machines and of building and infrastructure materials. One can easily imagine a similar certification market for medicine. Such a market would be comprised of firms and non-profit entities selling certification, i.e., testing drugs and verifying their safety and quality. Sellers of medicine would then signal the quality of their products to consumers by showing that they have independently been certified. Such a system has three main advantages. First, non-certified drugs, such as experimental treatments, would be available on the market, rather than being illegal.¹⁶ Second, the FDA's misaligned incentives problem will be alleviated, as the certification companies face both the risk of negative publicity (if they certify dangerous products) *and* the benefit of authenticating safe, beneficial drugs, as they are getting paid to provide such certification. The certification company thus will require testing until the marginal cost (of a potential public relations nightmare) becomes equal to the marginal benefit of getting paid by the drug companies. A certification company that requires overly complex testing will attract fewer clients, while, by contrast, the certification provided by an independent company that is overly superficial will not be very valuable. Third, and perhaps what is most important, the FDA has no mechanism by which to evaluate whether it is overly strict in its regulatory zeal or too lenient. By contrast, a certification market has access to the price system as a guide. Even if the certification market does not work perfectly,¹⁷ the profit-and-loss mechanism would still almost certainly work more efficiently than the current system.

Such an idea is obviously not restricted to the FDA. For instance, certification companies like Underwriters Laboratories provide testing of new technologies, and the US Occupational Safety and Health Administration (OSHA) relies on a list of Nationally Recognized Testing Laboratories. These could form the basis for a certification *market* replacing the centralized federal agency. The same incentive problems faced by the FDA are also faced by OSHA and other regulatory agencies, hence predictably leading to an inefficient restriction of useful new technologies.

¹⁶ One can adopt a less radical position: in the same way that a small subset of the ASME requirements have been adopted as mandatory state codes, we might still maintain mandatory minimal state codes for medicine, taken as a subset from the requirements created by the certification companies.

¹⁷ Aligica et al. (2019) discuss the issue of market power as a few certification companies may come to dominate the market similar to how ASME dominates the certification market for industrial safety.

6 Conclusion

A polycentric regulatory system is more efficient than pessimists like Buchanan and Olson thought. Such pessimists implicitly adopted a mental model assuming a monopolistic regulator. The regulatory environment is more aptly viewed as a polycentric order that is typified by a multiplicity of quasi-independent regulatory agencies having overlapping responsibilities rather than as a unitary and de facto monopolistic regulatory authority. Consequently, the regulatory activities of various quasi-independent and overlapping regulatory authorities often are substitutes and regulated firms are able to engage in efficiency-enhancing regulatory arbitrage. The optimistic view of regulatory arbitrage suggests that the ability of firms to choose their preferred regulatory authority ultimately helps to generate a relatively efficient set of regulatory policies. It is the polycentric nature of the system, allowing a certain degree of regulatory arbitrage that hampers rent seeking to some extent. For example, a regulatory agency cannot give a monopoly right to a preferred firm if other overlapping regulatory agencies can sell licenses to the competitors of that firm. That being said, polycentricism is far from perfect and, in contrast to the optimistic view, regulatory arbitrage does not create an efficient emergent regulatory order. The biggest downside of the polycentric regulatory system is the possibility of fostering a tragedy of the anticommons among regulators—giving the veto power to stop various activities to multiple regulators.

Tullock's critique of the common law system offers interesting insights and analogies, as the common law system also can be understood as a polycentric regulatory system. One of Tullock's important points is that arbitration firms can be used as a benchmark for assessing the efficiency of alternative judicial systems. Similarly, we argued that certification markets can be seen as a benchmark, and potential substitute, for at least some regulatory agencies. The extent to which the polycentric regulatory system could be replaced by such certification markets remains a matter of debate. In cases like the FDA, this seems to be the case, but other examples, especially those involving public rather than private harms, are more difficult.

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