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Firms under Pressure: International Trade and Social Activism*

Claudius Löhnert†

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Abstract

Activists denouncing firms for what they consider unethical conduct (e.g., poor treatment of labor or practices that are harmful to the environment) often pressure firms through consumer boycotts. This paper presents a model of international trade with heterogeneous firms and endogenous campaigns conducted by social activists. Being the target of campaigns damages the reputation of a firm, reducing the perceived quality and therefore sales of its variety. Campaigns require funding by consumers who support the activists' mission. The paper analyzes the effect of such demand-reducing campaigns on firms. It identifies a *feedback effect* of campaigns that increases mark-ups in the presence of social activism, which stems from large firms attracting more campaigns while campaigns also decrease sales. The paper further shows that social activism reduces the elasticity of bilateral trade flows with respect to trade costs.

Keywords: international trade, heterogeneous firms, gravity, consumer boycotts, NGOs, campaigns, social activism.

JEL Classification: F12, F61, L11, L31, O35.

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1. Introduction

Firms in international trade operate under the risk of becoming the targets of social activists ("watchdog" NGOs) if these consider the firms' business practices as "unethical." The larger and more visible a brand, the more likely is the firm to be targeted by NGO campaigns (Hatte & Koenig 2020). Such campaigns may negatively affect a firm's reputation and consequentially its sales, if activists are capable of triggering a consumer boycott. Therefore, the presence of social activism – i.e., the latent risk of attracting demand-reducing NGO campaigns – is a relevant and understudied factor for the optimal strategy of firms.

This paper presents a model of international trade with endogenous campaigns by social activists, which negatively affect final demand. The aim of the paper is to analyze how the presence of reputation-damaging NGO campaigns affects internationally active firms, in particular the prices they set and the determinants of aggregate trade flows.

The model adds elements of social activism to a standard model of international trade. It considers heterogeneous firms under monopolistic competition, each producing a differentiated variety. On each market, there are watchdog NGOs monitoring firms that sell on their local market and proposing campaigns against firms they consider unethical. Running campaigns is costly and requires donations from consumers, who derive warm glow utility from supporting local NGO campaigns. Each consumer trades off warm glow utility from donating in order to fund campaigns against utility from consumption of a homogeneous good. This pins down individual-level campaign support and hence, in the aggregate, total campaign activity. Being the target of campaigns damages the reputation of a firm, reducing the perceived quality (i.e., the marginal utility from consumption) of their variety. Therefore, demand for firms facing many campaigns is lower.

The first main result of the model is that lower demand for products that are targeted by many campaigns *increases* the mark-up charged by firms, because demand becomes less elastic when incorporating social activism. As large firms attract more (demand-reducing) campaigns, any change in the demand for a firm's product is partially offset by an opposite effect of campaigns on demand. The second main result is that if final demand is responsive to social activism, trade flows are less elastic with respect to trade costs. Therefore, compared to a model without an effect of social activism on demand, this model predicts a smaller decline of bilateral trade flows if bilateral trade costs increase. Besides, as a corollary to the analysis of flows of final goods, the paper also presents a gravity equation for the total number of NGO campaigns originating in one country and targeting firms from another country.

While the general structure of the model is similar to Koenig, Krautheim, Löhnert & Verdier (2021), the focus of this paper is on the demand-reducing effect of NGO campaigns and its impact on international trade in final goods. Such an effect of campaigns on demand is absent in Koenig et al. (2021), who focus on the geography of social activism and how it is shaped by international production and trade.

It is an important premise of this paper that social activism is relevant for consumers as well as firms. Relevance for consumers means that consumers are willing to follow activists' calls for consumer boycotts, which implies that these consumers have a preference for goods that are "ethical" (according to some normative standard embodied in their preferences). Such a preference is also assumed by Nike's CEO when, in the aftermath of the anti-sweatshop protests that focused on Nike in 1997, he said: "The Nike product has become synonymous with slave wages, forced overtime and arbitrary abuse. I truly believe that the American consumer does not want to buy products made in abusive conditions" (quoted in Cushman 1998). In fact, there is empirical evidence that consumers prefer ethical goods: For example, Hiscox & Smyth (2011) and Hainmueller, Hiscox & Sequeira (2015) show in field experiments with real purchasing decisions that consumers have a higher willingness to pay for products with labels that indicate "fair" production practices.[1] That this preference can also lead to boycotts of unethical firms is confirmed by cases like the successful boycott of Shell gas stations initiated by Greenpeace in 1995 in order to stop Shell's plans to decommission the oil storage buoy Brent Spar via deep-sea disposal (e.g., Zyglidopoulos 2002).

