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Abstract

This paper investigates the conditions under which powerful private actors, such as multinational technology firms or wealthy individuals, can openly challenge the authority of sovereign governments, using a conflict between Elon Musk and the Brazilian Supreme Court in 2024 as a case study. We construct a series of game-theoretic models to analyze how co-investment in public infrastructure by private firms can create vulnerabilities for states, especially in digital markets where services can be withdrawn at short notice. The models reveal that a firm's economic power can translate into political power when governments become dependent on private investment, and that repeated interactions increase the risk of such confrontations. Empirical illustrations— including cases involving Google, Meta, and OpenAI—underscore the growing potential for corporate actors to exert political influence, sometimes even at the expense of profit. The paper concludes with policy recommendations to mitigate the risks of private actors undermining democratic governance.

JEL classification: D72, K23, P16, L86

Keywords: economic power, political power, infrastructure investments, hold up, vulnerable countries.

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1 Introduction

In 2024, the world saw an unusual conflict: Elon Musk, an entrepreneur and the world's richest individual, clashed with the Supreme Court of Brazil, a sovereign state with a population of over 212 million people and a GDP of about U$4.9trn.[1] The conflict centered on Musk's refusal to comply with orders of the Court demanding his social media platform, X (formerly Twitter), restrict certain user accounts accused of spreading misinformation and hate speech, and appoint a legal representative in Brazil. Justice Alexandre de Moraes, leading the court's actions, accused Musk of undermining democracy and labeled him an "outlaw" after X repeatedly ignored deadlines and dismissed local staff to avoid accountability. The standoff escalated when the Supreme Court imposed a nationwide ban on X, froze the Brazilian assets of Starlink (another Musk-owned company), and levied millions in fines, with the ban remaining until X complied with all judicial mandates.[2]

What makes this conflict peculiar is that a private individual openly and defiantly challenged the authority of Brazil's highest judicial body, a rare occurrence in international relations. Musk not only disregarded direct court orders but also publicly encouraged Brazilians to circumvent the ban and used his satellite internet company, Starlink, to resist enforcement efforts.[3] This extremely rare defiance by an individual person against the sovereign legal system of a major democracy raised fundamental questions about the limits of corporate power and the enforcement of national laws in the digital age. Ultimately, after weeks of confrontation and mounting penalties, Musk and X relented, complying with all court demands to have the ban lifted, but the episode underscored the extraordinary nature of a private actor attempting to place himself above a sovereign nation's Supreme Court.[4]

The case also raises several more general questions. Is the Musk vs. Brazil conflict as special as it seems, or is it just the tip of the iceberg? How can we explain that an individual feels comfortable confronting orders of a Supreme Court? Is there more than hybris and irrationality to it? More importantly, does the case foreshadow a more general pattern, where we can expect that, in the future, certain individuals do neither feel constrained by law nor social norms or

[1] See https://en.wikipedia.org/wiki/Elon_Musk and https://en.wikipedia.org/wiki/Brazil.

[2] See https://www.npr.org/2024/08/30/nx-s1-5096220/brazil-suspends-x-elon-musk and https://verfassungsblog.de/brazil-twitter-x-ban-musk-constitutionalism/.

[3] https://www.nytimes.com/2024/09/01/world/americas/elon-musk-brazil-starlink-x.html

[4] https://www.nytimes.com/2024/09/21/world/americas/elon-musk-x-brazil.html and https://www.lemonde.fr/en/international/article/2024/10/08/musk-s-x-to-be-reinstated-in-brazil-after-complying-with-supreme-court-demands_6728654_4.html.

morality to pursue their goals and confront highest political institutions of entire nations? How could we characterize and predict such cases? What problems would be associated with such a development, and how could they be contained?

Whereas the first question just asked is empirical and will be answered in Section 5, the others require a theory that captures the relationship between certain individuals and countries in a stylized way, reproduces observed stylized facts, and makes predictions about characteristics of related cases, which we could use to motivate and direct further empirical research and to inform policy.

Therefore, we develop a series of game-theoretic models that start very simple and step-by-step add complexities to analyze the strategic interaction between a government and a firm. The government needs to invest scarce financial resources into public infrastructure. Think of roads, utilities like water or energy production, or telecommunications networks or internet access. If some consumers/voters are not served, it will have political repercussions for the government, the extent of which depends on the political governance of the country. The government also has alternative uses for its budget, e.g., health care, defense, or a new Presidential palace. On the other side, the firm is assumed to have superior technology that it can co-invest and, thereby, alleviate the government's trade-off. We study equilibrium investment levels of both the government and the firm if the firm is only profit-motivated or if it has a political motive that conflicts with the government's political or social goals. In the latter case, the firm can invest in some action X that is not related to its business relationship with consumers or the government but that hurts the government's payoff because X supports illegal activities or undermines the country's political institutions (coined "societal harm"). Notably, we assume that the government has the capacity to effectively forbid/shut down X on legal grounds.

We show that X is never established in equilibrium and the players fully focus on their business relationship—the firm co-invests in public infrastructure and earns a profit from it—as long as the game is played only once or repeated finitely many times. Only if the game is repeated infinitely many times, which is to say that the players do not know whether or when their interaction will end, X can be established and not prohibited in equilibrium. It is a key contribution of the model to specify the conditions under which this happens. In general terms, we show that the government will not forbid X if the additional utility it obtains from the firm's co-financing of public infrastructure is higher than the societal damage X creates. Thereby, we are able to mathematically express a measure of the firm's economic power, which serves as an

upper bound on its political power. This equilibrium is achieved by a carefully designed strategy profile, which makes sure that each deviation from the foreseen equilibrium path is met with immediate punishment, that punishing is incentive-compatible although costly, and that both players can return to the equilibrium play quickly again. Thereby, the equilibrium draws on insights from both the literature on economic governance and on repeated games.[5]

We then revisit the motivating case, *Musk vs Supreme Court of Brazil*, and find that all six of the characteristics of a situation, which make a conflict more likely, are met in this case. We briefly review several other cases, including *Google and Meta vs. Australia* (2020-2021), *OpenAI vs. European Union* (2023), and *Elon Musk (Starlink) in Conflict Zones* (2023), and examples from traditional utilities industries. In all of these cases, the private party has threatened (sometimes implicitly) a public party with the withdrawal of service provision if the public party does not give in to the private party's demands (sometimes successful, sometimes not). Importantly, in all of these cases the objective of the private party was profit maximization. Only Elon Musk was in a situation where he could (and did) sacrifice economic profits in order to gain political power. Our model offers explanations why (big) tech firms are more likely than others to transform their economic power into political power, and why Musk may be the single most likely person to confront highest political institutions of foreign countries.

The remainder of the article is organized as follows. Section 2 provides an overview over related literature. Section 3 contains the central contribution of the paper by offering a series of five game-theoretic models. Section 4 compares payoffs across the five games and identifies characteristics of situations that make the government vulnerable to the firm's potential threat to withdraw its infrastructure investment unless the government accepts a political action of the firm that hurts the government. It formulates empirical hypotheses that make the transition of the firm's economic power into political power more likely. Section 5 characterizes several cases that offer tentative evidence for the empirical hypotheses and delineate cases that are novel in nature from more traditional ones. Section 6 offers policy implications and concludes. The Appendix includes a more elaborate description of *Musk vs Supreme Court of Brazil*.

[5]See Dixit (2004), Ellingsen (2024), and Prüfer (2024) for economic governance and Mailath and Samuelson (2006) for repeated games.

2 Related Literature

A substantial body of scholarly literature examines how economic power is translated into political power, particularly through the ability of wealthy or economically dominant actors to extract policy concessions or influence public decision-making. Classic theoretical foundations comprise Olson (1965), Epstein (1969), and Lindblom (1977). Olson (1965) posits that concentrated economic interests, such as large firms or industry groups, can organize more effectively to influence policy than diffuse public interests. Epstein (1969) explores patterns of corporate political involvement and the mechanisms by which economic power is converted into political influence, whereas Lindblom (1977) finds that business firms enjoy a privileged position in policymaking due to their central role in the economy, enabling them to threaten disinvestment or capital flight to influence government decisions.

A foundational study is Salamon and Siegfried (1977), who empirically investigate how aspects such as firm size, market concentration, and profitability influence an industry's political clout. They find that large and economically powerful firms are more successful in securing favorable public policies, especially in areas like federal corporate tax and state excise tax policy. The analysis supports the hypothesis that economic power–measured by firm size and market dominance—can be systematically converted into political influence. The study also references classic arguments (e.g., Kaysen, 1959) that the market power of large corporations underpins their broader political and social power, reinforcing the idea that corporate scale directly translates into political strength.

