Explaining Compensation Failure: Trade, Partisan Collusion, and the Underprovision of Compensation

Nicholas Ray

2024-08-28

Abstract

I argue it is puzzling that there has not been more compensation for the losers of globalization. My explanation is that political elites can reduce the expected costs of not providing compensation by choosing not to compete over compensation. The losers then find it difficult to hold elites accountable for not providing compensation and elites can focus on providing gains from trade to the majority of voters. I provide evidence for this argument with observational panel data showing that the marginal effect of import competition decreases under the theoretical conditions I specify which allow elites to cooperate.

Introduction

Globalization, and in particular trade, has increased aggregate economic welfare but had distributional consequences. In the United States (U.S.), for example, an estimated 87% of the population gained real income from a rise in imports from China while some may have lost up to four times the average gain (Galle, Rodriguez-Clare, and Yi 2023, 349). More generally, the losers from free trade have been concentrated in "the 'old-rich' countries of Western Europe, North America, [and] Oceania," where the real incomes of lower to middle class citizens grew the least compared to any other group in the world from 1988 to 2008 (Milanović 2016, 20).

There is a growing body of evidence that these distributional consequences have political implications. Specifically, negative import shocks are associated with reduced vote share for

political incumbents in the U.S. (Jensen, Quinn, and Weymouth 2017; Margalit 2011) and increased vote share for populist right-wing parties across Europe (e.g., Colantone and Stanig 2018; Milner 2021). Thus, the distributional consequences of free trade have contributed to an electoral backlash from the losers that has largely hurt incumbents and favored right-wing populists.

It is also well known theoretically that compensation can alleviate the distributional consequences of trade. By redistributing some of the gains from trade to the losers, free trade with compensation can still increase aggregate welfare yet leave no one worse off (i.e., Pareto gains) (e.g., Feenstra and Lewis 1994). However, there has been a "failure of compensation" (Frieden 2019, 182), where the supply of compensation has been less than demand in Western democracies (see next section). Consequently, a lack of compensation has made the backlash to globalization "perfectly predictable" (Rodrik 2018, 12).

It is puzzling why incumbent political elites in these countries have failed to compensate the losers of globalization. Scholars have long been aware of free trade's distributional impacts and of the ability for compensation to generate Pareto gains. By failing to compensate those hurt by free trade, incumbent political elites appear to have harmed themselves by contributing to an electoral backlash that has benefited populist challengers. Thus, it is surprising why incumbent political elites have not anticipated the electoral backlash and compensated the losers of globalization more. Why has there not been more compensation?

I argue that under certain conditions, political parties have the ability to improve their utility by not competing with each other over compensation in an election. In particular, if two coalitions of political parties can both commit to not proposing compensation during an election, they can compete over issues that are less costly for the majority of their potential voters. The losers have a difficult time holding incumbent elites accountable when challengers seem just as likely not to provide compensation. In expectation, parties choosing not to compete over compensation reduce the possibility of an electoral backlash to globalization.

Using observational panel data, I show that the marginal effect of import competition on

a measure of compensation is positive when the conditions I identify are weak but is zero or negative when the conditions are strong. I interpret this as evidence that the political conditions for parties choosing not to compete are associated with less compensation, as my theory implies. In the next section I define what compensation failure is and how previous scholars have explained it. I then detail my argument before highlighting its main implications and turning to how I test my hypotheses.

Literature Review

Defining Compensation Failure

Several plausible indicators of compensation are observed to be decreasing. In 2019, the Organisation for Economic Cooperation and Development (OECD) described "a widespread decline in income redistribution across OECD countries" (Causa, Browne, and Vindics 2019, 13). In the U.S., Autor, Dorn, and Hanson (2016, 231) conclude that there has been "limited regional redistribution of trade gains from winners to losers." Again in OECD countries, social spending on active labor market policies (ALMP) has been trending downward (see Figure 1).

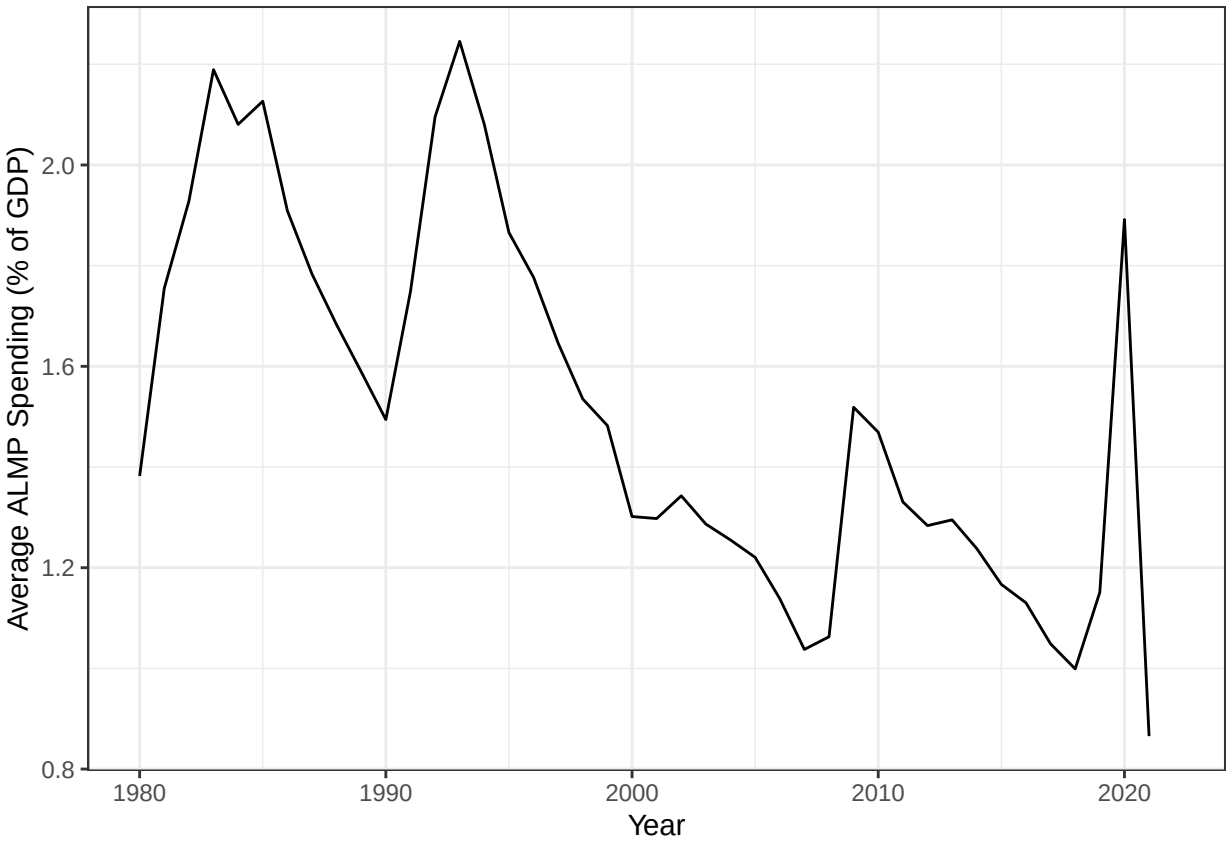

Figure 1: On average, active labor market policy (ALMP) spending has been decreasing.

However, compensation *failure* occurs when the supply of compensation is less than demand (Frieden 2019). Thus, to evaluate the existence of compensation failure requires investigating compensation conditional on demand. Throughout the paper, I measure the supply of compensation as total public social spending as a percent of gross domestic product (GDP) (Huber and Stephens 2001) and the demand for compensation as low-wage import penetration (Bernard, Jensen, and Schott 2006).

Total public social spending as a percent of GDP (henceforth total spending) is a commonly employed measure of welfare spending and is consistent with Rodrik's (2018, 18) definition of "actual compensation" in the form of "generous safety nets." Total spending is less politically contentious than targeted redistribution and more holistic, making it a relatively convenient and thus likely supply of compensation (Rodrik 2018).

Low-wage import penetration (henceforth import penetration) measures the penetration of imports from low-wage countries (see Research Design section) and is "a cleaner test of the influence of comparative advantage than aggregate import penetration" (Bernard, Jensen, and Schott 2006, 220). Thus, greater import penetration indicates greater import competition and ultimately greater demand for compensation, since import competition from countries that tend to be relatively low-wage is responsible for the distributive consequences of free trade and lost income for losers in Western democracies (see Theory section).

