Voters, Bailouts, and the Size of the Firm

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Abstract

I present a political-economic theory to explain bailouts for failing firms in the presence of non-voters (foreigners). The governing politician uses the bailout as a tool to sway voters to maximize re-election chances. Bailouts partially leak to foreigners at the firm and are financed by tax-paying foreigners outside the firm. I show larger failing firms are granted larger bailouts even if the additional size is due to having more foreign stakeholders ("too-big-to-fail- lookalike"). Nevertheless, among equally sized firms, the firm with more voting stakeholders receives the larger bailout, contradicting social optimality. Besides firm size, also voting rights cause bailouts.

1 Motivation

This paper proposes a theory to explain bailouts for failing firms in a political economy and provides a new perspective on too-big-to-fail (TBTF) and socially optimal bailout policies. Large failing firms have recurringly been provided with large bailouts in recent decades. These large bailouts have often been explained via social optimality or statements that the firm was "too-big-to-fail," that its failure would cause more harm than the provision of the bailout. Often, however, the provision of bailouts to large firms, or the lack thereof, has been accompanied by statements in news outlets that reveal a political component in governments' decision-making. Several examples suggest that politicians are majorly concerned with whether the bailout ends up in the hands of voters, and "too-big-to-fail" considerations may get sidelined when politically inconvenient. In the course of the 2012-2013 Cypriot banking crises, uninsured depositors of the Bank of Cyprus and Laiki Bank had to take large haircuts, justified by the EU's conjecture that many deposit accounts belonged to Russian oligarchs, i.e., non-EU residents, see also (NY Times, 2013). Likewise, in 2008 despite - or because of - approaching elections, the German government refused a bailout to German car manufacturer Opel, being concerned that the bailout would be redirected to U.S. mother company General Motors, see WSJ (2009) and Spiegel International (2008), whereas Obama's campaign for election promoted the General Motors bailout, renewing loans in 2009 after winning the U.S. elections, see The Hill (2015), US News (2013).

In this paper, a governing politician's primary objective is to secure re-election, rather than to maximize social welfare. Bailouts are controversial because they have an unequal redistributive effect on all agents in the economy: they are financed by all taxpayers, but benefit only a select group of firm stakeholders. The term "firm stakeholders" encompasses all agents that are adversely affected by the firm's failure either directly or via spill-over effects, such as employees, investors, suppliers, etc. As a firm approaches failure, different interest groups in favor of and against the bailout emerge naturally - the firm's stakeholders versus non-stakeholders in the population. Voters among the opposing interest groups hold the politician accountable for his bailout choice by endogenously adjusting their voting behavior ("vote-shading") in upcoming elections. The selfish politician, faced with re-elections, strategically chooses the bailout provision to sway voters in his favor, taking into account how his choice impacts the monetary transfers to his voters and, ultimately, his re-election chances.[1]

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[1]Empirical evidence suggests that a bailout provision can impact upcoming elections because voters hold politicians accountable for past actions or lack thereof by adjusting their voting behavior. For instance, voters reward, that is, positively reciprocate gifts (shares of the bailouts) by vote-shading or punish for a raise in taxation, see (Anderson, 2007) on economic voting. Empirical evidence on such vote-shading is provided in Leight et al. (2020); Vicente (2014); Cruz et al. (2016); Hicken et al. (2018) and Malmendier and Schmidt (2017) provide experimental evidence that recipients of gifts change their behavior in favor of the gift-giver.

Crucially and novel to the literature, the country is also populated by non-voters ("foreigners") that lack voting rights and, thus, cannot hold the politician accountable in the elections. Yet, they pay taxes to finance bailouts and receive shares of the bailout when being a firm stakeholder. Therefore, foreigners have aligned interests with voters of the same interest group of either firm stakeholders or non-stakeholders, similar to Guembel and Sussman (2009). The foreigner's affiliation with the firm can be thought of as being in the form of an employee holding a green card, an investor, a supplier, or any non-voting agents such as disenfranchised U.S. felons.[2] By the U.S. Bureau of Labor Statistics, the share of foreigners in the U.S. workforce is substantial, stating that "in 2022, the foreign-born accounted for 18.1 percent of the U.S. civilian labor force, up from 17.4 percent in 2021," see (Bureau of Labor Statistics, 2023). In my model, the politician in power recognizes that bailouts partially leak to an agent group that cannot vote to reward, whereas bailouts are also financed by agents that cannot vote to punish. The presence of foreigners in the country, thus, creates a tension between social and vote-share optimal bailouts, which maximize the politician's re-election chances.

I employ a probabilistic voting model which generates gradual changes in aggregate voting behavior in response to small changes in the politician's bailout choice, see Acemoglu and Robinson (2005). I extend the probabilistic voting models of Lindbeck and Weibull (1987); Dixit and Londregan (1996) to allow for non-voters where, unlike in Lizzeri and Persico (2004), the politician may not discriminate between voters and foreigners within the same interest group, that is, all firm stakeholders receive the same share of the bailout, and all taxpayers pay the same tax, independently of their identity as a voter or foreigner. I study the impact of firm size, in terms of the stakeholder group size, and firm stakeholder composition in terms of foreign as opposed to domestic stakeholders on vote-share maximizing bailouts. Changes in group size due to firm growth or shifts in stakeholder composition imply changes in political power across the interest groups and monetary transfers, causing the politician to readjust the bailout to reoptimize his re-election chances.

As the first and main contribution of the paper, I show a "too-big-to-fail lookalike" effect: the selfish politician endogenously increases the bailout provision if the failing firm that he is confronted with is larger. This is not only the case if the larger firm size stems from the employment of additional voting stakeholders, but the politician may even increase the bailout provision if the greater firm size stems from the employment of more foreigners. [I call it "employment" for a shorter description. One can equally think of the firm taking on more foreign versus domestic investors or suppliers.] From

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[2]In the U.S., felony disenfranchisement describes the suspension of voting rights caused by the conviction of a criminal offense.

the outside, it appears as if the politician generically grants larger bailouts to larger firms, allowing him to falsely justify the bailout by stating the firm was too-big-to-fail. But the effect is unrelated to social optimality, being purely driven by the political economy and the selfishness of the politician to win elections. As an alternate view, politicians that respond to voters are -to a degree- socially minded and also care for foreigners since they understand how much the presence of foreign taxpayers benefits the country.

To see the economic mechanism, even though foreigners have no direct impact on the electorate, the politician recognizes that their presence impacts the electorate indirectly by changing the behavior of groups that vote. Foreigners affect aggregate voting behavior because they contribute to bailout financing through taxes, thereby reducing the tax burden on voters outside of the firm, which, in turn, reduces the punishment of the politician in the elections. On the other hand, foreign and voting stakeholders at the firm receive an equal share of the bailout, meaning the presence of foreign stakeholders reduces the pro rata share received by each voting stakeholder ("leakage"). This causes voting stakeholders to reward the politician less, thus, making the bailout less effective at positively swaying voters. The selfish politician, thus, not only minds the electoral balance of power between voter groups that are in favor of or against the bailout. But he also considers the indirect impact of foreigners on the electorate via monetary transfers when choosing the bailout to secure his re-election.

Firm growth via foreign or domestic stakeholders impacts the politician differently. As the firm grows by employing more voters, the balance of power between the voting interest groups tilts towards the group in favor of the bailout, thus, the politician adjusts the bailout upwards to maximize the re-election chances. If the firm grows by employing more foreigners, the balance of power between the voting interest groups in the elections remains the same because foreigners have no voting rights. But the monetary transfers to groups that vote change: As more foreigners enter the firm, the bailout leaks to a larger agent group that cannot vote to reward, implying that the share of the bailout per voting firm stakeholder declines. Therefore, voters at the firm reward the politician less, which might encourage the politician to set a larger bailout to stimulate rewards. There is, however, another opposing effect: Because the measure of all foreigners in the country is constant, the group of taxpayers outside of the firm, who finance the bailout in net terms, declines as more foreigners enter the firm, meaning that the tax burden to voters outside of the firm, and thus their punishment in the elections increases. The latter effect may cause the politician to lower the bailout. Depending on the relative risk-aversion of the voters, either effect can dominate so that the vote-share maximizing bailout can increase, decline, or stay constant as the firm grows by taking on more foreigners.

The result that bailouts may endogenously increase as the firm employs more for-

eigners reveals an important fact: Despite their lack of voting rights, the presence of foreigners impacts the electorate by changing the behavior of groups that vote. This can be interpreted as an indirect, foreign form of voting via monetary transfers, prompting the politician to adjust the bailout accordingly. The result also shows, a politician who entirely disregards foreign stakeholders when making his bailout choice misses out on votes.

As the second contribution, I show that voters drive (vote-share maximizing) bailouts stronger than foreigners, which contradicts social optimality. For that purpose, I fix the firm's size (group size of firm stakeholders) and alter the firm's stakeholder composition by substituting foreigners for voters. This allows me to disentangle effects on bailouts due to firm size from effects due to voting rights. I show, when considering two firms of equal size, the politician endogenously grants larger bailouts to firms that employ more voters. This means there exists a political economy effect in addition to the firm size effect, both driving bailouts. Note that the political economy effect found here runs contrary to the too-big-to-fail theory and social optimality, according to which the firm's size alone is the driving cause of the bailout. Therefore, these results are interesting for empirical work, implying that the firm's size is an insufficient variable when it comes to forecasting bailouts. Voting rights at the firm level need additionally be taken into account. The first and the second result jointly imply that selfish politicians may allocate larger bailouts to small firms that employ many voters than to large firms that employ many foreigners. Because the selfish politician allocates different bailouts to two equally sized firms when the shares of voters at their firm levels differ, the theory developed here provides a micro foundation for the value of voting rights at the firm level. The value of voting rights benefits the firm and all firm stakeholders, including foreign ones, and stems from their capacity to cause bailouts in case of firm failure. The value of voting rights has far-reaching corporate finance implications that I further explore below.

As the third result, I show, the politician grants the socially optimal bailout if and only if the share of voters at the firm level equals the share of voters in the entire taxable population. But if the share of voters at the firm exceeds the share of voters in the population, the politician over provides the bailout in excess of the social optimum and otherwise under provides the bailout. If there are no foreigners in the country, vote-share maximizing and socially optimal bailouts coincide. The introduction of foreigners in the country causes the politician to deviate from socially optimal bailouts, thus creating the value of voting rights to the firm and all firm stakeholders, ultimately causing deviations from "too-big-to-fail" predictions.

As the fourth contribution to the literature, I explore the economic implications of the discovered political economy effect on corporate finance. I show, the voting rights'

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value, stemming from its capacity to generate bailouts in case of firm failure, causes firms to strategically discriminate between foreign and domestic stakeholders with regard to employment or credit conditions, thus, exploiting the political economy in anticipation of a possible firm failure in the future. Intuitively, voting rights act like insurance, for instance deposit or unemployment insurance, to the firm and all firm stakeholders by causing bailouts. If the firm can choose its stakeholder composition, I show, firms are indifferent between employing voters (domestic agents) and foreigners only if foreigners are cheaper to employ or more skilled. The other way around, an agent that is offered employment at the same wage by two different firms would always prefer being employed at the firm that is composed of more voters, even if that agent himself is a foreigner. Likewise, an agent is willing to work at a firm that employs foreigners only if wages there are higher, and (domestic) capital investors prefer financing firms that have otherwise mainly domestic and few foreign capital investors.

The analysis here sheds light on how global labor migration, international capital markets, and cross-border firm supply chains affect national bailout policies through the political economy. My results rationalize why politicians often defy existing regulatory frameworks when making bailout decisions, such as in the case of Banca Monte dei Paschi di Siena in 2017, or explain why bank deposit insurance was created in the U.S. following the Great Depression in 1933. In times of the Silicon Valley Bank bailout, the results here highlight the importance of not neglecting warped incentives stemming from the political economy when thinking about how to regulate the banking sector in a socially optimal way.

The analysis provided here not only applies to bailouts to failing firms and their stakeholders, but equally applies to other transfer decisions by governments across interest groups, among which only some members hold voting rights.

Literature

This paper is at the intersection of finance and political economy and contributes to both fields: The closest papers are Guembel and Sussman (2009), Lizzeri and Persico (2004); Dixit and Londregan (1996); Lindbeck and Weibull (1987).

This paper contributes to the literature on the optimality of bailout policies by adding a political economy component: a selfish politician grants bailouts to maximize reelection chances and discriminates between voters and non-voters in the country. The paper provides an alternative explanation for bailouts while yet demonstrating outcomes that "look-alike" outcomes in the too-big-to-fail literature (Freixas et al., 1999; Allen and Gale, 2000; Strahan, 2013; Acharya and Yorulmazer, 2007) and the literature on socially optimal bailouts (Keister and Mitkov, 2016; Chari and Kehoe, 2016;

Keister, 2015; Bianchi, 2012; Farhi and Tirole, 2012; Keister and Narasiman, 2016; Dewatripont and Tirole, 2018; Philippon and Wang, 2023). I show, because foreigners cannot respond to bailouts in a way that benefits the politician in the elections, the politician particularly caters to his voters, such that vote-share maximizing and socially optimal bailouts generically differ. The paper moreover contributes to the (political) corporate finance literature by providing a micro foundation for the value of voting rights at the firm level: voters drive vote-share maximizing bailouts stronger than foreigners, implying that strategic firms value domestic stakeholders more than foreign stakeholders unless adequately compensated when anticipating the possibility of failure in the future.

This paper contributes to the wider literature on political finance by studying the impact of firm size and firm stakeholder composition (voters to non-voters) on bailouts granted to maximize a politician's election chances. Malenko and Shen (2016) and Malenko and Malenko (2019) study the impact of recommendations by proxy advisory firms on the voting outcomes of shareholders. Levit and Malenko (2011) study whether nonbinding voting on shareholder proposals is an effective mechanism for revealing shareholder views. Levit, Malenko, and Maug (2019) study a model of shareholder voting in which stock trading alters the composition of the shareholder base.

This paper adds to the literature that studies the impact of non-voters (foreigners) on policy making in the political economy. Drazen (1998) provides a political-economic theory of public debt where a government can issue debt to domestic and foreign agents at different interest rates, where the rates reflect the government's capacity to repudiate foreign debt via domestic voters' decisions. In a related context, Guembel and Sussman (2009) study debt capacity when a sovereign issues debt to both domestic and foreign agents at the same interest rate. This paper is close to Guembel and Sussman (2009), because it likewise employs a voting mechanism to explain why the sovereign is partially deterred from preying on foreign agents. In both papers, foreign and domestic agents have claims to receive identical payments (shares of the bailout respectively interest on sovereign debt), and thus have aligned interests, but only the latter group can enforce their interest via vote. This paper differs from Drazen (1998) and Guembel and Sussman (2009) by focusing on bailouts and, in particular, by considering size effects of foreigners versus voters across the different interest groups, that is, firm size and firm stakeholder composition. The models further differ since I feature different groups of foreigners, and in particular, also incorporate a group of foreigners whose presence provides for a negative externality on domestic agents (foreign firm stakeholders that receive bailouts), which the sovereign must minimize for winning elections.

Similar to Bombardini and Trebbi (2011), I analyze the impact of interest group size, in terms of voter representation, on the electorate. While my probabilistic voting

model analyzes a politician who sways his voters via bailouts depending on the interest groups' size, in Bombardini and Trebbi (2011) the voting interest groups sway the politician via campaign contributions depending on their groups' size in a simultaneous bilateral bargaining model. Moreover, I consider the impact of non-voters.