Castañeda's (2017; 2018) work provides a nuanced account of how business interest groups leverage economic power to shape fiscal policy, particularly in Latin America. He distinguishes between structural power, which refers to the economy's dependence on key business sectors, making threats of disinvestment or capital flight credible and effective in influencing policy (as theorized by Lindblom, 1977), and instrumental power, which refers to the use of resources for lobbying, networks, and relationships with policymakers. Castañeda finds that business groups are more influential in less diversified economies, where their threats to withhold investment or relocate operations carry greater weight. A similar point is made by UNDP (2021), which explores the feedback loop between monopoly rents and political power, also focusing on Latin America. In many markets on the continent, a small number of giant firms dominate, leading to high market power and inequality. UNDP (2021) argues that monopoly rents can be translated

into political power, which in turn is used to entrench and expand economic dominance, thereby creating a vicious circle, where business elites distort policy and weaken institutions to their advantage, which in turn feeds their power to distort. Both Castañeda (2017; 2018) and UNDP (2021) support the view that economic dependence on specific sectors amplifies their political leverage, a point reiterated by our model below.

Related to this business group focus, in one of the few theoretical contributions Larrain and Prüfer (2015) construct a game-theoretic model, where firms can join forces in trade associations and jointly lobby the government, which can have positive or negative spillovers on the rest of the economy. They identify conditions under which trade associations assume either function and, for the case of "bad lobbying", when they exploit their economic resources to elicit favors from the government. López (2018) develops a macroeconomic model integrating economic and political conditions, showing that economic power constitutes the fundamental linkage between politics and economics. In his model, the distribution of bargaining power between capital owners and workers affects growth, inequality, and the political equilibrium. Lopez argues that political regimes shape the distribution of economic power, which in turn influences subsequent political cycles, suggesting a cyclical, mutually reinforcing relationship between economic and political power. In the same spirit, Zingales (2017) shows that economically powerful firms seek political influence primarily to further weaken competition, creating a self-reinforcing cycle of economic and political concentration. Deutscher (2022) argues that competitive markets are essential for protecting democracy by preventing the domination of political processes by concentrated private interests. The republican concept of liberty as non-domination is central to this view: deconcentrated markets are seen as a bulwark against the political capture by economic elites.

Prat et al. (2022) empirically demonstrate that corporate mergers, which increase market concentration, are followed by significant and persistent rises in lobbying activity by both individual firms and industry associations, indicating that greater market power translates into increased political engagement and influence. Their analysis, using U.S. data from 1999–2017, supports the hypothesis that market power begets political power, as firms leverage their scale to shape regulation and policy in their favor.

Moving into the opposite direction, Shahshahani and McCarty (2023) present a comprehensive empirical analysis of U.S. lobbying data and find little evidence that increased economic concentration leads to a corresponding concentration of lobbying power or restricts smaller firms'

political advocacy. Their results challenge the central claims of the "political antitrust" movement and suggest that the relationship between economic and political power is more complex and less direct than often assumed.

Basihos (2023) is among the first to empirically establish a causal link between rising market power and democratic decline. Analyzing data from 80 countries between 1990 and 2019, Basihos finds that about one-quarter of the observed decline in democracy can be attributed to the concentration of market power. The study demonstrates that as a small set of large firms accumulate economic dominance, which is measured by aggregate markups and market share, they also amass substantial political influence. Basihos' empirical strategy includes firm-level analysis, showing that high-markup firms with greater financial resources are more likely to develop strong political connections. She also finds that the translation of market power into political power is mediated by the financial resources concentrated in dominant firms (a mechanism coming back in our model). Importantly, Basihos finds that this effect is distinct from and not explained by income inequality, suggesting that market power itself is a direct threat to democratic norms and institutions. Scheve et al. (2024) extend the analysis to voter and legislator behavior, showing that economic concentration can directly misalign policy with voter preferences, as observed in the steel industry during the Progressive Era in the U.S.

Summarizing, the literature consistently demonstrates *that* economic power—via market dominance, sectoral concentration, or control of key resources—can be systematically leveraged to extract political concessions, shape policy, and sometimes even extort favors from governments that fear economic backlash or instability. What the literature does not show is *when* or *why* we should expect such situations, where economic power is transformed into political power, which sectors or countries are particularly vulnerable, and what could be done to minimize associated risks.

3 The Model

We model two risk-neutral players, a government G and a monopolistic Firm F. Both of them can invest I_j in public infrastructure, where $j \in \{G, F\}$, $I = I_G + I_F$. The total investment cost is $c(I) = c_G(I_G) + c_F(I_F)$, with $c_j'(I_j) > 0, c_j''(I_j) > 0$. Specifically, G can produce I_G for cost $c_G(I_G)$ and F can produce I_F for cost $c_F(I_F) = \tau c_G(I_F)$. $\tau \in (0, 1)$ is a technology parameter measuring the firm's higher relative efficiency in producing infrastructure, as compared to the

government.[6] The infrastructure benefits the population, which is assumed to have unit mass and fixed demand D. It obtains welfare of $W(I) = min\{I, D\} - C(I)$. Hence, I can also be understood as the share of the population that gets access to the infrastructure.

For exemplification, assume that $c_G(I_G) = I_G^2$, $c_F(I_F) = \tau I_F^2$, and that $D = 1$.

We study a series of 5 games, which start very simple and get more realistic, in order to create benchmark results and facilitate comparisons.

3.1 Game 1: Neoclassical public-goods provision by the government

Assume that there is no firm and that the government is the sole producer of public infrastructure. G has a budget B, which we assume to be high enough to finance all infrastructure needs. G maximizes productive efficiency, i.e., welfare net of investment costs. This captures that the government takes its job, to act on behalf of the people, sincerely but also that there may be alternative uses for the government's budget, e.g., to invest in education, healthcare or defense, or to build a new Presidential palace with $B - c_G(I_G)$.

This is a one-shot game, where G determines public investment in infrastructure I_G and payoffs materialize immediately. The solution concept is, hence, Nash equilibrium.[7] It follows that G solves:

$$\max_{I_G} \quad \pi_G = I_G - c_G(I_G) \tag{1}$$

Lemma 1 *The resulting first-best equilibrium investment is characterized by the FOC:*

$$I'_{FB} = C'(I_G) \tag{2}$$

Example: For $c(I) = I^2$, this implies that $I_{FB} = 1/2$. It also implies that 50% of the population ($D - I_{FB} = 1/2$) will not be served on efficiency grounds: they would benefit from having access to public infrastructure, but the costs to serve them would outweigh the benefits, from a welfare perspective.

Henceforth, we will speak of $D - I$ as *unserved demand*.

[6] This reflects high-powered incentives available in for-profit firms, less bureaucratic organization, and (often) higher innovativeness.

[7] Throughout the paper, for parsimony we only consider equilibria in pure strategies.

3.2 Game 2: A government with political motives

Assume the same as in Game 1 but that the government is interested in getting re-elected and therefore wants to minimize the unserved (=unhappy) share of the population. Nevertheless, the same technological constraints as in Game 1 apply. G solves:

$$\max_{I_G} \quad \pi_G = I_G - c_G(I_G) - P(I_G), \tag{3}$$

where $P(I_G) = \gamma(D - I_G)$ denotes the political damage to G from unserved demand. $\gamma \in [0, 1]$ is a governance parameter that captures how much the government's fate depends on (un)happy citizens. High γ-values are prevalent in democracies, whereas autocratic countries are characterized by low γ-values.

Lemma 2 *The resulting equilibrium investment is characterized by the FOC:*

$$I'_P = c'_G(I_G) + P'(I_G). \tag{4}$$

Example: For $c_G(I_G) = I_G^2$, this implies that $I_P = \frac{1+\gamma}{2}$. G realizes a payoff of $\pi_G(I_P) = I_P - c_G(I_P) - P(I_P) = (1+\gamma)\frac{(1+\gamma)}{2} - \left(\frac{1+\gamma}{2}\right)^2 - \gamma D = \frac{(1+\gamma)^2}{4} - \gamma D$.

Apart from identifying the equilibrium investment level, Lemma 2 contains two additional insights.

Corollary 1 *(a)* $I_P > I_{FB}$. *(b)* $\frac{\partial I_P}{\partial \gamma} > 0$.

Corollary 1.(a) shows that a government that is afraid of angry (unserved) voters will invest more in public infrastructure than a technocratic government without the wish to be re-elected. Hence, *ceteris paribus* such political motives lead to overinvestment in public infrastructure and reduce productive efficiency. Corollary 1.(b) shows that the degree to which a government is receptive to citizens' wishes beyond their actual utility from access to public infrastructure (which is already captured by $W(I)$) pushes up equilibrium investments: a democratic government will invest more in public infrastructure than an autocratic government.

As we consider the political regime of a country as fixed in this paper, henceforth we will consider I_P as the benchmark level of public infrastructure that the government strives to produce.

3.3 Game 3: A firm with profit-motives enters

Assume that firm F enters the game. It offers G to supply public infrastructure to a share I_F of the population. This would enable G to spend more budget on other purposes without bearing the full political damage that is associated with unserved demand. If G allows F to offer infrastructure to citizens, it equips F with a license and also sets a regulated retail price, p, where p is sufficient to make F's operations profitable and where p equals the marginal cost of investment of the last supplied unit, I_F.[8] F's entry modifies the game as follows:[9]

1. Contracting: F signs a contract to supply capacity $\hat{I}_F$ for a unit price of p.
2. G determines public investment in infrastructure I_G.
3. F determines private investment in infrastructure I_F, complementing I_G. Payoffs materialize.