Compensation failure implies that total spending is unresponsive to changes in import penetration. If the demand for compensation increases while total spending is stagnant, demand will outpace supply. Strikingly, for 22 European countries from 1990 to 2019 greater import penetration is associated with *less* total spending (see Table 1). Across three time series models- a lagged dependent variable (LDV) model with country-year fixed effects, an autoregressive distributed lag (ADL) model with two lags of the dependent variable and two lags of the independent variable (Kagawala and Whitten ND) and country-year fixed effects, and a first differences (FD) model- import penetration is associated with decreased total spending. Specifically, a percentage point increase in import penetration is associated with less total spending in the next period (models 1 and 2) while positive changes in import penetration are associated with negative changes in total spending (model 3).

Rather than evaluating changes in the supply of compensation alone, Table 1 demonstrates that supply conditional on demand is decreasing. Thus, there is evidence that in OECD countries there has indeed been a compensation failure. In the next section I discuss why this is puzzling given current explanations.

Current Explanations of Compensation Failure

There is a large literature on the relationship between globalization and social spending and thus several arguments relevant for explaining compensation failure. Broadly speaking, there are three types of arguments that explain why there would be a lack of compensation

Table 1: Low-Wage Import Penetration (% of Consumption) is Negatively Associated with Total Public Social Spending (% of GDP)

	Dependent variable:		
	Spending		Δ Spending
	LDV	ADL (2,2)	FD
	(1)	(2)	(3)
Spending$_{t-1}$	0.801***	1.010***	
	(0.024)	(0.038)	
Spending$_{t-2}$		−0.120***	
		(0.034)	
Import Penetration$_{t-1}$	−0.236***	−0.596***	
	(0.070)	(0.184)	
Import Penetration$_{t-2}$		−0.012	
		(0.253)	
Import Penetration$_{t-3}$		0.394**	
		(0.182)	
ΔImport Penetration			−0.839***
			(0.261)
N=22, T=7-24	N×T=483	N×T=290	N×T=373
Unit FE	Yes	Yes	No
Year FE	Yes	Yes	No
R^2	0.761	0.881	0.029
F Statistic	692.778***	368.059***	10.292***
Note:			*p<0.1; **p<0.05; ***p<0.01

conditional on there being demand for it: 1) compensation is too costly to supply, 2) compensation is ineffective at moderating the distributional effects of import competition, and 3) the political incentives for supplying compensation are low despite demand.

The first set of arguments asserts that compensation is too costly to supply. Classic examples include those that advance the so-called efficiency hypothesis, where capital mobility and free trade lead states to compete over cheaper taxes and labor standards to attract firms (e.g., Rodrik 1997; Olney 2013; Mosley and Uno 2007). More recent efficiency arguments highlight the deadweight losses incurred from the taxation required for compensation (see Rodrik 2018). Rodrik (2018) also argues that compensation is too costly because of political commitment problems, where politicians no longer have the incentive to compensate losers once trade deals have been secured.

These arguments are certainly correct that compensation is costly. While elites may not directly pay for compensation out of their own pockets, taxes necessary for compensation plausibly create deadweight losses that may negatively affect economic growth. And most observers of elections would agree that procuring economic growth for voters is a key concern for elites (e.g., Lewis-Beck and Stegmaier 2013). However, the fact that compensation is costly does not imply that it is rational for elites to not provide compensate. If not providing compensation means that incumbent political elites lose vote share and possibly office to populist challengers, then the opportunity cost of not providing compensation is likely higher for elites than the cost of compensation itself. In other words, the expected costs of compensation must be compared to the expected costs of not compensating the losers and possibly experiencing an electoral backlash. It is not ex-ante obvious or clear from previous literature that the expected costs of compensation were larger than the expected costs of not providing compensation, and thus arguments that highlight how costly compensation is do not sufficiently explain the observed compensation failure.

The second set of arguments suggests that compensation may not be effective at moderating the distributional effects of import competition (Frieden 2019; Rodrik 2018). If this

were true, it would be irrational for elites to possibly jeapordize economic growth or the gains to the winners to compensate losers who may vote against them anyway. This is especially relevant for targeted forms of compensation, as with trade adjustment assistance (TAA) in the U.S., since they tend to be underfunded in the first place (see Autor, Dorn, and Hanson 2016). While the lack of funding for these forms of compensation also begs the question of why elites have not compensated more, the effectiveness of compensation is ultimately an empirical question. If the distributional consequences from trade are associated with voters turning to populist challengers (e.g., Colantone and Stanig 2018; Milner 2021), "effective" compensation from the perspective of elites would moderate this relationship.

In particular, one of the analyses conducted by Milner (2021) evaluates how an increase in import competition affects the vote share of populist and centrist parties in Europe. Milner's (2021) main finding is that the "China shock" (see Autor, Dorn, and Hanson 2013; Acemoglu et al. 2016) increases the vote share of populist right-wing parties. I replicated this analysis and then made the following changes: I included a LDV, an interaction between the China shock and total spending, and used the unimputed, original data collected by the author. The marginal effect of the China shock across the range of total spending is shown in Figure 2 for left and right-wing centrists (i.e., traditional political elites) and left and right-wing populists. The full results are reported in the appendix.

Figure 2 suggests that compensation is effective at moderating the effect of import competition on vote shares. The marginal effect of the China shock on right and left-wing populist vote shares is positive when total spending is low but negative when total spending is high. For right and left-wing centrists, the marginal effect of the China shock on vote share is negative at low levels of total spending but positive at high levels of total spending. Consequently, there is evidence that total spending reverses the electoral backlash to globalization, where populists no longer enjoy an electoral advantage from import competition relative to traditional political elites. These results make the compensation failure puzzling if it is true that compensation moderates the distributional consequences of free trade and

reduces the electoral backlash for traditional incumbent elites.

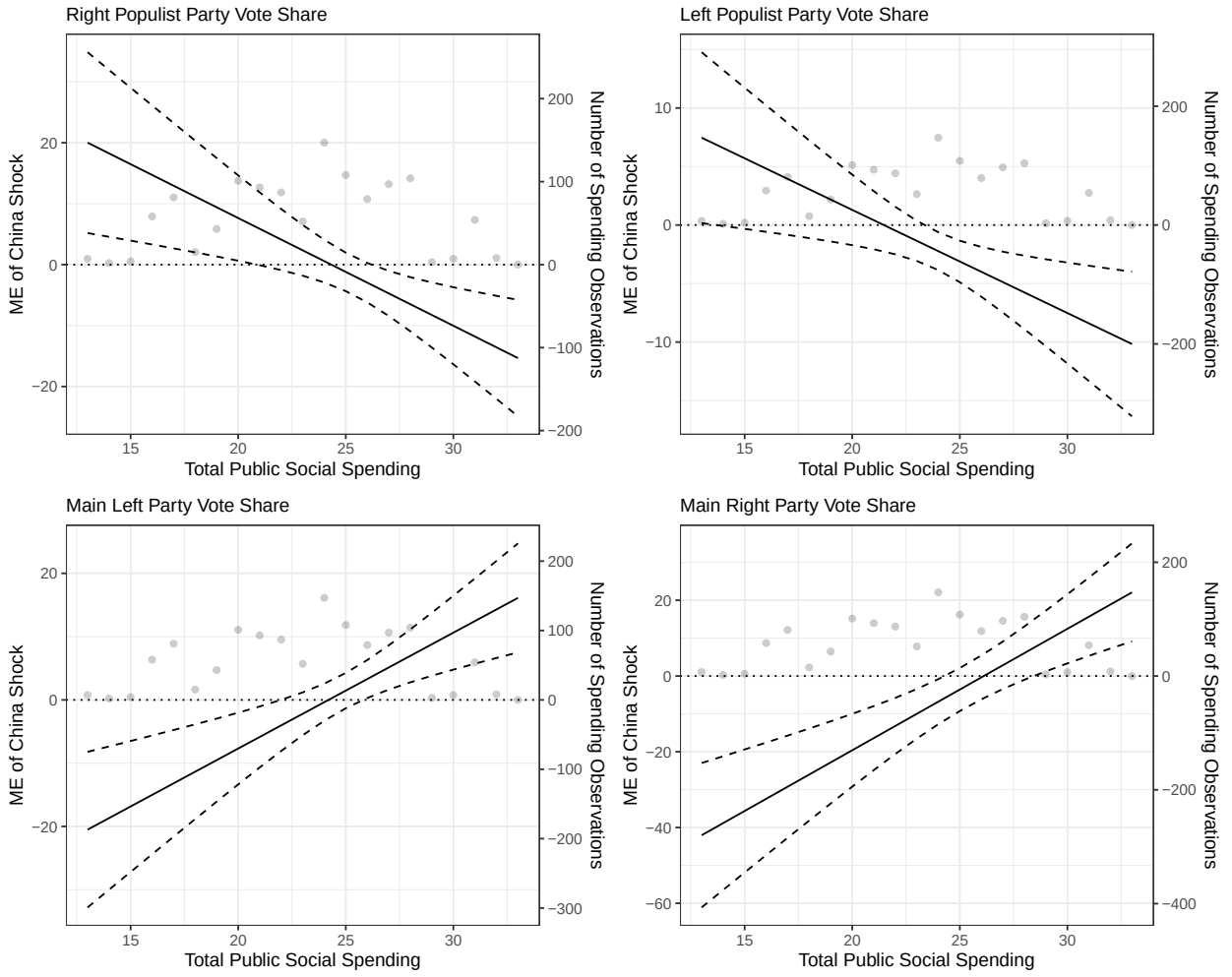

Figure 2: Reevaluating Milner's (2021) analysis of how the China shock affects vote shares. Using the author's unimputed data and including a LDV, spending appears to moderate the marginal effect of the China shock on vote shares.

