Voters, Bailouts, and the Size of the Firm

Schilling, Linda

Olin Business School - Washington University in St Louis

12 July 2023

Voters, Bailouts, and the Size of the Firm

Linda M. Schilling

Olin Business School - Wash U St Louis, CEPR, FTG*

July 12, 2023

Abstract

I present a political economic theory, explaining bailouts for failing firms in the presence of non-voters (foreigners). The governing politician uses the bailout as a tool to sway voters for maximizing re-election chances. Bailouts partially leak to foreigners at the firm and are also 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"). Yet, 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.

Key words: political finance, bailouts, economic voting, probabilistic voting, vote-share maximization, too-big-to-fail, socially optimal bailouts, partial suffrage
JEL codes: G3, P16, D72

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 exlained 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 with 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 im-

pacts the monetary transfers to his voters and ultimately his re-election chances.[1]

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 and 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 greencard, 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 among the U.S. work force 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 socially 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 pro rata 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

---

[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.

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

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 politican 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 the outside, it appears as if the politician generically grants larger bailouts to larger firms, allowing him to falsely justify the bailout via stating the firm was too-big-to-fail. But the effect is purely driven by the political economy and the selfishness of the politician to win elections. 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 the 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 foreigners 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 (total measure 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 with equal size the politician endogenously grants larger bailouts to firms that employs 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 microfoundation for a 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 overprovides the bailout in excess of the social optimum and otherwise underprovides 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 set bailouts that 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 for corporate finance. I show, the voting rights' 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 poli-

cies through the political economy. For instance, my results rationalize why politicians often defy existing regulatory frameworks when making bailout decisions such as in the case of the bank 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 moreover 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 its 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 papers that are closest related are Drazen (1998), 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: bailouts are granted by selfish politicians to maximize reelection chances. I show that in case of failure, firms with more stakeholders, either by employing more domestic (voting) or more foreign firm stakeholders, are granted larger bailouts by a selfish politician that sets bailouts to maximize his reelection chances. The paper therefore provides an alternative explanation for bailouts while yet demonstrating "look-alike" outcomes to 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 the politician discriminates between foreign and voting stakeholders, vote-share maximizing and socially optimal bailouts generically differ.

The paper moreover contributes to the (political) corporate finance literature by providing a microfoundation for the value of voting rights at the firm level: voters create insurance to the firm and its stakeholders because they drive vote-share maximizing bailouts stronger than foreigners, implying that strategic firms value voters more than foreign stakeholders unless adequately com-

pensated when they anticipated 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 proxi advisory firms on 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 instead of taxing agents today, a government can issue public 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. Guembel and Sussman (2009) explain why sovereigns can issue debt to domestic and, in particular, foreign agents, showing that the sovereign is partially deterred from preying on foreigners by defaulting on debt because foreign and domestic investors with large enough invesments (median voter) have aligned interests in a debt repayment and the latter group can enforce their interest via vote. This paper is close to Guembel and Sussman (2009), because it likewise employs a voting mechanism to explain sovereign payments to domestic and foreign agents where foreigners have aligned interests with domestic agents, since they obtain the same monetary transfers, but have no power to enforce their interest since they lack voting rights. Unlike their paper, foreigners in this paper have an additional indirect effect on the electorate: the monetary transfers from and to foreign agents affect the transfers from and to voters depending on the group size, thus, changing their behavior, which affects the bailout policy of the sovereign. The models further differ since I feature different groups of foreigners, and in particular, also incorporate a group of foreigners that preys on domestic agents (foreign firm stakeholders that receive bailouts) which the sovereign must avoid for winning elections. This paper differs from Drazen (1998) and Guembel and Sussman (2009) by focusing on firm size and firm stakeholder composition effects on bailouts instead of sovereign debt. The models further differ since I employ a probabilistic voting model instead of the median voter theorem.

Similar to Bombardini and Trebbi (2011), I analyze the impact of interest

group size, in terms of voter representation, on the electorate. While my probablilistic voting model analyzes a politician who sways his voting interest groups via bailouts depending on the 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 form of an accumulated deficit acts as an instrument of the current government to restrict 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 propects 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 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 heterogenous 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. Voters belong to special interest groups, hold heterogeneous political ideologies over candidates, and endogenously shade their vote away from their ideology depending on the monetary transfer chosen by the politician under a budget-balancing constraint. 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 interest 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.[3] Unlike in Dixit and Londregan (1996), changes in leakage are not studied in isolation. Rather, a change in leakage occurs either due to a change in firm size, which however requires migration of foreigners across the group of stakeholders and non-stakeholders, thus impacting the taxation of non-voters. Alternatively, leakage changes under fixed firm size as the firm substitutes voters for foreigners, which causes a simultaneous alteration in the balance of power between voters in favor of and against the bailout. These 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 fea-

---

[3]Dixit and Londregan (1996) discusses the effect of a "leaky bucket" where a politician's transfers to a particular interest group arrives 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 the extent of leakage changes in the relative group sizes.

ture two different voter groups, and voter ideologies of both groups are drawn from the same distribution. The three key differences 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, in this paper, 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 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 voter, 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 heterogenous 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

10

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.

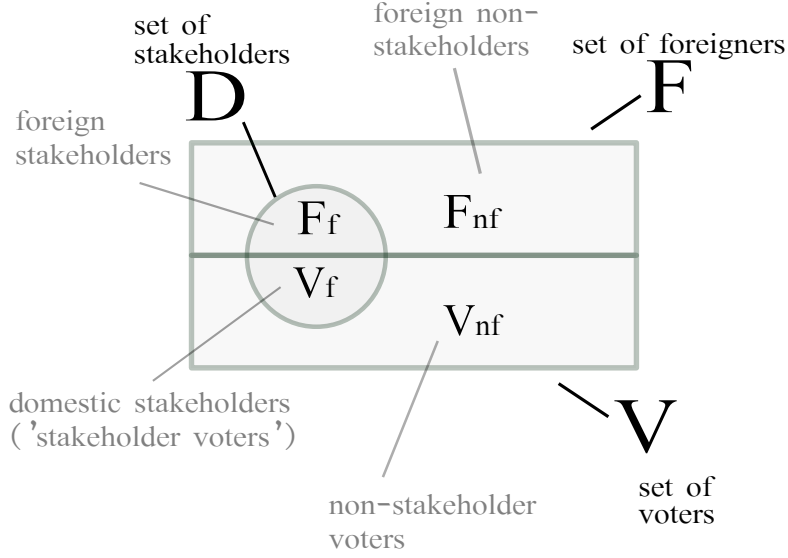Figure 1: Composition of voters V, foreigners F and firm stakeholders D: Stakeholder-voters V_f are both in V and D. Foreign firm stakeholders F_f are not in V (cannot vote) but in D and in F. Non-stakeholder voters V_{nf} are in V but not in D, non-stakeholder foreigners F_{nf} are not in V and not in 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 $F_{nf} = F \setminus F_f$ the set and measure of "non-stakeholder foreigners", which denotes agents who can neither vote nor have a stake in the firm. One can think of these agents that are not affiliated with the firm as being employed at other firms.