This paper adds to the wider literature analyzing the effects of electoral cycles on public spending behavior, and vice versa, by exploring the impact of non-voters on bailout policies in the face of elections. Persson and Svensson (1989); Alesina and Tabellini (1990, 1988); Tabellini and Alesina (1990) analyze the time-consistency problem that arises when public debt in the form of an accumulated deficit acts as an instrument of the current government to restrict the policy-making of a future government that has distinct preferences. Similar to this paper, Aghion and Bolton (1990) show how policies of the current governing party can have an impact on the median voter and thus outcomes of future elections. Aghion and Bolton (1990) study fiscal policies where a deficit accumulation lets voters anticipate future default in case a leftist government was elected, thus impacting the election results. Milesi-Ferretti and Spolaore (1994) show how an incumbent can improve her voting prospects via "strategic inefficiency," employing resources for the benefit of their constituents instead of everybody. Relatedly, Besley and Coate (1998) study efficiency of policy choices under repeated elections. Biais and Perotti (2002) study how a governing party can impact the preferences of the median voter by making her a shareholder in privatized companies, thus favoring more right-wing policies that preserve investment value. Rola-Janicka (2022) studies prudential policy for reducing debt as an outcome of an electoral process when borrowers (voters) have heterogeneous income types. Unlike all these papers, I study bailouts, and particularly consider the impact of non-voters and their group sizes on election outcomes, and, thus, vote-share maximizing policies.

With regard to the model, this paper relies on a probabilistic voting model (Lindbeck and Weibull, 1987; Dixit and Londregan, 1996; Coughlin, 1992) to derive vote-share maximizing bailouts. I contribute to the political economy literature on probabilistic voting by extending Lindbeck and Weibull (1987); Dixit and Londregan (1996) in two ways: First, I introduce non-voters who have aligned interests with the given voting interest groups because they receive or pay the same monetary transfers. Non-voters have been introduced to probabilistic voting models before in Lizzeri and Persico (2004). Besides their distinct focus on the provision of public goods and the extension of the franchise, their analysis differs because their sovereign can perfectly discriminate between groups of voters and non-voters, assigning them different allocations. In my analysis, in contrast, non-voters can hide behind voters with aligned interests because the politician is restricted by law to treat all firm stakeholders the same way, assigning them equal transfers irrespective of their identity, that is, whether they are domestic or foreign. Second, I further extend the analysis in Lindbeck and Weibull

(1987); Dixit and Londregan (1996) by analyzing how (exogenous and endogenous) alterations in the relative size of interest groups (firm size and firm stakeholder composition) impact vote-share maximizing subsidies. The presence of foreigners among firm stakeholders creates leakage of the bailout to an agent group that cannot vote to reward the politician. While leakage of transfers has been analyzed before as an abstract concept in Dixit and Londregan (1996), the presence of foreigners at the firm, as analyzed here, presents a natural use case. Their paper studies a change in leakage in isolation. Here, instead, a change in leakage can only occur simultaneously with changes in the balance of power between the voting interest groups and or changes in the tax.[3] These simultaneous effects have not been analyzed in the literature before. Unlike in Lindbeck and Weibull (1987); Dixit and Londregan (1996); Lizzeri and Persico (2004), in my model, the ideologies of both voter groups at and outside of the firm are identically distributed so that the firm is not political.

2 The Model

The model is based on the political economy models of Lindbeck and Weibull (1987) and Dixit and Londregan (1996). In contrast to both models, I only feature two different voter groups, and the voter ideologies of both groups are drawn from the same distribution. The three key differences of this paper to Lindbeck and Weibull (1987) and Dixit and Londregan (1996), are first, I introduce two additional agent groups that cannot vote but pay and receive monetary transfers, the foreigners at and outside of the firm. Second, I study how exogenous changes in the relative group sizes of voters and foreigners impact the electorate and, thus, vote-share maximizing subsidies. Third, in the second part of the paper, I study how a strategic firm can exploit the political economy: the firm is no longer exogenously failing, and the relative group size become a choice variable of the firm that anticipates possible failure in the future.

2.1 The political economy

Under slight abuse of notation, groups of agents and the measure of the according group will be denoted by the same letter. There are four types of agents: a continuum of voters of measure V, a continuum of foreigners of measure F, a firm, and a governing politician A. All voters, foreigners and the firm are located in the same country

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[3]Dixit and Londregan (1996) discusses the effect of a "leaky bucket" where a politician's transfers to a particular interest group arrive only partially due to frictions, implying that only a fraction of the original transfer is effective to shade votes. Here, the presence of foreigners creates leakage endogenously, and leakage changes due to a change in firm size or stakeholder composition, meaning that changes in leakage are always accompanied by simultaneous changes in the (net) taxpayer composition.

under the jurisdiction of politician A. One can equivalently think of the country as a union, such as the EU, with a single government.

In the first part of the paper, the model has two time periods $t = 1$ and $t = 2$. In $t = 1$, the governing politician is confronted with an exogenously failing, non-strategic firm and exogenously sized groups of voters, foreigners, and firm stakeholders, see below. The politician needs to decide on the size of the bailout to allocate to the firm, taking into account how his bailout choice in $t = 1$ impacts the elections in $t = 2$. In $t = 2$, the politician A faces re-elections in which all voters cast their vote following the politician's bailout choice S in $t = 1$. In section 6, I add a prestage $t = 0$ at which the firm makes strategic decisions taking as given the possibility of failing in $t = 1$, and the political economy subgame that follows in $t = 2$.

The failing firm In $t = 1$, the exogenously failing firm employs stakeholders of measure $D \subset (V \cup F)$. I refer to D as the firm's size. Firm stakeholders in D are heterogeneous with regard to their voting rights: the firm comprises a set of voters $V_f = V \cap D$ and foreigners $F_f = F \cap D = D \setminus V_f$ (subscript "f" indicates "firm stakeholder"), $D = V_f \cup F_f$, see Figure 1. I call members of V_f both 'stakeholder voters' and 'domestic stakeholders' where the first term stresses that members of V_f are voters whereas the second term stresses that members of V_f have an affiliation with the firm. In contrast, I denote members of F_f "foreign firm stakeholders" who lack voting rights. The firm's stakeholder composition (V_f, F_f) and size D are exogenous to the politician.
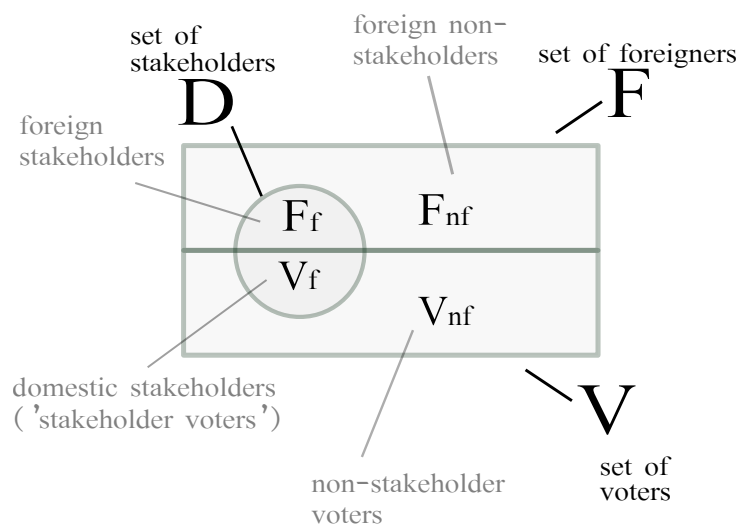

Figure 1: Composition of voters V, foreigners F and firm stakeholders D.

Outside of the firm exist voters and foreigners that are not affiliated with the firm. Let $V_{nf} = V \setminus V_f$ the set and measure of "non-stakeholder voters", that is, voters who

have no stake in the firm. Likewise, let $F_{nf} = F \setminus F_f$ be the set and measure of "non-stakeholder foreigners", that is, agents who neither vote nor have a stake in the firm. One can think of agents that are not affiliated with the failing firm as being stakeholders at other firms in the country. The set of voters is, therefore, partitioned into voters that are stakeholders and voters who are non-stakeholders $V = V_f \cup V_{nf}$. Likewise, the set of foreigners is partitioned into foreigners that are firm stakeholders and foreigners that are non-stakeholders, $F = F_f \cup F_{nf}$.

Firm failure creates inequality Assume that before the firm fails, all agents $V \cup F$ have symmetric income $\bar{w} > 0$ available for consumption. As the firm fails, all firm stakeholders $V_f \cup F_f$ are subject to an income shock $\varepsilon > 0$, reducing their income to $w_f = \bar{w} - \varepsilon \in [0, \bar{w})$. The non-stakeholders' income is unaffected by firm failure, remaining at $\bar{w}$.

2.2 The politician's problem

When faced with the failing firm in $t = 1$, the governing politician A anticipates the upcoming elections in $t = 2$. In $t = 1$, A faces the decision problem to choose a firm bailout $S \in [0, \overline{S}]$ that maximizes his re-election chances, taking as given the size and composition of the firm (D, V_f, F_f) and the group size and composition of voters outside of the firm (V, V_{nf}). The upper bound on the bailout $\bar{S}$ can be thought of as the maximum bailout the politician can finance via taxation.[4] To write down the politician's problem, I need to clarify how bailouts shape monetary transfers in $t = 1$, how transfers impact voting behavior in $t = 2$, and how the sizes of the different interest groups matter for the elections.

2.2.1 Montetary transfers (Bailout and taxes)

Following Lindbeck and Weibull (1987), I impose that the firm bailout shall be budget balancing, and no deficit can be accumulated.[5]

Consider a bailout choice $S \geq 0$. Since voters and foreigners are located in the country of the politician's jurisdiction, the *set of taxpayers* equals $V \cup F$.[6] To finance bailout S in a budget-balancing way, the politician levies lump-sum taxes uniformly

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[4]$\bar{S}$ must be such that it holds $\tau \leq \frac{\bar{S}}{V+F} \leq \omega_{min}$, where $\omega_{min} = \bar{w} - \varepsilon$ is the smallest endowment in the economy, and τ is the symmetric per capita tax to finance the bailout, see equation (1) below.

[5]I abstract from deficits because deficits can be interpreted as future taxes. When agents rationally anticipate future taxation (and are long-lived), deficits give rise to a similar effect as instantaneous taxation modeled here. Deficits give additionally rise to a time-inconsistency problem between subsequent constituents which is thoroughly analyzed in Persson and Svensson (1989); Alesina and Tabellini (1990, 1988); Tabellini and Alesina (1990).

[6]I relax this assumption in section 7.2.

on all taxable agents. The per capita tax therefore equals

$$\tau(S) = \frac{S}{V + F} \geq 0 \tag{1}$$

In the bailout literature, bailouts are often modeled in the form of guarantees or loans, allowing the failing firm to continue its business. Because suppliers, investors, or employees can continue their contracts with the firm, though potentially at renegotiated terms, the bailout has an indirect, positive effect on the stakeholders' income, partially making up for the negative impact caused by the firm's failure. In this paper, I choose a more direct approach, assuming that the bailout is redistributed, without friction, to all stakeholders in the form of a transfer.[7]

Crucially, and in contrast to Lizzeri and Persico (2004), the politician provides the bailout to all firm stakeholders, including foreigners, $D = V_f \cup F_f$. That is, I assume that due to legal reasons the politician cannot discriminate between voters and non-voters at the firm. Therefore, every stakeholder of the failing firm receives an equal pro rata share

$$c(S) = \frac{S}{D} = \frac{S}{V_f + F_f} \geq \tau. \tag{2}$$

of bailout S. This assumption allows foreign stakeholders to hide behind voters with aligned interests in the spirit of Guembel and Sussman (2009). Equation (2) also implies that the politician uses the entire tax income $S = \tau(V + F)$ for redistribution as a bailout. No tax income is wasted or diverted to other projects.

Foreign non-stakeholders F_{nf} and non-stakeholder voters V_{nf} receive no share of the bailout but pay taxes. Firm stakeholders are net beneficiaries of the bailout because the pro rata share exceeds the tax $c - \tau > 0$, for all $S > 0$, as long as some taxpayers are not affiliated with the firm, $D < V + F$, see Figure 2. Because the bailout choice is an endogenous equilibrium object, so are the tax and the pro rata share. Figure 2 depicts the set of taxpayers and bailout receivers.
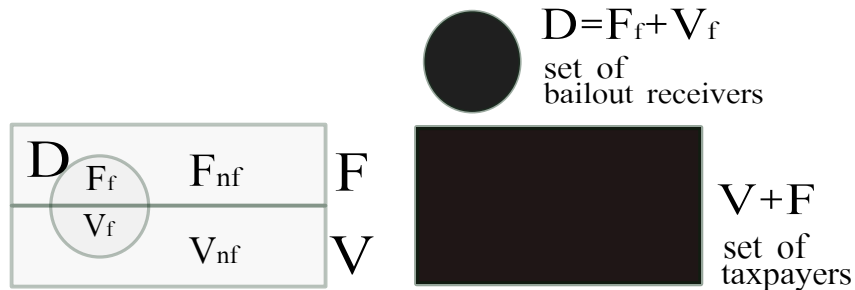

Figure 2: Sets of bailout receivers and taxpayers

[7]One can easily adjust the model, by assuming that a constant share $(1 - \alpha) \in (0, 1)$ of the bailout gets lost due to frictions and only αS can be directly redistributed to stakeholders.

2.2.2 Preferences and Voting Behavior

In the elections, all voters vote and vote either for A or for a contender B. Individual voting behavior depends on three components: (i) an exogenous ideology realization, (ii) membership to a special interest group, that is, whether a voter is a firm stakeholder or not, and (iii) the bailout choice S of the politician and the according monetary transfers across all voters and foreigners. Aggregate voting behavior additionally depends on the size of the interest groups.

Ideologies Building on the probabilistic voting model of Lindbeck and Weibull (1987), voters have exogenous, and heterogeneous preferences in favor of the governing politician and his contender: Each voter $i \in V$ infers an idiosyncratic, policy-independent benefit σ_i^A ('ideology') if A is re-elected, and equivalently infers benefit σ_i^B if B is elected. Voter ideologies are private information and therefore unobservable to the politician. Assume that the differences

$$\Delta_i = \sigma_i^B - \sigma_i^A \sim U(-1, 1) \tag{3}$$

are iid uniformly distributed. Observe that the uniform distribution is centered around zero, so that voters are politically unbiased. Unlike (Lindbeck and Weibull, 1987; Dixit and Londregan, 1996; Lizzeri and Persico, 2004), I assume that voter ideologies realize independently of whether a voter belongs to the group of firm stakeholders or non-stakeholder voters. That is, the firm is not political, which could have given the politician a specific incentive to cater to the firm stakeholders as a favorable voter group. The mechanism analyzed in this paper works even without such particular political incentives to the politician. Ideologies also realize independently of the politician's bailout choice. Foreigners cannot vote, and therefore hold no ideology.

Special Interest Groups and Vote-shading To pin down individual voting behavior, I follow Lindbeck and Weibull (1987) assuming that utility is additively separable. Assume politician A proposes bailout S. If A gets elected, an agent $i \in V$ receives utility $u_i(A) = v_i(w_i + t_i^A) + \sigma_i^A$, where $w_i \in \{\bar{w}, \bar{w} - \varepsilon\}$ is the agent's income, $v_i(\cdot)$ is a positive, strictly increasing, continuous, twice differentiable and concave consumption utility function shared by all voters and foreigners, and the transfer $t_i^A \in \{c(S) - \tau(S), -\tau(S)\}$ to agent i following bailout S depends on whether the agent is a firm stakeholder, thus receiving a share of the bailout, or a non-stakeholder, obliged to pay a tax. When B gets elected, an agent i receives utility $u_i(B) = v_i(w_i) + \sigma_i^B$. Here, the transfer to the agent is zero because at the time the firm fails, contender B is not governing, and thus cannot offer an alternate bailout.