The game is solved by backward-induction for a subgame-perfect equilibrium (SPE). We start at stage 3, where F maximizes profits. As $p = c'_F(\hat{I}_F)$, by construction, F makes a profit with every additional unit supplied until $I_F = \hat{I}_F$ but makes a loss for additional units. Hence, in equilibrium, F will produce $I_F = \hat{I}_F$.

At stage 2, G knows that F will produce $I_F = \hat{I}_F$ and sets I_G to maximize its payoff. We know from Game 2 that G prefers a total investment level of I_P. Hence, at stage 2 G will set $I_G = I_P - \hat{I}_F$ and thereby best-respond to the expected level of the firm's investment, producing the residual infrastructure up to I_P.

At stage 1, G contracts F to produce infrastructure $\hat{I}_F$, s.t. G's payoff is maximized. Productive efficiency of joint supply requires that the marginal costs of production of both producers are equal at the last unit they supply, respectively: $c'_G(I_G) = c'_F(I_F = \hat{I}_F) \Leftrightarrow c'_G(I_G) = \tau c'_G(I_G = \hat{I}_F)$.

Example: $c'_G(I_G) = \tau c'_G(I_G = \hat{I}_F) \Leftrightarrow 2I_G = \tau 2\hat{I}_F \Leftrightarrow I_G = \tau \hat{I}_F$. Hence, in equilibrium F should supply $\hat{I}_F$ units and G should supply $\tau \hat{I}_F$ units. Given that G prefers to produce I_P in

[8] The key consequence of this price regulation is that F gains positive profit from co-investing in infrastructure and that it independently stops to supply, where $\frac{\partial c_F(I_F)}{\partial I_F} = p$, i.e., where its marginal cost equal the regulated price. Alternatively, we could assume cost-plus pricing, such that F gets a fixed markup μ per unit of output, where $0 < \mu < \tau$. This would similarly share the efficiency gains from F's technology between F and G but not affect the model's results in a meaningful way.

[9] The timing can be thought of as a simplification of a more realistic game, where each party first commits to a certain level of investment, I_j, and later actually invests, or not. In practice, committing is quick but investing in infrastructure takes a long time and works in parallel for G and F. Therefore, G has to decide about how much I_G to actually invest before it knows how much I_F the firm actually installs. This crucial difficulty, akin to a hold-up problem, is captured by the modeled timing.

total, it implies that supply meets demand if $(1+\tau)\hat{I}_F = \frac{1+\gamma}{2} \Rightarrow \hat{I}_F = \frac{1+\gamma}{2(1+\tau)} \Rightarrow I_G = I_P - \hat{I}_F = \frac{(1+\gamma)\tau}{2(1+\tau)}$.

Lemma 3 *In the equilibrium of Game 3, (a) G contracts F to supply a share* $\frac{\hat{I}_F}{I_P} = \frac{1}{(1+\tau)}$ *of total investment* I_P*. G produces a share* $\frac{I_G^*}{I_P} = \frac{\tau}{(1+\tau)}$ *itself. F produces* $I_F = \hat{I}_F$*, in line with the contract. (b)* $\partial\left(\frac{\hat{I}_F}{I_P}\right)/\partial\tau < 0$.

Example: For $c(I) = I^2$, Lemma 3.(a) shows that production is efficiently distributed if $\hat{I}_F = \frac{1+\gamma}{2(1+\tau)}$ and $I_G^* = \frac{(1+\gamma)\tau}{2(1+\tau)}$. (b) confirms intuition, that the lower τ, i.e., the more efficient F is, the higher F's share and the lower G's share are in joint production.

In equilibrium, F makes profit $\pi_F(\hat{I}_F) = c'_F(\hat{I}_F)\hat{I}_F - c_F(\hat{I}_F)$ and G realizes a payoff $\pi_G(I_G^*, \hat{I}_F) = I_P - c_G(I_G^*) - c'_F(\hat{I}_F)\hat{I}_F - P(I_P)$.[10]

Example: For $c_G(I_G) = I_G^2$, $\pi_F(\hat{I}_F) = \tau\hat{I}_F^2$. G realizes a payoff of:

$$\begin{aligned}
\pi_G(I_G^*, \hat{I}_F) &= (1+\gamma)\frac{(1+\gamma)}{2} - \left(\frac{(1+\gamma)\tau}{2(1+\tau)}\right)^2 - 2\tau\left(\frac{(1+\gamma)}{2(1+\tau)}\right)^2 - \gamma D && (5)\\
&= \frac{(1+\gamma)^2}{2} - \frac{(1+\gamma)^2}{4}\left(\frac{\tau}{(1+\tau)}\right)^2 - 2\tau\frac{(1+\gamma)^2}{4}\left(\frac{1}{(1+\tau)}\right)^2 - \gamma D && (6)\\
&= \frac{(1+\gamma)^2}{4}\left(2 - \frac{\tau^2+2\tau}{(1+\tau)^2}\right) - \gamma D && (7)\\
&= \frac{(1+\gamma)^2}{4}\left(1 + \frac{1}{(1+\tau)^2}\right) - \gamma D && (8)
\end{aligned}$$

Now we can compare payoffs across games 2 and 3.

Lemma 4 *For all defined* τ *and* γ*, we find (a)* $\pi_F(\hat{I}_F) > 0$*. (b)* $\pi_G(I_G^*, \hat{I}_F) > \pi_G(I_P)$.

Lemma 4 underlines both players' interest in the cooperation: (a) shows that the firm makes positive profits, whereas it received nothing in Game 2. (b) details the government's interest in getting the firm to provide some public infrastructure. This has two technological reasons because (1) two providers can produce more cheaply than one, facing convex costs,and (2) F is more efficient than G in production. It also has a political reason: G benefits from F's production not only through the high total level of infrastructure provision ($I_G^* + \hat{I}_F = I_P$), which makes the population happy and also averts political damage from G. On top, G gets all this for modest own production ($I_G^* < I_P$), which saves it a lot of resources to pursue other goals, even as F's services have to be paid for.

[10] The first term in $\pi_G(I_G^*, \hat{I}_F)$ captures G's welfare benefit because many citizens get access to the infrastructure, the second term captures production costs of governmental provision, the third term denotes revenues that have to be paid to F according to the regulated price; the final term contains G's political damage because some demand is unserved.

3.4 Game 4: A politically motivated firm (owner)

Consider the situation of Game 3 with one difference: the firm has not only a profit-motive but also a political motive. It can invest in an action, X, which comes at a small cost $\xi > 0$ for the firm.[11] X does not directly affect F's profit but it provides the owner of F with high political payoff, e.g., because it supports election probabilities of politicians favored by the owner of F, or keeps F out of legal trouble, or directly provides them with a political function and influence. We assume that $X - \xi > \pi_F(\hat{I}_F)$, taking F's business profit from Game 3 as the benchmark: the net benefit to F from establishing X is higher than the profit it can make by contracting with G and supplying public infrastructure.

However, X generates a conflict between F and G because it hurts the government's payoffs, e.g., because X supports illegal activities or provides a stage and audience for radical politicians who do not respect the system of liberal democracy. Notably, because of this *societal harm* generated by X, we assume G can forbid X on legal grounds (and that a prohibition is enforced by law enforcers and, hence, fully effective). If X is not forbidden, it generates utility $-\rho X$ for the government, where $\rho > 0$.

F's potential political activities modify the game as follows:

1. Contracting: F signs a contract to supply capacity $\hat{I}_F$ for a unit price of p.
2. G determines public investment in infrastructure I_G.
3. F establishes X (with action $a = 1$), or not ($a = 0$).
4. If F chose $a = 1$, G can forbid X, or refrain from it.
5. F determines private investment in infrastructure I_F, complementing I_G. Payoffs materialize.

Again, we are looking for a subgame-perfect Nash equilibrium. Stage 5, where F decides about I_F, is similar to stage 3 in Game 3: whatever happened on stages 1-4, F maximizes its payoff in stage 5 by setting $I_F = \hat{I}_F$.

At stage 4, G knows the Nash equilibrium of stage 5: F will fulfill its contractual obligations. Therefore, G can safely forbid X, which would create a large disutility, otherwise.

[11] Assume that F has already developed X elsewhere and could launch it with little effort in the country we model.

At stage 3, F knows that X would be forbidden at stage 4 if F chooses $a = 1$. Hence, F cannot get any benefit from X in this game. However, because $a = 1$ comes at cost ξ, F is better off setting $a = 0$, stopping political ambitions, and concentrating on their business activities.

Because all of this is common knowledge, implying that the new parts in Game 4 do not affect the equilibrium outcome, both stages 1 and 2 are identical to these stages in Game 3. Consequently, Lemmas 3 and 4 hold in Game 4, too. It follows without formal proof:

Lemma 5 *In the unique subgame-perfect equilibrium of Game 4, G contracts F to supply a share* $\frac{\hat{I}_F}{I_P} = \frac{1}{(1+\tau)}$ *of total investment* I_P*. G produces a share* $\frac{I_G^*}{I_P} = \frac{\tau}{(1+\tau)}$ *itself. F refrains from launching X (*$a = 0$*). Hence, there is nothing to forbid for G (but G would forbid X off equilibrium). Finally, F produces* $I_F = \hat{I}_F$*, in line with the contract.*

3.5 An interlude

The essence of Lemma 5 is that, if the firm has political ambitions that run counter to the government's, as long as the government is able to effectively forbid X, the owner of F will be weaker than G and has to drop their political ambitions. The business relationship, where G sources out a significant share of public infrastructure investments to F, is not hurt, however. Both parties keep their contractual obligations and cooperate in serving a large part of the population.