The set of voters is 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, $F = F_f \cup F_{nf}$.

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 $\overline{S}$ 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.

Monetary 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 on all taxable agents. The per capita tax therefore equals

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

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

---

[4]While I do not model the agent's endowments explicitly, $\overline{S}$ must be such that it holds $\tau \leq \frac{\overline{S}}{V+F} \leq \omega_{min}$, where ω_{min} 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.

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.
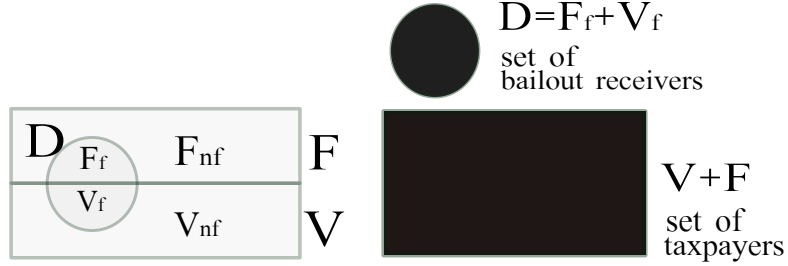

Figure 2: Sets of bailout receivers and taxpayers

2.2.1 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

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

are iid uniformly distributed. For ideology realizations $\Delta_i = 0$, voter i is indifferent between A and contender B. For realizations $\Delta_i < 0$, voter i infers higher benefit when A gets elected. 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 The bail-out is exclusively provided to firm stakeholders D. Non-stakeholder voters V_{nf} and foreigners outside of the firm F_{nf} only contribute towards the bailout financing. Via the bailout provision, the politician A treats voter group V_f better at the expense of voter group V_{nf}. This unequal treatment causes the different voter groups to adjust their voting behavior in the elections by "shading their vote" away from their ideology.

Vote-shading To pin down individual voting behavior, I follow the more convenient notation of Acemoglu and Robinson (2005) in chapter 12.2.2., rather than Lindbeck and Weibull (1987); Dixit and Londregan (1996). The groups of stakeholder and non-stakeholder voters infer different indirect utility from the same bailout choice $S > 0$. Let $g(c(S) - \tau(S)) \geq 0$ denote the indirect utility a stakeholder-voter infers from bailout choice S via taxes and benefits given in (1) and (2). Note that contender B cannot offer an alternate bailout since he is not governing at the time the firm fails. Assume $g(\cdot) \geq 0$ is a positive, strictly increasing, twice differentiable and concave function. Likewise, let $-h(\tau(S)) \leq 0$ denote the indirect disutility a non-stakeholder voter infers from bailout choice S via taxation. Assume $h(\cdot) \geq 0$ is positive, strictly increasing, twice differentiable and convex function. Assume $g(0) = h(0) = 0$, implying that a zero bail-out policy implies no vote-shading, see below.

Because bailouts and taxes impact consumption, voters reward or punish the politician for the bailout via 'vote-shading.' The latter term means voters deviate away from their ideological propensity to vote for the politician depending on the bailout choice of the politician S, and the membership to either the group of firm-stakeholder voters or non-stakeholder voters.

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. Likewise, 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 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

$$\mathbb{P}\left(\Delta_i \leq g(c(S) - \tau(S))\right) = \frac{1}{2}g(c(S) - \tau(S)) + \frac{1}{2} \tag{4}$$

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

$$\mathbb{P}\left(\Delta_i \leq -h(\tau(S))\right) = -\frac{1}{2}h(\tau(S)) + \frac{1}{2}. \tag{5}$$

Vote-shading is an endogenous deviation in individual, and later aggregate voting behavior away from the ideology as a response to the politician's bailout choice. Firm stakeholder-voters shade their propensity to vote for A up, and the more so the larger the bailout, whereas non-stakeholder voters shade their vote down, because $g(\cdot)$ and $h(\cdot)$ are increasing functions of the monetary transfers, and transfers increase in S. The larger the bailout provision S, the larger the net pro-rata share $c - \tau$ to stakeholder voters and the budget-balancing tax to non-stakeholder voters, thus the more extreme the extent of vote-shading in (4) and (5), because voter at the firm become happier, and voters outside of the firm become unhappier the larger the bailout, respectively the tax.

Assumption 2.1 (Extreme Ideologies). *The support of ideologies $\Delta_i \sim U[-1, 1]$ and the (dis)-utility functions $g(\cdot)$ and $h(\cdot)$ jointly satisfy*

$$\max(\max_{S \in [0, \overline{S}]} g(S), \max_{S \in [0, \overline{S}]} h(S)) = \max(g(\overline{S}), h(\overline{S})) < 1 \tag{6}$$

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.[7]

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 $A(S)$

$$A(S) = \frac{1}{V} \left(\int_{i \in V_f} \mathbb{P}(i \text{ votes for A}|S, \tau(S), c(S)) \, di + \int_{i \in V_{nf}} \mathbb{P}(i \text{ votes for A}|S, \tau(S)) \, di \right). \tag{7}$$

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 $(-h(\tau), g(c - \tau))$.

Definition 2.1 (Equilibrium: Vote-share maximizer)**.** *Given the political economy* (V, V_f, D, F_f, F), $(g(\cdot), h(\cdot))$, *an equilibrium of the voting game is a bailout,*

$$S_F^*(V_f, V_{nf}, F_f, F_{nf}, D) \in \arg\max_{S \in [0, \bar{S}]} A(S), \tag{8}$$

that maximizes politician A's vote share (7) 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 S impacts monetary transfers $(\tau(S), c(S))$, and thus voting behavior via utility and disutility $g(\tau - c), h(\tau)$ caused by bailout S.