The third type of argument contends that the political incentives to supply compensation may be low despite demand for compensation. Menendez (2016) argues that compensation will decrease in countries with high district magnitude and geographically concentrated losers because politicians will place less weight on losers, who will have increasingly different preferences for compensation the more concentrated they are. However, it is unclear from the argument why compensation failure is rational for political elites. In footnote 7 (Menendez 2016, 669) the author concedes that "Simply ignoring the demands of concentrated trade

losers is unlikely to maximize electoral returns, as politicians in high-magnitude systems have strong incentives to bring every single vote on board. . . ." As before with the arguments that compensation is too costly, it is not clear that decreasing compensation is rational if there exists a threat of electoral backlash from the losers. A political challenger would be incentivized to provide more compensation to win the votes of these losers and force the incumbents to provide more compensation to avoid losing the election. An explanation of compensation failure would have to explain why the expected costs of not providing compensation (i.e., the possibility of an electoral backlash) were lower than the expected costs of compensation. In the next section, I offer my explanation for why this would be the case and thus why compensation failure is rational for political elites.

Theory

Free trade has aggregate and distributional consequences. Because countries tend to specialize in what they have a comparative advantage in producing, countries are more productive when they trade with each other and average incomes rise. But how factors of production are reallocated within countries to best respond to comparative advantage pressures generates distributional effects. According to the classical Heckscher-Ohlin model, countries have a comparative advantage in producing goods that intensively use the factor of production they are relatively abundant in (Feenstra and Taylor 2020). For instance, if a country is abundant in labor but scarce in capital they will tend to specialize in and export goods that intensively use the factor of labor. The Stolper-Samuelson theorem then predicts that if factors of production are freely mobile, people will reallocate the factors they own towards the production of labor-intensive goods and labor will gain real income while capital loses real income.

Many OECD countries tend to be relatively abundant in capital while countries part of BRIICS tend to be relatively abundant in labor. As trade has increased between the two

sets of countries (see Figure 2), the Stolper-Samuelson theorem implies that people who own labor in many OECD countries have lost real income while the owners of labor in BRIICS countries have gained real income. Indeed, this phenomena is one of the reasons that global inequality has decreased but at the expense of middle to lower class citizens of developed, Western democracies (Milanović 2016).

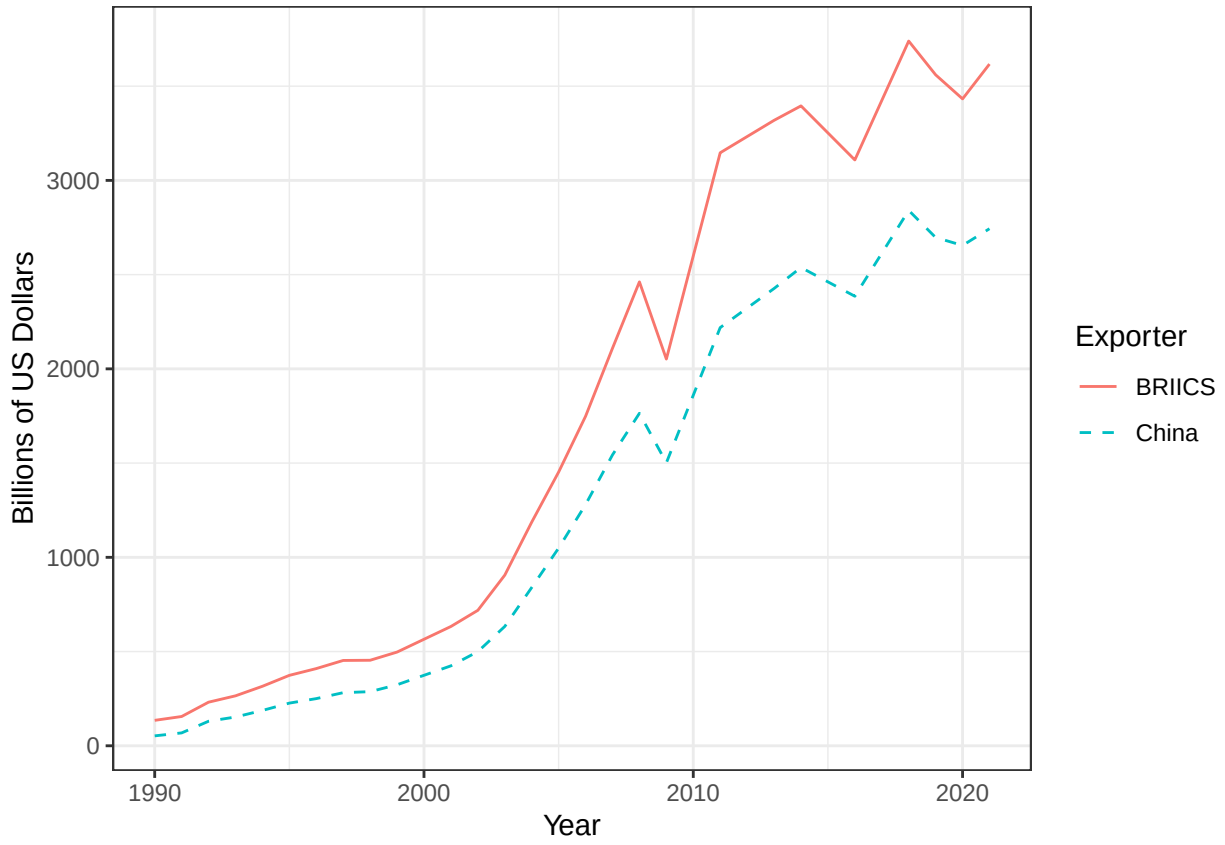

Figure 3: Imports to OECD countries from BRIICS countries (Brazil, Russia, India, Indonesia, China, and South Africa).

All else equal, I assume that these citizens prefer compensation for the real income they have lost from free trade. A manufacturing worker who was laid off due to import competition, for example, may not be able to regain the pride associated with their old job or expect to earn an identical income in the future. But this assumption means that they would still prefer to receive material compensation for being laid off than to be fired without compensation.

Moreover, I assume that these citizens hold incumbent political elites responsible for their lost income and compensation. Classic economic voting literature largely concludes that the average voter is myopic, retrospective in their evaluation of the government, and particularly sensitive to negative shocks (e.g., Nannestad and Paldam 1994; Lewis-Beck and Stegmaier 2013). This assumption also enjoys support from studies that find a relationship between negative import shocks and anti-incumbent voting effects (Margalit 2011; Jensen, Quinn, and Weymouth 2017). It is not necessary for citizens to understand economics for them to understand that they are not as well off as they used to be, and it does not seem unreasonable that they would at least partially hold the government responsible.

I assume that the relevant political elites for my argument are political parties. Parties craft policy, including on trade and compensation, and have reputations that extend beyond an individual leaders' tenure. Any single government or administration may not be responsible for compensating the losers that have been hurt over decades of free trade. But parties have an interest in their brand and reputation with voters beyond particular governments, such that they are likely to particularly concerned about an electoral backlash from losers in the future. Furthermore, I assume that political parties prefer to win elections. Even if they would like to pass specific legislation, they must first win elections to do so. Lastly, for the sake of the argument I assume that there are two main parties or coalitions of parties that compete in elections. While this is a restrictive assumption, there are multiparty countries that credibly fit this assumption (e.g., Germany with the SPD and CDU parties).

I argue that under these assumptions, an incumbent political party will compete with a challenging political party over proposing compensation to the losers. If the losers prefer compensation, they should vote for the party that compensates them most in expectation, *ceteris paribus*. The party that fails to compete over increasing compensation may experience electoral backlash and lose votes from the losers.

However, both the incumbent political party and challenger party would be better off if they could compete over other issues than compensation. If they adopt similar policies

on compensation while differentiating themselves on other issues, they can make it difficult for the losers to manifest a backlash about the lack of compensation. When the incumbent and challenger have similar policies, voters may choose between them based on the policies where they are distinguishable. If the incumbent and challenger differentiate themselves by adopting opposite positions on climate policy, for example, the losers may vote based on their preference for climate policy rather than vote against the incumbent for failing to compensate them when the challenger is likely to do the same.