For the firm owner, Lemma 5 is sobering. It confirms the traditional, long-term division of influence spheres — economic vs. political — that we have seen in liberal democracies, by and large, for a long time. What could F do to change this?

One way would be trying to reduce the government's enforcement abilities such that a decision of G to forbid X would be less effective. This could work via legally appealing against a prohibition decision, for instance, or by depriving G of access to law enforcement resources. The latter could work, for instance, if G is the federal government in a federal state and law enforcement is organized at the state level (and the governor of one state is sympathetic to F's political ambitions). As many other alternatives, these solutions to F's problem are based on legal or political actions.

Here, we want to take a different route and will employ insights from the economics of institutions and organizations to show F a way how and under which circumstances X can be

launched in equilibrium.[12] The starting point is an application of the theory of repeated games: can F launch X in equilibrium if we repeat Game 4 n times?

In this case, Game 4 would be the $1+n$th-period game of a supergame, in which Game 4 is played $1+n$ times by G and F. As the supergame ends after this final round, its subgame-perfect equilibrium is the same as in Lemma 5: F will not launch X in period $1+n$.

In period n, the players know that SPE of period $1+n$. Crucial for the argumentation, they know that in the final stage of the final period, independent of all earlier announcements, F will produce $I_F = \hat{I}_F$, as contracted, because it maximizes F's profit. Hence, F has neither threat potential to hurt G by playing $I_F \neq \hat{I}_F$ in period $1+n$ nor in period n. This final-round effect actually leads to complete unraveling (or breakdown) of any strategy of F that contains the idea to punish G by producing $I_F \neq \hat{I}_F$ as a reaction to the prohibition of X. Independent of the number of repetitions n (and as long as we refrain from introducing behavioral constraints like forgetting or cognitive constraints), F cannot establish X in equilibrium as long as both players know n, n is finite, and they know that they will play the full supergame.

Of course, as elaborated on in Ellingsen (2024) in different contexts, F's problem is that n is finite and, therefore, the final round is known, which gives rise to the final-round effect. However, what if the players repeat their play indefinitely, which can be modeled as an infinitely repeated game?[13]

3.6 Game 5: The infinitely repeated political economy game

The game is the same as in Game 4, but the sequence of 5 stages is repeated infinitely many times. We are looking for a subgame-perfect equilibrium in which F establishes X and G does not forbid it. Consider the following strategy profiles of F and G, respectively.

Strategy F*:

- In period $t = 1$,
  - at stage 1, F contractually promises to supply capacity $\hat{I}_F = \frac{1}{1+\tau} I_P$.
  - At stage 3, if G produced $I_G = \frac{\tau}{1+\tau} I_P$, F establishes X. Otherwise, X is not established.

[12] See Prüfer (2024) for an overview of the field of economic governance, which is relevant here. Ellingsen (2024) offers a very accessible introduction at undergraduate course level. Both authors rely on the work of Dixit (2003a,b, 2004, 2009).

[13] Think of a probability σ, with which the game ends exogenously after any repetition and then let $\sigma \to 0$, which saves us one parameter.

– At stage 5, if G did not forbid X, F produces $I_F = \hat{I}_F$; if G forbade X, F produces $I_F = 0$.

- In any period $t > 1$,

  – at stage 1, if F always set $I_F = 0$ following the prohibition of X in an earlier period $\underline{t} < t$, F contracts to supply capacity $\hat{I}_F = \frac{1}{1+\tau} I_P$. Otherwise, contract $\hat{I}_F = 0$.

  – At stage 3, if G just produced $I_G = \frac{\tau}{1+\tau} I_P$ and if F always set $I_F = 0$ following the prohibition of X in an earlier period $\underline{t} < t$, F establishes X. Otherwise, X is not established.

  – At stage 5, if F always set $I_F = 0$ following the prohibition of X in an earlier period $\underline{t} < t$ and if G did not forbid X in period t, F produces $I_F = \hat{I}_F$. Otherwise, F produces $I_F = 0$.

Strategy $\mathbf{G}^*$:

- In period $t = 1$,

  – at stage 2, if F promised to produce $\hat{I}_F = \frac{1}{1+\tau} I_P$, produce $I_G = \frac{\tau}{1+\tau} I_P$. Otherwise, produce $I_G = I_P$.

  – At stage 4, if F promised to produce $\hat{I}_F = \frac{1}{1+\tau} I_P$, do not forbid X. Otherwise, forbid X.

- In any period $t > 1$,

  – at stage 2, if F always set $I_F = 0$ following the prohibition of X in an earlier period $\underline{t} < t$ and if F promised to produce $\hat{I}_F = \frac{1}{1+\tau} I_P$ in period t, produce $I_G = \frac{\tau}{1+\tau} I_P$. Otherwise, produce $I_G = I_P$.

  – At stage 4, if F always set $I_F = 0$ following the prohibition of X in an earlier period $\underline{t} < t$ and if F promised to produce $\hat{I}_F = \frac{1}{1+\tau} I_P$ in period t, do not forbid X. Otherwise, forbid X.

Now we need to show under which circumstances the strategy profile $(\mathbf{F}^*, \mathbf{G}^*)$ constitutes a subgame-perfect equilibrium.[14]

[14] An infinitely repeated game with 5 stages has multiple SPEs. The purpose of this paper is *not* to show that the equilibrium is unique but rather the conditions under which X is established and not forbidden at equilibrium.

Consider stage 5 of some period t. If both players played $(\mathbf{F}^*, \mathbf{G}^*)$ until now, it implies that F established X and G did not forbid X this period. Then, F is supposed to set $I_F = \hat{I}_F = \frac{1}{1+\tau} I_P$, which creates $\pi_F(\hat{I}_F) > 0$. On top, F enjoys utility $X - \xi$. This is the highest per-period payoff that F can hope to generate. Hence, F has no incentive to deviate from strategy $\mathbf{F}^*$.

By contrast, assume that G just forbade X, deviating from Strategy $\mathbf{G}^*$. Hence, the question is whether it is incentive compatible for F to produce $I_F = 0$, as specified by Strategy $\mathbf{F}^*$. If F produces $I_F = 0$, they expect zero business profit and no political payoff, as X was forbidden, from period t. However, playing $I_F = 0$ brings F back on the equilibrium path because of the one-stage deviation principle (Fudenberg and Tirole, 1991): from period $t+1$ onward, they expect $\pi_F(\hat{I}_F) > 0$ and political utility $X - \xi$. By contrast, if F produces $I_F = \hat{I}_F = \frac{1}{1+\tau} I_P$, F makes $\pi_F(\hat{I}_F) > 0$ in period t. However, this would trigger G to build public infrastructure up to I_P as of period $t+1$, according to Strategy $\mathbf{G}^*$. Therefore, F could not expect any profits in the future. Moreover, G would then also forbid X in every period $\bar{t} > t$, costing F all political payoffs in the future.

Putting both sides together, F will set $I_F = 0$ following the prohibition of X if, and only if:

$$0 + \frac{\delta}{1-\delta}(\pi_F(\hat{I}_F) + X - \xi) \geq \pi_F(\hat{I}_F) \tag{9}$$

$$\Leftrightarrow \delta \geq \frac{\pi_F(\hat{I}_F)}{2\pi_F(\hat{I}_F) + X - \xi} \equiv \underline{\delta}_F \tag{10}$$

Example: For $c(I) = I^2$, this Incentive-Compatibility Constraint, equation (10), equals $\delta \geq \frac{\frac{\tau}{(1+\tau)^2}\frac{(1+\gamma)^2}{4}}{2\frac{\tau}{(1+\tau)^2}\frac{(1+\gamma)^2}{4} + X - \xi}$.

The following lemma follows from (10) and comparative statics on $\underline{\delta}_F$.

Lemma 6 *(a) $\underline{\delta}_F \in (0, \frac{1}{2})$. (b) F is more likely to set $I_F = 0$ following the prohibition of X if F is more patient (high δ), or the net political payoff $(X - \xi)$ is high, or the governance parameter γ is low, or if the firm is very efficient (low τ).*

At stage 4 of any period t, the question is whether G is better off forbidding X (assuming it is established), or not. If both players have followed the strategy profile $(\mathbf{F}^*, \mathbf{G}^*)$, then G is supposed to not forbid X. If G indeed does not forbid X, they expect that F produces $I_F = \hat{I}_F = \frac{1}{1+\tau} I_P$ and that, consequently, G gets payoff $\pi_G(I_G^*, \hat{I}_F)$ in t, which implies low investment costs and low political damage. However, G is to suffer from X's establishment then. G would expect the same payoff in every future period.