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

---

[7]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.

purpose, I rewrite the expected vote-share in (7) via the law of large numbers

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

(9)

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 on 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 the set of voters, foreigners and the firm's size (V, F, D). Fix the voter and firm stakeholder composition (V_f, V_{nf}), (F_f, F_{nf}) with $V = V_f \cup V_{nf}$, $D = V_f \cup F_f$, $F = F_f \cup F_{nf}$. Fix the indirect utility function $g(S)$ 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*

$$\frac{V_f}{V} \times g'\left(c(S) - \tau(S)\right)\left(\frac{\partial}{\partial S}c(S) - \frac{\partial}{\partial S}\tau(S)\right) - \left(1 - \frac{V_f}{V}\right) \times h'(\tau(S))\frac{\partial}{\partial S}\tau(S) = 0 \quad (10)$$

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 changes. For completeness, I, however, also study linear utility and disutility functions of the voters in Proposition 9.1 of the appendix.[8]

---

[8]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.

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 8. 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.
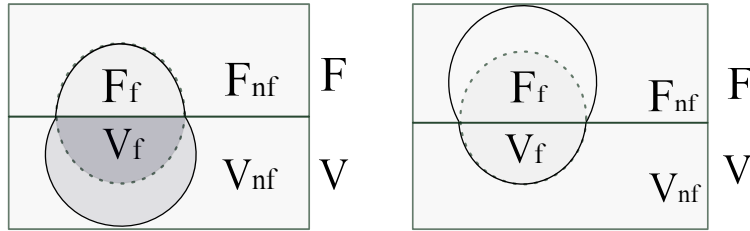

Figure 3: Firm growth by employing more voters respectively more foreigners

Proposition 4.1 (Firm size effects on equilibrium bailout: Too-Big-To-Fail-Look-a-like). *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 $V_f \to V$.*

18

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 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.*

There are two important insights from Proposition 4.1. 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 via stating, the firm was too-big-to-fail.

To cleanly disentangle the size effect from the voting effect, I proceed below to analyzing 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 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 alter their rewards and punishments of the poltician during the elections.

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 8 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 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.
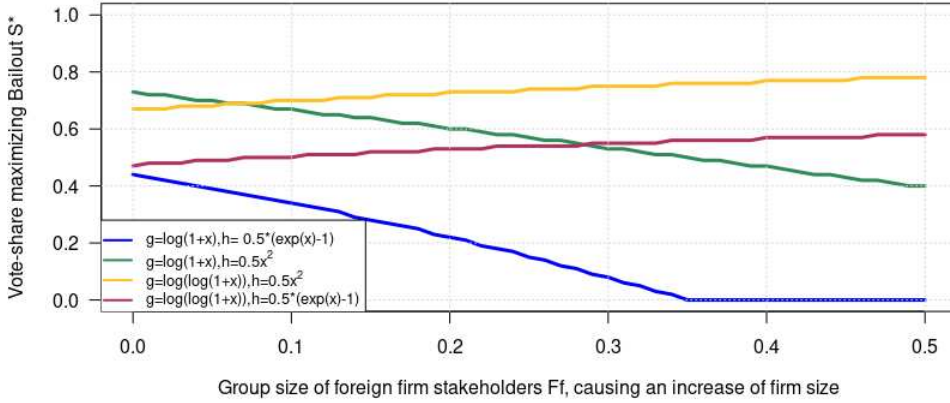

Figure 4: Change in vote-share maximizing bailout $S^*(F_f) = \arg\max_S A(S, F_f)$ as the firm grows by influx of foreign firm stakeholders F_f. For the utility function $g(x) = ln(ln((1 + x))$, the vote-share maximizing bailout monotonically increases as the firm grows by taking on more foreign firm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

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
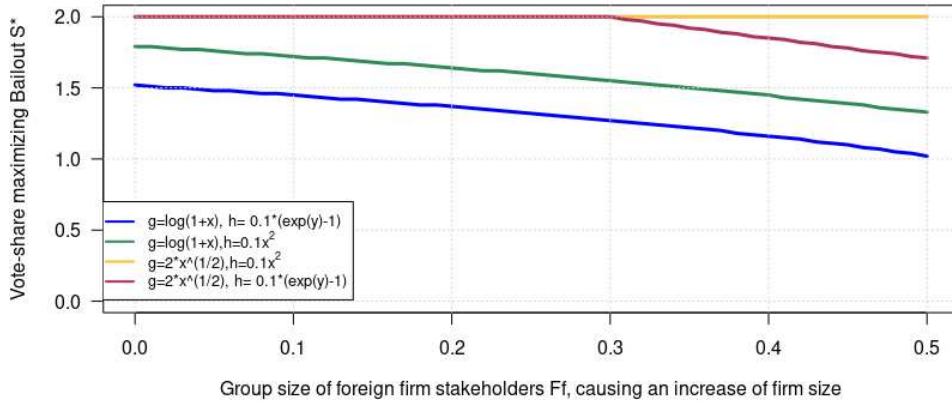
Figure 5: Change in vote-share maximizing bailout S^* as the firm grows by influx of foreign firm stakeholders F_f. Given a different utility function $g(\cdot)$, the vote-share maximizing bailout S_F^* is stuck at the maximum possible bailout for few foreigners at the firm level and then declines monotonically as the firm grows by taking on more foreign stakeholders F_f. The largest possible bailout in the politician's budget is increased to $S^* = \bar{S} = 2$. Parameters $V = 1$, $F = 0.5$, $V_f = 0.25$, $F_f \in [0, F]$

group of foreigners outside of the firm $F_{nf} = F - F_f$, see Figure 8 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. But 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. Allover, as foreigners enter the firm, their

21

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 Figures 4 and 5. 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.

The function $g(x) = log(log(x))$ provides an examples 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 function $g(x) = log(x)$ provides an examples of a utility function 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 function $g(x) = 2\sqrt{x}$ provides an examples of a utility function that 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 6. 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,*

$$\rho = \frac{V_f}{\bar{D}} \in [0, 1], \quad V_f \in [0, \bar{D}] \tag{11}$$

Consequentially, the measure of foreigners at the firm level under substitution is given as

$$F_f = (1 - \rho)D. \tag{12}$$

The voter-concentration is a useful 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.

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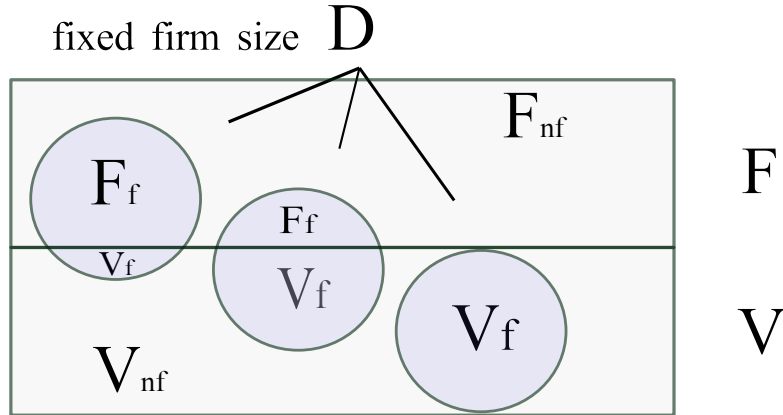

Figure 6: Change in firm stakeholder composition at fixed firm size D: The voter-concentration at the firm level ρ increases as the firm substitutes foreign for domestic stakehodlers with voting rights.