Thus, when both the incumbent and challenger do not offer compensation, the incumbent's expected cost of not compensating the losers decreases because it is less likely that voters will manifest a backlash on the issue of compensation. The incumbent can then focus on maintaining free trade with minimal compensation, providing the most economic growth for the majority of voters who do benefit from free trade and competing with the challenger on less costly issues.

In conclusion, my explanation for the puzzling compensation failure is that political parties have tacitly colluded to compete over issues other than compensation. By doing so, they effectively reduced the probability that an electoral backlash would fall on either one of them. The benefit of tacit collusion is that parties could continue the status quo of free trade with little compensation to minimize the potential costs of compensation on economic growth and the benefits accumulated to the winners of trade. Thus, parties can ensure that most citizens benefit from their policies and compete with each other on issues that are less costly for the majority of supporters.

In the next section I build a simple theoretical model to demonstrate that this is behavior is rational for elites and to generate testable implications.

Game-Theoretic Analysis of the Argument

Let Γ_δ be a game where $\Gamma_\delta = \left(N, (\mathcal{B}_i^\infty)_{i\in N}, (\gamma_i^\delta)_{i\in N}\right)$ (Maschler, Solan, and Zamir 2020, 552). The set of players, $N = \{I, Ch\}$, consists of an incumbent (I) and challenger (Ch) party

that are competing to win an election. $\mathcal{B}_i^\infty$ is the set of mixed strategies available to player i, where each strategy specifies an action that player i takes at every $t \in \infty$ stage of the game. The actions that players can take is the set $A = \{C, \neg C\}$, where players decide to propose compensation (C) to the losers during the election or not ($\neg C$). I assume that the proposal is binding, such that the winner of the election must pay the cost of compensation (c) proposed during the election. γ_i^δ is the utility function that associates each strategy with a total payoff for each player i. It is a discounted utility function, where the utility (u) for actions played in stages $t > 1$ is discounted by a factor of $0 < \delta < 1$. Specifically, the discounted utility function for a strategy $\tau_i \in \mathcal{B}_i^\infty$ is $\gamma_i^\delta(\tau_i) = \mathbb{E}\Big[(1-\delta)\sum_{t=1}^{\infty} \delta^{t-1} u_i^t\Big]$.

Figure 3 displays the base game that is infinitely repeated. The first or row player is the incumbent party which must decide between proposing compensation or not. The second or column player is the challenger party facing the same decision. If they both choose not to compensate, the incumbent earns a payoff of $p\psi$ or the probability that they get the payoff of winning. The challenger would also earn a payoff associated with the probability that they win office, or $(1-p)\psi$. However, if the incumbent proposes to compensate the losers while the challenger does not, the incumbent wins the election with certainty (ψ) while the challenger earns a payoff of 0. If the challenger instead proposes compensation while the incumbent does not, they win the election with certainty and earn the same payoff from winning office (ψ) while the incumbent earns 0. Lastly, if both players compensate then the incumbent has the same probability of winning office as before (p) but now will have to pay the cost of compensation c if they win. The challenger's payoff would be $(1-p)(\psi - c)$.

The base game is a prisoner's dilemma when $0 < c < \psi$ and $0 < p < 1$. Each party has an incentive to propose compensation regardless of what the other party does. If one party is not proposing compensation, the other party would win the election with certainty. And to avoid losing the election with certainty, each party has an incentive to propose compensation to at least compete for office with some probability. By iterated elimination of dominated strategies ($\neg C$), the only Nash equilibrium of the base game is (C, C).

		Ch	
		$\neg C$	C
I	$\neg C$	$p\psi,\ (1-p)\psi$	$0,\ \psi$
	C	$\psi,\ 0$	$p(\psi - c),\ (1-p)(\psi - c)$

Figure 4: PD when $0 < c < \psi$ and $0 < p < 1$

However, in the infinitely repeated base game it can be rational for the players to not propose compensation $(\neg C, \neg C)$. If each player adopts a punishment strategy such that it is not profitable for the other player to deviate from $(\neg C, \neg C)$, then it can be an equilibrium of the game Γ_δ. Let τ^{GT} represent a pair of grim trigger strategies, $(\tau_I^{GT}, \tau_{Ch}^{GT})$, that instructs the players to $\neg C$ in the first stage and all subsequent stages of the game unless the other player C. Once a player C's, the other player will punish them by playing $\neg C$ and holding them to the minmax value (see Appendix).

τ^{GT} is an equilibrium if and only if for all players $i \in N$ the payoff from the strategy pair is greater than or equal to the payoff player i could get from playing any other strategy while player $-i$ still plays τ_{-i}^{GT} (Maschler, Solan, and Zamir 2020, 552):

$$\gamma_i^\delta(\tau^{GT}) \geq \gamma_i^\delta(\tau_i, \tau_{-i}^{GT}).$$

The best alternative strategy a player can consider is C for all stages $t \in \infty$. Since the other player will play $\neg C$ in the first stage per the grim trigger strategy, player i can earn a larger payoff that stage by compensating. In all other stages, it would be best to compensate since the other player with the grim trigger strategy will also be playing C. Thus, for the strategy pair τ^{GT} to be an equilibrium it must be greater than or equal to the strategy pair of playing all C:

$$\gamma_i^\delta\Big((p\psi, (1-p)\psi)_{t=1\to\infty}\Big) \geq \gamma_i^\delta\Big((\psi, \psi)_{t=1} + \Big(p(\psi - c), (1-p)(\psi - c)_{t=2\to\infty})\Big)$$

Solving for δ (see Appendix), the equilibrium condition for not compensating in every stage of the game is:

$$(\delta_I^*, \delta_{Ch}^*) \geq \left(\frac{\psi - p\psi}{\psi - p(\psi - c)}, \frac{\psi - (1-p)\psi}{\psi - (1-p)(\psi - c)} \right) \tag{1}$$

Note that the base game specified $0 < c < \psi$ and $0 < p < 1$ as requirements for the model to be a prisoner's dilemma. The comparative statics for inequality (1) are graphed in Figure 4 by holding the parameters constant at hypothetical values and varying each at a time. The first (left most) comparative static implies that as the cost of compensation increases, inequality (1) becomes easier to satisfy. Intuitively, this implication means that parties will want to avoid proposing compensation more as it becomes more costly. The second (middle) comparative static states that as the payoff from winning office increases, inequality (1) becomes harder to hold. Intuitively, the bigger the payoff associated with winning office is the more incentive parties have to shirk collusion to try to win with certainty. The last (right most) comparative static displayed implies that as the probability of the incumbent winning the election increases, inequality (1) becomes easier to hold for the incumbent party but harder to hold for the challengers. One way to interpret this comparative static is that when parties have asymmetric chances of winning office, they have little incentive to collude. The equilibrium associated with inequality (1) requires players to be able to punish each other to ensure that deviation from the strategy is not profitable. Parties that have high chances of winning are difficult to punish while parties with low chances of winning have difficulty punishing. The last implication from the model is given by inequality (1) itself, namely that a higher δ parameter will make the inequality (1) easier to hold. This is sometimes interpreted as "patience," where players value future outcomes greatly and thus benefit more from long-term collusion.