For firms, the question if social activism is relevant depends on whether reputation-damaging campaigns or consumer boycotts can significantly affect firm outcomes. Compared to the previous year, Nike's profits and even the stock price dropped significantly in 1998 (see Herkenhoff & Krautheim 2020, footnote 7), after activists had voiced extensive public criticism of the working conditions in the company's Indonesian supplier factories. In response to the pressure, the company agreed to improve working conditions and raise minimum wages (O'Rourke 2005; Harrison & Scorse 2010). Such anecdotal evidence is in line with the findings in Couttenier & Hatte (2016), who analyze a panel of 555 firms and show that critical campaigns can negatively affect firms' stock prices. Besides purely financial evidence, the mere fact that firms adapt their production practices to public pressure and make large CSR efforts in order to maintain a positive reputation shows the relevance of consumer perception – and hence, reputation-damaging campaigns – for firms.[2]

[1] There are also surveys that find a preference for ethical goods, e.g. Loureiro & Lotade (2005) or those cited in O'Rourke (2005). However, without real purchasing decisions such findings may be attributed to an intention-behavior gap, whereas field experiments like Hainmueller et al. (2015) are immune to such critique.

[2] Besides the aforementioned examples of Shell and Nike, there are many more examples where (the threat of) calls for consumer boycotts or other reputation-damaging campaigns forced firms to accede to activists' demands. In 1990, after a two-year campaign and calls for consumer boycotts by the Earth Island Institute, the tuna industry agreed to stop buying dolphin-unsafe tuna (Putnam 1993). In 2002, the US retailer of paper and office supplies Staples gave in to activist pressure requesting it to reduce its sales of paper made from endangered forests and to increase its sales of recycled paper (O'Rourke 2005). In 2013, the Rana Plaza garment factory in Dhaka, Bangladesh, collapsed due to violations of building safety standards,

The second premise of the model is that social activism is inherently domestic. Using a rich data set that encompasses more than 100 000 campaigns, Koenig et al. (2021) show that in 74 % of campaigns either the targeted firm or action (or both) is located in the same country as the NGO. This is in line with the notion put forward in the following quote by a former CEO of Greenpeace Belgium, who said that NGOs are "always trying to find companies whose brands resonnate [sic] to people's ears and even 'hearts'" (quoted according to Hatte & Koenig 2020, p. 149). In this paper, social activism being domestic is reflected in two ways: First, NGOs propose campaigns targeting firms that sell on the activists' domestic market. Second, consumers donate to NGOs/campaigns targeted at firms that are known to them: They donate to local NGOs, supporting campaigns that target domestically active firms and therefore suppliers of products they know from their personal consumption basket.

In the model, consumers' preference to support campaigns concerned with producers of varieties that are well-known to them is embedded in their incentive for donating to campaigns: Consumers receive warm glow utility for each campaign they fund. The larger the domestic sales volume of the firm targeted by a campaign, the larger is the warm glow the consumer draws from funding that campaign. Each consumer decides on the number of campaigns targeting a given firm he or she wants to support. Donating to several campaigns targeting the same firm gives the consumer positive but diminishing amounts of warm glow utility. At the same time, each campaign requires a constant amount of donations. This constant price per campaign combined with the positive but decreasing warm glow utility from funding determines the consumer–firm-level number of campaigns, which is highest for domestic high-productivity firms, as these sell the largest quantities.

The country-wide aggregate number of campaigns targeting the producer of a given variety influences the utility consumers draw from consumption of that variety. Consumers interpret the aggregate level of campaigns targeting a firm as a signal for the quality of the firm's product: The more campaigns a producer is facing, the lower is the marginal utility of consuming its variety. As a result, campaigns work like a negative demand shifter, i.e., demand for a variety is lower the higher the total number of campaigns targeting its producer.

In the model, the strength of the effect that campaigns have on demand – and therefore, in more general terms, the strength of social activism – is governed by a parameter ($\eta \geq 0$) in the utility function. If this parameter is set to zero, firms are unaffected by NGO

killing at least 1 132 people (see, e.g., International Labour Organization 2017). The collapse received world-wide attention by the media as well as social activists, resulting in many firms whose brands were produced in Rana Plaza signing the "Accord on Fire and Building Safety in Bangladesh", a binding agreement supposed to prevent future accidents. The incident resulted in a substantial relative decrease of textile imports from Bangladesh to those countries whose bands were produced in the Rana Plaza building (Koenig & Poncet 2019). Herkenhoff & Krautheim (2020) provide further examples of consumer boycotts targeting firms in many different industries.

campaigns, making the model collapse to a no-activism benchmark. This feature enables a very transparent analysis of the effects of social activism by comparing outcomes with $\eta > 0$ (effective social activism) to outcomes with $\eta = 0$ (no effect of social activism). In the latter no-activism case, demand for differentiated varieties in the model becomes identical to the setup of Koenig et al. (2021), where an effect of campaigns on demand is also absent.

The simultaneity of large firms attracting more campaigns but campaigns reducing a firm's demand gives rise to a *feedback effect*, which is central to the functioning of the model. Technically, the feedback effect that stems from the presence of social activism diminishes elasticity of demand. To see where this effect originates, consider a firm increasing its price: On the one hand, a price increase has the standard demand-reducing effect, which decreases sales. On the other hand, however, declining sales imply being targeted by fewer campaigns, which are themselves demand-reducing. Therefore, the feedback loop – where a change in sales affects campaigns, which again affect sales – partially offsets the direct effect a price increase has on demand. As a result of this reduced demand elasticity, firms can charge higher mark-ups in the presence of social activism. Identifying this novel feedback channel and its effect on prices is the first main contribution in this paper.