Proposition 4.2 (Substitution effects: Voters matter more). *Fix the set of voters, foreigners and the firm size* $(V, F, \bar{D})$ *with* $\bar{D} < \min(F, V)$.[9] *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, voters drive bailouts more than foreigners, independently of the utility function $g(\cdot)$. As a consequence, when confronted with two

---

[9] 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.

equally sized firms the politician grants a larger bailout to the firm that employs more voters, that is, 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.[10]

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

That holds because the substitution triggers migration across various agent groups.[11] The substitution, however, changes the balance of power between the different interest 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 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 not sufficient 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.

---

[10]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.

[11]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. Moreover, as the firm employs more voters, the measure of voters that are not affiliated with the firm, the non-stakeholder voters, declines by $V_{nf}(V_f) = V - V_f$.

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 is straightforward to infer another result that contradics 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 the 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

The previous results suggest that vote-share maximizing bailouts can substantially differ from socially optimal bailouts. In this section, I want to quantify the politician's deviation 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

$$W(S|V, F, D) = \underbrace{\frac{D}{V+F}}_{\substack{\text{share of population} \\ \text{employed at the firm}}} g(c(S) - \tau(S)) - \underbrace{\frac{(V+F)-D}{V+F}}_{\substack{\text{share of population} \\ \text{outside of firm}}} h(\tau(S)) + \bar{W} \tag{16}$$

where $\bar{W} = W(0)$ denotes the status quo level of welfare when not providing a bailout to population $V \cup F$, $S = 0$.

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*

$$S_{soc}^*(V, F, D) \in \arg\max_{S \in [0, \bar{S}]} W(S|V, F, D) \tag{17}$$

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 (9). Clearly,

Lemma 5.1. *The socially optimal bailout S_{soc}^* strictly increases in firm size D. But 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.*

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*

$$\{S_F^*(\rho) = S_{soc}^*\} \quad \Leftrightarrow \quad \{ \quad \underbrace{\frac{V_f}{D}}_{\substack{=\rho,\ voter\text{-}\\ concentration\\ at\ the\ firm}} \quad = \quad \underbrace{\frac{V}{V+F}}_{\substack{share\ of\ voters\\ among\ all\ taxpayers}} \quad \} \qquad (18)$$

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

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

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 tax payers 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 overprovides bailouts, and pays more than socially optimal, see Figure 7. 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 him 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, overprovides the bailout if the leakage effect is weak in comparison to the foreigner's tax money influx, that is, if there are many voters among firm stakeholders to generate rewards and only 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.
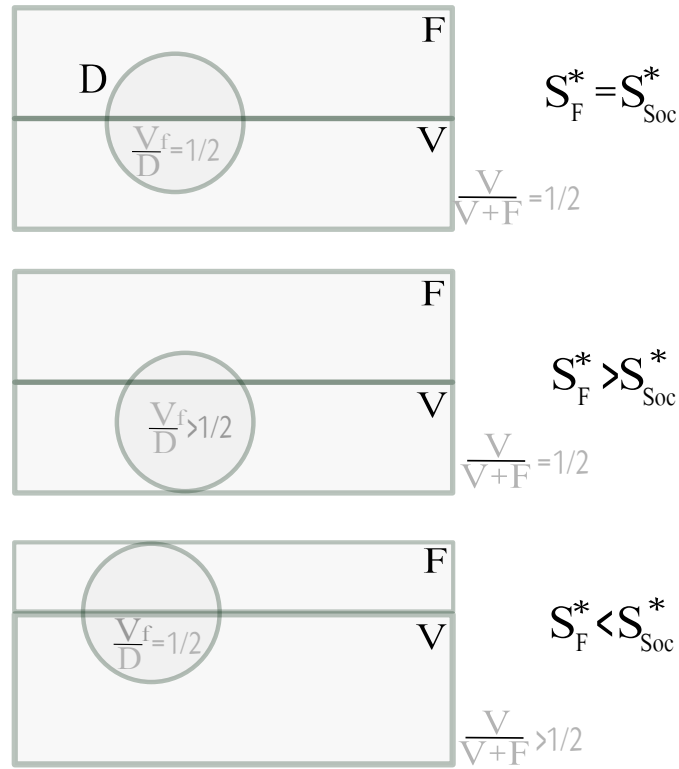
Figure 7: Vote-share maximizing versus socially optimal bailouts. Either can exceed the other, depending on the voter-concentration at the firm level versus the voter-concentration in the taxpayer base.

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 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 the wage to a voter and w_F 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

$$\pi_D(\rho) = \max(\mathbb{E}_F[\theta]\, S_D(\rho) + (1 - \mathbb{E}_F[\theta])R - D\ (\rho\, w_V + (1 - \rho)w_F)\,, 0), \quad (19)$$

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 beween hiring a foreign stakeholders (workers or creditors) or a domestic stakeholder (voter) 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 exclusively employ voters.*

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).[12]

---

[12]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, tem-

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 to 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 firms endogenous voter-concentration choice. The firm's first order condition following revenue function (19) reads $\frac{\partial}{\partial \rho} \pi_D(\rho) = \mathbb{E}_F[\theta] \left(\frac{\partial}{\partial \rho} S_D(\rho) \right) - D \ (w_V - w_F) = 0$. 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 Heterogenously 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 work force 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

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

Corollary 6.2 (Firm's hiring decision II: heterogenous skill)**.** *Fix firm size D. Assume the maximum bailout the politician can possibly grant undercuts the risky return*

---

porary 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."

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 price of labor) only if the foreign work force is more skilled than the domestic one, having a lower failure probabilty $\mathbb{E}_V[\theta] > \mathbb{E}_F[\psi]$.