Agent $i \in V$ votes for A if and only if her transfer and her ideology realization

satisfy $u_i(B) \leq u_i(A)$, or put differently if Δ_i realizes such that

$$\Delta_i \leq v_i(w_i + t_i^A) - v_i(w_i) \tag{4}$$

Special Interest groups Because the bail-out is exclusively provided to firm stakeholders D, the politician A treats voter group V_f better at the expense of voter group V_{nf}, allocating them different transfers following the bailout choice $S > 0$. Stakeholder voters V_f receive $t_f^A = c(S) - \tau(S)$ whereas nonstakeholder-voters V_{nf} pay $t_{nf}^A = -\tau(S)$.

Because bailouts and taxes impact consumption and due to this unequal treatment, equation (4) reveals that stakeholder voters reward and nonstakeholder voters punish the politician in the elections by adjusting their voting behavior, "shading their vote" away from their ideology, depending on the bailout choice S. One could argue that because the bailout is sunk once the elections take place it may no longer impact the voting behavior. However, empirical evidence suggests that voters do hold politicians accountable for past actions or the lack thereof.[8]

Voting decisions are symmetric within special interest group, except for the ideology realization Δ_i.[9] For convenience, I, therefore, simplify the notation, and let

$$g(t_f^A) \equiv v_i(w_f + t_f^A) - v_i(w_f), \quad t_f^A = c(S) - \tau(S) \geq 0 \tag{5}$$

represent the utility a stakeholder-voter receives from bailout choice S via taxes and benefits given in (1) and (2). See that $g(\cdot) \geq 0$ is a positive, strictly increasing, continuous, twice differentiable and concave function in transfer t_f^A. Likewise, let

$$-h(t_{nf}^A) \equiv v_i(\bar{w} - t_{nf}^A) - v_i(\bar{w}), \quad t_{nf}^A = \tau(S) \geq 0 \tag{6}$$

represent the disutility a non-stakeholder-voter receives from bailout choice S via taxation. See that $h(\cdot) \geq 0$ is positive, strictly increasing, twice differentiable and convex function in transfer t_{nf}^A. With that notation, given the bailout S, a stakeholder-voter $i \in V_f$ votes for A if and only if her ideology difference realizes below the utility she infers from the bailout, $\Delta_i \leq g(c(S) - \tau(S))$. Absent a bailout, $S = 0$, a stakeholder-voter votes for A if the ideology difference realizes as $\Delta_i \leq 0$. The provision of a bailout $S > 0$ creates additional consumption to all firm stakeholders, prompting some stakeholder voters with ideology realization in $[0, g(c(S) - \tau(S)))$ to *swing their vote* away from B to A. Vote-shading is, thus, an endogenous deviation in individual, and later aggregate voting behavior away from the ideology as a response to the

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[8]See (Anderson, 2007; Leight et al., 2020; Vicente, 2014; Cruz et al., 2016; Hicken et al., 2018) on economic voting and Malmendier and Schmidt (2017) on experimental evidence that recipients of gifts change their behavior in favor of the gift-giver.

[9]In equation (4), on the RHS all stakeholder voters use the cut-off $v_i(w_f + c(S) - \tau(S)) - v_i(w_f)$ whereas all non stakeholder voters use the cut-off $-(v_i(\bar{w} - \tau(S)) - v_i(\bar{w}))$ when choosing the politician to vote for.

politician's bailout choice. Firm stakeholder voters shade their propensity to vote for A up, whereas non-stakeholder voters shade their vote down. Non-stakeholder voters $i \in V_{nf}$ vote for A if $\Delta_i \leq -h(\tau(S))$. The bailout provision $S > 0$, therefore, causes a counter swing-vote: non-stakeholder voters with ideology in $[-h(\tau(S)), 0]$ would have voted for A absent a bailout. With the bailout provision, they *swing their vote* in the opposite direction away from A to B. The intensity of vote-shading increases with the bailout choice because $g(\cdot)$ and $h(\cdot)$ are increasing functions of the monetary transfers, and transfers $c - \tau$ and τ increase in S. That is, voters at the firm become happier, and voters outside of the firm become unhappier the larger the bailout, respectively the tax. Observe that $g(0) = h(0) = 0$, implying that a zero bail-out policy choice implies no vote-shading.

The individual voting decisions of the different groups are deterministic. But because the politician cannot observe the ideology realizations he faces uncertainty when making the bailout decision. By the uniform ideology distribution, the likelihood that stakeholder voter $i \in V_f$ votes for A equals

$$\mathbb{P}\left(\Delta_i \leq g(c(S) - \tau(S))\right) = \frac{1}{2}g(c(S) - \tau(S)) + \frac{1}{2} \tag{7}$$

whereas a non stakeholder voter $i \in V_{nf}$ votes for A with likelihood

$$\mathbb{P}\left(\Delta_i \leq -h(\tau(S))\right) = -\frac{1}{2}h(\tau(S)) + \frac{1}{2}. \tag{8}$$

Assumption 2.1 (Extreme Ideologies). *The ideology support $U[-1, 1]$ and the functions $g(\cdot)$ and $h(\cdot)$ jointly satisfy $\max(\max_{S \in [0,\overline{S}]} g(S), \max_{S \in [0,\overline{S}]} h(S)) = \max(g(\overline{S}), h(\overline{S})) < 1$.*

The assumption says there exist voters $i \in V$ with extreme ideologies that will vote for A no matter how detrimental and will vote against A no matter how favorable A's policy choice S is for i's group.[10]

2.2.3 Politician's Policy Choice (Decision Problem)

In $t = 1$, given (V, V_f, D, F_f, F) and given the distribution of ideologies in the voter population, the politician's objective is to maximize his re-election chances in $t = 2$, that is, his expected vote share $A(S)$

$$A(S) = \frac{1}{V}\left(\int_{i \in V_f} \mathbb{P}(i \text{ votes for A}|S, \tau(S), c(S))\, di + \int_{i \in V_{nf}} \mathbb{P}(i \text{ votes for A}|S, \tau(S))\, di\right). \tag{9}$$

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[10]I require this assumption for technical reasons: the ideology distribution has bounded support so that, absent this assumption, the monetary transfers and the resulting vote-shading may create atoms at the boundary of the ideology support. For instance, there may exist $S \in (0, \overline{S}]$ such that either $\mathbb{P}\left(\Delta_i \leq g(c(S) - \tau(S))\right) = \frac{1}{2}g(c(S) - \tau(S)) + \frac{1}{2} \geq 1$ or $\mathbb{P}\left(\Delta_i \leq -h(\tau(S))\right) = -\frac{1}{2}h(\tau(S)) + \frac{1}{2} \leq 0$ which I want to rule out.

via a bailout choice $S \in [0, \bar{S}]$, taking as given how his bailout choice impacts the electorate via budget-balancing monetary transfers $(\tau(S), c(S))$ through vote-shading $(-h(\tau), g(c - \tau))$. Note, the bailout is not set to undo the consumption inequality caused by firm failure, see Section 5 on socially optimal bailouts. Rather, the politician uses the firm's failure and the bailout as an excuse to implement transfers to voter groups to maximize his election chances. The bailout can thus be seen as a discrimination tool, where discrimination against foreigners is partially deterred by law because foreign stakeholders and taxpayers must be treated like locals.

Definition 2.1 (Equilibrium: Vote-share maximizer). *Given the political economy an equilibrium of the voting game is a bailout, $S_F^*(V_f, V_{nf}, F_f, F_{nf}, D, g(\cdot), h(\cdot)) \in \underset{S \in [0, \bar{S}]}{\arg\max} A(S)$, that maximizes politician A's expected vote share (9) subject to the budget constraint $\tau(S) = \frac{S}{V+F}$, and the no-waste condition $c(S) = \frac{S}{V_f + F_f} = \frac{S}{D}$, taking as given how the bailout choice impacts monetary transfers $(\tau(S), c(S))$, and voting behavior via the (dis)utility $g(\tau - c), h(\tau)$.*

All proofs can be found in the appendix.

3   Equilibrium Analysis: Existence and Uniqueness

Of key interest in this analysis is how changes in the firm's size D and stakeholder composition impact vote-share maximizing bailouts. For this purpose, I first clarify existence and uniqueness of the vote-share maximizer. For this purpose, I rewrite the expected vote-share in (9) via the law of large numbers

$$A(S) = \frac{1}{2}\Big(\underbrace{\frac{V_f}{V}}_{\substack{\text{share of voters} \\ \text{at firm level}}} \times \underbrace{g\left(c(S) - \tau(S)\right)}_{\substack{\text{reward per} \\ \text{voter at firm}}} - \underbrace{\left(1 - \frac{V_f}{V}\right)}_{\substack{\text{share of voters} \\ \text{outside of firm}}} \times \underbrace{h(\tau(S))}_{\substack{\text{punishment per} \\ \text{voter outside firm}}} \Big) + \frac{1}{2}.$$

(10)

If the politician grants no bailout, $S = 0$, which is always among his possible choices, the expected vote share equals $1/2$. Via his bailout choice, the politician can tilt the election in his favor. Crucially, the expected vote-share not only depends on the balance of power between stakeholder- and non-stakeholder voters $(V_f/V, V_{nf}/V)$ but also the extent of vote-shading, that is, rewards and punishments for the bailout. The extent of reward and punishment, in return, depend, besides the bailout provision, also on the monetary transfers $\tau = S/(V + F)$ and $c = S/(V_f + F_f)$ and, thus, the share of foreigners among the firm stakeholders and the taxpayer population.

Proposition 3.1 (Existence and Uniqueness of Vote-share maximizer S^*). *Fix (V, F, D), the voter and firm stakeholder composition $(V_f, V_{nf}, F_f, F_{nf})$, and the (dis)utility functions $g(S)$ and $h(S)$, where both functions are positive, strictly increasing, $g(\cdot)$ concave and $h(\cdot)$*

convex. If either $g(\cdot)$ is strictly concave or $h(\cdot)$ is strictly convex or both, then there exists a unique bailout maximizer $S_F^* \geq 0$. If V_f is small, it holds $S^* = 0$, where as for V_f close to V, $S_F^* = \bar{S}$. For $V_f \in (0, V)$, the unique maximizer can be interior in $(0, \bar{S})$, and is then characterized as the solution to

$$\frac{V_f}{V} \times g'\left(c(S) - \tau(S)\right)\left(\frac{\partial}{\partial S}c(S) - \frac{\partial}{\partial S}\tau(S)\right) - \left(1 - \frac{V_f}{V}\right) \times h'(\tau(S))\frac{\partial}{\partial S}\tau(S) = 0 \qquad (11)$$

Going forward in the paper, I assume the conditions of Proposition 3.1 hold, that is, $g(), -h()$ are strictly concave. Therefore, the vote-share maximizer exists, is unique, and can be interior, which allows me to analyze its behavior as the firm's size and the firm's stakeholder composition change. For completeness, I, however, also study linear utility and disutility functions of the voters in Proposition 9.1 of the appendix.[11]

4 Main Results: Comparative Statics in Equilibrium

In this section, I analyze how the vote-share maximizing bailout S_F^* changes with firm size and the firm's stakeholder composition. All comparative statics are in equilibrium. For the analysis, I keep the set of voters V and foreigners F constant, which also implies that the taxable population is fixed. Changes in firm size D via changes in firm stakeholders V_f and F_f necessitate migration of voters or foreigners across different interest groups, which is taken into account in the analysis. In the robustness section 7, I consider an extension case where foreigners that leave the firm also leave the country, meaning the taxable population changes as foreigners leave the firm (emigration), and a separate case where foreigners are no taxed in the home country.

4.1 Size Effects

If the firm grows in size D, how does the politician adjust the equilibrium vote-share maximizing bailout? There are two ways the firm can grow, namely either by employing more voters or more foreigners, see Figure 7. I call the first type of growth *voter-effective* since the measure of stakeholder-voters V_f at the firm level increases with the firm. I call the second type of firm growth *voter-neutral* since the measure of voters at the firm level ("voter concentration at the firm", see below), V_f/D, remains constant as the firm grows so that the balance of power between the opposing voting interest groups is kept constant in the electorate.

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[11]For these cases, I show that the expected vote-share becomes strictly monotone in the bailout so that the vote-share maximizer S^* is sticky at or jumps across the boundary points $\{0, \bar{S}\}$ when altering V_f, holding (F_f, F, V) fixed. The maximizer S^* cannot become interior. In some special cases, the politician's vote share can become independent of his bailout choice S, meaning that the politician cannot impact the electorate via the bailout. In that case, S_F^* does not exist.
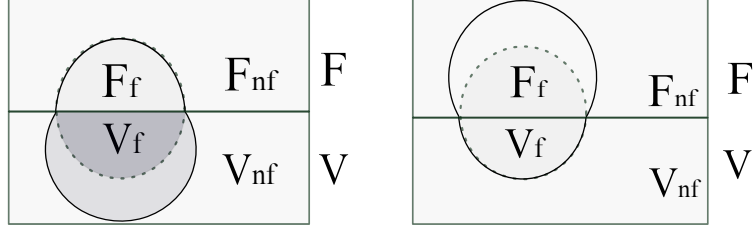
Figure 3: Firm growth by employing more voters respectively more foreigners

Proposition 4.1 (Firm size effects on equilibrium bailout: Too-Big-To-Fail-Look-alike). *Keep V, F fixed. If the firm's size $D = V_f + F_f$ grows exclusively by*

1. *employing more voters V_f, the vote-share maximizing bailout $S^*(V_f)$ increases monotonically in $V_f \in [0, V]$. For V_f small, the equilibrium bailout is stuck at zero, $S^*(V_f) = 0$. As V_f becomes larger, the equilibrium bailout $S^*(V_f)$ increases strictly monotone in V_f, reaching $S_F^* = \bar{S}$ for $V_f \to V$.*

2. *employing more foreigners F_f, then the vote-share maximizing bailout $S^*(F_f)$ increases strict monotonically in the measure of foreign workers F_f if and only if the voters' utility function has a relative risk aversion coefficient greater than one $-xg''(x)/g'(x) > 1$ for all $x > 0$. If $-xg''(x)/g'(x) = 1$ for all $x > 0$, the vote-share maximizing bailout remains constant as the firm grows by taking on more foreigners. If $-xg''(x)/g'(x) < 1$ for all $x > 0$, the vote-share maximizing bailout monotonically declines as the firm grows by taking on more foreigners. For F_f small, $S^*(F_f)$ is positive for V_f not too small.*

3. *As the firm becomes large, comprising the entire country $D \to V + F$, it holds $S_F^* = 0$. As the firm becomes tiny $D \to 0$, it holds $S_F^* = 0$.*

Section 7 shows that this result is robust when firm growth occurs due to an increase in the foreign population F ("immigration").

Two essential insights from Proposition 4.1 exist. First, the equilibrium bailout increases not only when employing more voters but can even increase when employing more foreigners, even though foreigners cannot vote to reward the politician. I call an increase in the equilibrium bailouts S^* due to an increase in firm size D a too-big-to-fail look alike: While socially optimal bailouts do increase in firm size, see Lemma 5.1, the upward adjustment of the vote-share maximizing bailout here is purely driven by the selfishness of the politician, and is not related to social optimality, see the comparison in Proposition 5.1. For an outsider who has no insight into the political economy, this effect looks like a too-big-to-fail, or a pure size effect, allowing the politician to falsely justify the bailout as being socially optimal or stating that the firm was too-big-to-fail.