Despite the nonlinearities introduced by the feedback effect, the model permits solving for the equilibrium price index as well as aggregate profits.[3] For this equilibrium, the paper presents a gravity equation for bilateral trade in final goods. Here, the parameter governing the strength of social activism (η) affects the effect of bilateral trade costs on trade flows. The second main contribution in this paper is to show that a stronger effect of social activism diminishes the elasticity of aggregate bilateral trade flows with respect to trade costs. Besides, to complement the analysis of trade flows, the paper also presents a gravity equation for NGO campaigns, linking the number of campaigns by NGOs located in one country targeting firms from some other country to country sizes and trade costs.

This paper contributes to the gravity literature (surveyed in Head & Mayer (2014)), by presenting gravity equations for the flow of final goods as well as NGO campaigns between countries. Considering firms in international trade, it is most directly related to Chaney (2008), which guides the modeling of heterogeneous firms in this paper.[4] Melitz & Redding (2014) review the literature on heterogeneous firms and trade.

Direct interactions between firms and activists are the subject of the literature on "private politics." This term has been coined and introduced into the Industrial Organization literature by Baron (2001, 2003), to distinguish such direct – confrontational or cooperative – interactions from cases where activists engage in "public politics" (e.g.,

[3] Due to the feedback effect, income enters demand and sales in a nonlinear way, which complicates solving for aggregate profits.

[4] However, to keep the model tractable despite the complexities that arise from incorporating social activism, it is assumed that firms incur only variable but not fixed costs.

by lobbying for regulation). Among the central contributions to this literature are Innes (2006), Baron & Diermeier (2007), Baron (2012), Lyon & Salant (2013), Baron (2016), Egorov & Harstad (2017) and Daubanes & Rochet (2019).

In this paper, being the target of NGO campaigns has the effect of a negative quality shifter. Therefore, this paper is technically also related to a literature in International Trade where consumers have a preference for quality. Among the contributions where quality enters preferences comparably to this paper are Hallak (2006), Baldwin & Harrigan (2011), Crozet, Head & Mayer (2012), Kugler & Verhoogen (2012), Amiti & Khandelwal (2013), Fan, Li & Yeaple (2015) and Flach & Unger (2022). The framing, however, differs: While quality in these papers is a parameter that increases utility from consumption of a good, this paper features a parameter for negative quality (campaigns).

This paper belongs to a strand of literature that introduces elements of social activism into models of international trade. Aldashev & Verdier (2009) model the competition for donations among horizontally differentiated NGOs. Aldashev, Limardi & Verdier (2015) analyze how NGO pressure interacts with industry structure in a model with linear-quadratic preferences and endogenous mark-ups. Krautheim & Verdier (2016) present a model of offshoring with endogenous NGO emergence, in which NGOs monitor offshoring firms and may trigger a consumer boycott. Herkenhoff & Krautheim (2020) consider a property rights model of the international organization of production, where suppliers can choose a cost-saving unethical technology that may result in a consumer boycott. Most directly related to this paper is Koenig et al. (2021), which also starts from the observation that NGO activity is inherently domestic. The objective of Koenig et al. (2021), however, is to rationalize how NGO activity is internationalized through international sourcing and trade. To this end, it models firms in international trade who globally source their inputs and *value chain campaigns* that target final goods producers for infringements by their suppliers. While the goal of Koenig et al. (2021) is to explain the geographical patterns of social activism, this paper takes a complementary perspective and analyzes how firms in international trade are affected by social activism.

The remainder of the paper is structured as follows. Section 2 presents a benchmark model, which does not yet include elements of social activism. In section 3, the benchmark model is extended to incorporate NGOs running endogenously funded campaigns that have a reputation-damaging effect on firms. Section 4 concludes.

2. Benchmark Model

This section introduces the benchmark model: a simple model of international trade without social activism. By outlining the general structure of the model's economy, the benchmark model sets the stage for the main model of international trade and social activism in section 3. Besides, presenting the benchmark model upfront in this section allows for comparisons to the outcomes of the main model later on. To facilitate these comparisons, I will use a hat on objects that relate to the benchmark model, whereas the corresponding main model equivalent in section 3 will bear no hat (e.g., $\hat{x}$ in the benchmark model corresponds to x in the main model).

2.1. Setup

Consider a world economy that consists of N countries, where L_i denotes the labor endowment of country i. In each country, there are two sectors producing a homogeneous consumption good h and a differentiated product, respectively. The general structure of the economy builds on Chaney (2008), with one differentiated goods sector but without fixed costs of production. The absence of fixed costs improves tractability of the model in section 3, but limits the gravity analysis in section 3.5 to intensive margin effects of trade costs and social activism.