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, $\mathbb{E}_V[\theta] - \mathbb{E}_F[\psi] > 0$. □

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 (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 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 $P(\rho_j) = E[\theta] (c(S(\rho_j)) - \tau(\rho_j)) + (1 - E[\theta]) w$. The expected payoff to the worker strictly increases in the firm's 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 at being employed at two firms $\rho_1 < \rho_2$ only if wages satisfy $w_1 > w_2$. $\square$

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 interst groups 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 economy for which he considers working. The firms have distinct, exogenous voter-concentration $\rho_j \neq \rho_k$. 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 essentially 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 the firm that employs more voters, irrespective of whether the worker herself is domestic (voter) or a foreigner.

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

$$P_j(\rho_j, \rho_k, D) = (1 - \theta)\theta \left[(c(S(\rho_j)) - \tau(S(\rho_j)) - \tau(S(\rho_k)) \right] \tag{21}$$

$$+ \theta^2 (c(S_{2D}((\rho_j + \rho_k)/2) - \tau_{2D}(S_{2D})) + (1 - \theta) w \tag{22}$$

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

$$P_k(\rho_j, \rho_k, D) = (1 - \theta)\theta \left[(c(S(\rho_k)) - \tau(S(\rho_j)) - \tau(S(\rho_k)) \right] \tag{23}$$

$$+ \theta^2 (c(S_{2D}((\rho_j + \rho_k)/2) - \tau_{2D}(S_{2D})) + (1 - \theta) w \tag{24}$$

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

$$\{P_j(\rho_j, \rho_k, D) > P_k(\rho_j, \rho_k, D)\} \Leftrightarrow \{c(S(\rho_j)) > c(S(\rho_k))\} \tag{25}$$

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 goverend 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 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 $\rho_i D \to \rho_i D + \tilde{V}_f$. 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

$$P(\rho_i) = (1 - \theta)\, R + \theta\, \tilde{V}_f(c(\rho_i) - \tau(\rho_i)). \tag{26}$$

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 crises 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. $\qquad\square$

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 nation-wide 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.

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

$$\tilde{A}(S, F) = \frac{1}{2}\left[\frac{V_f}{V}\, g\!\left(\frac{S}{V_f + F} - \frac{S}{V + F}\right) - \left(1 - \frac{V_f}{V}\right) h\!\left(\frac{S}{V + F}\right)\right] + \frac{1}{2} \quad (27)$$

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 9:

Proposition 7.1 (Firm Size Effects under Emigration)**.** *Fix V.*
(i) for all $F > 0$, the vote-share maximizing subsidy equals zero if there are only few

voters at the firm level, $V_f \to 0$.

(ii) the vote-share maximizer $\hat{S}_F^*$ monotonically increases with firm size if the rise in firm size is due to an increase in the measure of stakeholder voters V_f, holding the measure of foreign stakeholders $F > 0$ fix.

(iii) If the utility function g has relative risk aversion coefficient greater than one, $-xg''(x)/g'(x) > 1$ 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.
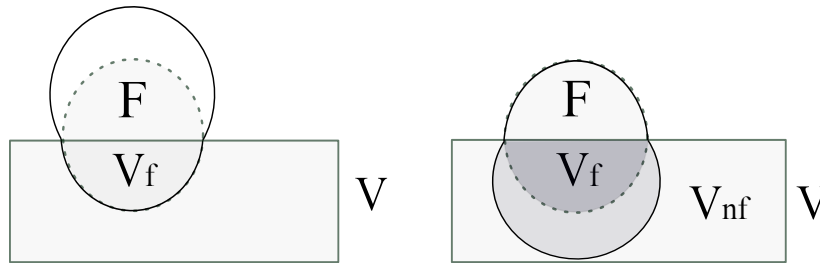

Figure 8: Firm growth by employing more voters respectively more foreigners, causing either changes in the balance of power between interest groups or the taxpayer base.
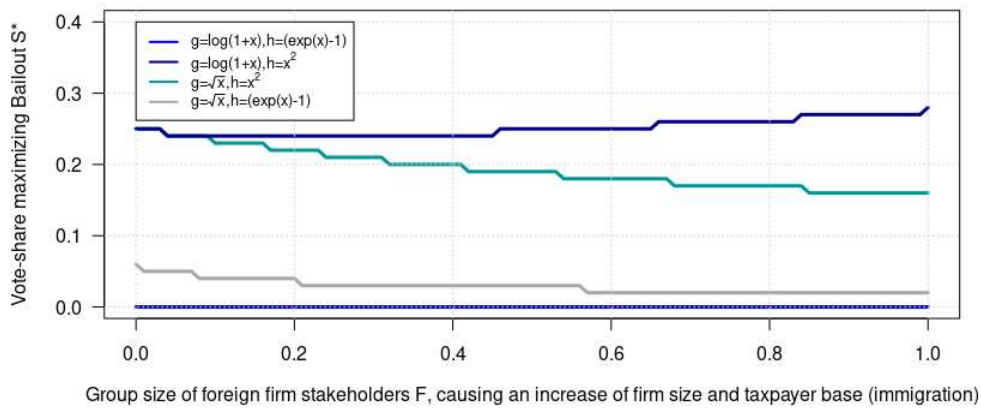

Figure 9: Firm size effects under emigration of foreigners. The vote-share maximizing bailout S_F^* can increase or decrease as the firm grows by taking on more foreigners. Plotted variables are $V = 1$, $V_f = 0.2$, $F = F_f$.

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 to both foreign and domestic firm investors. We have $F_{nf} = 0$, $F_f > 0$ and

$$c = \frac{S}{V_f + F_f} = \frac{S}{D}, \qquad \tau = \frac{S}{V} \tag{28}$$

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

$$A(S) = \frac{1}{2}\left(\frac{V_f}{V} \times g\left(\frac{S}{D} - \frac{S}{V}\right) - \left(1 - \frac{V_f}{V}\right) \times h\left(\frac{S}{V}\right)\right) + \frac{1}{2}. \tag{29}$$

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.[13]

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 when being a firm stakeholder. Foreign firm stakeholders reduce the effectiveness of the bailout in terms of positively swaying voters because for-

---

[13]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.

eigners cannot vote to reward but receive a share of the bailout which reduces the bailout share to voters at the firm, causing them to reward less ("leakage"). On the other hand, foreigners outside of the firm cannot vote to punish but reduce the tax burden to all voters outside of the firm, causing them to punish less.

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 the firm was too big to fail. 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. Because voters at the firm cause bailouts, this paper provides a microfoundation for the value of voting rights at the firm level with implications for corporate finance that I explore.