To cleanly disentangle the size effect from the voting effect, I proceed below to analyze substitution effects where I hold the firm size fixed but alter the voter concentration at the firm level. Second, and more general, the fact that vote-share maximizing

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bailouts alter with the measure of foreigners at the firm level indicates that the presence of foreigners, despite their lack of voting rights, impacts the electorate so that a politician who disregards foreigners misses out on votes. The results indicate that foreigners 'vote indirectly' by changing the behavior of groups that vote: the presence of foreigners impacts the monetary transfers to voters, and thus alters their rewards and punishments of the politician during the elections.
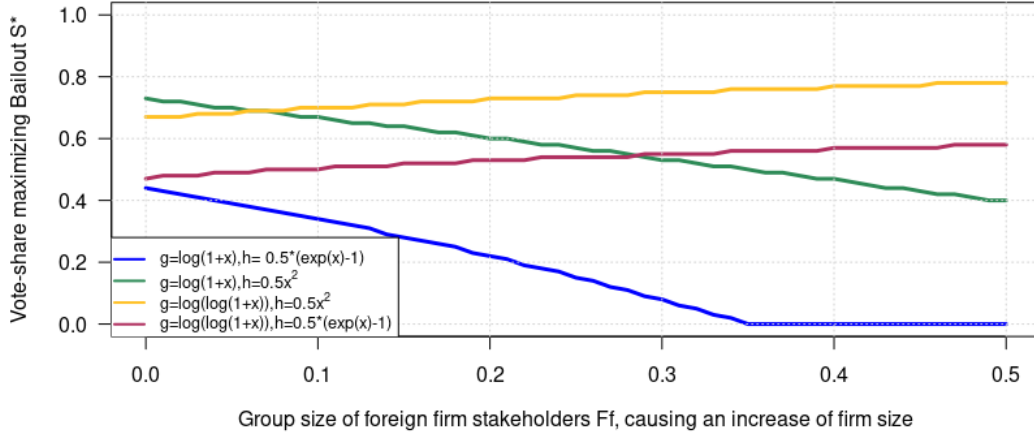

Figure 4: Change in vote-share maximizing bailout $S^*(F_f) = \arg\max_S A(S, F_f)$ as the firm grows by influx of foreign firm stakeholders F_f. For $F_f = 0$ the firm has only domestic stakeholders. As F_f increases along the x-achsis, firm size increases via $D(F_f) = 0.25 + F_f$. Parameters $V = 1$, $F = 0.5$, $V_f = V/4 = 0.25$, $\bar{S} = 1$, $F_f \in [0, F]$.

To gain intuition into Proposition 4.1, under both types of firm growth two effects are at play, and either type of firm growth has a size effect on the equilibrium bailout. Under voter-effective firm growth, the firm's size $D(V_f) = V_f + F_f$ grows because the firm employs more voters V_f, and holds the measure of foreigners at the firm F_f constant. Because the measure of all voters V and foreigners F is held fixed, voter-effective firm growth necessarily requires a simultaneous decline in the group size of non-stakeholder voters $V_{nf} = V - V_f$, see the migration between voter groups in Figure 7 on the left. The agent group that rewards the politician for the bailout in the elections becomes larger whereas the agent group that punishes becomes smaller, implying that the balance of power between the voting interest groups tilts towards the group that favors a bailout. In addition, the following size effect is at play which impacts the monetary transfers: because the firm becomes larger, the given bailout is allocated to more agents and the group of agents that finance the bailout in net terms becomes smaller. Therefore, the pro rata share per voter $c(S)$ and thus also the reward in terms of positive vote-shading in the election declines. Allover, the voter group that rewards the politician for the bailout becomes larger (change in the balance of

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power) but rewards per voter decline (size effect), causing the politician to readjust the bailout upwards. The politician will, however, not allocate a bailout if the firm employs (almost) exclusively foreign stakeholders. The rationale is, to finance the bail-out, the politician needs to raise taxes, thus losing votes from non-stakeholder voters. At the same time, the bail-out cannot reach any domestic stakeholders with voting rights to generate rewards since all employed agents are foreign.

Under voter-neutral firm growth, the firm's size $D(F_f) = V_f + F_f$ grows because the firm employs more foreigners F_f, and the measure of voters at the firm V_f is held constant. Because the measure of all voters and foreigners is held constant, voter-neutral firm growth requires a simultaneous decline in the group of foreigners outside of the firm $F_{nf} = F - F_f$, see Figure 7 on the right. Unlike in the case of voter-effective firm growth, if the firm grows by employing more foreigners the balance of power between the opposing voting interest groups is preserved, V_f/V_{nf} is constant, so that the voter groups in favor and disfavor of the bailout maintain their size. However, due to the change in firm size, the monetary transfers to voters of both groups still change with the measure of foreigners at the firm level, F_f. The group of agents that finance a given bailout, $V_{nf} \cup F_{nf}$, shrinks as more foreigners enter the firm whereas the same bailout is now pro-rated to more agents (size effect). The pro rata share $c(S) = \frac{S}{V_f + F_f}$ per voter at the firm level drops, causing these voters to reward the politician less for the same bailout. That is, as in the case of voter-effective firm growth, the same bailout has become less effective at swinging voters at the firm level. As the second effect, though, these additional agents that receive a share of the bailout cannot vote to reward the politician in the elections. That is, due to the presence of foreigners at the firm level $F_f > 0$, the bailout leaks to an agent group that cannot vote to reward the politician, and leakage becomes more intense as more foreigners enter the firm. More intense leakage additionally reduces the effectiveness of the bailout. In contrast, leakage becomes less intense under voter-effective firm growth. In a nutshell, as foreigners enter the firm, their presence alters the monetary transfers to voters via a size effect and increased leakage, thus, affecting their voting behavior. To reoptimize his vote-share, the politician adjusts the bailout depending on how sensitive voters at the firm level react to changes in monetary transfers, that is, depending on their relative risk-aversion, see Figure 4. In his decision, the politician trades off that an increase in the bailout causes voters outside of the firm to punish more whereas voters at the firm increase their rewards but less so the more foreigners enter since the bailout is allocated to more agents.

As the firm grows large, comprising the entire country, $D \rightarrow V + F$, the tax and the share of the bailout received by every stakeholder equalize. Therefore, voters at the firm no longer reward the politician for the bailout, prompting him to provide no bailout. As the firm becomes tiny, no voters at the firm may benefit from the bailout,

so the politician provides none. However, for an intermediate firm size $D \in (0, V+F)$, the bailout becomes highly non-monotone and is not only determined by firm size but particularly by the firm's stakeholder composition. The vote-share maximizing bailout is not necessarily hump-shaped in D. Rather, the politician's bailout response to the firm's growth depends on whether the size increase is due to taking on more foreign or domestic stakeholders.

The function $g(x) = log(log(x))$ provides an example of a positive, increasing and concave utility function that satisfies $g''(x)x + g'(x) < 0$ for all $x > 0$, meaning the equilibrium bailout increases with the measure of foreigners at the firm. The utility function $g(x) = log(x)$ provides an example that satisfies $g''(x)x + g'(x) = 0$ for all $x > 0$, meaning the equilibrium bailout remains constant as the firm grows by taking on more foreigners at the firm. The utility function $g(x) = 2\sqrt{x}$ satisfies $g''(x)x + g'(x) > 0$ for all $x > 0$, implying the vote-share maximizing bailout monotonically declines as the firm grows by taking on more foreigners at the firm.

4.2 Substitution effects

Because voters and foreigners impact the politician's decision problem differently, the question arises which agent group drives vote-share maximizing bailouts stronger? To answer this question, I fix the firm's size at $\bar{D}$, and analyze how the politician readjusts the vote-share maximizing bailout as the firm substitutes foreigners for voters; see Figure 5. Holding the firm's size fixed and then substituting foreigners for voters allows me to disentangle firm size from political economy effects on bailouts. Similar to the firm size increase, for now, the firm substitutes stakeholders without a strategic motive to learn the politician's optimal bailout response to different firm stakeholder compositions. In section 6, I then analyze how the firm can exploit her stakeholder composition, taking as given the politician's response that follows.

Definition 4.1 (Voter concentration at the firm level). *For a fixed firm size $\bar{D}$, define the "voter concentration at the firm level" ρ as the share of firm stakeholders with voting rights,*

$$\rho = \frac{V_f}{\bar{D}} \in [0, 1], \quad V_f \in [0, \bar{D}] \tag{12}$$

Consequentially, the measure of foreigners at the firm level under substitution is given as $F_f = (1 - \rho)D$. The voter concentration is a valuable tool for studying substitution effects. At $\rho = 0$, all firm stakeholders are foreign, $D = F_f$, whereas at $\rho = 1$ all firm stakeholders are voters, $D = V_f$. As ρ increases within $[0, 1]$, the firm gradually substitutes foreign by domestic stakeholders (voters). On average, every firm stakeholder corresponds to $\rho \in [0, 1]$ votes. The restriction $\rho \leq 1$ means that the average stakeholder corresponds to maximally one vote. For a fixed firm size D, I can rewrite

the vote-share as a function of voter concentration ρ, substituting V_f for ρD.

$$A(S, \rho, D) = \frac{1}{2} \left(\frac{\rho D}{V} g \left(\frac{S}{D} - \frac{S}{V+F} \right) - \left(1 - \frac{\rho D}{V} \right) h \left(\frac{S}{V+F} \right) \right) + \frac{1}{2} \quad (13)$$
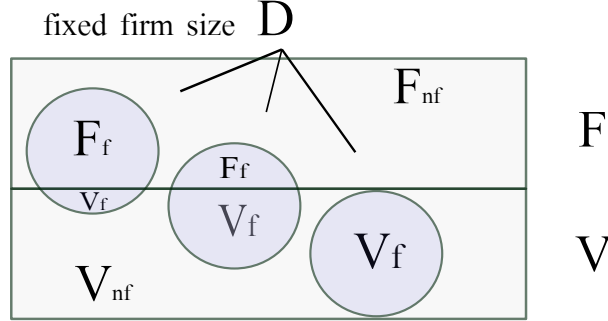

Figure 5: Change in firm stakeholder composition at fixed firm size D.

Proposition 4.2 (Substitution effects: Voters matter more). *Fix the set of voters, foreigners and the firm size* $(V, F, \bar{D})$ *with* $\bar{D} < \min(F, V)$.[12] *The vote-share maximizing bailout* S_F^* *strictly increases in the voter concentration* ρ, *that is, as the firm substitutes foreign for domestic stakeholders (voters).*

The Proposition says, that voters drive bailouts more than foreigners, independently of the utility function $g(\cdot)$. Consequently, when confronted with two equally sized firms the politician grants a larger bailout to the firm that employs more voters, that is, the firm with the higher voter concentration ρ.

To see the result, observe that the substitution of foreign for domestic stakeholders, at a given firm size and bailout, holds the taxable population and the group size of bailout receivers D constant. Under substitution, the firm size effect is, thus, held constant, implying the monetary transfers, and thus the extent of vote-shading per voter, stay constant.[13]

$$\tau = \frac{S}{V+F}, \quad c = \frac{S}{\bar{D}}, \quad V_f \in [0, \bar{D}] \quad (14)$$

That holds because the substitution triggers migration across various agent groups.[14] The substitution, however, changes the balance of power between the different interest

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[12]I require $\bar{D} < \min(F, V)$ because I want to be able to compare firms that are entirely composed of voters with firms entirely composed of foreigners.

[13]Under substitution, monetary transfers and vote-shading are only functions of the bailout, the firm size, and the taxable population, and no longer depend on V_f and F_f.

[14]For the substitution, the increase in the measure of voters at the firm level $V_f \in [0, \bar{D}]$ is, under a fixed firm size, necessarily accompanied by a simultaneous decline in the measure of foreign firm stakeholders $F_f(V_f) = \bar{D} - V_f$, $V_f \in [0, \bar{D}]$. Foreigners that leave the firm become, and therefore increase the group of, foreigners that are not affiliated with the firm, $F_{nf}(V_f) = F - F_f(V_f) = F - \bar{D} + V_f$, $V_f \in [0, \bar{D}]$ increases in V_f. Moreover, as the firm employs more voters, the group size of non-stakeholder voters declines by $V_{nf}(V_f) = V - V_f$.

groups in the elections by changing the relative group size $\frac{V_f}{V}$ versus $1 - \frac{V_f}{V}$. The agent group in favor of the bailout becomes larger and thus more powerful in the elections, which causes the politician to grant larger bailouts. As a corollary of the Proposition,

Corollary 4.1. *When confronted with two failing firms of the same size D, the politician grants different bailouts if the firms have a distinct stakeholder-composition, and grants the larger bailout to the firm that employs more voters.*

This Corollary has crucial implications for corporate finance and individual employment decisions by stakeholders, see section 6.2.2 for an application. 'Voters at the firm level' is an important variable that causes bailouts, in addition to firm size. Firm size alone is insufficient for determining vote-share maximizing bailouts since voters and foreigners drive bailouts at distinct rates. This result opposes the too-big-to-fail literature and opposes social optimality since foreigners and voters should be treated equally by a social planner, see section 5 and Proposition 5.1 below, where I contrast vote-share and socially optimal bailouts.

The size results in Proposition (4.1) describe changes in equilibrium bailouts when firm size and the voter concentration alter simultaneously. The substitution result in Propositions (4.2), on the other hand, fixes one dimension, telling us the vote-share maximizing equilibrium subsidy for equally sized firms across different stakeholder compositions. When combining Propositions (4.2) and (4.1), is straightforward to infer another result that contradicts social optimality:

Corollary 4.2. *The politician may grant larger bailouts to small firms that employ mostly voters than to large firms that are mostly composed of foreigners.*

To see this result, consider a small firm that employs mostly voters and consider a utility function $g(\cdot)$ for which the equilibrium subsidy declines as the firm grows by taking on more foreigners. Then, as the firm grows large by taking on more foreigners, the bailout the politician would grant to the firm in case of failure declines.

While this result is intuitive, I will show in section 7 that foreigners can be more effective in causing bailouts than voters if foreigners that leave the firm also leave the country, meaning the taxable population declines as foreigners exit the firm (emigration).

5   Social optimal versus Vote-share maximizing Bailouts

In this section, I want to quantify the politician's deviation of vote-share maximizing bailouts from socially optimal bailouts. Consider the social planner. Similarly to the politician, he taxes the entire population $V \cup F$ and exclusively allocates the raised proceeds S to all firm stakeholders $D = V_f + F_f$ in the form of a bailout, paying

them equal pro rata shares because he values all agents equally. Because the bailout-financing and the bailout-receiving groups are the same under the politician's and the social planner's redistribution, the tax and the pro rata share of the bailout, have the same functional form under vote-share and social welfare maximization,

$$\tau(S) = \frac{S}{V+F}, \qquad c(S) = \frac{S}{D}. \tag{15}$$

However, in contrast to the politician, the planner ignores ideologies and values all agents, foreign and domestic, equally. Therefore, the weights of the social planner objective function differ from those in the politician's vote-share maximization problem. I define utilitarian welfare of population $V \cup F$ at bailout S and firm size D as

$$W(S|V,F,D) = \frac{D}{V+F}\, v(w_f + c(S) - \tau(S)) + \left(1 - \frac{D}{V+F}\right)\, v(\bar{w} - \tau(S)) \tag{16}$$

$$\equiv \underbrace{\frac{D}{V+F}}_{\substack{\text{share of population} \\ \text{employed at the firm}}} g(c(S) - \tau(S)) - \underbrace{\frac{(V+F)-D}{V+F}}_{\substack{\text{share of population} \\ \text{outside of firm}}} h(\tau(S)) - \bar{W} \tag{17}$$

where $\bar{W} = W(0) = \frac{D}{V+F}\, v(w_f) + \left(1 - \frac{D}{V+F}\right)\, v(\bar{w})$ denotes the status quo level of welfare when not providing a bailout to population $V \cup F$, $S = 0$. Recall that foreigners have the same utility function $v(\cdot)$ over consumption as voters.