The labor productivity in the homogeneous goods sector in country i is exogenously given by $w_i > 1$. Therefore, denoting the number of workers allocated to this sector in country i as L_i^h, total output of good h in country i is $w_i L_i^h$. Using the homogeneous good as numéraire and with frictionless mobility of labor across sectors, this pins down the wage in country i to equal w_i. Good h is freely traded and in line with the literature (Chaney 2008) only equilibria where it is produced in all countries are considered.

In the differentiated goods sector in country i, there is a mass of firms proportional to the effective labor endowment expressed in efficiency units in terms of the numéraire, $w_i L_i$. Firms in this sector operate under monopolistic competition: Each firm produces a differentiated variety $\omega \in \Omega$ by transforming labor – the only factor of production – into final output with its firm-specific productivity φ. Productivities are distributed according to a Pareto distribution with density

$$g_\varphi(\varphi) = \gamma\ \varphi^{-\gamma-1}, \qquad \gamma > 0. \tag{1}$$

For a firm in country i with productivity φ, the costs to deliver q units to country j are

$$c_{ij}(q) = \frac{w_i\ \tau_{ij}}{\varphi}\ q, \tag{2}$$

where the first subscript refers to the exporting country and the second subscript refers to the destination market – usually referred to as countries i and j, respectively. The same convention is used throughout the remainder of the paper. Bilateral iceberg trade costs are given by τ_{ij}. As in Chaney (2008), there is a global mutual fund that is owned by consumers. The number of shares each consumer owns is equal to the consumer's productivity in sector h. The fund owns all firms, collects aggregate world profits and redistributes them to its shareholders, where π represents dividends per share.

Utility of the representative agent in country j is given by

$$\hat{U}_j = \left[\hat{q}_j(h)\right]^{1-\mu} \left[\int_{\Omega_j} \hat{q}_j(\omega)^{\frac{\sigma-1}{\sigma}} \,\mathrm{d}\omega\right]^{\frac{\sigma}{\sigma-1}\mu}, \tag{3}$$

where $0 < \mu < 1, \sigma > 1$ and Ω_j is the set of varieties ω available in country j (including domestic as well as imported varieties). The quantities $\hat{q}_j(h)$ and $\hat{q}_j(\omega)$ denote the consumption levels of the homogeneous good and variety ω, respectively.

2.2. Solving the Model

Aggregate income in country j ($\hat{Y}_j$) consists of labor income and dividends from the global fund:

$$\hat{Y}_j = w_j L_j (1 + \hat{\pi}).$$

Consumers maximize utility subject to their budget constraint. The Cobb-Douglas structure of equation (3) implies that a fraction μ of aggregate income is allocated to consumption of the differentiated good. Specifically, demand for variety ω, exported from country i and consumed in country j, is (see appendix C.1)

$$\hat{q}_{ij}(\omega) = \hat{p}_{ij}(\omega)^{-\sigma} \; \hat{P}_j^{\sigma-1} \; \mu \hat{Y}_j, \tag{4}$$

$$\text{where} \qquad \hat{P}_j^{1-\sigma} = \sum_{n=1}^{N} \int_{\Omega_{nj}} \hat{p}_{nj}(\omega)^{1-\sigma} \,\mathrm{d}\omega \tag{5}$$

represents the price index in country j (raised to the power of $1-\sigma$) and Ω_{nj} is the set of varieties exported from country n to market j. The price the producer of variety ω located in country i charges a consumer located in country j is $p_{ij}(\omega)$.

The producer of variety ω generates revenue of $\hat{x}_{ij}(\omega) = \hat{p}_{ij}(\omega)\,\hat{q}_{ij}(\omega)$ on market j. Taking into account its cost function and demand (equations (2) and (4)), the firm sets its price $\hat{p}_{ij}(\omega)$ by maximizing its profits from serving that market: $\hat{\pi}_{ij}(\omega) = \hat{x}_{ij}(\omega) - \frac{w_i \tau_{ij}}{\varphi} \hat{q}_{ij}(\omega)$. In order to generalize the approach, which will allow a closer link to the main model in section 3, let $\hat{\rho} \equiv \frac{\sigma-1}{\sigma}$. This makes $0 < \hat{\rho} < 1$ a measure of substitutability, such that $\frac{1}{1-\hat{\rho}}$ reflects elasticity of substitution and (the absolute value of) price elasticity of demand in equation (4). Profit maximization gives rise to the following pricing rule:[5]

$$\hat{p}_{ij}(\varphi) = \hat{\psi} \; \frac{w_i \, \tau_{ij}}{\varphi}, \tag{6}$$

$$\text{where} \qquad \hat{\psi} \equiv \frac{\sigma}{\sigma-1}. \tag{7}$$

[5] As prices charged differ only across productivity levels, prices are from here on expressed as functions of φ instead of functions of ω. Wherever appropriate, the same applies for other equilibrium objects throughout the remainder of the paper (in the main model for equations after equation (21)).

Note that in line with the standard CES prediction, $\hat{\psi}$ – the mark-up over marginal costs – is equal to the inverse of the measure of substitutability $\hat{\rho}$: $\hat{\psi} = \frac{1}{\hat{\rho}}$. See appendix C.2 for details.