By contrast, if G forbids X in period t, they expect that F produces $I_F = 0$ at stage 5, leading to high political damage $P(D - I_G^*)$ for G in t. As of $t+1$, returning on the equilibrium path of Strategy $\mathbf{G}^*$, G would produce $I_G^* = \frac{\tau}{1+\tau} I_P$, not forbid X, and expect F to produce $I_F = \hat{I}_F$.

Summarizing, G will *not* forbid X if, and only if:

$$\frac{1}{1-\delta}(\pi_G(I_G^*, \hat{I}_F) - \rho X) \geq \pi_G(I_G^*, I_F = 0) + \frac{\delta}{1-\delta}(\pi_G(I_G^*, \hat{I}_F) - \rho X) \tag{11}$$

$$\Leftrightarrow \pi_G(I_G^*, \hat{I}_F) - \pi_G(I_G^*, I_F = 0) \geq \rho X \tag{12}$$

In words: G will not forbid X if the additional utility G obtains from F's co-financing of public infrastructure is higher than the societal damage X creates. Thereby, **the LHS of (12) serves as a measure of F's economic power, which serves as an upper bound on F's political power, expressed by the RHS of (12).**[15]

Example: For $c(I) = I^2$, recall that $I_G^* = \frac{\tau}{1+\tau} I_P = \frac{\tau}{1+\tau} \frac{(1+\gamma)}{2}$. It follows that:

$$\pi_G(I_G^*, I_F = 0) = \frac{\tau}{1+\tau}\frac{(1+\gamma)}{2} - \left(\frac{\tau}{1+\tau}\frac{(1+\gamma)}{2}\right)^2 - \gamma\left(D - \frac{\tau}{1+\tau}\frac{(1+\gamma)}{2}\right) \tag{13}$$

$$= \frac{\tau}{1+\tau}\frac{(1+\gamma)^2}{2} - \left(\frac{\tau}{1+\tau}\frac{(1+\gamma)}{2}\right)^2 - \gamma D \tag{14}$$

$$= \frac{\tau(2+\tau)}{(1+\tau)^2}\frac{(1+\gamma)^2}{4} - \gamma D \tag{15}$$

Consequently, we have:

$$\pi_G(I_G^*, \hat{I}_F) - \pi_G(I_G^*, I_F = 0) = \left(\frac{(1+\gamma)^2}{4}\left(1 + \frac{1}{(1+\tau)^2}\right) - \gamma D\right) - \left(\frac{\tau(2+\tau)}{(1+\tau)^2}\frac{(1+\gamma)^2}{4} - \gamma D\right) \tag{16}$$

$$= \left(\frac{(1+\gamma)^2}{4}\left(\frac{2+2\tau+\tau^2-(\tau(2+\tau))}{(1+\tau)^2}\right)\right) \tag{17}$$

$$= \frac{(1+\gamma)^2}{2(1+\tau)^2} \tag{18}$$

Using (18), G's Incentive-Compatibility Constraint to not forbid X, equation (12), becomes $\frac{(1+\gamma)^2}{2(1+\tau)^2} \geq \rho X$.

Lemma 7 *(a) G's equilibrium decision to forbid X, or not, is independent of δ. (b) G is more likely to allow X if the societal damage ρX is small, or if the governance parameter γ is high, or if the firm is very efficient (low τ).*

When deciding about the prohibition of X, the government trades off the additional gain

[15] Note that it is straightforward for parameters to fulfil both equations (10) and (12).

from F's cooperation in partly supplying public infrastructure, which allows G to spend budget on other means and saves it political damage, against the damage inflicted by X.[16]

Proceeding to stage 3, F decides whether to establish X, or not. The strategies $(\mathbf{F}^*, \mathbf{G}^*)$ prescribe that any deviation from the equilibrium path have to be punished immediately: if, in $t-1$, F only produced $I_F = 0$ despite X was not forbidden, or if F produced $I_F = \hat{I}_F$ despite X was indeed forbidden, then F is supposed to not establish X. This is clearly incentive-compatible as G would forbid X in this case, leaving F with establishment cost ξ. By contrast, if nobody deviated from the strategy pair $(\mathbf{F}^*, \mathbf{G}^*)$, F is better off establishing X — and producing $I_F = \hat{I}_F$ at stage 5 — and thereby reaching its highest possible payoff.

At stage 2, G faces a similar trade-off: if nobody deviated from strategies $(\mathbf{F}^*, \mathbf{G}^*)$, G is supposed to produce $I_G^* = \frac{\tau}{1+\tau} I_P$, which maximizes its payoff as G can trust that F will produce the remaining share, $I_F = \frac{1}{1+\tau} I_P$, thereby saving G the cost to produce it and still totaling G's preferred infrastructure level, I_P. By contrast, if F deviated from strategy $\mathbf{F}^*$, for instance, by producing $I_F = \frac{1}{1+\tau} I_P$ despite G forbade X in period $t-1$, G is supposed to punish F in period t by producing all of I_P itself and foreclosing the market for F forever, next to forbidding X. This would create payoff of $\pi_G(I_P)$ in every period and, correspondingly, save G from societal harm through X. G's alternative in this situation is to neglect F's deviation from strategy $\mathbf{F}^*$ and to only producing I_G^*. However, as F would punish G's lack of punishment with producing $I_F = 0$, according to strategy $\mathbf{F}^*$, G could only expect payoffs of $\pi_G(I_G^*, I_F = 0)$ in this and all subsequent periods. Consequently, G will stick to strategy $\mathbf{G}^*$ if, and only if:

$$\begin{aligned} \pi_G(I_P) &\geq \pi_G(I_G^*, I_F = 0) && (19) \\ \Leftrightarrow \frac{(1+\gamma)^2}{4} - \gamma D &\geq \left(\frac{\tau(2+\tau)}{(1+\tau)^2} \frac{(1+\gamma)^2}{4} - \gamma D \right) && (20) \\ \Leftrightarrow 1 &\geq \frac{2\tau + \tau^2}{1 + 2\tau + \tau^2} && (21) \end{aligned}$$

Because $\tau < 1$, by assumption, (21) always holds.

Lemma 8 *G has no incentive to deviate from strategy* $\mathbf{G}^*$ *at stage 2.*

At stage 1 of period t, F concludes a contract with G, in which it promises to supply the

[16] Note that, because the strategy pair $(\mathbf{F}^*, \mathbf{G}^*)$ is formulated such that the parties immediately return on the equilibrium path after a one-time defection and one-time punishment for the defection, G's expected future payoffs, in all periods $\bar{t} > t$, are identical with and without prohibition of X. An alternative formulation of strategy $\mathbf{G}^*$ could entail that cooperation between F and G breaks down forever after a one-time defection, e.g., if G forbids X. In this case, on top of the trade-off contained in (12), G would have to produce I_P itself in all future periods, which reduces its payoff from forbidding X even more (see Lemma 4.(b)). Therefore, the current formulation of strategies $(\mathbf{F}^*, \mathbf{G}^*)$ makes it relatively hard for G to forbid X, which means it is conservative.

amount $\hat{I}_F$ of public infrastructure. In Game 5, this stage serves as a coordination device. If any side deviated from the strategy profile $(\mathbf{F}^*, \mathbf{G}^*)$ in any period $\underline{t} < t$, F is to signal punishment of G (and of itself, given that F benefits double if it can establish X and sell infrastructure $I_F = \hat{I}_F = \frac{1}{1+\tau} I_P$) here. Announcing a higher or lower level of I_F as actually planned makes no sense for F because G uses $\hat{I}_F$ to determine public supply of infrastructure I_G at stage 2: if F reports too little, e.g., $\hat{I}_F = 0$, G will supply the market itself and F loses business. If F reports too much, e.g. $\hat{I}_F = \frac{1}{1+\tau} I_P$ despite it will only produce $I_F = 0$ even as X was not forbidden, it will trigger punishment by G in the form of a foreclosed infrastructure market and prohibition of X as of $t + 1$.

Lemma 9 *F has no incentive to deviate from strategy* $\mathbf{F}^*$ *at stage 1.*

Now we can summarize lemmas 6 to 9 in the main theoretical result of this paper.

Proposition 1 *The strategy profile* $(\mathbf{F}^*, \mathbf{G}^*)$ *constitutes a subgame-perfect Nash equilibrium of Game 5.*

Proposition 1 applies the insight that an infinitely repeated game can establish "cooperation" by two players even if each player has a myopic incentive to "not cooperate."[17] Crucially, "cooperation" in Game 5 implies that the firm uses its superior technology and helps the government to supply public infrastructure up to the level preferred by the government (for both economic and political reasons). The government, in exchange, does not forbid the political activity X of the firm, despite the fact that it leads to societal damage.

This equilibrium is achieved by a carefully designed strategy combination, here $(\mathbf{F}^*, \mathbf{G}^*)$, which makes sure that each deviation from the foreseen equilibrium path is met with immediate punishment but that both players can return to the equilibrium play quickly again.