Definition 5.1 (Socially optimal bailout). *Given the political economy (V, V_f, F_f, F), $(g(\cdot), h(\cdot))$, and firm size D, the socially optimal bailout is defined as the welfare maximizer*

$$S^*_{soc}(V,F,D) \in \arg\max_{S \in [0,\bar{S}]} W(S|V,F,D) \tag{18}$$

subject to the budget constraint $\tau(S) = \frac{S}{V+F}$, and the no-waste condition $c(S) = \frac{S}{V_f+F_f} = \frac{S}{D}$.

In contrast, the politician's objective function is given in (10). Clearly,

Lemma 5.1. *The socially optimal bailout is strictly positive, $S^*_{soc} > 0$ for a shock $-\varepsilon < 0$ to the firm stakeholders' income caused by firm failure. The socially optimal bailout strictly increases in firm size D. However, for a fixed firm size D, the socially optimal bailout S^*_{soc} is constant in the composition of foreign to domestic stakeholders, that is, in voter concentration ρ.*
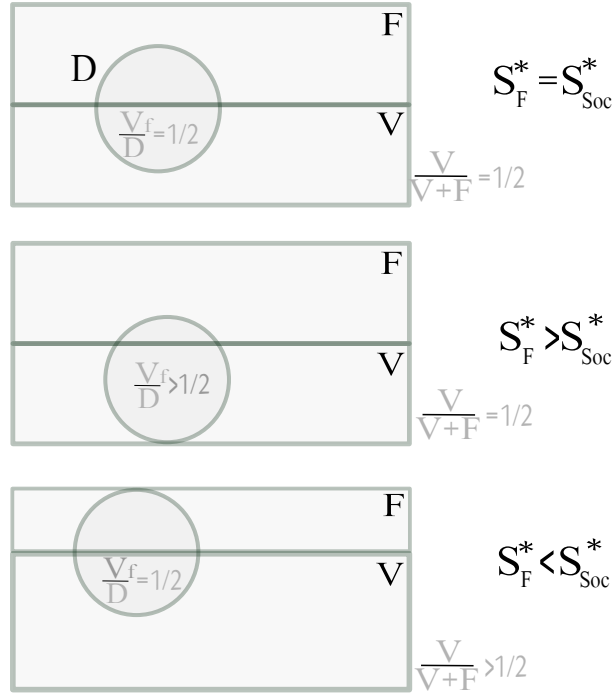
Figure 6: Vote-share maximizing bailout S_F^* versus socially optimal bailout S_{soc}^*.

The socially optimal bailout completely undoes the consumption inequality caused by the firm's failure. The result follows from the fact that the social planner's objective function only depends on the firm's size and the size of the taxable population but is independent of whether a firm stakeholder is foreign or domestic. Therefore, welfare is independent of the firm's stakeholder composition.

The Lemma jointly with Proposition 4.2 suggest that vote-share maximizing bailouts may approach the socially optimal bailout once ρ is sufficiently large, that is, if there are sufficiently many voters at the firm level. Does the politician ever grant socially optimal bailouts, and can vote-share maximizing bailouts exceed socially optimal bailouts?

Proposition 5.1 (Social vs. Vote-share maximizing bailouts). *Fix (V, F) and hold the firm size $D > 0$ constant.*

1. *The vote share maximizing and the socially optimal bailout coincide if and only if*

$$\{S_F^*(\rho) = S_{soc}^*\} \quad \Leftrightarrow \quad \{ \underbrace{\frac{V_f}{D}}_{\substack{=\rho,\, voter\text{-}\\concentration\\at\ the\ firm}} = \underbrace{\frac{V}{V + F}}_{\substack{share\ of\ voters\\among\ all\ taxpayers}} \} \tag{19}$$

2. *If $\rho < \frac{V}{V+F}$, then $S_F^*(\rho) < S_{soc}^*$*

3. *If $\rho > \frac{V}{V+F}$ then $S_F^*(\rho) > S_{soc}^*$*

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That is, the politician under-provides bailouts if there are too few voters among the firm stakeholder that reward him relative to voters among the remaining taxpayers that punish him for the bailout. If the share of voters at the firm level exceeds the share of voters among the taxable population, the politician provides bailouts larger than socially optimal, see Figure 6. Intuitively, the politician sees foreigners outside of the firm as an agent group he can exploit without punishment, that is, without negative consequences for his vote share when financing bailouts that generate additional votes from voters among the firm's stakeholders. At the same time, the politician understands that voters share the provided bailout with foreigners at the firm level who cannot reward him in the elections, causing 'leakage'. The politician, therefore, over provides the bailout if the leakage effect is weak compared to the foreigner's tax money influx, that is, if there are many voters among firm stakeholders to generate rewards and only a few voters among the remaining taxpayers that punish. If there are no foreigners in the country, $F = 0 = F_f$, then the bailout provided by the politician coincides with the socially optimal bailout.

6 Economic implications for corporate finance

The past sections have shown that a selfish politician discriminates between foreign and domestic firm stakeholders (voters) when it comes to granting bailouts. In this section, I build dynamic toy models that demonstrate the far-reaching consequences of this discrimination for credit and labor markets once the firm or stakeholders are strategic, taking advantage of the political economy.

6.1 Hiring Decisions by Firms

6.1.1 A 3-period model

I introduce a pre-stage $t = 0$ to the baseline model. In $t = 0$, a strategic, risk-neutral (and alive) firm of exogenous, fixed size D invests and pursues a risky project. With a probability $\theta \sim F([0, 1])$ the project pays zero in $t = 1$, which causes the firm to fail. With probability $1 - \theta$ the project succeeds, pays return R, and the firm stays alive. Knowing about the possibility of failure in $t = 1$, in $t = 0$ the firm needs to decide on its stakeholder composition by hiring the according proportion of foreign and domestic stakeholders. That is, the firm strategically sets the voter concentration $\rho \in [0, 1]$ that pins down the share of voters at the firm level. If the firm fails in $t = 1$, then in the same period the politician sets the bailout S_F^* that maximizes his expected vote-share in the elections that take place in $t = 2$. If the firm stays alive in $t = 1$, the game ends. As the firm sets her stakeholder composition ρ in $t = 0$, it takes as

given the political economy subgame that follows the voter concentration choice ρ if the risky project fails.

6.1.2 Homogenously skilled workers: Wage discrimination

Let w_V be the wage to a voter and w_F be the wage paid to a foreigner. I assume that the stakeholder composition does not affect the success likelihood of the project, meaning that all foreign and domestic stakeholders with voting rights are equally skilled. Assume no discounting between periods. The firm has limited liability, and maximizes expected revenue by setting voter concentration $\rho \in [0, 1]$, given as

$$\pi_D(\rho) = \max(\mathbb{E}_F[\theta]\, S_D(\rho) + (1 - \mathbb{E}_F[\theta])R - D\ (\rho\, w_V + (1 - \rho)w_F)\,, 0), \qquad (20)$$

where $D\ (\rho\, w_V + (1 - \rho)w_F)$ is total wages paid to all stakeholders if a share ρ of all stakeholders is domestic, and $S_D(\rho)$ is the equilibrium vote-share maximizing bailout the politician grants in $t = 1$ following the firm's failure if the firm has set a voter concentration ρ in $t = 0$. I make the simplifying assumption that wages are inelastic in the firm's demand for a specific type of worker.

Corollary 6.1 (Firm's hiring decision under homogenous skill). *Fix firm size D. If foreign and domestic applicants have an equal skill level, a firm is indifferent between hiring foreign stakeholders (workers or creditors) or domestic stakeholders (voters) only if foreign labor is cheaper than domestic labor, $w_V > w_F$. If $w_V - w_F \leq 0$, then revenue maximization requires the firm to employ voters exclusively.*

The Peterson Foundation provides evidence for this result, stating that "Foreign-born [U.S.] individuals typically earn less than native-born individuals — on average, 89 cents for every dollar earned by their native-born counterparts," see (Peterson-Foundation, 2022).[15]

The result is intuitive. The provision of bailouts has an effect similar to the payment of unemployment or deposit insurance. Given firm failure, voters generate larger bailouts than foreigners because the politician wants to get re-elected. Voters at the firm level, therefore, have an insurance function for the firm. Foreigners cannot generate this insurance and are equally skilled as domestic agents which is why they need to be cheaper to make the firm indifferent in its employment decision.

Proof. [Corollary 6.1] Let $\rho \in [0, 1]$ the firm's endogenous voter concentration choice. The firm's first order condition following revenue function (20) reads $\frac{\partial}{\partial \rho}\pi_D(\rho) = \mathbb{E}_F[\theta]\ \left(\frac{\partial}{\partial \rho}S_D(\rho)\right) -$

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[15]The foreign-born population is here defined as "persons residing in the United States who were not U.S. citizens at birth." That includes "legally-admitted immigrants, refugees, temporary residents such as students and temporary workers, and undocumented immigrants." Conversely, BLS defines the native-born population as "persons born in the United States or one of its outlying areas such as Puerto Rico or Guam or who were born abroad of at least one parent who was a U.S. citizen."

$D\ (w_V - w_F) = 0$. By Proposition 4.2 we know that for fixed firm size D, the bailout strictly increases in the share of voters ρ, $\left(\frac{\partial}{\partial \rho} S_D(\rho)\right) > 0$. The firm's indifference between hiring a domestic stakeholder (voter) or a foreigner, therefore requires $w_V - w_F > 0$. If $w_V - w_F \leq 0$, then $\frac{\partial}{\partial \rho} \pi_D(\rho) > 0$ and the firm exclusively employs voters. $\square$

6.1.3 Heterogeneously skilled workers (Skills versus votes)

Next, I allow for distinct worker productivity. Let $1 - \theta \sim V([0, 1])$ the productivity of a voter, and let $1 - \psi \sim F([0, 1])$ the productivity of a foreigner. Productivity determines the success likelihood of the risky project. Let $\mathbb{E}_V[\theta]$ be the expected failure probability under a domestic workforce and $\mathbb{E}_F[\psi]$ the failure probability under a foreign workforce. Assume no discounting between periods. Given a firm of size D, the choice of voter concentration $\rho \in [0, 1]$ then endogenously determines the project's expected failure probability $(\rho \mathbb{E}_V[\theta] + (1 - \rho)\mathbb{E}_F[\psi]) > 0$. As before, in case of failure the project pays zero. If the project succeeds it pays R. If the firm sets equal wages to all stakeholders, $w = w_V = w_F$, expected firm revenue at the firm's chosen voter concentration ρ equals

$$\pi_D(\rho) = \max((\rho \mathbb{E}_V[\theta] + (1-\rho)\mathbb{E}_F[\psi])\ S_D(\rho) + (1 - (\rho \mathbb{E}_V[\theta] + (1-\rho)\mathbb{E}_F[\psi]))R - D\ w, 0) \quad (21)$$

Corollary 6.2 (Firm's hiring decision II: heterogeneous skill). *Fix firm size D. Assume the maximum bailout the politician can possibly grant undercuts the risky return of the asset $\bar{S} < R$. A firm in the political economy is willing to hire foreign and domestic stakeholders at the same wage (indifference on the price of labor) only if the foreign workforce is more skilled than the domestic one, having a lower failure probability $\mathbb{E}_V[\theta] > \mathbb{E}_F[\psi]$.*

The Peterson Foundation also provides evidence for this result, stating "that [wage] disparity [between foreign and native-born individuals] generally holds true across age groups and education levels, with one significant exception. Foreign-born individuals with a bachelor's degree or more had median weekly earnings of $1,521 per week in 2021, which was $81 per week higher than the median for the native-born population with that level of education," see (Peterson-Foundation, 2022).

Because foreigners generate lower bailouts than voters given a firm failure, the firm employs voters and foreigners at an equal wage only if foreigners make up for this disadvantage by reducing the chance of firm failure via increased productivity. Employing foreigners must reduce the chance of failure because employing voters makes failure less costly.

Proof. [Corollary 6.2] Let again $\rho \in [0, 1]$ the firm's endogenous voter concentration choice. The firm's first order condition reads $\frac{\partial}{\partial \rho} \pi_D(\rho) = (\rho \mathbb{E}_V[\theta] + (1-\rho)\mathbb{E}_F[\psi])\ \left(\frac{\partial}{\partial \rho} S_D(\rho)\right) + (\mathbb{E}_V[\theta] - \mathbb{E}_F[\psi])(S_D(\rho) - R)$. The first term is always positive because the vote-share

maximizing bailout strictly increases in the voter concentration ρ by Proposition 4.2, $\left(\frac{\partial}{\partial \rho} S_D(\rho)\right) > 0$ and because the expected failure probability is positive, $(\rho \mathbb{E}_V[\theta] + (1 - \rho)\mathbb{E}_F[\psi]) > 0$. If the bailout undercuts the payoff from the project $S_D(\rho) < R$, the second term is negative, and the firm can be indifferent between hiring a foreign and a domestic worker at the same wage only if the probability of failure is larger under a domestic than under a foreign workforce, $\mathbb{E}_V[\theta] - \mathbb{E}_F[\psi] > 0$. $\qquad\square$

6.2 Individual Employment Choice by Stakeholders

6.2.1 Single firm failure

I next consider individual employment choices by workers. Consider a (future) worker that is either domestic or foreign, $i \in V \cup F$. Consider the following three-stage game:

In $t = 0$, an agent contemplates joining a firm that offers a wage w. The firm has size D and voter concentration ρ when accepting the agent as an employee. The firm is invested in a risky project. In $t = 1$, the success of the firm's project realizes. By limited liability of the firm, wages are only paid if the firm succeeds with chance $1 - \theta$. In case the firm fails in $t = 1$, the political economy game of the benchmark model applies: the politician grants the vote-share maximizing bailout $S(\rho)$ in $t = 1$ in anticipation of elections in $t = 2$. Of the bailout, the worker receives the pro rata share $c(S, \rho) = S(\rho)/D$ less a tax $\tau(S, \rho) = \frac{S(\rho)}{V+F}$. The net pro rata share $c - \tau > 0$ is always positive. Assume no discounting between periods.

Corollary 6.3 (Individual job choice). *Fix firm size D. Assume the firm's voter concentration does not impact the firm's success likelihood, that is, voters and foreigners are equally skilled. When keeping the worker's wage fixed, a worker strictly prefers working at a firm that employs more voters, irrespective of whether the worker herself is domestic (a voter) or a foreigner. Put differently: A worker is willing to accept a lower wage when a firm mainly employs voters.*

Intuitively, firms that employ more voters are capable of extracting higher bailouts from politicians who want to get re-elected. A higher bailout, however, implies higher "unemployment insurance" in the form of a higher net pro rata share $c(S) - \tau(S) = \frac{S}{D} - \frac{S}{V+D}$ to every firm stakeholder in case the firm fails. Higher insurance in the bad state implies that a worker is willing to accept a lower wage in the good state where the firm survives.