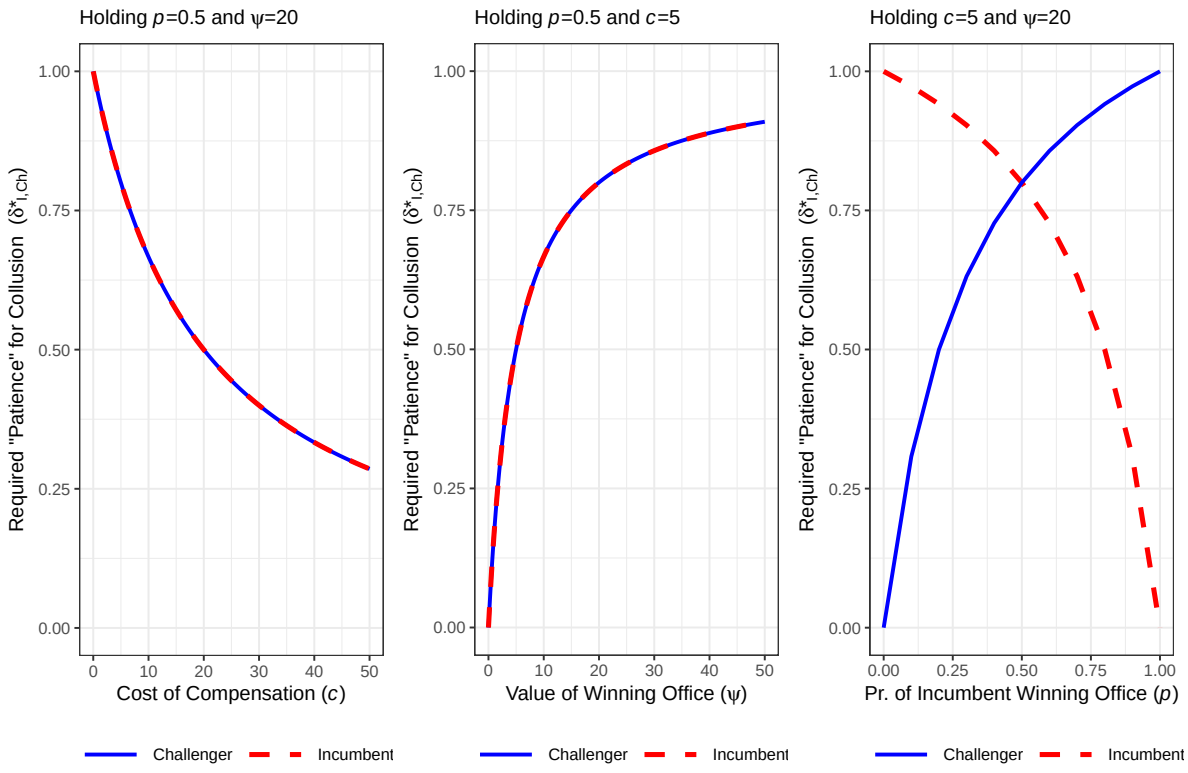

Figure 5: The potential for collusion is greater when the required "patience" for colluding (eq. 1) is lower. From left to right, these graphs imply that the potential for collusion increases in the cost of compensation, decreases in the value of winning office, and increases in the joint probability of the incumbent and challenger winning office.

It is important to note that punishment strategies discussed above ensure that there are many equilibria possible in the infinitely repeated game (i.e., Folk Theorem, see Appendix). While there do exist learning models that try to predict which equilibria players will converge to, I have not created one. Rather, because the equilibrium of interest is $(\neg C, \neg C$ and is Pareto dominant, it is reasonable to expect that players will choose the Pareto dominant equilibrium.

Implications

I will focus on what I consider to be the two main implications of my argument. If I am right, then free trade and import competition will induce compensation when the cooperative equilibrium described above is unattainable. Cooperation or tacit collusion is more difficult

to attain when the cost of compensation is low (c), the value of winning office (ψ) is relatively high, and the probability of the incumbent winning the election (p) is disproportionate to the challenger's probability of winning the election. I will term the combination of these three parameters the "political conditions" for tacit collusion (or just collusion). Intuitively, the lower the cost of compensation the less elites will care to avoid paying it. The greater that a party values winning office, the more that the impending election dominates valuations of distant elections. And if one party has a outsized advantage in an election, they will have fewer incentives to collude because it is unlikely that the challengers will win office one day and punish them. On the other hand, a party trying to overcome the odds will place less weight on future elections and will compensate more now. Thus, when the political conditions are less favorable for collusion I predict that import competition will be associated with more compensation. This is a version of the classic *compensation hypothesis*:

Compensation Hypothesis : Import competition will increase compensation when the political conditions are not favorable for collusion.

However, if the political conditions are favorable for collusion then compensation should be unresponsive to import competition. In this case, the cost of compensation would be high (c), the value of winning office (ψ) relatively low, and the probability of the incumbent winning the election (p) would be relatively equal to the challenger's probability of winning the election. When the cost of compensation is high, elites will have a greater incentive to collue in order to avoid paying it. A relatively low value placed on winning office means that they will have a smaller incentive to defect in the current period from collusion. And when the incumbent's probability of winning the election is relatively equal to the challenger's, they have a relatively equal chance of winning office and punishing each other in the next election for defecting from collusion. Thus, I predict that import competion will it increase

compensation when these political conditions are favorable for collusion. I call this the *collusion hypothesis*:

Collusion Hypothesis : Import penetration should be unrelated to compensation when the political conditions are favorable for collusion.

Research Design and Results

To assess these two hypotheses I collected observational data to measure import competition, compensation, and the political conditions. I first discuss each measurement before describing the panel models I used to test the expecations.

To measure import competition I follow Bernard, Jensen, and Schott (2006) in using low-wage import penetration. They define low-wage import penetration as the product of the proportion of imports from low-wage countries times aggregate import penetration:

$$\frac{I_{LW}}{I_T} \times \frac{I_T}{(GDP + I_T - E_T)} = \frac{I_{LW}}{(GDP + I_T - E_T)}. \tag{2}$$

To identify low-wage countries, Bernard, Jensen, and Schott (2006) compare every country's per capita GDP to the U.S.'s per capita GDP. If a country's GDP per capita is less than 5% of the U.S.'s in a particular year, they code the country as low-wage. They argue that this is a more precise way to capture the comparative advantaged trade in labor-intensive goods that is responsible for import competition in the West. I collect trade data from the OECD (OECD 2024) and modify this identification slightly to label a country as low-wage if in the first year of the sample (1990) the country's GDP per capita is less than 5% of the U.S.'s. I do this because there are many countries that exceed this threshold in later years despite being low-wage for much of the sample period and still likely producing labor-intensive goods. This includes China, which exceeds 5% of the U.S.'s GDP per capita in 2007. Excluding

Table 2: Low-Wage Countries

Afghanistan	Gambia, The	Pakistan
Albania	Ghana	Papua New Guinea
Angola	Guinea	Philippines
Armenia	Guinea-Bissau	Rwanda
Bangladesh	Haiti	Sao Tome and Principe
Benin	Honduras	Senegal
Bhutan	India	Sierra Leone
Bolivia	Indonesia	Solomon Islands
Burkina Faso	Kenya	South Sudan
Burundi	Kiribati	Sri Lanka
Cabo Verde	Kyrgyz Republic	Sudan
Cambodia	Lao PDR	Tajikistan
Cameroon	Lesotho	Tanzania
Central African Republic	Liberia	Timor-Leste
Chad	Madagascar	Togo
China	Malawi	Turkmenistan
Comoros	Mali	Uganda
Congo, Dem. Rep.	Mauritania	Uzbekistan
Congo, Rep.	Moldova	Vanuatu
Cote d'Ivoire	Mozambique	Viet Nam
Djibouti	Myanmar	West Bank and Gaza
Egypt, Arab Rep.	Nepal	Yemen, Rep.
Equatorial Guinea	Nicaragua	Zambia
Eritrea	Niger	Zimbabwe
Ethiopia	Nigeria	

China and others induces unnecessary heterogeneity without a comparable improvement on theoretical measurement. Table 2 lists the countries identified as low-wage for the period 1990 to 2019 while Figure 6 shows the average level of low-wage import penetration for all countries.