This is particularly true for the firm: as found in Game 4, if G forbade X, F does not like it but is still tempted to increase public infrastructure provision to $\hat{I}_F = \frac{1}{1+\tau} I_P$ at stage 5, simply because that maximizes F's profits in period t. If G expects this, however, G will forbid X, which is a pure nuisance to G. Hence, F must find a way to tie its hands such that it surely punishes the prohibition of X by producing $I_F = 0$, even if it costs profits. That trick is achieved by the strategy profile $(\mathbf{F}^*, \mathbf{G}^*)$ because it specifies that any unwarranted prohibition of X must be met with F's setting of $I_F = 0$; otherwise, the equilibrium breaks down, which

[17] See Mailath and Samuelson (2006).

implies for F eternal prohibition of X and the foreclosure of the infrastructure market. Because F wants to avoid that, as Lemma 6 shows, F punishes the prohibition of X indeed as long as its political payoff is high enough, the country's governance is less democratic, if F's technology to produce public infrastructure is way more efficient than G's, or if F has a long-term horizon.

In turn, the government loves to have F help it with the provision of infrastructure because (i) it saves G the cost of governmental provision of infrastructure (and F is more efficient in it) and hence enables G to spend its limited budget on other policy priorities. (ii) it saves G some political damage from unhappy voters, which would materialize if G just produced less infrastructure than I_P. As Lemma 7 shows, G is more motivated to accept X if the societal damage done through X is small or if the firm's efficiency advantage over G is high, or if the government is very dependent on voters' goodwill in the next elections.

4 Payoffs, Model Discussion, and Empirical Hypotheses

The following table summarizes equilibrium investments in public infrastructure by G and F (where applicable) as well as equilibrium payoffs, for the example where $c_G(I_G) = I_G^2$, $c_F(I_F) = \tau I_F^2$ and $D = 1$. For Game 5, it considers the "cooperative" equilibrium, where G accepts that F establishes X under the conditions specified in equation (12).

	$\mathbf{I_G}$	$\mathbf{I_F}$	$\pi_\mathbf{G}$	$\pi_\mathbf{F}$
Game 1	$1/2$	n.a.	$1/2 - 1/4 = 1/4$	n.a.
Game 2	$I_P = \frac{1+\gamma}{2}$	n.a.	$\frac{(1-\gamma)^2}{4}$	n.a.
Game 3	$\frac{\tau}{1+\tau} I_P = \frac{(1+\gamma)\tau}{2(1+\tau)}$	$\frac{1}{1+\tau} I_P = \frac{1+\gamma}{2(1+\tau)}$	$\frac{(1-\gamma)^2}{4} + \frac{(1+\gamma)^2}{4} \frac{1}{(1+\tau)^2}$	$\frac{(1+\gamma)^2}{4} \frac{\tau}{1+\tau}$
Game 4	$\frac{\tau}{1+\tau} I_P = \frac{(1+\gamma)\tau}{2(1+\tau)}$	$\frac{1}{1+\tau} I_P = \frac{1+\gamma}{2(1+\tau)}$	$\frac{(1-\gamma)^2}{4} + \frac{(1+\gamma)^2}{4} \frac{1}{(1+\tau)^2}$	$\frac{(1+\gamma)^2}{4} \frac{\tau}{1+\tau}$
Game 5	$\frac{\tau}{1+\tau} I_P = \frac{(1+\gamma)\tau}{2(1+\tau)}$	$\frac{1}{1+\tau} I_P = \frac{1+\gamma}{2(1+\tau)}$	$\frac{(1-\gamma)^2}{4} + \frac{(1+\gamma)^2}{4} \frac{1}{(1+\tau)^2} - \rho X$	$\frac{(1+\gamma)^2}{4} \frac{\tau}{1+\tau} + X - \xi$

Table 1: Equilibrium investments & payoffs in EXAMPLE: $c_G(I_G) = I_G^2$, $c_F(I_F) = \tau I_F^2, D = 1$.

Table 1 shows that G benefits from F's co-investment in public infrastructure as long as F only focuses on business profits: π_G is larger in Games 3 and 4 than in Game 2. However, if F has political motives and enough economic power to make G accept the establishment of X, as in Game 5 under the condition specified in equation (12), π_G decreases, whereas π_F increases, as compared to Game 4.

Governance and technological efficiency: Using the language introduced above, F's economic power, which determines the upper bound of F's political power, increases the more G

depends on the population's goodwill and the more efficient F's technological advantage is over G's in-house production. This suggests that F's political power is larger in well functioning liberal democracies and if F uses a very innovative and efficient technology to provide infrastructure. Most digital technologies, which are subject to tremendous economies of scale and, sometimes, economies of scope, as well as network effects, learning-curve effects (=dynamic economies of scale), and switching costs fall into this category.

G's binding budget constraint: Equation (12) shows that F's economic power—and hence political power— increases in the payoff it can generate for G through co-investing in public infrastructure. If G's budget B were binding, the logic behind Lemma 3 would dictate that F supplies a relatively larger share of total infrastructure investment. Consequently, F's economic power—and political power—would increase. This is especially prevalent in times of economic crisis or in times of war or in poor or developing countries.

F's strategic actions outside of the game: The same logic, captured by the expression $\pi_G(I_G^*, \hat{I}_F) - \pi_G(I_G^*, I_F = 0)$ in (12), suggests that, if F is very rich (and if we assume diminishing marginal utility from wealth such that the cost $c_F(I_F)$ is not very important in F's payoff maximization considerations, as compared to the political payoff from X), F has an incentive to increase I_F even beyond the level $\frac{1}{(1+\tau)}$ of total investment I_P that is productively efficient, given G's objectives (see Lemma 5). Therefore, we can expect that very rich investors or those with strong political/non-economic motives use their resources to first increase their level of public infrastructure investment, which then increases the level of societal damage (ρX) the government would accept in order not to lose those private infrastructure investments. This increases these persons' political power.

Empirical hypotheses: Summarizing these effects, we can characterize situations, where it is most **likely that a firm will try to** "establish X," i.e., to **transform its economic power into political power and affect societal or political decisions in a country**. This **likelihood is increased** with each of the following characteristics of a situation holding:

1. The country is a **well developed democracy** with regular elections, such that the current government has the motive to respect citizens' preferences in order to get reelected.

2. The country is **poor** or **highly indebted** and needs financial resources quickly, or there

is a **crisis** and the government needs to spend its scarce resources on fighting the (economic/military/health/social, etc.) crisis.

3. The public infrastructure sector in which the firm is investing is an innovative **high-tech industry**, potentially **a digital market**, where the firm's technology is significantly more efficient than governmental in-house production.

4. The firm (or its owner) has **tremendous financial resources**.

5. The firm (or its owner) has **political motives that they weigh strongly against economic motives** at the margin.

6. The firm only has **limited assets in the country** and the **firm's owner does not reside in the country**, such that the country's law enforcement agencies cannot simply get hold of the firm's owner or confiscate crucial assets in case of a dispute.

5 Evidence

5.1 Musk vs Supreme Court of Brazil, revisited

Now, let us confront the case from the introduction section with these empirical hypotheses. A more complete account of the case, incl. references, is in Appendix A.1.

In this conflict, Elon Musk, the **richest person on the planet** [characteristic 4], who mainly **resides in the U.S.** [6] and who just strongly and openly supported the **extremist political agenda of a U.S. Presidential candidate** (in 2024 at the time of the conflict) [5] defied orders of the Supreme Court of **Brazil** [6]. That country has an emerging market economy with **" 'slow-burning' fiscal problems"**[18] [2], which ranks 57th out of 167 countries with a Democracy Index score of 6.49 (and 9.58 in the category "Electoral Process and Pluralism", both out of 10), way above the global average[19] [1]. The market in question was internet access, where Musk's **satellite internet provider** Starlink offers significant efficiency advantages, especially in remote areas, over traditional, in-the-ground internet access [3].

Note that, in our model, G denotes the government, i.e., the executive branch, not the Supreme Court, which heads a country's judiciary. The Supreme Court does not make policy, as captured by G's objective function: to maximize welfare $W(I)$. It only applies the law.

[18] https://foreignpolicy.com/2025/02/10/brazil-fiscalcrisis-real-dollar/.
[19] https://d1qqtien6gys07.cloudfront.net/wp-content/uploads/2025/03/Democracy_INDEX_2024.pdf

However, these laws have been passed by legislators, which are policy makers indeed and for which it is a fair and common assumption that they act on behalf of the citizens, i.e., they try to maximize welfare.

We conclude that, in *Musk vs Supreme Court of Brazil*, all six characteristics for an increased conflict likelihood that we identified in the previous section, were fulfilled.

5.2 Other cases: Big Tech Firms and Geopolitics

In order to better understand to which extent *Musk vs Supreme Court of Brazil* is a special, or maybe even unique case, here we list several recent cases with related characteristics (as bulleted lists, for easier comparison). To focus on the mechanism suggested by our model, these are high-profile conflicts that emerged between corporations providing public services who threatened to withdraw those services to pressure governments over regulatory or political disputes.

1. Google and Meta (Facebook) vs Australia (2020 – 2021):

- Service Provided: News distribution via search engines and social media platforms.
- Conflict: Australia proposed a law requiring tech giants to pay news publishers for content.
- Threats and outcomes:
  - Google threatened to block its search engine in Australia, claiming the law created "unmanageable financial and operational risk." Later, it struck deals with publishers to avoid penalties.[20]
  - Meta retaliated by shutting down its news service in Australia.[21]
- Impact: Australian government accused Meta of undermining media sustainability but ultimately allowed negotiated settlements under the *News Media Bargaining Code* (ended by Meta in 2024).