Proof. [Proposition 6.3] The worker receives the wage if the firm succeeds, and receives the net pro rata share if the firm fails which causes the politician to grant bailout $S(\rho)$. Therefore, the expected payoff to the worker at firm $j = 1, 2$ is $P(\rho_j) = E[\theta]\left(c(S(\rho_j)) - \tau(\rho_j)\right) + (1 - E[\theta])w$. The expected payoff to the worker strictly increases in the firm's

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voter concentration $\frac{\partial}{\partial \rho_i} P_i = E[\theta] \frac{\partial}{\partial \rho_i} (c(S(\rho_i)) - \tau(\rho_i)) = E[\theta] \left(\frac{\partial}{\partial \rho_i} S(\rho_i) \right) \left(\frac{1}{D} - \frac{1}{V+F} \right) > 0$
by $D < V + F$ and Proposition 4.2. Thus, the worker always prefers working for the
firm with the higher voter concentration ρ_i, even if the worker herself is a foreigner.
The latter holds because voters and foreigners receive the same pro rata share. Because
firms with higher voter concentration are preferred, a worker is indifferent to being
employed at two firms $\rho_1 < \rho_2$ only if wages satisfy $w_1 > w_2$. □

6.2.2 Multiple firm failures in the Economy

I now consider the setting where two firms exist in the economy, and the worker needs
to decide for which firm to work. In contrast to the setting with single firm failure, I
now explicitly account for the possibility that a worker is employed at a firm that does
not fail, thus becoming a member of the interest group that opposes bailouts, or that
several firms fail simultaneously.

In $t = 0$, the worker observes two distinct firms j, k with equal size D in the econ-
omy for which he considers working. The firms have distinct, exogenous voter con-
centration $\rho_j \neq \rho_k$. Assume both firms offer the worker a job at the same wage w.
Note, because the worker is small, employment of the single worker does not change
the firm's size D nor the voter concentration. Recall that θ is the failure probability of
either firm. Both firms employ equally skilled workers, and thus both firms fail with
the same probability $\theta \sim F([0, 1])$ in $t = 1$. The firm's failure probabilities, and thus
firm failures realize independently of one another. The worker takes this into account
when choosing her employer in $t = 0$.

Without loss of generality, assume the worker accepts the offer of firm j in $t = 0$.
In $t = 1$, the success of firm j's and k's risky projects realize. By limited liability of
the firms, wages are only paid if the employer firm succeeds with chance $1 - \theta$. With
probability $(1 - \theta)\theta$ firm j fails in $t = 1$ and firm k succeeds. In that case, the politician
grants the vote-share maximizing bailout $S_D(\rho_j)$ in $t = 1$ of which the worker receives
the pro rata share $c(S, \rho_j) = S(\rho_j)/D$. All taxpayers, including the worker, pay a tax
$\tau(S(\rho_j)) = \frac{S(\rho_j)}{V+F}$ but the net pro rata share $c - \tau > 0$ to the worker is positive.

With probability $(1 - \theta)\theta$ the non-employer firm k fails and firm j succeeds. In that
case, the worker receives his wage from firm j but the politician grants the vote-share
maximizing bailout $S_D(\rho_k)$ to firm k in $t = 1$ of which the worker receives zero because
he is employed at the other firm, thus, belonging to the group of non-stakeholders
$V_{nf} \cup F_{nf}$. All taxpayers, including the worker, pay the tax $\tau(S, \rho_k) = \frac{S(\rho_k)}{V+F}$.

If both firms fail with probability θ^2, the politician is confronted with a failure of a
single large firm that employs measure $2D$ of firm stakeholders in favor of a bailout.
Among these stakeholders is a measure $(\rho_j + \rho_k)D$ of voters. The voter concentration
of this larger firm is then $(\rho_j + \rho_k)/2$, and the politician grants bailout $S_{2D}((\rho_j + \rho_k)/2)$.

All workers at firm j and k receive the same pro rata share $c(S_{2D}, (\rho_j + \rho_k)/2) = S_{2D}((\rho_j + \rho_k)/2)/2D$ and are taxed $\tau_{2D}(S((\rho_j + \rho_k)/2)) = S((\rho_j + \rho_k)/2)/2D$. Assume no discounting between periods.

Corollary 6.4 (Individual job choice with 2 firms). *Considering two firms j, k in the economy with equal size D that offer employment at the same wage w but have distinct voter concentration $\rho_j \neq \rho_k$. Assume the firm's voter concentration does not impact the firm's success likelihood, that is, voters and foreigners are equally skilled. A worker strictly prefers working at a firm that employs more voters, irrespective of whether the worker herself is domestic (a voter) or a foreigner.*

Proof. [Corollary 6.4] The worker's expected payoff when working at firm j equals

$$P_j(\rho_j, \rho_k, D) = (1 - \theta)\theta \left[(c(S(\rho_j)) - \tau(S(\rho_j)) - \tau(S(\rho_k)) \right] \tag{22}$$

$$+ \theta^2 (c(S_{2D}((\rho_j + \rho_k)/2) - \tau_{2D}(S_{2D})) + (1 - \theta)\, w \tag{23}$$

If instead the worker chose firm k, his expected payoff equals

$$P_k(\rho_j, \rho_k, D) = (1 - \theta)\theta \left[(c(S(\rho_k)) - \tau(S(\rho_j)) - \tau(S(\rho_k)) \right] \tag{24}$$

$$+ \theta^2 (c(S_{2D}((\rho_j + \rho_k)/2) - \tau_{2D}(S_{2D})) + (1 - \theta)\, w \tag{25}$$

That is, the expected payoffs differ solely via the pro rata share given the employer firm fails and the other firm survives. It holds

$$\{P_j(\rho_j, \rho_k, D) > P_k(\rho_j, \rho_k, D)\} \Leftrightarrow \{c(S(\rho_j)) > c(S(\rho_k))\} \tag{26}$$

But $c(S(\rho_j)) > c(S(\rho_k))$ if and only if $\rho_j > \rho_k$ by Proposition 4.2. $\qquad\square$

6.3 Domestic versus Foreign Capital Investors

Consider a domestic investor with a domestic workforce of measure $\tilde{V}_f \subset V$, seeking investment in his come country governed by the politician. Assume the investor and his workforce are already taxpayers in the home country. In $t = 0$, the investor considers investing in a firm of size D with voter concentration ρ_i and pre-existing foreign capital investors (stakeholders) of the firm $F_f = (1 - \rho_i)D$. Assume all foreign and domestic capital investors are equally skilled, that is, the firm has a failure probability of $\theta \sim F([0, 1])$ independent of ρ_i. Given an investment, the firm offers the domestic investor a return on investment R in case of success. If the domestic investor decides to invest in the firm, two things happen simultaneously, the firm grows (size effect) and the stakeholder composition changes (voting effect): the firm's group of stakeholders grows from D to $\tilde{D} \equiv D + \tilde{V}_f$, increasing the voter concentration from ρ_i to

$\tilde{\rho}_i \equiv (\rho_i D + \tilde{V}_f)/(D + \tilde{V}_f)$, that is, the group of domestic firm stakeholders grows from $\rho_i D \rightarrow \rho_i D + \tilde{V}_f$. If the firm fails in $t = 1$, the politician grants the vote-share maximizing bailout $\tilde{S} = S(\tilde{D}, \rho_i D + \tilde{V}_f, F_f)$ to the firm of which the domestic investor receives a share $c\tilde{V}_f = \tilde{V}_f \tilde{S}/\tilde{D}$. The politician moreover levies a tax $\tau = \tilde{S}/(V + F_f + F_{nf})$ on the population, including the foreign firm investor and other foreign agents F_{nf} that are not affiliated with the firm, $F = F_f \cup F_{nf}$. The expected revenue to the domestic investor when investing in the firm equals

$$P(\rho_i) = (1 - \theta) R + \theta \tilde{V}_f (c(\rho_i) - \tau(\rho_i)). \tag{27}$$

Corollary 6.5 (Domestic versus Crossborder (Foreign) Investment). *Domestic investors prefer investing in firms with few foreign capital investors (non-voting stakeholders). Domestic investors can be made indifferent between investing in firms with many domestic as opposed to foreign capital investors if the firm with many foreign capital investors offers a larger return.*

Domestic investors internalize that domestically financed firms, that is, firms with more domestic stakeholders receive larger bailouts in a crisis than mostly foreign financed firms. Profits to domestic investors increase if the firm they are financing has a larger voter concentration to begin with. That is, domestic capital investors prefer financing firms jointly with other domestic investors rather than foreign capital investors. Moreover, as the domestic investor invests in a firm, she takes into account that her investment choice increases the voter concentration at the firm level *and* the firm's size, which are two effects that cause firm bailouts to be larger. The domestic investor can cash out on this positive side effect of her investment by demanding a larger return on investment than for instance a foreign capital investor could demand for his investment.

Proof. [Proposition 6.5] The revenue to the domestic investor increases in the initial voter concentration of the firm he chooses to invest in, $\frac{\partial}{\partial \rho_i} P(\rho_i) = \theta \tilde{V}_f (\frac{\partial}{\partial \rho_i} c(\rho_i) - \frac{\partial}{\partial \rho_i} \tau(\rho_i)) = \theta \tilde{V}_f \frac{\partial \tilde{S}}{\partial \rho_i} (\frac{1}{\tilde{D}} - \frac{1}{V+F}) > 0$ because bailouts increase in both the voter concentration for a fixed firm size and in firm size if the growth stems from adding more voters. Therefore, the domestic investor chooses a firm that has a maximally large voter concentration. The domestic investor can only be indifferent between investing in firms with distinct ρ_i if the firm with the larger voter concentration offers a lower return on investment, that is, $R(\rho_i)$ must decline in ρ_i to make the investor indifferent. □

7 Robustness

7.1 Special case I: Emigration following lay-offs

The main model assumes that foreign stakeholders that exit the firm will find employment elsewhere in the country, and therefore do not exit the taxpayer base. That assumption was consistent with foreigners having permanent work and resident permits, such as green card holders which are taxed in the country they work, and as such also have claims on benefits. For H1B visa holders, however, this kind of model would not apply since visas are employer-specific. Rather, they would need to leave the country when leaving the firm. I, therefore next explore how the politician sets vote share maximizing bailouts if foreigners that are leaving the firm also leave the taxpayer base (emigration). This setting has an equivalent interpretation where the failing firm employs all foreigners in the country, and the firm's failure is interpreted as a nationwide industry meltdown such as due to the Covid-19 shock. There, the bailout took the form of the 2020 Covid 19- U.S. stimulus checks that were not only allocated to U.S. voters but also to alien residents that file taxes in the United States but lack voting rights. Vice versa, the analysis here applies when firm growth is due to immigration or when the firm attracts more foreign investors (shareholders) that also become a taxpayer in the country. For the case where foreigners pay no taxes, see the following section 7.2.

As the most important difference to the benchmark model, there no longer exists an agent group $F_{nf} \equiv 0$ on which the politician can prey to finance bailouts without provoking punishment. Yet, the leakage effect still exists, $F_f = F$. The monetary transfers then need to adjust, the per capita tax equals $\tilde{\tau} = \frac{S}{V+F}$ to finance a bail-out S. All foreigners in the country are employed by the firm, and therefore have a claim on the bail-out. The pro rata share equals $\tilde{c} = \frac{S}{D} = \frac{S}{V_f+F}$. The politician faces the same distribution of political ideologies and group sizes (V, V_f, V_{nf}, F) when choosing bail-out S to maximize his adjusted vote-share

$$\tilde{A}(S, F) = \frac{1}{2}\left[\frac{V_f}{V}\,g\Big(\frac{S}{V_f + F} - \frac{S}{V + F}\Big) - \Big(1 - \frac{V_f}{V}\Big)h\Big(\frac{S}{V + F}\Big)\right] + \frac{1}{2} \qquad (28)$$

As the main difference to the benchmark model, if foreigners leave the firm, not only the leakage effect becomes weaker but now also the taxpayer base is reduced.

The too-big-to-fail lookalike effect of Proposition 4.1 is robust under emigration, see Figure 8:

Proposition 7.1 (Firm Size Effects under Emigration). *Fix V.*
(i) for all $F > 0$, the vote-share maximizing subsidy equals zero if V_f is small.
(ii) the vote-share maximizer $\hat{S}_F^*$ monotonically increases with firm size if the rise in firm size
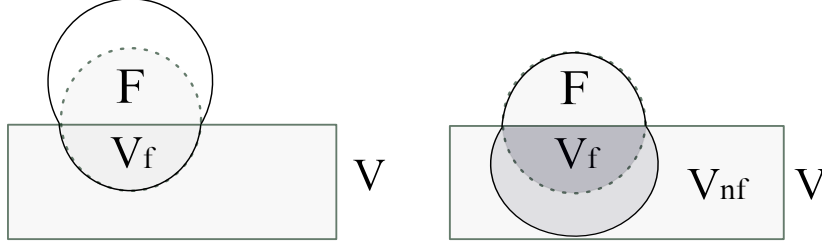
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Figure 7: Firm growth by employing more voters respectively more foreigners.

is due to an increase in the measure of stakeholder voters V_f, holding the measure of foreign stakeholders $F > 0$ fix.

(iii) If utility g satisfies $-xg''(x)/g'(x) > 1$ for all $x > 0$, then the vote-share maximizing subsidy $\hat{S}_F^*$ monotonically increases with firm size if the rise in firm size is due to an increase in the measure of foreign stakeholders F, holding V_f constant.

Note, unlike in Proposition 4.1, under emigration the condition $-xg''(x)/g'(x) > 1$ for all $x > 0$ is sufficient but not necessary for the bailout to increase as the firm grows by taking on more foreign stakeholders.
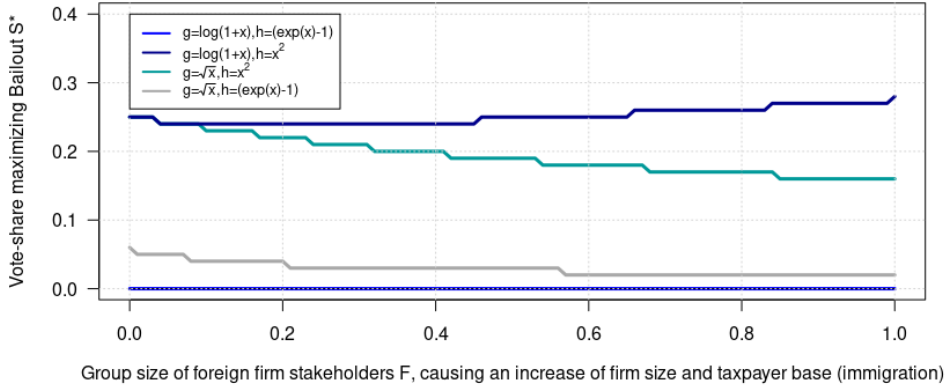

Figure 8: Firm size effects under emigration of foreigners. $V = 1$, $V_f = 0.2$, $F = F_f$.