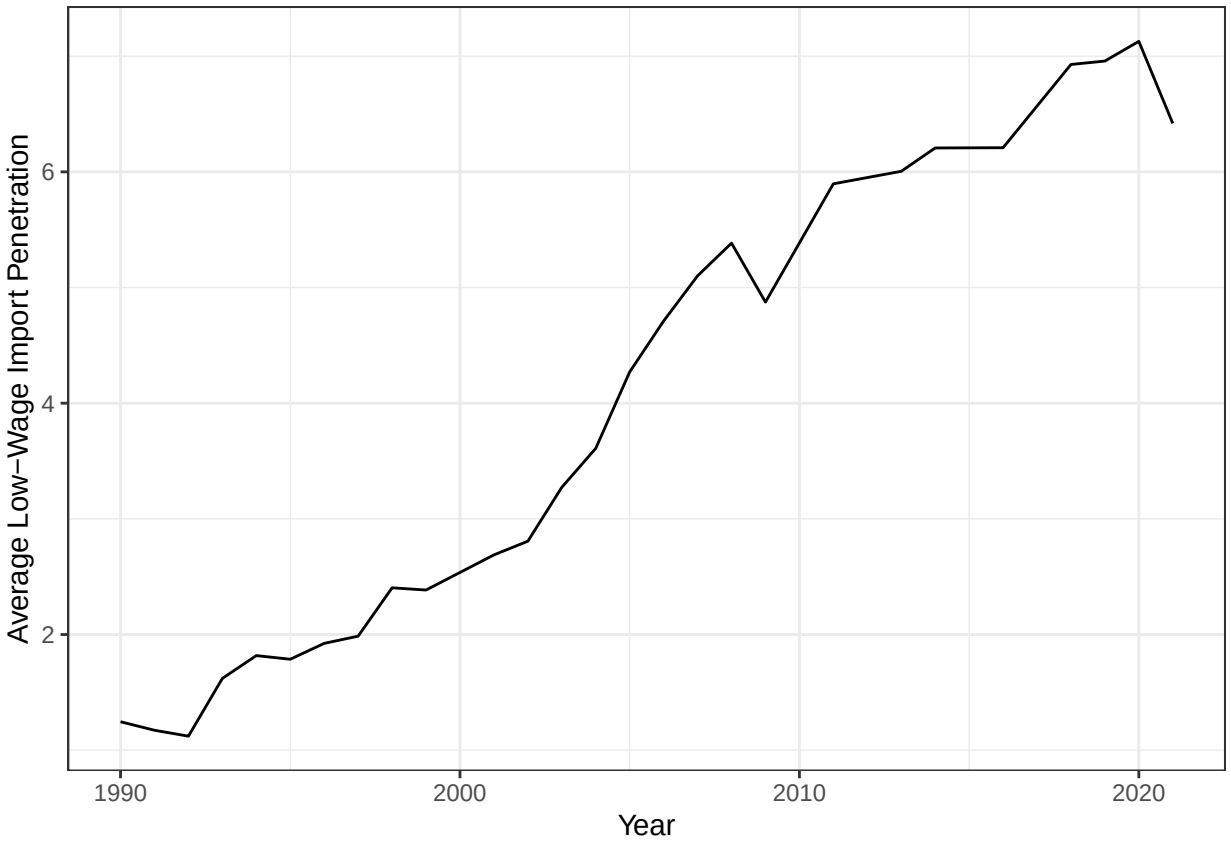

Figure 6: Average low-wage import penetration across all countries.

Data on total public social spending as a percent of GDP comes from the OECD as well (OECD 2023). As described in the section on defining compensation failure, Huber and Stevenson (2001) advocate for this measure of spending as the best indicator of generosity or compensation in a country while the measure is consistent with Rodrik's (2018) discussion of compensation likely being in the form of broad social safety nets. Figure 7 shows the average level of total spending for OECD countries.

Figure 7: Average total spending across OECD countries.

To measure the political conditions described above, I collect data on a country's primary balances as a percentage of GDP (IMF 2021), the cumulative proportion of single party majority governments (Hellstrom et al. 2024), and the seat shares of these governments in their country's lower house (Hellstrom et al. 2024).

Primary balances measure the budget surplus or deficit that country's have every fiscal year. This is a plausible measure for the cost of compensation because the main cost behind compensation is the raising of inefficient taxes to pay it. If budget surpluses are high, this cost is relatively low. When budget deficits occur, the cost of raising additional revenue to pay for compensation is high (also known as a high marginal cost of public funds).

To measure the value of winning office, in every year I measure how many governments have been single party majority (SPM) governments out of the total number of governments that have existed in the data (going back to WWII). The logic behind this measure is that

holding office is more valuable for a party when they have more power or control over how to use that office. If there are several parties in the cabinet it may be more difficult to get things done and any rents from holding office may be divided between the parties. Thus a higher proportion of SPM governments in a country indicates that winning office may be more valuable.

To measure the probability of winning office for the incumbent, I evaluate the combined seat share that incumbent parties have in the lower house. The intuition here is that when the parties in government have more seat share in the lower house, they may use this as the best guess of how they will perform in the next election and infer that they have a good chance of winning office again. Seat share in the lower house is a better measure than vote share for parties in office because countries have various rules translating votes to seats and sometimes more than one round of an election.

To evaluate my hypotheses, I need to assess the marginal effect of import competition on compensation when the political conditions are favorable for collusion and when they are not. Thus, I will run an interaction model where the effect of import penetration is conditional on the measures I use for political conditions. But because increases in the measures described above do not necessarily correspond to increases in the possibility of collusion, I reverse the sign of some measures and min-max normalize each of them to be on the same scale. Specifically, I reverse the sign for primary balances to make an increase in the measure correspond to a greater deficit instead of a greater surplus. I also reverse the sign for the proportion of SPM governments to make an increase in this measure correspond to a relatively smaller value of winning office than greater. Cabinet seat share is already in line with the theoretical effect of the probability of winning for the incumbent, where a greater probability indicates a higher possibility of collusion for the collusion. However, I have not currently taken into account how this probability needs to be proportional to the challenger's probability of winning as well. Thus, an increase in primary balances, proportion of SPM governments, and cabinet seat share in the lower house all should correspond to more

favorable political conditions for collusion. Histograms for the three political variables are shown in Figure 8.

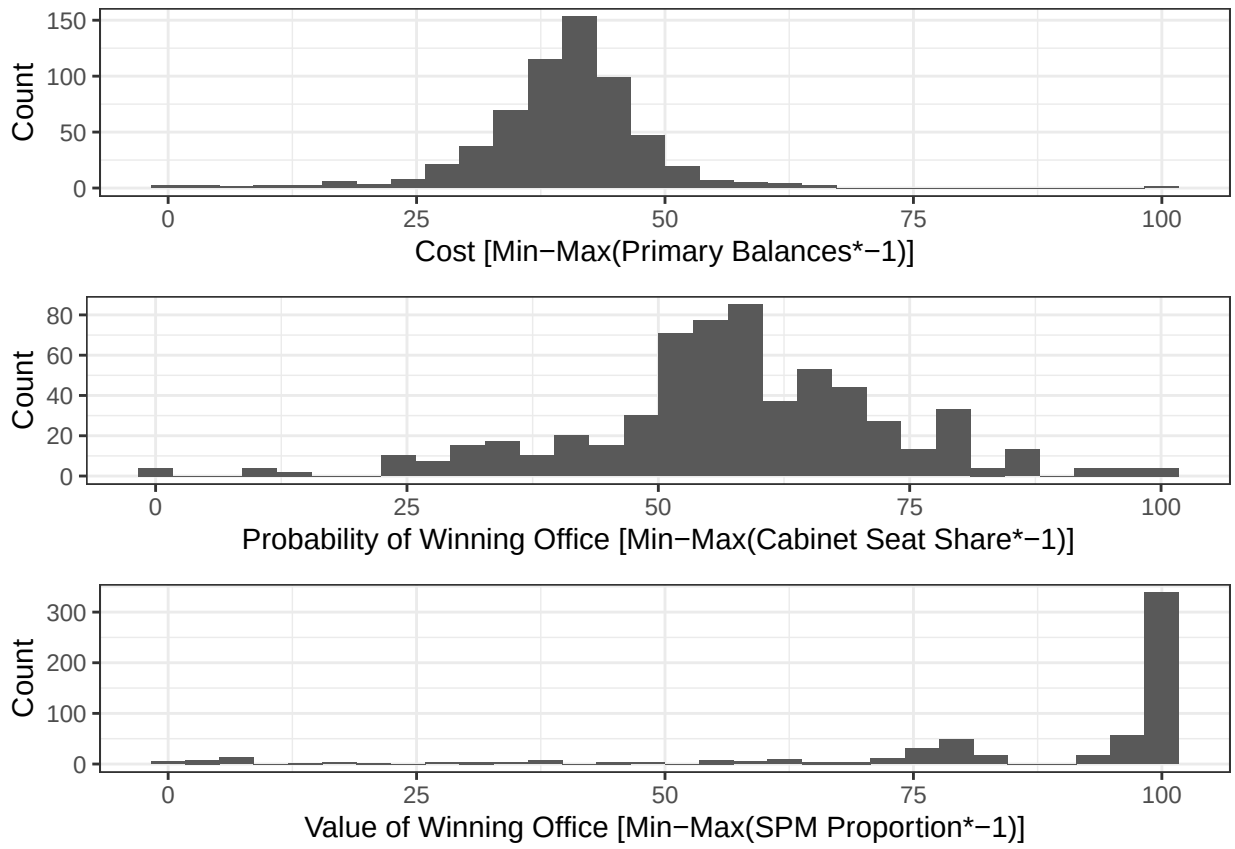

Figure 8: Histograms of the measures of political conditions.

I then run the following model:

$$\begin{aligned}\text{Total Spending}_{it} = {} & \alpha\text{Total Spending}_{it-1} + \beta_1\text{Import Penetration}_{it-1} + \beta_2\text{Primary Balances}_{it-1} \\ & + \beta_3\text{Cabinet Seat Share}_{it-1} + \beta_4\text{Proportion of SPM Cabinets}_{it-1} \\ & + \beta_5\text{Import Penetration}_{it-1} \times \text{Primary Balances}_{it-1} \\ & + \beta_6\text{Import Penetration}_{it-1} \times \text{Cabinet Seat Share}_{it-1} \\ & + \beta_7\text{Import Penetration}_{it-1} \times \text{Proportion of SPM Cabinets}_{it-1} \\ & + \gamma_i + \varepsilon_{it}\end{aligned}$$

After running the above model, I extract the estimated coefficients and plug them into the formula for the marginal effect of import penetration and the variance of the marginal effect of import penetration (see Clark and Golder 2023). More specifically, to evaluate my hypotheses I assess the marginal effect when all three of the moderating variables are at value 0, then at value 1, and so on. I do the same thing for the variance of the marginal effect and plot the estimated slope and standard error. The results of this process are shown in Figure 9 while the full results are shown in Table 3. The left hand graph includes only unit fixed effects while the right hand graph includes both unit and year fixed effects. I also included controls for the proportion of parties in the cabinet that were right-wing or left-wing (Lehmann et al. 2024).