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 $\{F_f < F$ and $0 < V_f \leq V\}$ or $\{F_f \leq F$ and $0 < V_f < V\}$. If the constant $\frac{g'}{h'}$ satisfies

$$\frac{g'}{h'} > \frac{\frac{V}{V_f} - 1}{\frac{V+F}{V_f+F_f} - 1} \tag{30}$$

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

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

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 $\{F_f < F$ and $0 < V_f \le V\}$ or $\{F_f \le F$ and $0 < V_f < V\}$ and

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

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

$$\frac{V}{V + F} = \frac{V_f}{V_f + F_f}.\tag{33}$$

(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

$$0 = \frac{\partial}{\partial S}A(S)\tag{35}$$

and for the second derivative we obtain

$$\frac{\partial^2}{\partial S^2} A(S) = \frac{V_f}{V} \times g''\left(c(S) - \tau(S)\right)\left(c'(s) - \tau'(s)\right)^2 \tag{36}$$

$$- \left(1 - \frac{V_f}{V}\right) \times h''(\tau(S))(\tau'(S))^2 \tag{37}$$

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 (35) 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

$$\frac{g'}{h'} > \frac{\frac{V}{V_f} - 1}{\frac{V+F}{V_f+F_f} - 1}. \tag{38}$$

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 38 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

$$\frac{V}{V+F} = \frac{V_f}{V_f + F_f}. \tag{39}$$

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. $\square$

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

$$\frac{\partial A}{\partial S} = \frac{V_f}{V} g'\left(\frac{S}{V_f + F_f} - \frac{S}{V+F}\right)\left(\frac{1}{V_f + F_f} - \frac{1}{V+F}\right) - \left(1 - \frac{V_f}{V}\right) h'\left(\frac{S}{V+F}\right)\frac{1}{V+F} = 0 \tag{40}$$

or equivalently

$$h'(\frac{S}{V+F})\frac{1}{V+F} = g'\left(\frac{S}{V_f + F_f} - \frac{S}{V+F}\right)\frac{V_f}{V - V_f}\left(\frac{1}{V_f + F_f} - \frac{1}{V+F}\right) \tag{41}$$

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 (40) can hold. For given $V_f \in (0, V)$, this maximizer must satisfy

$$\frac{\partial A}{\partial S}(V_f, S(V_f)) = 0. \tag{42}$$

That is, changes in V_f cause a change in the vote-share maximizing bailout S^* such that (42) continues to hold. By (42) and the implicit function theorem, the slope of the vote-share maximizer S_F^* under changes in V_f is determined by

$$\frac{\partial S_F^*}{\partial V_f} = -\frac{\frac{\partial}{\partial V_f}\frac{\partial A}{\partial S}}{\frac{\partial^2}{\partial S^2} A(S)} \tag{43}$$

To determine its sign, calculate the cross-derivative and then replace $h'(\frac{1}{V+F})\frac{1}{V+F}$

via (41) yields

$$\frac{\partial}{\partial V_f}\frac{\partial A}{\partial S} = \frac{1}{V}\left[g''(\cdot)\left(-\frac{S}{(V_f+F_f)^2}\right)\left(\frac{V_f}{V_f+F_f}-\frac{V_f}{V+F}\right)+g'(\cdot)\left(\frac{F_f}{(F_f+V_f)^2}-\frac{1}{V+F}\right)\right.$$
(44)

$$+ h'(\cdot)\frac{1}{V+F}\Big]$$
(45)

$$= \frac{1}{V}\Big[g''(\cdot)\left(-\frac{S}{(V_f+F_f)^2}\right)\left(\frac{V_f}{V_f+F_f}-\frac{V_f}{V+F}\right)$$
(46)

$$+ g'(\cdot)\left(\frac{F_f}{(F_f+V_f)^2}-\frac{1}{V+F}+\frac{V_f}{V-V_f}\left(\frac{1}{V_f+F_f}-\frac{1}{V+F}\right)\right)\Big]$$
(47)

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

$$(V-V_f)\frac{F_f}{(F_f+V_f)^2}+\frac{V_f}{V_f+F_f} > \frac{V}{V+F}.$$
(48)

For $V_f \to 0$, condition (48) is true because by $F_f < F$ it holds $\frac{V}{F_f} > \frac{V}{V+F}$. Also for $V_f \to V$, condition (48) holds because $\frac{V}{V+F_f} > \frac{V}{V+F}$. Last, the left hand side of (48) 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,

$$\frac{\partial^2}{\partial S^2}A(S) = \frac{1}{V}\left[g''(\cdot)V_f\left(\frac{1}{V_f+F_f}-\frac{1}{V+F}\right)^2 - h''(\cdot)\frac{V-V_f}{(V+F)^2}\right] < 0$$
(49)

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) 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,

$$\frac{\partial}{\partial F_f}\frac{\partial A}{\partial S} = \frac{V_f}{V}\left(-\frac{1}{(V_f+F_f)^2}\right)\left(g''(x)\,x+g'(x)\right)$$
(50)

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. $\square$

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. This requires $V_f \in [0, D]$, and F_f is given as the residual $F_f = D - V_f \in [0, D]$. Because of the substitution, the pro rata share does no longer change in V_f but is constant at $c = S/D$. Also the tax remains constant in V_f under substitution because V is constant and F is constant. 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 (40), now written in terms of $\bar{D}$,

$$\frac{\partial B}{\partial S} = \frac{V_f}{V} g'\left(\frac{S}{D} - \frac{S}{V+F}\right)\left(\frac{1}{D} - \frac{1}{V+F}\right) - \left(1 - \frac{V_f}{V}\right) h'\left(\frac{S}{V+F}\right)\left(\frac{1}{V+F}\right) \equiv 0$$
(51)

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 condition (51) 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 (49) 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. $\qquad \square$

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

$$g'\Big(\frac{S^*_{c,soc}}{D} - \frac{S^*_{c,soc}}{V + F}\Big) = h'\Big(\frac{S^*_{c,soc}}{V + F}\Big) \tag{52}$$

Define the function

$$F(S) \equiv g'\Big(\frac{S}{D} - \frac{S}{V + F}\Big) - h'\Big(\frac{S}{V + F}\Big). \tag{53}$$

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 $D < V + F$,

$$\frac{\partial}{\partial S} F(S) = g''\Big(\frac{S}{D} - \frac{S}{V + F}\Big)\Big(\frac{1}{D} - \frac{1}{V + F}\Big) - h''\Big(\frac{S}{V + F}\Big)\frac{1}{V + F} < 0 \tag{54}$$

and

$$\frac{\partial}{\partial D} F = g''\Big(\frac{S}{D} - \frac{S}{V + F}\Big)\Big(-\frac{S}{D^2} > 0 \tag{55}$$