2. OpenAI vs European Union (2023)

- Service Provided: AI tools and research collaborations.
- Conflict: EU proposed strict regulations on AI under its AI Act.

[20] https://www.dw.com/en/google-threatens-to-block-australia-from-search-engine/a-56309087
[21] https://www.dw.com/en/meta-drops-facebook-news-tab-for-us-and-australian-users/a-68412518

- Threat: OpenAI CEO Sam Altman threatened to withdraw operations from Europe if the regulations were adopted, calling them "over-regulatory."[22]
- Outcome: OpenAI backtracked after EU officials refused to dilute the rules, agreeing to comply while continuing negotiations.

3. Elon Musk (Starlink) in Conflict Zones

- Service Provided: satellite internet services in geopolitically sensitive contexts.
- Conflict and threat:
  - In *Ukraine*, Musk reportedly considered restricting Starlink access during military operations, raising concerns about private control over critical wartime infrastructure.[23]
  - In *Gaza*, Musk announced that Starlink would support internet connectivity for "internationally recognized aid organizations" (after blackout) but then dropped idea, pressured by Israelian government fearing internet access of Hamas.[24]
- Outcome: in Ukraine, Starlink's internet services were kept open for the Ukrainian military; in Gaza, Starlink provided no internet access.

All three cases are driven by power imbalances between governments and firms, where the latter exploit their dominance in essential services to resist regulation. Withholding services risks disrupting access to information, economic stability, and democratic processes and thereby leverages the firms' power. As one consequence, governments increasingly consider laws to counter (sometimes explicit, sometimes implicit) corporate coercion. For instance, in the EU, an Anti-Coercion Instrument (Regulation 2023/2675) has been in force since December 2023; it provides a legal framework to respond to economic coercion by third countries (and private actors from those countries).[25]

One notable commonality of these three cases is that the private party is always a "big tech" firm controlling (digital) frontier technology and having access to vast economic resources. Therefore, our next question is whether we can identify related cases in traditional industries.

[22] https://qz.com/sam-altman-openai-chatgpt-rules-backtracks-leave-eu-1850479197

[23] https://www.nytimes.com/2023/09/08/world/europe/elon-musk-starlink-ukraine.html

[24] https://www.politico.com/news/2023/10/28/musk-says-starlink-will-support-connectivity-to-aid-organizations-in-gaza-00124090, https://www.ft.com/content/67a874e3-42fb-4c69-8d74-212f2fed5d0e.

[25] https://policy.trade.ec.europa.eu/enforcement-and-protection/protecting-against-coercion_en

The answer is—yes—but there is always a twist, as compared to the big tech cases, as the next subsection shows.

5.3 Examples from Traditional Industries

Conflicts where private firms threaten to withdraw essential public services in response to political or regulatory disputes also do arise in traditional (non-digital) industries. These situations often arise in sectors like water, electricity, and infrastructure, where private companies have been granted (often exclusive) concessions or contracts to operate services that are vital for society.

1. Water and Energy Utilities (Global): In the water and energy sectors, multinational companies have sometimes threatened to exit contracts or withhold investment and maintenance if governments do not meet their demands for higher profitability or regulatory concessions. For instance, in Orissa, India, the private electricity company AES refused to carry out critical repairs and withheld funds after a cyclone, arguing that the costs were incompatible with their expected returns. This left the civilian population and authorities in a vulnerable position. More broadly, studies show that private water and energy providers have exited contracts or threatened withdrawal when profitability was insufficient, often after initially saving public funds by taking over service provision (Hall and Lobina, 2004).

2. Water Supply in the United Kingdom: The privatization of water utilities in England led to several instances where private firms, facing financial or regulatory pressures, threatened to withhold investment or maintenance. For example, Thames Water's financial troubles and shareholders' refusal to inject new equity have raised the prospect of a temporary renationalization, as the company struggles to maintain service quality and infrastructure.[26] While not always a direct threat, the leverage of potential service collapse or withdrawal is used to pressure the government for more favorable terms or bailouts.

There have also been cases where private owners of small water supplies threatened to disconnect customers or withhold necessary improvements if payment disputes or regulatory disagreements arose. UK law now prohibits disconnection for non-payment, but the existence of such threats in the past highlights the risks of private control over essential services.[27]

[26] https://bsic.it/currents-of-change-navigating-uks-privatized-water-utilities/

[27] https://www.dwi.gov.uk/private-water-supplies/local-authorities/local-authorities-case-studies/general/prohibition-of-disconnection-and-securing-the-sufficiency-of-private-supplies/

3. Ontario Electricity Exports to the US: In 2025, the Premier of the Canadian province Ontario escalated tensions with the United States by threatening to cut off electricity exports to several U.S. states in response to new U.S. tariffs on Canadian goods. Ontario's government imposed a 25% surcharge on electricity exports to Michigan, Minnesota, and New York, affecting approximately 1.5 million homes and businesses in those states. The surcharge was intended as a direct response to President Donald TrumpÂ's decision to impose 25% tariffs on Canadian steel and aluminum. The Premier warned that if the U.S. further escalated tariffs, Ontario would not hesitate to "shut off electricity completely," a move that could have significant economic and social repercussions on both sides of the border.[28]

The standoff quickly became part of a broader tit-for-tat trade war. Trump responded by threatening to double tariffs on Canadian imports and accused Canada of being one of the world's highest tariffing nations. Ford, in turn, apologized to Americans for the fallout, blaming the U.S. administration for initiating the dispute and urging both countries to work together against global competitors like China rather than fighting each other.[29]

Ontario's move was controversial domestically. Critics argued that the tactic could backfire in the long term by pushing U.S. states to seek alternative energy suppliers, potentially costing Ontario valuable export markets even after the dispute was resolved. Energy experts also noted that while Ontario could afford to take the risk in the short term, any reciprocal U.S. action could increase the cost of electricity imports for Ontario, particularly during periods of peak demand. The case highlights how control over critical infrastructure—in this case by a state actor, not a private actor—can be used as leverage in economic disputes.

5.4 Patterns and Systemic Risks

As the reported cases show, conflicts where private providers of essential public services threaten withdrawal to influence state decisions are not unique to digital platforms. They have a long history in traditional industries like water and electricity, where the public interest and profit motives can diverge sharply. Such threats are often used as leverage during contract renegotiations, especially when profitability is at stake or when public authorities seek to impose stricter standards or oversight.

However, it appears to be the case that there are very few, if any, well-documented examples

[28] https://globalnews.ca/news/11074633/how-ontario-cut-off-us-energy/

[29] https://abcnews.go.com/Politics/us-jobs-risk-due-trumps-steel-tariff-dispute/story?id=122494356

in traditional (non-digital) industries where a private firm providing essential public services threatened to withdraw those services primarily for *political motives* unrelated to its business interests (World Economic Forum, 2015). Traditional infrastructure firms almost always have profit maximization as their core incentive, and their leverage over governments is typically used to renegotiate contracts, increase tariffs, or avoid new regulations.

Political motives—such as influencing a government's stance on unrelated social or political issues—are not commonly part of the business model or public communications of these firms. Their shareholders and boards are usually focused on financial outcomes, not ideological or political agendas. Political risk is discussed as a constraint on investment, but not as a motivation for private firms to use essential service withdrawal as leverage for unrelated political causes (OECD, 2007). In some cases, state-owned enterprises or firms with close political ties have been used as tools of government policy (for example, Russia's use of Gazprom to pressure neighboring countries), but these are generally acts of statecraft, not private firms acting independently for non-business political motives.

Consequently, the *Musk vs Supreme Court of Brazil* case stands out as highly unusual, where the stated motive of Musk was to defend "free speech" rather than to secure higher profits or regulatory concessions. In traditional industries, such behavior is virtually unheard of, as private firms' incentives and governance structures are overwhelmingly profit-driven, and shareholders would rarely tolerate actions that risk business for ideological reasons. Thus, there are no clear historical analogues to Musk's approach in the non-digital infrastructure sector.

6 Conclusion and Policy Implications

Inspired by the 2024 conflict between Elon Musk and the Supreme Court of Brazil, in this paper we have tried to better understand whether the disregard for an order of the highest court of a democratic country with a population of more than 200 million people can be rationally explained and, if so, what we can learn from the case for potential related cases and the future. For that purpose, we have constructed a series of game-theoretic models focusing on the interaction between a government that has to provide public infrastructure to its citizens and a private firm that can co-invest with the government and thereby free public resources for other purposes. In these models, we vary the motives of both players, starting simple and moving towards a framework where the government is interested in being reelected (and hence wants to

keep citizens happy by providing infrastructure) and the firm both has a profit-maximization and an unrelated, political objective. By assumption, the latter leads to societal damage and, hence, conflicts with the government's goals.