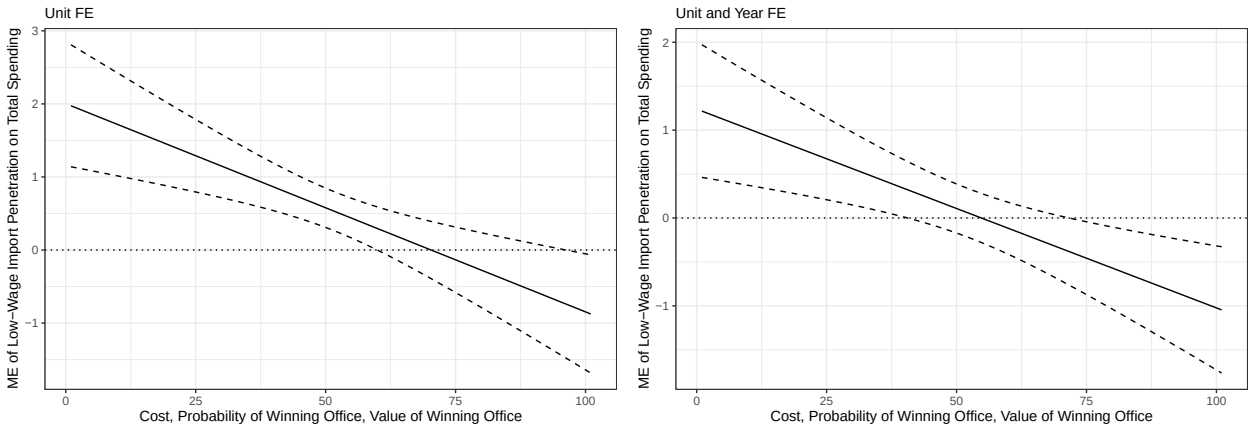

Figure 9: Estimated marginal effects of import penetration on total spending plugging in the same values for cost, probability of winning office, and value of winning office. As these values increase (independently) the marginal effect of import penetration goes down.

I interpret these results as evidence for both the compensation and collusion hypotheses. When the measures of the political conditions that make collusion possible are weak, the marginal effect of import penetration on total spending is positive. When the measures of the political conditions are strong, collusion becomes more theoretically possible and the marginal effect of import penetration is null or sometimes negative.

Table 3: The Marginal Effect of Import Penetration (% of Consumption) on Total Public Social Spending (% of GDP)

	Dependent variable:	
	Total Spending$_{it}$	
	(1)	(2)
Total Spending$_{it-1}$	0.715***	0.724***
	(0.028)	(0.027)
Import Penetration$_{it-1}$	1.974***	1.217***
	(0.425)	(0.384)
Primary Balances$_{it-1}$	0.073***	0.065***
	(0.018)	(0.016)
Cabinet Seat Share$_{it-1}$	0.013	0.004
	(0.009)	(0.008)
Proportion of SPM Cabinets$_{it-1}$	−0.039*	−0.039**
	(0.021)	(0.018)
Import Penetration$_{it-1}$ × Primary Balances$_{it-1}$	−0.013**	−0.012**
	(0.006)	(0.006)
Import Penetration$_{it-1}$ × Cabinet Seat Share$_{it-1}$	−0.003	−0.002
	(0.003)	(0.003)
Import Penetration$_{it-1}$ × Proportion of SPM Cabinets$_{it-1}$	−0.012***	−0.008***
	(0.003)	(0.002)
Right-Wing Cabinet Parties	−0.009**	−0.007**
	(0.004)	(0.003)
Left-Wing Cabinet Parties	−0.008**	−0.007**
	(0.004)	(0.003)
N=22, T=15-24	N×T=452	N×T=452
Unit FE	Yes	Yes
Year FE	No	Yes
R^2	0.759	0.767
F Statistic	132.156***	130.989***
Note:	*p<0.1; **p<0.05; ***p<0.01	

Appendix

Milner Extension Results

Table 4: Milner Extension Results. LDV omitted for space considerations.

	Dependent variable:			
	nuts2_right_pop_vs	nuts2_left_pop_vs	nuts2_main_left_vs	nuts2_main_right_vs
	(1)	(2)	(3)	(4)
shock_china_ind_L1	42.990***	18.930**	−44.320***	−83.731***
	(15.238)	(7.991)	(12.830)	(19.342)
shock_fdi_in_ind_L1	−2.082	4.537**	−22.808***	5.707
	(2.776)	(2.068)	(3.499)	(3.549)
shock_fgn92_L1	0.306	−9.133	−15.716	24.720*
	(16.747)	(13.089)	(42.240)	(13.016)
shock_robots_mfg_L1	0.311	−4.092	−7.205*	7.406
	(3.545)	(3.259)	(3.683)	(4.919)
rti_region_L1	1.103	2.734	6.977	−0.267
	(3.918)	(2.545)	(5.054)	(4.810)
total_lag	0.493	0.567***	−5.032***	−4.945***
	(0.612)	(0.195)	(0.872)	(0.964)
shock_china_ind_L1:total_lag	−1.767***	−0.882***	1.832***	3.207***
	(0.598)	(0.333)	(0.512)	(0.759)
Constant	0.015	2.514	139.853***	130.024***
	(15.760)	(6.129)	(25.472)	(26.171)
Observations	480	480	480	480
R^2	0.830	0.908	0.841	0.869
Adjusted R^2	0.815	0.900	0.827	0.857
Residual Std. Error (df = 440)	4.701	3.180	5.249	5.677
F Statistic (df = 39; 440)	54.983***	111.462***	59.640***	74.642***
Note:				*p<0.1; **p<0.05; ***p<0.01

Solving for inequality (1)

$$
\begin{aligned}
(1-\delta)\Big(\big(p\psi,(1-p)\psi\big)(1+\delta+...+\delta^{\infty})\Big) &\geq (1-\delta)\Big(\big(\psi,\psi\big)(1) \\
&\quad + \big(p(\psi-c),(1-p)(\psi-c)\big)(\delta+...+\delta^{\infty})\Big) \\
(1-\delta)\Big(\big(\frac{p\psi}{1-\delta},\frac{(1-p)\psi}{1-\delta}\big)\Big) &\geq (1-\delta)\Big(\big(\psi,\psi\big)+\big(\frac{\delta p(\psi-c)}{1-\delta},\frac{\delta(1-p)(\psi-c)}{1-\delta}\big)\Big) \\
\big(p\psi,(1-p)\psi\big) &\geq (1-\delta)\Big(\psi+\frac{\delta p(\psi-c)}{1-\delta},\psi+\frac{\delta(1-p)(\psi-c)}{1-\delta}\Big) \\
\big(p\psi,(1-p)\psi\big) &\geq \big(\psi-\psi\delta+\delta p(\psi-c),\psi-\psi\delta+\delta(1-p)(\psi-c)\big) \\
\big(\psi\delta-\delta p(\psi-c),\psi\delta-\delta(1-p)(\psi-c)\big) &\geq \big(\psi-p\psi,\psi-(1-p)\psi\big) \\
\Big(\delta\big(\psi-p(\psi-c)\big),\delta\big(\psi-(1-p)(\psi-c)\big)\Big) &\geq \big(\psi-p\psi,\psi-(1-p)\psi\big) \\
(\delta_I^*,\delta_{Ch}^*) &\geq \Big(\frac{\psi-p\psi}{\psi-p(\psi-c)},\frac{\psi-(1-p)\psi}{\psi-(1-p)(\psi-c)}\Big)
\end{aligned}
$$

Folk Theorem

Denote the minmax value of player i as $\bar{v}_i$, where $\bar{v}_i = \min_{s_{-i}\in S_{-i}}\max_{s_i\in S_i}U_i(s_i,s_{-i})$.[1] In words, the minmax value is the result of player $-i$ choosing the strategy (s_{-i}) that gives player i the smallest of their best response payoffs $(\max_{s_i\in S_i}U_i(s_i,s_{-i}))$.

$$
\begin{aligned}
\bar{v}_I &= \min_{s_{Ch}\in S_{Ch}}\max_{s_I\in S_I}U_I(s_I,s_{Ch}) \\
&= \min_{s_{Ch}\in S_{Ch}}\{\psi,p(\psi-c)\} \\
&= p(\psi-c)
\end{aligned}
$$

[1] (Maschler, Solan, and Zamir 2020, 112)

$$\begin{aligned}\bar{v}_{Ch} &= \min_{s_I \in S_I} \max_{s_{Ch} \in S_{Ch}} U_{Ch}(s_{Ch}, s_I) \\ &= \min_{s_I \in S_I} \{\psi, (1-p)(\psi - c)\} \\ &= (1-p)(\psi - c)\end{aligned}$$

Denote a payoff as x and the set of players as N. The set of "individually rational" payoffs is denoted as V, where $V = \{x_i \geq \bar{v}_i \ \forall \ i \in N\}$.[2] V is simply the list of each individual's payoff that is greater than or equal to their minmax value. For this game, $V = \{p(\psi), \psi_I, p(\psi - c), (1-p)\psi, \psi_{Ch}, (1-p)(\psi - c)\}$.