7.2 Special case II (Cypriot Banking crises or Opel crises): Stakeholders who receive benefits but pay no taxes

Consider the case where a foreign stakeholder lives in a foreign country where she is taxed but invests in the firm located in the home country governed by politician A. Foreign stakeholders have a claim on bailouts but, unlike in the case of the benchmark model or emigration, are not taxable by A. Instead, the local population finances the bailout for both foreign and domestic firm investors. We have $F_{nf} = 0$, $F_f > 0$ and

$$c = \frac{S}{V_f + F_f} = \frac{S}{D}, \qquad \tau = \frac{S}{V} \tag{29}$$

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with firm size D potentially larger than the measure of voters V. The politician's expected vote share becomes

$$A(S) = \frac{1}{2}\left(\frac{V_f}{V} \times g\left(\frac{S}{D} - \frac{S}{V}\right) - \left(1 - \frac{V_f}{V}\right) \times h\left(\frac{S}{V}\right)\right) + \frac{1}{2}. \quad (30)$$

If the firm is large relative to the country $D > V$, then $\tau > c$ meaning that the net benefit of the bailout to stakeholder voters becomes negative. If we assume that $g(x) \leq 0$ for a negative x, then for every $S > 0$, $A(S) < 1/2$, implying that a zero bailout, $S_F^* = 0$, maximizes the politician's vote-share.

The setting above matches the case of the Cypriot banking crises and the crises of the German car manufacturer Opel, because in either case bailouts were refused by politicians due to considerations that the receiving population group is large but not domestic, thus, not comprising many voters.[16]

8 Conclusion

This paper provides a political-economic theory to explain bailouts to failing firms in the presence of non-voters ("foreigners"). A selfish politician faces re-elections and strategically sets the bailout to a failing firm to sway voters in his favor. Foreigners impact elections and thus vote-share maximizing bailouts because they contribute to bailout financing via taxation and receive shares of the bailout as a firm stakeholder but cannot vote to reward or punish the politician.

As the main result, I show a "too-big-to-fail" lookalike effect: the politician allocates larger bailouts to larger failing firms not only if the additional firm size stems from having more domestic (voting) firm stakeholders, but even if the additional size stems from having more foreign firm stakeholders. This effect allows the selfish politician to falsely justify the bailout, stating that the firm was too big to fail. Put the other way around, even a selfish-minded politician acknowledges that foreign taxpayers benefit the country, prompting him to respond in a social way towards foreigners.

Second, I show that among two equally sized firms, the politician allocates a larger bailout to the firm that employs more voters, thus contradicting social optimality. Voters matter more to the politician than foreigners. In a nutshell, the politician's bailout response depends not only on firm size but also on who benefits from the bailout. Because voters at the firm cause bailouts, this paper provides a micro foundation for the value of voting rights at the firm level with implications for corporate finance that I explore.

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[16]In the case of Cyprus, EU politicians believed bailouts would benefit Russian oligarchs whereas in the case of Opel, German politicians believed that the bailout would be redirected to US mother company General Motors.

9 Appendix: Main Proofs

9.1 Proof: Existence and Uniqueness, and special cases

Proposition 9.1 (Existence and Uniqueness of vote-share maximizer (Special cases)).
Fix the set of voters and the firm size (V, D), and composition (V_f, V_{nf}), (F_f, F_{nf}). Fix the indirect utility function $g(S)$ and $h(S)$, where both functions are positive, and strictly increasing. Assume, both $g(\cdot)$ and $h(\cdot)$ are linear, and strictly increasing, $g', h' > 0$ constant.
(iia) Assume either $\{F_f < F \text{ and } 0 < V_f \leq V\}$ or $\{F_f \leq F \text{ and } 0 < V_f < V\}$. If the constant $\frac{g'}{h'}$ satisfies

$$\frac{g'}{h'} > \frac{\frac{V}{V_f} - 1}{\frac{V+F}{V_f+F_f} - 1} \tag{31}$$

then the expected vote-share $A(S)$ strictly increases in the bailout S, and the largest possible bailout uniquely maximizes the vote-share, $S^* = \bar{S}$. This holds in particular for $V_f = V$. If instead

$$\frac{g'}{h'} < \frac{\frac{V}{V_f} - 1}{\frac{V+F}{V_f+F_f} - 1} \tag{32}$$

then the expected vote-share $A(S)$ strictly decreases in the bailout S, and the unique bailout maximizer equals $S_F^* = 0$, in equilibrium no bailout is granted.
(iib) If $\{F_f < F \text{ and } 0 < V_f \leq V\}$ or $\{F_f \leq F \text{ and } 0 < V_f < V\}$ and

$$\frac{g'}{h'} = \frac{\frac{V}{V_f} - 1}{\frac{V+F}{V_f+F_f} - 1}, \tag{33}$$

then the vote-share $A(S)$ is constant in S, so the politician cannot impact the electorate via a bailin, implying S_F^* is not unique (or does not exist). This holds in particular for the special case where $h' = g'$, and $\frac{V}{V+F} = \frac{V_f}{V_f+F_f}$.
(iic) Assume all taxpayers are also firm stakeholders: $V_f = V$ and $F_f = F$. Then, $c = \tau$ for every bailout S, and the vote-share is independent of bailout S. Because the politician cannot impact the vote-share via the bailout it follows that either S_F^* is not unique (or does not exist).
(iid) If $V_f = 0$, then independently of whether g and h are linear or not, the expected vote-share strictly declines in bailout S, so the unique equilibrium is a zero bailout, $S_F^* = 0$.

Proof. [Proposition 3.1 and Proposition 9.1] Consider the vote-share
$A(S) = \frac{1}{2} \left[\frac{V_f}{V} \times g\left(c(S) - \tau(S)\right) - \left(1 - \frac{V_f}{V}\right) \times h(\tau) + 1 \right]$. See that $1/2$ is a positive constant, so that multiplication by $1/2$ does not change the slope of $A(S)$. I therefore oppress multiplication by $1/2$ in the remaining analysis. It holds

$$\frac{\partial}{\partial S} A(S) = \frac{V_f}{V} \times g'\left(c(S) - \tau(S)\right)\left(c'(s) - \tau'(s)\right) - \left(1 - \frac{V_f}{V}\right) \times h'(\tau(S))\tau'(S) \tag{34}$$

The optimality condition for an interior vote-share maximizing bailout S_F^* reads $0 = \frac{\partial}{\partial S} A(S)$. The second derivative equals $\frac{\partial^2}{\partial S^2} A(S) = \frac{V_f}{V} \times g''\left(c(S) - \tau(S)\right)\left(c'(s) - \tau'(s)\right)^2 - \left(1 - \frac{V_f}{V}\right) \times h''(\tau(S))(\tau'(S))^2$. We see that the vote-share is strictly concave in the subsidy if either $g(\cdot)$ is strictly concave and $h(\cdot)$ is weakly convex or if $g(\cdot)$ is weakly concave and $h(\cdot)$ is strictly convex. If the vote-share is strictly concave in S, then the maximizer $S_F^* \geq 0$ is unique, and is interior whenever $0 = \frac{\partial}{\partial S} A(S)$ holds. For $V_f \to 0$, it holds $\frac{\partial}{\partial S} A(S) \to -h'(\tau(S))\tau'(S) < 0$, so that $S_F^* = 0$ is optimal for V_f small. Likewise, for $V_f \to V$, , it holds $\frac{\partial}{\partial S} A(S) \to g'\left(c(S) - \tau(S)\right)\left(c'(s) - \tau'(s)\right) > 0$, so that $S_F^* = \bar{S}$ is optimal.

(ii) Assume $g(\cdot), h(\cdot)$ are both linear and strictly increasing. Then, $g'(S) = const$, $h'(S) = const$, $g'' = h'' = 0$, and $\frac{\partial^2}{\partial S^2} A(S) = 0$. Moreover, $\frac{\partial}{\partial S} A(S)$ is constant in S. Therefore, if $\frac{\partial}{\partial S} A(S) > 0$, then $S^* = \bar{S}$ meaning the largest possible bailout uniquely maximizes the vote-share. If instead $\frac{\partial}{\partial S} A(S) < 0$, then $S^* = 0$, and if $\frac{\partial}{\partial S} A(S) = 0$ then the bailout choice has no impact on the vote-share, meaning the vote-share maximizer is not unique (or does not exist). I next determine conditions on the primitives that determine the slope of the marginal expected vote-share: Recall that for all $0 \leq V_f \leq V$ and $0 \leq F_f \leq F$ it holds $c'(S) \geq \tau'(S)$.

a) Assume that $D < V + F$, that is, either $\{0 < V_f \leq V$ and $F_f < F\}$ or $\{V_f < V$ and $F_f \leq F\}$ hold. Then, $c' > \tau'$, and hence $\frac{V+F}{V_f + F_f} > 1$. It holds $\frac{\partial}{\partial S} A(S) > 0$ if and only if the positive constant g'/h' satisfies

$$\frac{g'}{h'} > \frac{\frac{V}{V_f} - 1}{\frac{V+F}{V_f + F_f} - 1}. \tag{35}$$

In that case, the largest possible bailout uniquely maximizes the vote-share, $S^* = \bar{S}$. If $\frac{g'}{h'} < \frac{\frac{V}{V_f} - 1}{\frac{V+F}{V_f + F_f} - 1}$, then $\frac{\partial}{\partial S} A(S) < 0$, and $S^* = 0$ uniquely maximizes the vote-share. Condition 35 in particular holds for $V_f = V$ and $F_f < F$.

In the special case $\frac{g'}{h'} = \frac{\frac{V}{V_f} - 1}{\frac{V+F}{V_f + F_f} - 1}$, then $\frac{\partial}{\partial S} A(S) = 0$ for all S. That is, the vote-share $A(S)$ is constant in the bailout, tht is, the politician cannot impact the electorate via the bailout. This condition is for instance satisfied for $g(\cdot), h(\cdot)$ both linear with $h' = g'$, and if additionally $\frac{V}{V+F} = \frac{V_f}{V_f + F_f}$ holds.

b) Assume $F_f = F$ and $V_f = V$, then $c(S) = \tau(S)$ for all S. Then, $A(S) = 1/2$ since $g(0) = 0$ and since the weight on h is zero. Thus, again the vote-share is independent of the bailout choice.

c) If $V_f = 0$, then for any functions g weakly concave and h weakly convex, $\frac{\partial}{\partial S} A(S) \leq 0$ so that $S_F^* = 0$ is an equilibrium. If $h' > 0$, then $\frac{\partial}{\partial S} A(S) < 0$ and $S_F^* = 0$ is the unique equilibrium. $\qquad\square$

9.2 Proofs: Comparative Statics of vote-share maximizer

9.2.1 Proof: Size effects

Proof. [Proposition 4.1] (1) Let $V_f \in (0, V)$, and hold $F_f \in (0, F)$ fixed. Recall that changes in V_f do not impact V, F, F_f. The first order condition for an interior vote-share maximizer satisfies

$$\frac{\partial A}{\partial S} = \frac{V_f}{V} g' \left(\frac{S}{V_f + F_f} - \frac{S}{V + F} \right) \left(\frac{1}{V_f + F_f} - \frac{1}{V + F} \right) - \left(1 - \frac{V_f}{V} \right) h' \left(\frac{S}{V + F} \right) \frac{1}{V + F} = 0 \tag{36}$$

or equivalently

$$h'(\frac{S}{V + F}) \frac{1}{V + F} = g' \left(\frac{S}{V_f + F_f} - \frac{S}{V + F} \right) \frac{V_f}{V - V_f} \left(\frac{1}{V_f + F_f} - \frac{1}{V + F} \right) \tag{37}$$

For $V_f \to 0$, $\frac{\partial A}{\partial S} < 0$ and $S^* = 0$. For $V_f \to V$, $\frac{\partial A}{\partial S} > 0$ and $S^* = \bar{S}$.

But for $V_f \in (0, V)$, condition (36) can hold. For given $V_f \in (0, V)$, this maximizer must satisfy

$$\frac{\partial A}{\partial S}(V_f, S(V_f)) = 0. \tag{38}$$

That is, changes in V_f cause a change in the vote-share maximizing bailout S^* such that (38) continues to hold. By (38) and the implicit function theorem, the slope of the vote-share maximizer S_F^* under changes in V_f is determined by $\frac{\partial S_F^*}{\partial V_f} = -\frac{\frac{\partial}{\partial V_f} \frac{\partial A}{\partial S}}{\frac{\partial^2}{\partial S^2} A(S)}$. To determine its sign, calculate the cross-derivative and then replace $h'(\frac{1}{V+F}) \frac{1}{V+F}$ via (37) yields

$$\frac{\partial}{\partial V_f} \frac{\partial A}{\partial S} = \frac{1}{V} \left[g''(\cdot) \left(-\frac{S}{(V_f + F_f)^2} \right) \left(\frac{V_f}{V_f + F_f} - \frac{V_f}{V + F} \right) + g'(\cdot) \left(\frac{F_f}{(F_f + V_f)^2} - \frac{1}{V + F} \right) + h'(\cdot) \frac{1}{V + F} \right]$$

$$= \frac{1}{V} \left[g''(\cdot) \left(-\frac{S}{(V_f + F_f)^2} \right) \left(\frac{V_f}{V_f + F_f} - \frac{V_f}{V + F} \right) \right. \tag{39}$$

$$\left. + g'(\cdot) \left(\frac{F_f}{(F_f + V_f)^2} - \frac{1}{V + F} + \frac{V_f}{V - V_f} \left(\frac{1}{V_f + F_f} - \frac{1}{V + F} \right) \right) \right) \tag{40}$$

By concavity of g, the first term is positive. The second term is positive because g is increasing and because the bracket can be shown to be positive: Multiplying the bracket by $V - V_f > 0$, the bracket is positive if and only if for all $V_f \in (0, V)$ it holds

$$(V - V_f) \frac{F_f}{(F_f + V_f)^2} + \frac{V_f}{V_f + F_f} > \frac{V}{V + F}. \tag{41}$$

For $V_f \to 0$, condition (41) is true because by $F_f < F$ it holds $\frac{V}{F_f} > \frac{V}{V+F}$. Also for $V_f \to V$, condition (41) holds because $\frac{V}{V+F_f} > \frac{V}{V+F}$. Last, the left hand side of (41) strictly declines in V_f. Therefore, the bracked, and thus the cross-derivative $\frac{\partial}{\partial V_f} \frac{\partial A}{\partial S}$ is positive for all $V_f \in (0, V)$ and all $F_f \in (0, F)$.

Moreover, the vote-share A is strictly concave in S because g is concave, h is convex,

and at least one of them strictly, $\frac{\partial^2}{\partial S^2} A(S) = \frac{1}{V} \left[g''(\cdot) V_f \left(\frac{1}{V_f + F_f} - \frac{1}{V + F} \right)^2 - h''(\cdot) \frac{V - V_f}{(V + F)^2} \right] <$ 0, meaning the interior maximizer S_F^* is unique if it exists. Moreover, the maximizer S_f^* is strictly increasing in V_f by concavity of A in S and the implicit function theorem, $\frac{\partial S_F^*}{\partial V_f} = -\frac{\frac{\partial}{\partial V_f} \frac{\partial A}{\partial S}}{\frac{\partial^2}{\partial S^2} A(S)} > 0.$

(2) First, see that for $F_f \to 0$, the vote-share maximizer S_F^* can be positive as long as V_f is sufficiently large. Now, consider how an increase in $F_f \in (0, F)$ impacts the vote-share maximizer, holding $V_f \in (0, V)$ fixed. Recall, a change in F_f leaves F, V, V_f unchanged. Define the short-cut $x = \frac{S}{V_f + F_f} - \frac{S}{V + F}$. Then,

$$\frac{\partial}{\partial F_f} \frac{\partial A}{\partial S} = \frac{V_f}{V} \left(-\frac{1}{(V_f + F_f)^2} \right) \left(g''(x) x + g'(x) \right) \tag{42}$$

We see, $\frac{\partial}{\partial F_f} \frac{\partial A}{\partial S} > 0$ if and only if $g''(x) x + g'(x) < 0$ for all $x > 0$. In that case, via the implicit function theorem and the concavity of A in S the vote-share maximizer S_F^* strictly increases in F_f if and only if $g''(x) x + g'(x) < 0$ for all $x > 0$. If $g''(x) x + g'(x) = 0$ for all $x > 0$, then $\frac{\partial S_F^*}{\partial F_f} = 0$, meaning the vote-share maximizing bailout stays constant as the firm grows by taking on more foreign stakeholders. If $g''(x) x + g'(x) > 0$ for all $x > 0$ the vote-share maximizing bailout declines as the firm grows by taking on more foreign stakeholders.