Using the pricing rule from equation (6), firm-level sales and profits are given by

$$\hat{x}_{ij}(\varphi) = \Big(\hat{\psi}\ \frac{w_i\ \tau_{ij}}{\varphi}\Big)^{-\frac{1}{\hat{\psi}-1}}\ \hat{P}_j^{\sigma-1}\ \mu\,\hat{Y}_j \tag{8}$$

$$\text{and} \qquad \hat{\pi}_{ij}(\varphi) = \hat{x}_{ij}(\varphi)\ (1-\hat{\psi}^{-1}). \tag{9}$$

The only endogenous objects yet to be determined are the equilibrium price index $\hat{P}_j$ and dividends per share $\hat{\pi}$. In order to compute the equilibrium price index, plug prices from equation (6) into equation (5), weighting each price according to the productivity density in equation (1). Under assumption C.1 ($\gamma > \sigma - 1$, see appendix C.3), the equilibrium price index is obtained as

$$\hat{P}_j^{\sigma-1} = \hat{\psi}^{\sigma-1}\ \hat{\mathcal{C}}_P\ \hat{\theta}_j, \tag{10}$$

$$\text{where} \qquad \hat{\theta}_j \equiv \Big[\sum_{n=1}^{N} w_n L_n\,(w_n\,\tau_{nj})^{1-\sigma}\Big]^{-1}, \tag{11}$$

$$\text{and} \qquad \hat{\mathcal{C}}_P \equiv \frac{1+\gamma-\sigma}{\gamma}.$$

Finally, using firm-level profits from equation (9) and the price index, dividends per share can be derived to be

$$\hat{\pi} = \Big(\frac{1}{\mu(1-\hat{\psi}^{-1})} - 1\Big)^{-1} = \frac{\mu}{\sigma-\mu}. \tag{12}$$

Using the price index and $\hat{\pi}$, equilibrium firm-level sales from equation (8) can be expressed as

$$\hat{x}_{ij}(\varphi) = \mu(1+\hat{\pi})\ \hat{\mathcal{C}}_P\,\hat{\theta}_j\ \Big(\frac{w_i\ \tau_{ij}}{\varphi}\Big)^{-(\sigma-1)}\ w_j L_j.$$

Aggregating these sales to the country-level, total sales from firms in country i to consumers in country j are given by the gravity equation

$$\hat{X}_{ij} = \mu(1+\hat{\pi})\ \hat{\theta}_j\ (w_i\ \tau_{ij})^{-(\sigma-1)}\ w_i L_i\ w_j L_j.$$

3. International Trade and Social Activism

This section extends the benchmark model from section 2 by adding elements of social activism. This entails NGOs that conduct endogenously funded campaigns, which influence the demand for the targeted firms' products.

3.1. Social Activism

In each country, there is a large (unbounded) pool of watchdog NGOs monitoring firms that serve the domestic market. In line with the premise motivated in section 1 that social activism is inherently domestic, NGOs only scrutinize the activity of firms on their local market.

Each NGO is run by a mission-oriented motivated agent (Besley & Ghatak 2005). The objective of an NGO is to maximize the number of campaigns it runs against domestically selling firms it considers unethical. This paper does not take a normative stand on the question which activities are unethical – this is up to the motivated agents' preferences. However, the campaigns described in the introduction can be considered as some real-world examples of topics activists take issue with: treatment of labor (including infringements related to child labor, low wages, workplace safety standards or worker rights), pollution, overuse of natural resources, treatment of animals, etc.

Due to the wide – or actually: unrestricted – range of activities NGOs might scrutinize, the model assumes that each firm engages in some kinds of conduct that conflict with the mission of at least some motivated agents running NGOs. This implies that there is perfectly elastic "supply" of campaigns (by NGOs from country j) criticizing any potential target firm (i.e., firms serving market j). However, running campaigns is costly: each campaign incurs costs of p_C. These costs must be covered by consumers through donations, hence shifting the decision of which campaigns are actually realized to donating consumers. An NGO on the other hand tries to raise funds for all its potential campaigns, which are then carried out if and only if they receive the necessary funding.

3.2. Consumers/Donors

There are L_j consumers in country j. In order to analyze the optimal consumption and donation choices, it is necessary to consider preferences of individual consumers/donors instead of just the representative agent's decisions. Notation-wise, a tilde is used to denote variables that refer to individual consumers, whereas the same variable without tilde refers to the same quantity in the aggregate (e.g., $\tilde{q}_j$ for one consumer's demand vs. q_j for total demand).