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 (52). On the other hand, from (41), for a fixed firm size (under substitution) the vote-share maximizing bail-out S^*_F satisfies

$$\Big(\frac{V_f}{D} - \frac{V_f}{V + F}\Big) g'\Big(\frac{S^*_F}{D} - \frac{S^*_F}{V + F}\Big) = \Big(\frac{V}{V + F} - \frac{V_f}{V + F}\Big) h'\Big(\frac{S^*_F}{V + F}\Big) \tag{56}$$

45

1) Consider the special case where the voter concentration at the firm level equals the share of all voters in the taxpayer population,

$$\rho \equiv \frac{V_f}{D} = \frac{V}{V + F} \tag{57}$$

Then the equilibrium condition on the vote-share maximizer S_F^* in (56) coincides with the equilibrium condition on the socially optimal subsidy S_{soc}^* in (52). That is, we have $S_{soc}^* = S_F^*$. Note, condition (57) is equivalent to requiring that the share of stakeholder voters among all voters equals the share of stakeholders among all taxpayers

$$\frac{V_f}{V} = \frac{D}{V + F}, \tag{58}$$

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

$$0 < \frac{V_f}{D} - \frac{V_f}{V + F} < \frac{V}{V + F} - \frac{V_f}{V + F}. \tag{59}$$

Via the equilibrium condition on the vote-share maximizer S_F^* (56), and because $h(\cdot)$ and $g(\cdot)$ are strictly increasing, I can thus infer

$$g'\left(\frac{S_F^*}{D} - \frac{S_F^*}{V + F}\right) = \frac{\left(\frac{V}{V+F} - \frac{V_f}{V+F}\right)}{\left(\frac{V_f}{D} - \frac{V_f}{V+F}\right)} h'\left(\frac{S_F^*}{V + F}\right) > h'\left(\frac{S_F^*}{V + F}\right). \tag{60}$$

Using the defined function in (53), we can conclude $F(S_F^*) > 0$ by (60), $F(S_{soc}^*) = 0$ by (52) and, thus, $S_{soc}^* > S_F^*$.

3) If $\rho > \frac{V}{V+F}$, then by the analogous 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)

$$\frac{\partial}{\partial S}\tilde{A}(S) = \frac{1}{V}\left[g'\left(\frac{S}{V_F + F} - \frac{S}{V + F}\right)\left(\frac{V_f}{V_F + F} - \frac{V_f}{V + F}\right) - h'\left(\frac{S}{V + F}\right)\frac{V - V_f}{V + F}\right] \quad (61)$$

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, $V_f \subset V$ and

$$\frac{\partial^2}{\partial S^2}\tilde{A}(S) = \frac{1}{V}\left[g''(\cdot)V_f\left(\frac{1}{V_f + F} - \frac{1}{V + F}\right)^2 - h''(\cdot)\frac{V - V_f}{(V + F)^2}\right] < 0 \quad (62)$$

Therefore, for $V_f > 0$, the vote-share can have an interior maximizer S that satisfies

$$g'\left(\frac{S}{V_F + F} - \frac{S}{V + F}\right)\left(\frac{V_f}{V_F + F} - \frac{V_f}{V + F}\right) - h'\left(\frac{S}{V + F}\right)\left(\frac{V}{V + F} - \frac{V_f}{V + F}\right) = 0 \quad (63)$$

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

$$\frac{\partial}{\partial V_f}\frac{\partial}{\partial S}\tilde{A}(S) = \frac{1}{V}\left[g''(\cdot)\left(\frac{V_f}{V_F + F} - \frac{V_f}{V + F}\right)\left(-\frac{S}{(V_f + F)^2}\right) + h'\left(\frac{S}{V + F}\right)\frac{1}{V + F}\right. \quad (64)$$

$$\left. + g'(\cdot)\left(\frac{F}{(V_f + F)^2} - \frac{1}{V + F}\right)\right] \quad (65)$$

Plugging in the equilibrium condition (63) to replace the second term in (64), yields

$$\frac{\partial}{\partial V_f}\frac{\partial}{\partial S}\tilde{A}(S) = \frac{1}{V}\left[g''(\cdot)\left(\frac{V_f}{V_F + F} - \frac{V_f}{V + F}\right)\left(-\frac{S}{(V_f + F)^2}\right)\right. \quad (66)$$

$$\left. + g'(\cdot)\left(\frac{V_f}{V - V_f}\left(\frac{1}{V_F + F} - \frac{1}{V + F}\right) + \left(\frac{F}{(V_f + F)^2} - \frac{1}{V + F}\right)\right)\right] \quad (67)$$

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

$$V_f\frac{1}{V_f + F} + (V - V_f)\frac{F}{(V_f + F)^2} \geq \frac{V}{V + F} \quad (68)$$

The term on the left hand side of (68) is monotonically decreasing in V_f, takes

47

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, (68) holds for all $V_f \in [0, V]$, and the cross-derivative (66) 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.

For the second part of the proof, using the short-cuts $x = \frac{S}{V_F+F} - \frac{S}{V+F} > 0$ and $y = \frac{S}{V+F} > 0$, then

$$\frac{\partial}{\partial F}\frac{\partial}{\partial S}\tilde{A}(S) = \frac{1}{V}\left[V_f\left(\frac{1}{(V+F)^2} - \frac{1}{(V_f+F)^2}\right)\left(g''(x)\,x + g'(x)\right) \qquad (69)$$
$$+ \frac{V - V_f}{(V+F)^2}\left(h''(y)\,y + h'(y)\right)\right]$$

Since h is increasing and convex, the last term is always positive. Thus, if $g''(x)\,x + g'(x) \leq 0$ for all x, the cross-derivative (69) 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. □

References

Daron Acemoglu and James A Robinson. *Economic origins of dictatorship and democracy*. Cambridge University Press, 2005.

Viral V. Acharya and Tanju Yorulmazer. Too many to fail—an analysis of time-inconsistency in bank closure policies. *Journal of Financial Intermediation*, 16:1 – 31, 2007. ISSN 1042-9573.

Philippe Aghion and Patrick Bolton. Government domestic debt and the risk of default: a political-economic model of the strategic role of debt. *Public debt management: theory and history*, 315, 1990.

Alberto Alesina and Guido Tabellini. Voting on the budget deficit. Technical report, National Bureau of Economic Research, 1988.

Alberto Alesina and Guido Tabellini. A positive theory of fiscal deficits and government debt. *The Review of Economic Studies*, 57(3):403–414, 1990.

Franklin Allen and Douglas Gale. Financial contagion. *Journal of political economy*, 108(1):1–33, 2000.