Denote the set of feasible payoffs as F, where $F = \text{conv}\{U(s), s \in S\}$.[3] It is the smallest vector of numbers that contains the pair of payoffs for each strategy in the game. In this game, it is simply the list of payoff pairs for each action: $F = \{\Big(p(\psi, (1-p)\psi)\Big), \Big(0, \psi\Big), \Big(\psi, 0\Big), \Big(p(\psi - c), (1-p)(\psi - c)\Big)\}$.

Thus, the set of individually rational and feasible payoffs is $F \cap V$, also known as W (see Figure 5).[4]

[2](Maschler, Solan, and Zamir 2020, 538)
[3](Maschler, Solan, and Zamir 2020, 538)
[4](Maschler, Solan, and Zamir 2020, 548)

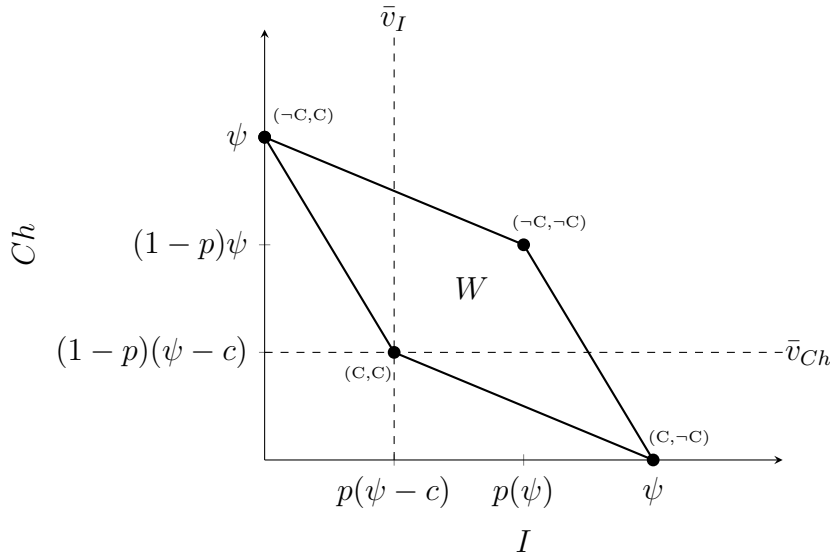

Figure 10: W is the set of payoffs that can be approximated in equilibrium via the Folk Theorem.

Bibliography

Acemoglu, Daron, David Autor, David Dorn, Gordon H. Hanson, and Brendan Price. 2016. "Import Competition and the Great US Employment Sag of the 2000s." *Journal of Labor Economics*.

Autor, David, David Dorn, and Gordon Hanson. 2013. "The China Syndrome: Local Labor Market Effects of Import Competition in the United States." *American Economic Review* 103 (6): 2121–68. https://doi.org/10.1257/aer.103.6.2121.

———. 2016. "The China Shock: Learning from Labor-Market Adjustment to Large Changes in Trade." *Annual Review of Economics*. https://doi.org/10.1146/annurev-economics-080315-015041.

Bernard, Andrew B., J. Bradford Jensen, and Peter K. Schott. 2006. "Survival of the Best Fit: Exposure to Low-Wage Countries and the (Uneven) Growth of u.s. Manufacturing Plants." *Journal of International Economics*.

Causa, Orsetta, James Browne, and Anna Vindics. 2019. "Income Redistribution Across

OECD Countries," no. 23. https://doi.org/https://doi.org/https://doi.org/10.1787/3b63e61c-en.

Clark, William Roberts, and Matt Golder. 2023. *Interaction Models: Specification and Interpretation*. Cambridge University Press.

Colantone, Italo, and Piero Stanig. 2018. "The Trade Origins of Economic Nationalism: Import Competition and Voting Behavior in Western Europe." *American Journal of Political Science*.

Feenstra, Robert C., and Tracy R. Lewis. 1994. "Trade Adjustment Assistance and Pareto Gains from Trade." *Journal of International Economics*.

Feenstra, Robert C., and Alan M. Taylor. 2020. *International Economics*. Fifth edition. New York: Worth Publishers, Incorporated.

Frieden, Jeffry. 2019. "The Politics of the Globalization Backlash: Sources and Implications." In *Meeting Globalization's Challenges*, edited by Maurice Obstfeld and Luis Catao. Princeton: Princeton University Press.

Galle, Simon, Andres Rodriguez-Clare, and Moises Yi. 2023. "Slicing the Pie: Quantifying the Aggregate and Distributional Effects of Trade." *Review of Economic Studies*. https://doi.org/https://doi.org/10.1093/restud/rdac020.

Hellstrom, Johan, Torbjorn Bergman, Jonas Lindahl, and Maciej Sychowiec. 2024. "Party Government in Europe Database (PAGED) – Basic Dataset, Version 2024.06." https://repdem.org/index.php/combined-dataset-release-2023/.

Huber, Evelyne, and John D. Stephens. 2001. *Development and Crisis of the Welfare State*. The University of Chicago Press.

IMF. 2021. "Government Primary Balance, Percent of GDP." https://www.imf.org/external/datamapper/pb@FPP/USA/FRA/JPN/GBR/SWE/ESP/ITA/ZAF/IND.

Jensen, J. Bradford, Dennis P. Quinn, and Stephen Weymouth. 2017. "Winners and Losers in International Trade: The Effects on US Presidential Voting." *International Organization*.

Lehmann, Pola, Simon Franzmann, Denise Al-Gaddooa, Tobias Burst, Christoph Ivanusch, Sven Regel, Felicia Riethmuller, Andrea Volkens, Bernhard Webels, and Lisa Zehnter. 2024. "Manifesto Project Dataset (Version 2024a)." Berlin: Wissenschaftszentrum Berlin fur Sozialforschung (WZB) / Gottingen: Institut fur Demokratieforschung (IfDem). https://manifesto-project.wzb.eu/datasets/MPDS2024a.

Lewis-Beck, Michael, and Mary Stegmaier. 2013. "The VP-Function Revisited: A Survey of the Literature on Vote and Popularity Functions After over 40 Years." *Public Choice*.

Margalit, Yotam. 2011. "Costly Jobs: Trade-Related Layoffs, Government Compensation, and Voting in u.s. Elections." *The American Political Science Review*.

Maschler, Michael, Eilon Solan, and Shmuel Zamir. 2020. *Game Theory*. Cambridge University Press.

Menendez, Irene. 2016. "Globalization and Welfare Spending: How Geography and Electoral Institutions Condition Compensation." *International Studies Quarterly*.

Milanović, Branko. 2016. *Global Inequality*. Harvard University Press.

Milner, Helen V. 2021. "Voting for Populism in Europe: Globalization, Technological Change, and the Extreme Right." *Comparative Political Studies* 54 (13): 2286–2320.

Mosley, Layna, and Saika Uno. 2007. "Racing to the Bottomor Climbing to the Top?" *Comparative Political Studies*.

Nannestad, Peter, and Martin Paldam. 1994. "The VP-Function: A Survey of the Literature on Vote and Popularity Functions After 25 Years." *Public Choice*.

OECD. 2023. "Social Expenditure Database (SOCX)." 2023. https://www.oecd.org/social/expenditure.htm.

———. 2024. "Bilateral Trade in Goods by Industry and End-Use (BTDIxE)." https://stats.oecd.org/Index.aspx?DataSetCode=BTDIXE_I4.

Olney, William W. 2013. "A Race to the Bottom? Employment Protection and Foreign Direct Investment." *Journal of International Economics*.

Rodrik, Dani. 1997. *Has Globalization Gone Too Far?* Washington, DC: Institute for

International Economics.

———. 2018. "Populism and the Economics of Globalization." *Journal of International Business Policy* 1 (1): 12–33.