Utility of *one* consumer in country j is given by

$$\tilde{U}_j = \left[\tilde{q}_j(h) + \int_{\Omega_j} \tilde{\mathcal{S}}_j(\omega)\,\mathrm{d}\omega\right]^{1-\mu} \left[\int_{\Omega_j} n_j(\omega)^{-\eta}\;\tilde{q}_j(\omega)^{\frac{\sigma-1}{\sigma}}\,\mathrm{d}\omega\right]^{\frac{\sigma}{\sigma-1}\mu}. \tag{13}$$

As in the benchmark model, $0 < \mu < 1$, $\sigma > 1$ and Ω_j is the set of varieties ω available in country j. The consumer's consumption levels of the homogeneous good and differentiated varieties are given by $\tilde{q}_j(h)$ and $\tilde{q}_j(\omega)$, respectively. Social activism affects a consumer in two ways, which constitute the key difference to utility in the benchmark model (equation (3)): Firstly, the term $n_j(\omega)$ reflects the *total* number of campaigns (financed by consumers and conducted by NGOs both located in country j) targeting the producer of variety ω. Consumers interpret a high number of campaigns as a signal of low quality ("unethical") goods, which is why a high number of campaigns acts like a negative demand shifter and reduces utility from consuming variety ω (shaped by the exogenous parameter $\eta \geq 0$). Secondly, the term $\tilde{\mathcal{S}}_j(\omega)$ summarizes warm glow utility (see, e.g., Andreoni 1989, 1990) the consumer draws from donating to campaigns targeting the producer of variety ω.

Note the role of η in equation (13): If $\eta = 0$, campaigns have no effect on utility from consumption of differentiated varieties, whereas they do have a utility- and hence demand-reducing effect for $\eta > 0$. Therefore, the parameter η determines the strength of social activism, i.e., how effective campaigns are in reducing demand.

A consumer from country j who finances $\tilde{n}_{ij}(\omega)$ campaigns targeting the producer of variety ω (located in country i) receives a total warm glow of

$$\tilde{\mathcal{S}}_{ij}(\omega) = \xi_j \; q_{ij}(\omega)^{\beta} \; \tilde{n}_{ij}(\omega)^{\alpha}, \tag{14}$$

where $\xi_j > 0$ is a country-specific exogenous scaling factor and $\alpha, \beta \in (0, 1)$.[6] The warm glow a consumer derives from supporting social activism against the producer of variety ω is therefore determined by two factors: First, the warm glow increases in $\tilde{n}_{ij}(\omega)$, the number of campaigns against the producer of variety ω the consumer supports – although with diminishing returns ($\alpha < 1$). Second, large firms are more attractive targets; $q_{ij}(\omega)$ denotes the total quantity of variety ω that is sold on market j, i.e., it is the sum of the individual consumers' demands: $q_{ij}(\omega) = L_j \, \tilde{q}_{ij}(\omega)$. Higher aggregate consumption of variety ω increases the warm glow generated by campaigns targeting that producer ($\beta > 0$). This reflects that consumers consider social activism criticizing firms that locally sell high quantities more worthwhile and therefore draw more warm glow from donating to such campaigns.[7]

Considering the interdependence of consumption, campaign funding and warm glow in equations (13) and (14), it is important to note that each individual consumer is "small":[8] While each consumer chooses her own levels of campaign support $\tilde{n}_{ij}(\omega)$ and consumption

[6] Recall that, as introduced in section 2.1, in equation (14) and all subsequent expressions the first subscript refers to the exporting country (usually country i) and the second subscript refers to the destination market (usually country j), where consumer/donor/NGO are located.

[7] An alternative modeling approach would be to replace demand $q_{ij}(\omega)$ in equation (14) by the firm's sales volume. This would be closer to the modeling of "salience" in Koenig et al. (2021). Such a model is outlined in appendix E and qualitatively delivers comparable results. However, interpretation of some of the key mechanisms that will be outlined in the discussion of proposition 1 are less straightforward in that case, as the price then affects warm glow / funding through two channels (because sales are directly and indirectly – through demand – affected by the price).

[8] This assumption is the demand-side equivalent of the standard monopolistic competition assumption that individual firms are "small" and therefore have no impact on the aggregate price level.

$\tilde{q}_{ij}(\omega)$, the aggregate quantities $n_{ij}(\omega)$ as well as $q_{ij}(\omega)$ are unaffected by each individual consumer's choices. Therefore, when a consumer decides on his individual consumption level $\tilde{q}_{ij}(\omega)$, this has no impact on the warm glow the consumer receives, because this is determined by *aggregate* demand, $q_{ij}(\omega)$. Likewise, a consumer's funding decision – i.e., her choice of $\tilde{n}_{ij}(\omega)$ – does not affect utility from consumption of variety ω, because the latter depends on the *total* number of campaigns targeting that firm, $n_{ij}(\omega)$. Consequently, the funding decision and the choice regarding the consumption levels of the differentiated goods are completely separable.

3.3. Optimal Choices of Consumers and Firms

This section analyzes the optimal choices of consumers (campaign funding and consumption; in section 3.3.1) and firms (pricing and related sales volume; in section 3.3.2). At this stage, all agents take aggregate income and the price index as given, which will be derived in section 3.4.