(3) As the firm grows large $D = V_f + F_f \to V + F$, it holds $\frac{\partial A}{\partial S} < 0$, so that $S_F^* \to 0$. Likewise, as $D \to 0$ this requires $V_f \to 0$ and thus implies $S_F^* \to 0$ as just shown above. However, for the interior firm range $D \in (0, V + F)$, the size of the bailout not only depends on the firm's size but its composition: For $D = F_f >> 0$ implying $V_f = 0$, it holds $S_F^* = 0$. For $D = V_f >> 0$ and $F_f = 0$ it can hold $S_F^* > 0$. In particular, for $V_f \to V$ but $F_f < F$ the vote share maximizer can be strictly positive, (36) can hold. $\qquad \square$

9.2.2 Proof: Vote-share maximizer under stakeholder substitution

Proof. [Proposition 4.2] Fix the firm's size at $D \equiv V_f + F_f < V + F$. Assume the firm substitutes foreign stakeholders F_f gradually for voters V_f while maintainings its size. This requires $V_f \in [0, D]$, and F_f is given as the residual $F_f = D - V_f \in [0, D]$. As an important insight to ease the analysis, under substitution the pro rata share and the tax no longer change (directly) in V_f and F_f because V, D and F are held constant. That is, given S, the tax and the pro rata share are constant under substitution of F_f for V_f. Because the tax and the pro rata share however remain functions of S, as I show next, they change in V_f and F_f indirectly since the politician will find it optimal to set a different bailout. The vote share $A(S)$ at firm size D under substitution can be

rewritten as

$$B(S, V_f, \bar{D}) = \frac{1}{2}\left(\frac{V_f}{V} \underbrace{g\left(\frac{S}{\bar{D}} - \frac{S}{V+F}\right)}_{\substack{\text{const under stake-}\\\text{holder substitution}}} - \left(1 - \frac{V_f}{V}\right) \underbrace{h\left(\frac{S}{V+F}\right)}_{\substack{\text{const under stake-}\\\text{holder substitution}}}\right) + \frac{1}{2}, \ V_f \in [0, \bar{D}]$$

As above, multiplication by the positive constant $\frac{1}{2}$ does not change the comparative statics which is why I oppress it henceforth. As before, the vote share maximizer S_F^* has to satisfy the first oder condition (36), now written in terms of $\bar{D}$, $\frac{\partial B}{\partial S} = \frac{V_f}{V} g'\left(\frac{S}{D} - \frac{S}{V+F}\right)\left(\frac{1}{D} - \frac{1}{V+F}\right) - \left(1 - \frac{V_f}{V}\right) h'\left(\frac{S}{V+F}\right)\left(\frac{1}{V+F}\right) \equiv 0$. Observe that for fixed $\bar{D}$, $\frac{\partial V_f}{\partial \rho} = \bar{D}$ and thus $\frac{\partial}{\partial \rho} = \frac{\partial}{\partial V_f}\bar{D}$. Multiplication with the positive constant $\bar{D}$ does not change signs, and thus slope directions, so that I neglect the constant for the remaining calculations. I again employ the implicit function theorem according to which changes in V_f cause the equilibrium bailout S^* to alter in a way that the first order condition, given above, is preserved. Thus, S^* changes in V_f according to $\frac{\partial S}{\partial V_f} = -\frac{\frac{\partial}{\partial V_f}\frac{\partial B}{\partial S}}{\frac{\partial}{\partial S}\frac{\partial B}{\partial S}}\big|_{D \, const}$ The cross-derivative when substituting foreigners F_f for voters V_f at the firm level while maintaining the firm's size at D, $\frac{\partial}{\partial V_f}\frac{\partial B}{\partial S} = \frac{1}{V}\left[g'\left(\frac{S}{D} - \frac{S}{V+F}\right)\left(\frac{1}{D} - \frac{1}{V+F}\right) + h'\left(\frac{S}{V+F}\right)\left(\frac{1}{V+F}\right)\right] > 0$ is positive because $g(\cdot)$ and $h(\cdot)$ are increasing, and because the firm is smaller than the taxpayer base, $D < V + F$. Further, we recall from the proof to Proposition 4.1 that the vote-share is concave in the subsidy $\frac{\partial}{\partial S}\frac{\partial B}{\partial S} < 0$. Therefore, the implicit function theorem yields that the vote-share maximizer S^* strictly increasing in V_f under substi­tution when holding the firm's size fixed, $\frac{\partial S^*}{\partial V_f} > 0$. Consequently, the maximizer also increases in the voter concentration $\rho = V_f/D$ when holding the firm's size fixed. $\quad\square$

9.3 Proof: Social versus Vote-share optimal bailouts

Proof. [Lemma 5.1] Akin to the politician, the social planner taxes all agents $V + F$ to finance a bailout S that is allocated to firm stakeholders $D = V_F + F_f$. The planner maximizes utilitarian welfare (16) subject to the budget balancing monetary transfers (15). For a given firm size D and (V, F), an interior socially optimal bailout $S_{soc}^*(D)$ satisfies the first order condition $v'(w_f + c(S_{soc}^*) - \tau(S_{soc}^*)) = v'(\bar{w} - \tau(S_{soc}^*))$. By strict concavity of v, $S_{soc}^*(D)$ undoes the consumption inequality caused by firm failure: $w_f + c(S_{soc}^*) - \tau(S_{soc}^*) = \bar{w} - \tau(S_{soc}^*)$. Consider the income shock $-\varepsilon < 0$ to the firm stakeholders' income caused by firm failure. Without a bailout, $S = 0$, all agents consume their income $\bar{w}$ for non stakeholders and $\bar{w} - \varepsilon < \bar{w}$ for firm stakeholders. But then, the income heterogeneity caused by firm failure implies that the maginal utilities are not equal: by concavity of $v(\cdot)$, $g'(0) = v'(w_f) > v'(\bar{w}) = h'(0)$. Moreover, for every bailout $S > 0$ that is small enough to imply transfers $\bar{w} - \tau(S) \geq w_f + c(S) - \tau(S)$, it holds $v'(w_f + c(S) - \tau(S)) \geq v'(\bar{w} - \tau(S))$, so that by concavity of $v(\cdot)$ inequality declines

as the bailout increases until marginal utilities are alike: That is, for an income shock $-\varepsilon < 0$, it holds $S^*_{soc} > 0$. I can rewrite the FOC differently:

$$g'\left(\frac{S^*_{c,soc}}{D} - \frac{S^*_{c,soc}}{V+F}\right) = h'\left(\frac{S^*_{c,soc}}{V+F}\right) \tag{43}$$

Define the function

$$F(S) \equiv g'\left(\frac{S}{D} - \frac{S}{V+F}\right) - h'\left(\frac{S}{V+F}\right). \tag{44}$$

Its zeroes yield the social optimal bailout. Further, $F(S)$ is continuous and strictly decreasing in S by concavity of g, convexity of h, and $D < V + F$, $\frac{\partial}{\partial S}F(S) = g''\left(\frac{S}{D} - \frac{S}{V+F}\right)\left(\frac{1}{D} - \frac{1}{V+F}\right) - h''\left(\frac{S}{V+F}\right)\frac{1}{V+F} < 0$ and $\frac{\partial}{\partial D}F = g''\left(\frac{S}{D} - \frac{S}{V+F}\right)\left(-\frac{S}{D^2}\right) > 0$. Thus, by the implicit function theorem, $\frac{\partial S^*_{soc}}{\partial D} > 0$. Further, $\frac{\partial S^*_{soc}}{\partial \rho} = 0$, because welfare is independent of ρ. $\qquad\square$

Proof. [Proposition 5.1] Fix the firm's size D. The socially optimal bailout S^*_{soc} is characterized by the first order condition (43). On the other hand, from (37), for a fixed firm size (under substitution) the vote-share maximizing bail-out S^*_F satisfies

$$\left(\frac{V_f}{D} - \frac{V_f}{V+F}\right) g'\left(\frac{S^*_F}{D} - \frac{S^*_F}{V+F}\right) = \left(\frac{V}{V+F} - \frac{V_f}{V+F}\right) h'\left(\frac{S^*_F}{V+F}\right) \tag{45}$$

1) Consider the special case where the voter concentration at the firm level equals the share of all voters in the taxpayer population, $\rho \equiv \frac{V_f}{D} = \frac{V}{V+F}$. Then the equilibrium condition on the vote-share maximizer S^*_F in (45) coincides with the equilibrium condition on the socially optimal subsidy S^*_{soc} in (43). That is, we have $S^*_{soc} = S^*_F$. Note, condition $\frac{V_f}{D} = \frac{V}{V+F}$ is equivalent to requiring that the share of stakeholder voters among all voters equals the share of stakeholders among all taxpayers $\frac{V_f}{V} = \frac{D}{V+F}$,, implying that the welfare weights in the planner problem coincide with the relative size of the special interest groups up to a monotone transformation $\times\frac{1}{2}$, and thus have the same solutions, including boundary solutions.

2) Consider the case $\rho < \frac{V}{V+F}$. Jointly with $D < V + F$, this condition implies $0 < \frac{V_f}{D} - \frac{V_f}{V+F} < \frac{V}{V+F} - \frac{V_f}{V+F}$. Via the equilibrium condition on the vote-share maximizer S^*_F (45), and because $h(\cdot)$ and $g(\cdot)$ are strictly increasing, I can thus infer

$$g'\left(\frac{S^*_F}{D} - \frac{S^*_F}{V+F}\right) = \frac{\left(\frac{V}{V+F} - \frac{V_f}{V+F}\right)}{\left(\frac{V_f}{D} - \frac{V_f}{V+F}\right)} h'\left(\frac{S^*_F}{V+F}\right) > h'\left(\frac{S^*_F}{V+F}\right). \tag{46}$$

Via this inequality, and using the defined function (44), we can conclude $F(S^*_F) > 0$. Further, $F(S^*_{soc}) = 0$ by (43) and, thus, $S^*_{soc} > S^*_F$.

3) If $\rho > \frac{V}{V+F}$, then by the same argument, $F(S_F^*) < 0$, $F(S_{soc}^*) = 0$, and $S_{soc}^* < S_F^*$. $\qquad\square$

9.4 Proofs: Robustness

Proof. [Proposition 7.1] Fix the set of voters V, and let $F > 0$ an abitrary measure of foreign stakeholders. For a given measure of stakeholder voters $V_f \in (0, V)$, consider the first derivative of the vote-share (ignoring multiplication by $1/2$ since it does not affect the sign of the slope)

$$\frac{\partial}{\partial S}\tilde{A}(S) = \frac{1}{V}\left[g'\left(\frac{S}{V_F + F} - \frac{S}{V + F}\right)\left(\frac{V_f}{V_F + F} - \frac{V_f}{V + F}\right) - h'\left(\frac{S}{V + F}\right)\frac{V - V_f}{V + F}\right] \quad (47)$$

First, see that for $V_f \to 0$, we have $\tilde{A}(S) \to -h(\frac{S}{V+F}) + \frac{1}{2}$ and $\frac{\partial}{\partial S}\tilde{A}(S) < 0$. Therefore, if there are few voters at the firm level, the vote-share clearly takes its maximimum in $S = 0$ for all $F > 0$. The vote-share is concave in S since g is concave, h is convex, $V_f \subset V$: $\frac{\partial^2}{\partial S^2}\tilde{A}(S) = \frac{1}{V}\left[g''(\cdot)V_f\left(\frac{1}{V_f+F} - \frac{1}{V+F}\right)^2 - h''(\cdot)\frac{V-V_f}{(V+F)^2}\right] < 0$. Therefore, for $V_f > 0$, the vote-share can have an interior maximizer S that satisfies

$$g'\left(\frac{S}{V_F + F} - \frac{S}{V + F}\right)\left(\frac{V_f}{V_F + F} - \frac{V_f}{V + F}\right) - h'\left(\frac{S}{V + F}\right)\left(\frac{V}{V + F} - \frac{V_f}{V + F}\right) = 0 \quad (48)$$

To see how this maximizer behaves, since the tax is independent of V_f, the cross-derivative satisfies

$$\frac{\partial}{\partial V_f}\frac{\partial}{\partial S}\tilde{A}(S) = \frac{1}{V}\left[g''(\cdot)\left(\frac{V_f}{V_F + F} - \frac{V_f}{V + F}\right)\left(-\frac{S}{(V_f + F)^2}\right) + h'\left(\frac{S}{V + F}\right)\frac{1}{V + F} + g'(\cdot)\left(\frac{F}{(V_f + F)^2} - \frac{1}{V + F}\right)\right] \quad (49)$$

Plugging in the equilibrium condition (48), yields

$$\frac{\partial}{\partial V_f}\frac{\partial}{\partial S}\tilde{A}(S) = \frac{1}{V}\left[g''(\cdot)\left(\frac{V_f}{V_F + F} - \frac{V_f}{V + F}\right)\left(-\frac{S}{(V_f + F)^2}\right)\right. \quad (50)$$

$$\left. + g'(\cdot)\left(\frac{V_f}{V - V_f}\left(\frac{1}{V_F + F} - \frac{1}{V + F}\right) + \left(\frac{F}{(V_f + F)^2} - \frac{1}{V + F}\right)\right)\right] \quad (51)$$

By concavity of g, the first term is positive. We need to determine the sign of the large bracket in the second term. Multiplying with $(V - V_f)$, we see, the bracket is positive if and only if

$$V_f\frac{1}{V_f + F} + (V - V_f)\frac{F}{(V_f + F)^2} \geq \frac{V}{V + F} \quad (52)$$

The term on the left hand side of (52) is monotonically decreasing in V_f, takes the value $V/F > V/(V + F)$ in the point $V_f = 0$ and takes the value $\frac{V}{V+F}$ in $V_f = V$. Thus, (52) holds for all $V_f \in [0, V]$, and the cross-derivative (50) is always positive. Together with the concavity of the vote-share, by the implicit function theorem, the vote-share maximizing subsidy increases in V_f, and increases strictly whenever interior.

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For the second part of the proof, define $x \equiv \frac{S}{V_F + F} - \frac{S}{V+F} > 0$ and $y \equiv \frac{S}{V+F} > 0$, then $\frac{\partial}{\partial F} \frac{\partial}{\partial S} \tilde{A}(S) = \frac{1}{V} \left[V_f \left(\frac{1}{(V+F)^2} - \frac{1}{(V_f+F)^2} \right) \left(g''(x)\, x + g'(x) \right) + \frac{V - V_f}{(V+F)^2} \left(h''(y)\, y + h'(y) \right) \right]$. Since h is increasing and convex, the last term is always positive. Thus, if $g''(x)\, x + g'(x) \leq 0$ for all x, this cross-derivative is positive, and by concavity of the vote-share in the subsidy and the implicit function theorem, the vote-share maximizer monotonically increases in the measure of foreign stakeholders when holding the measure of domestic stakeholders fixed. $\qquad\square$

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