To incentivize the firm to invest, the government obviously has to offer a contract or regulatory terms that yield a profit for the firm in the first place. The analysis of our models has shown then that it is not easy for the firm to credibly threaten the government with a withdrawal of its investment—which would also imply missing out on the profits—if the government blocks its political goals. We show that only if both the firm and the government see a long-term perspective for their relationship (i.e., if their game is repeated indefinitely), the firm may be able to build a credible threat to withdraw its infrastructure co-investment if the government blocks the firm's political goals.

The analysis has enabled us to identify a mathematical expression for the firm's economic power, which equals the additional utility that the government obtains from the firm's co-investment of public infrastructure. We also show that the firm's economic power serves as upper bound for its political power as it identifies the extent of societal damage that the government would be willing to accept as long as the firm keeps co-investing in public infrastructure. Thereby, we show that and how economic power can be transformed into political power.

The model also allows us to construct six empirical hypotheses—or to characterize six facilitating factors that each increase the likelihood of such public-private conflicts and thereby rationalize the firm's guts to defy legal orders of state representatives. We confront these hypotheses with *Musk vs Supreme Court of Brazil* and find that all six characteristics are fulfilled here. This offers a rational explanation for Elon Musk's actions during the conflict and, thereby, foreshadows disputes in related situations. We identified several related cases, all characterized by a private firm first producing public infrastructure and then threatening to withdraw it. Notably, whereas there are many of such documented cases in traditional utilities industries, such as water or energy, in all of them the objective of the firm was profit maximization. We also identified several prominent cases involving big tech firms (namely Google, Meta, and OpenAI). Only in cases involving Elon Musk, however, does it seem safe to speak of a prominent political motive, which can conflict with his companies' economic motives (not only in Brazil but also, with his internet satellite provide Starlink, in Ukraine and Gaza).

Our model can rationalize these patterns as it identifies as facilitating factors if the firm (or its owner) has expressed political motives and is very rich, such that their marginal utility of

political influence exceeds that of even more profits. It also helps if the firm (or its owner) does not reside in the country and if the country is a democracy with a well-functioning electoral system and if it is either structurally poor or temporarily in a crisis. Finally, the model posits that conflict is higher if the firm has a significant technological/efficiency advantage over governmental in-house production in the relevant infrastructure industry, as it is given in digital high-tech markets, amongst others.

Based on these insights, several policy implications follow. First, all governments should beware of the double-edged sword of accepting private investments for public infrastructure without having public back-up resources. Often, citizens' demand is inelastic for such services and, hence, the political damage to the government from unserved demand, if the firm withdraws its services, is high. This increases political power of unelected firms or individuals, especially if those are foreign.

Second, governments (and all other decision makers accountable to the public) should be particularly beware of resourceful big tech firms, "helping" the government by providing cheap or high-quality digital infrastructure, even if the deal looks very sweet at the start. This holds even more if the big tech leaders have known political motives, which may not align with the preferences of the country's population or elected representatives. These risks are amplified in developing countries or in those with acute political, social, economic or health crises because such cases easily fulfill several of the high-risk indicators identified above.

Finally, governments should take note that being a well-functioning democracy, in particular having a system with high scores on "Electoral Process and Pluralism", increases a country's risk of being attacked through economic coercion of private actors.[30]

Looking ahead and broadening the scope of the analysis, here we focused on the interaction between a government and a private firm. More generally, a related mechanism can also apply if the role of the firm in the model is taken over by a foreign *state* actor. Think of China's "economic statecraft" and its "Belt and Road" Initiative Doshi (2021). Scott (2024) demonstrates how a state can use its economic leverage—such as trade dependencies and investment flows—to achieve political objectives globally, illustrating how economic power can be systematically deployed to extract political concessions from other states. The characteristics of the host

[30]Review the ranking and methodology of The Economist's Democracy Index at `https://d1qqtien6gys07.cloudfront.net/wp-content/uploads/2025/03/Democracy_INDEX_2024.pdf`.

countries largely coincide with the facilitating factors identified in Section 4 above.[31]

[31]Note that lots of Chinese infrastructure investments are in immobile assets such as ports, which could be seized by the host country if a conflict arises, in principle. However, to operate these assets independently, the host countries often lack the necessary technical expertise, management and digital systems. Thereby, China could use its operational or digital control to exert pressure or disrupt host country access to critical infrastructure, which gives it political power over the host country, just as modeled above. See `https://dialogo-americas.com/articles/chinas-port-investments-threaten-world-sovereignty/` or `https://www.wilsoncenter.org/article/americas-maritime-blind-spot-how-china-gaining-upper-hand-high-seas` for illustration.

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A Appendix

A.1 The Conflict Between Elon Musk (X and Starlink) and the Brazilian Supreme Court in 2024

The roots of the dispute trace back to Brazilian judicial demands that Musk's social networking service X restrict access to certain user accounts accused of disseminating misinformation, hate speech, and attacks on democratic institutions. Justice Alexandre de Moraes, a prominent member of Brazil's Supreme Court, spearheaded these orders, citing the need to protect democratic processes and public order, especially in the context of upcoming municipal elections.[32] Initially, X complied with some of these demands, blocking targeted accounts as instructed by the court. However, Elon Musk and X publicly criticized the orders as censorship and claimed that the requests exceeded what was permitted under Brazilian law.[33] Musk argued that the platform was being forced to violate both Brazilian and international legal standards regarding free expression. The situation escalated in April 2024 when Musk, responding to public pressure and his own opposition to what he called "illegal" censorship demands, ordered the removal of all blocks on the previously restricted accounts. This direct defiance put X on a collision course with Brazilian authorities, who responded by threatening daily fines and legal action against the company and its representatives.

As the conflict intensified, the Supreme Court issued a nationwide ban on X for failing to appoint a legal representative in Brazil and for non-compliance with court orders. The court also imposed escalating fines, which by September 2024 had surpassed US$3 million. Justice de Moraes labeled Musk an "outlaw" and accused him of enabling the spread of false information and undermining democratic principles.[34] In turn, Musk publicly criticized Justice de Moraes, calling him an "evil dictator' and framing the court's actions as censorship and an attack on free speech.[35] Musk's stance aligned with supporters of former president Jair Bolsonaro, who had also clashed with Moraes over misinformation and election-related investigations. The Brazilian government and judiciary, however, emphasized the need to enforce national laws and protect

[32] https://edition.cnn.com/2024/08/29/tech/brazils-supreme-court-threatens-x-intl/index.html, https://www.lemonde.fr/en/international/article/2024/09/03/brazilian-supreme-court-upholds-decision-to-block-x_6724591_4.html

[33] https://www.socialmediatoday.com/news/x-comply-brazilian-censorship-demands-after-initially-opposing/713281/

[34] https://www.aljazeera.com/news/2024/9/2/ban-on-elon-musks-x-platform-upheld-by-brazil-supreme-court

[35] https://www.nytimes.com/2024/09/13/world/americas/brazil-musk-x-starlink.html

democratic institutions from coordinated disinformation campaigns.[36]

In a significant development, the Supreme Court extended its enforcement measures to Starlink, Musk's satellite internet provider, which had become increasingly popular in Brazil with over 300,000 users in late 2024.[37] When X was banned, Starlink initially informed Brazil's telecom regulator that it would not comply with the order to block access to X, citing the freezing of its bank accounts as a reason. The Supreme Court, viewing X and Starlink as part of the same "de facto economic group" under Musk's control, froze Starlink's assets to force payment of X's fines. This move was controversial but ultimately led to the deduction of millions of dollars from both X and Starlink's Brazilian accounts.[38] While Musk did not explicitly threaten to withdraw Starlink's internet services from Brazil as blackmail, Starlink did initially refuse to comply with the order to block X, stating it would not do so until its accounts were unfrozen. This stance could be interpreted as an attempt to leverage Starlink's importance to pressure Brazilian authorities, but it stopped short of a direct threat to cut off internet access entirely. After facing the risk of losing its operational license, Starlink ultimately complied with the court's orders and blocked access to X.

While Starlink served a relatively small percentage of Brazil's population, its strategic importance far exceeded its subscriber numbers. A shutdown would have been minimally disruptive to most Brazilians but catastrophic for remote and indigenous communities who had no viable alternatives. In the Amazon region, only 11 percent of the population has access to meaningful high-quality connectivity, making Starlink a vital lifeline for many communities.[39] The Brazilian government's own operations in remote areas would be have been disrupted.[40] However, for the Brazilian government and Supreme Court, the greater concern would have been the precedent of a foreign company withdrawing essential services as political leverage, rather than widespread public dissatisfaction from the majority of the population who had other connectivity options.

[36] https://www.usnews.com/news/world/articles/2024-09-02/brazils-supreme-court-chamber-forms-majority-to-uphold-x-suspension

[37] https://www.ecommerceupdate.org/en/noticias/tres-anos-de-starlink-no-brasil-especialista-comenta-aprendizados-e-desafios-enfrentados-pela-empresa/

[38] https://www.nytimes.com/2024/09/13/world/americas/brazil-musk-x-starlink.html

[39] https://www.thegreenwebfoundation.org/news/starlinks-amazonian-adventure/

[40] https://sumauma.com/en/a-internet-da-amazonia-nas-maos-do-imprevisivel-elon-musk/