3.3.1. Consumer Choices: Consumption and Campaign Funding

As in the benchmark model (see sections 2.1 and 2.2), income consists of wage payments and dividends from the global fund. Each consumer in country j has a budget of

$$\tilde{Y}_j = w_j\,(1+\pi) \tag{15}$$

and aggregate income in country j is $Y_j = L_j\,\tilde{Y}_j$. A fraction μ of this income is optimally allocated to consumption of the differentiated good. The crucial difference to the benchmark model relates to the use of the remaining income: Consumers face a trade-off between spending $(1-\mu)\,\tilde{Y}_j$ on consumption of good h or campaign funding (see equation (13)). On the one hand, consumption of good h yields sub-utility of 1 at price 1. On the other hand, financing a campaign increases sub-utility by $\frac{\partial\,\tilde{S}_{ij}(\omega)}{\partial\,\tilde{n}_{ij}(\omega)}$ at price p_C.

Due to the diminishing marginal returns of funding additional campaigns targeting the producer of a given variety, it is optimal to increase $\tilde{n}_{ij}(\omega)$ as long as the marginal warm glow exceeds the costs of a campaign. Therefore, the funding condition is $\frac{\partial\,\tilde{S}_{ij}(\omega)}{\partial\,\tilde{n}_{ij}(\omega)} \geq p_C$, which will hold with equality in equilibrium.[9] This pins down the consumer–target-level number of campaigns, $\tilde{n}_{ij}(\omega)$, and therefore implies for $n_{ij}(\omega)$ (the *aggregate* number of campaigns the producer of variety ω from country i faces on market j, computed as the product of $\tilde{n}_{ij}(\omega)$ and the number of consumers, L_j):

$$n_{ij}(\omega) = \mathcal{C}_j\;q_{ij}(\omega)^{\frac{\beta}{1-\alpha}}, \tag{16}$$

[9] The model considers only equilibria in which funding of campaigns does not entirely crowd out consumption of the homogeneous good. This implies that the funding condition holds with equality for all campaign targets before the available funds $(1-\mu)\,\tilde{Y}_j$ are exceeded.

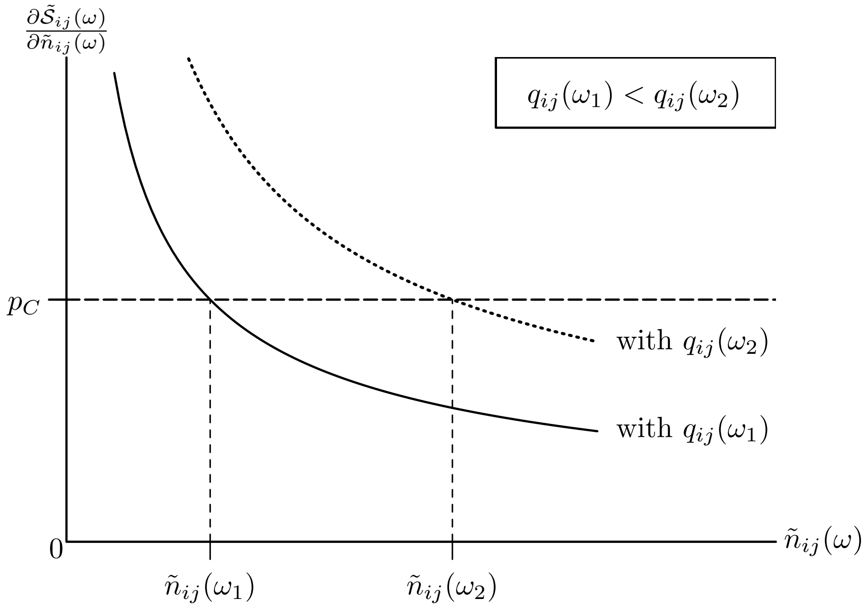

Figure 1: Campaign funding. The consumer keeps funding additional campaigns targeting the producer of variety ω until the marginal warm glow (solid and dotted curve) drops below the costs of funding a campaign, p_C. This determines $\tilde{n}_{ij}(\omega)$, which is therefore higher if the target is a larger firm (producer of variety ω_2) than if the target is a smaller firm (producer of variety ω_1).

$$\text{where} \qquad \mathcal{C}_j \equiv L_j \left(\frac{\alpha \ \xi_j}{p_C} \right)^{\frac{1}{1-\alpha}}. \tag{17}$$

Equation (16) shows that the firm-level number of campaigns is essentially a transformation of the firm's demand. The term $\mathcal{C}_j$ is a scaling factor that captures the level of country-specific campaign activity. It increases in both the number of consumers as well as the strength of warm glow donors in country j draw from funding campaigns (ξ_j).