Christopher J Anderson. The end of economic voting? contingency dilemmas and the limits of democratic accountability. *Annu. Rev. Polit. Sci.*, 10:271–296, 2007.

Timothy Besley and Stephen Coate. Sources of inefficiency in a representative democracy: a dynamic analysis. *American Economic Review*, pages 139–156, 1998.

Bruno Biais and Enrico Perotti. Machiavellian privatization. *American Economic Review*, 92(1):240–258, 2002.

Javier Bianchi. Efficient bailouts? Technical report, National Bureau of Economic Research, 2012.

Matilde Bombardini and Francesco Trebbi. Votes or money? theory and evidence from the us congress. *Journal of Public Economics*, 95(7-8):587–611, 2011.

Bureau of Labor Statistics. Foreign -born workers : Labor force characteristics — 2022. *https://www.bls.gov/opub/ted/2023/foreign-born-workers-were-a-record-high-18-1-percent-of-the-u-s-civilian-labor-force-in-2022.htm*, 2023.

VV Chari and Patrick J Kehoe. Bailouts, time inconsistency, and optimal regulation: A macroeconomic view. *The American Economic Review*, 106(9):2458–2493, 2016.

Peter J Coughlin. *Probabilistic voting theory*. Cambridge University Press, 1992.

Cesi Cruz, Philip Keefer, and Julien Labonne. Incumbent advantage, voter information and vote buying. Technical report, IDB Working Paper Series, 2016.

Mathias Dewatripont and Jean Tirole. Liquidity regulation, bail-ins and bailouts. Technical report, Working Paper, 2018.

Avinash Dixit and John Londregan. The determinants of success of special interests in redistributive politics. *the Journal of Politics*, 58(4):1132–1155, 1996.

Allan Drazen. Towards a political-economic theory of domestic debt. In *The debt burden and its consequences for monetary policy*, pages 159–178. Springer, 1998.

Emmanuel Farhi and Jean Tirole. Collective moral hazard, maturity mismatch, and systemic bailouts. *The American Economic Review*, 102(1):60–93, 2012.

Xavier Freixas et al. *Optimal bail-out, conditionality and creative ambiguity*, volume 2238. Centre for Economic Policy Research, 1999.

Alexander Guembel and Oren Sussman. Sovereign debt without default penalties. *The Review of Economic Studies*, 76(4):1297–1320, 2009.

Allen Hicken, Stephen Leider, Nico Ravanilla, and Dean Yang. Temptation in vote-selling: Evidence from a field experiment in the philippines. *Journal of Development Economics*, 131:1–14, 2018.

Todd Keister. Bailouts and financial fragility. *The Review of Economic Studies*, 83 (2):704–736, 2015.

Todd Keister and Yuliyan Mitkov. Bailouts, bail-ins and banking crises. *Memo, presented at the Board of Governors of the Federal Reserve System, September*, 27, 2016.

Todd Keister and Vijay Narasiman. Expectations vs. fundamentals-driven bank runs: When should bailouts be permitted? *Review of Economic Dynamics*, 21: 89–104, 2016.

Jessica Leight, Dana Foarta, Rohini Pande, and Laura Ralston. Value for money? vote-buying and politician accountability. *Journal of Public Economics*, 190: 104227, 2020.

Doron Levit and Nadya Malenko. Nonbinding voting for shareholder proposals. *The Journal of Finance*, 66(5):1579–1614, 2011.

Doron Levit, Nadya Malenko, and Ernst G Maug. Trading and shareholder democracy. *Journal of Finance, Forthcoming, European Corporate Governance Institute–Finance Working Paper*, (631), 2019.

Assar Lindbeck and Jörgen W Weibull. Balanced-budget redistribution as the outcome of political competition. *Public choice*, 52(3):273–297, 1987.

Alessandro Lizzeri and Nicola Persico. Why did the elites extend the suffrage? democracy and the scope of government, with an application to britain's "age of reform". *The Quarterly journal of economics*, 119(2):707–765, 2004.

Andrey Malenko and Nadya Malenko. Proxy advisory firms: The economics of selling information to voters. *The Journal of Finance*, 74(5):2441–2490, 2019.

Nadya Malenko and Yao Shen. The role of proxy advisory firms: Evidence from a regression-discontinuity design. *The Review of Financial Studies*, 29(12):3394–3427, 2016.

Ulrike Malmendier and Klaus M Schmidt. You owe me. *American Economic Review*, 107(2):493–526, 2017.

Gian Maria Milesi-Ferretti and Enrico Spolaore. How cynical can an incumbent be? strategic policy in a model of government spending. *Journal of Public Economics*, 55(1):121–140, 1994.

NY Times. Higgins, Andrew: Cyprus Bank's Bailout Hands Ownership to Russian Plutocrats. August 21 2013.

Torsten Persson and Lars EO Svensson. Why a stubborn conservative would run a deficit: Policy with time-inconsistent preferences. *The Quarterly Journal of Economics*, 104(2):325–345, 1989.

Peterson-Foundation. Here's what we know about foreign-born workers in the u.s. *https://www.pgpf.org/blog/2022/11/the-foreign-born-labor-force-of-the-united-states*, 2022.

Thomas Philippon and Olivier Wang. Let the worst one fail: a credible solution to the too-big-to-fail conundrum. *The Quarterly Journal of Economics*, 138(2): 1233–1271, 2023.

Magdalena Rola-Janicka. The political economy of prudential regulation. *Available at SSRN 3685733*, 2022.

Spiegel International. As gm falters, opel seeks government help. *https://www.spiegel.de/international/germany/auto-industry-bailout-as-gm-falters-opel-seeks-government-help-a-590906.html*, 2008.

Philip E Strahan. Too big to fail: Causes, consequences, and policy responses. *Annu. Rev. Financ. Econ.*, 5(1):43–61, 2013.

Guido Tabellini and Alberto Alesina. Voting on the budget deficit. *The American Economic Review*, 80(1):37, 1990.

The Hill. Obama: Auto bailout 'was the right thing to do'. *https://thehill.com/policy/transportation/228836-obama-auto-bailout-was-the-right-thing-to-do/*, 2015.

US News. Taking taxpayers out for a ride. *https://www.usnews.com/opinion/blogs/peter-roff/2013/10/17/gm-and-the-obama-administration-took-taxpayers-for-a-ride*, 2013.

Pedro C Vicente. Is vote buying effective? evidence from a field experiment in west africa. *The Economic Journal*, 124(574):F356–F387, 2014.

WSJ. Gm bows to berlin over opel bailout. *https://www.wsj.com/articles/SB125260438598600301*, 2009.