Figure 1 illustrates how the number of consumer–target-level campaigns is determined. It depicts the marginal warm glow of funding an additional campaign targeting the producer of variety ω on the vertical axis, plotted against $\tilde{n}_{ij}(\omega)$. For the consumer, it is optimal to increase the number of funded campaigns targeting the producer of variety ω as long as the marginal warm glow exceeds the price of a campaign, p_C. Therefore, the optimal level of $\tilde{n}_{ij}(\omega)$ is determined by the intersection of $\frac{\partial \tilde{S}_{ij}(\omega)}{\partial \tilde{n}_{ij}(\omega)}$ and p_C, where the funding condition holds with equality. Figure 1 also shows how this optimal level varies for target firms with different demand levels. By equation (14), the warm glow from funding campaigns targeting larger firms is higher. This implies for any level of $\tilde{n}_{ij}(\omega)$ that the marginal warm glow of an additional campaign targeting the (larger) producer of ω_2 is higher compared to a campaign targeting the (smaller) producer of ω_1. Therefore, the optimal level of campaigns targeting the larger firm is higher: $\tilde{n}_{ij}(\omega_1) < \tilde{n}_{ij}(\omega_2)$.

Notwithstanding the impact of social activism, the industry equilibrium in the differentiated good sector adheres to the well-known Dixit & Stiglitz (1977) mechanics, summarized in appendix B. Hence, demand of each of the L_j consumers in country j for variety ω from country i, $\tilde{q}_{ij}(\omega)$, follows from maximizing the CES sub-utility in equation (13), subject to the budget constraint that expenditures on differentiated varieties must not exceed $\mu\tilde{Y}_j$. Noting that $n_j(\omega)$ is exogenous to each individual consumer (see section 3.2), this implies that aggregate demand ($q_{ij}(\omega) = L_j\,\tilde{q}_{ij}(\omega)$) is given by

$$q_{ij}(\omega) = n_{ij}(\omega)^{-\eta\sigma}\; p_{ij}(\omega)^{-\sigma}\; P_j^{\sigma-1}\;\mu\, Y_j, \tag{18}$$

where $p_{ij}(\omega)$ is the price the producer of variety ω located in country i charges a consumer located in country j. The price index in country j is

$$P_j^{1-\sigma} = \sum_{n=1}^{N} \int_{\Omega_{nj}} n_{nj}(\omega)^{-\eta\sigma}\; p_{nj}(\omega)^{1-\sigma}\,\mathrm{d}\omega. \tag{19}$$

See appendix D.1 for details.

The demand function in equation (18) depends on the campaigns targeting this variety, $n_{ij}(\omega)$. Simultaneously, campaigns in equation (16) are a function of demand. In order to resolve this *feedback effect* – where demand triggers campaigns, which in turn affect demand – plug equation (16) into equation (18) and solve for $q_{ij}(\omega)$ to obtain the "true" demand function that embodies the effects of social activism:

$$q_{ij}(\omega) = \mathcal{C}_j^{-\frac{\eta}{1-\rho}}\; p_{ij}(\omega)^{-\frac{1}{1-\rho}}\; [P_j^{\sigma-1}\;\mu\, Y_j]^{\frac{1}{\sigma(1-\rho)}}, \tag{20}$$

$$\text{where} \qquad \rho \equiv \frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{\sigma(1-\alpha)}. \tag{21}$$

The term ρ defined in equation (21) is a measure of substitutability, such that $\frac{1}{1-\rho}$ reflects elasticity of substitution and (absolute value of) price elasticity of the aggregate demand function in equation (20). Imposing the following assumption ensures that $\frac{1}{1-\rho}$ remains larger than 1:

Assumption 1. $\sigma > \dfrac{1-\alpha}{1-\alpha-\eta\beta} \;\wedge\; \eta < \dfrac{1-\alpha}{\beta}$.

By this assumption, $0 < \rho < 1$ and $\frac{1}{1-\rho} > 1$. The constraint on σ is analog to the assumption $\sigma > 1$ in the benchmark model, which ensures $\frac{1}{1-\hat{\rho}} > 1$.

3.3.2. Firm Choices: Pricing

The producer of variety ω generates revenue of $x_{ij}(\omega) = p_{ij}(\omega)\, q_{ij}(\omega)$ on market j. Taking into account its cost function and demand (equations (2) and (20)), the firm sets its price $p_{ij}(\omega)$ by maximizing profits from serving that market: $\pi_{ij}(\omega) = x_{ij}(\omega) - \frac{w_i\,\tau_{ij}}{\varphi}\; q_{ij}(\omega)$.

This gives rise to the following mark-up pricing rule (see appendix D.2):

$$p_{ij}(\varphi) = \psi \, \frac{w_i \, \tau_{ij}}{\varphi}, \tag{22}$$

$$\text{where} \qquad \psi \equiv \frac{\sigma(1-\alpha)}{(\sigma-1)(1-\alpha)-\eta\sigma\beta}. \tag{23}$$

As in the benchmark model, ψ – the mark-up over marginal costs – is equal to the inverse of the measure of substitutability ρ: $\psi = \frac{1}{\rho}$.

To focus on the impact of social activism, consider the case of $\eta = 0$. In this scenario, the number of campaigns targeting the producer of variety ω has *no* impact on utility from consuming this variety (see equation (13)). As a result, the setup of the differentiated good sector collapses to that of the benchmark model from section 2. The benchmark model can therefore be considered as a variant of the main model where social activism has been disabled.[10] This allows to analyze the impact of social activism by comparing the main model *with* social activism ($\eta > 0$) to the benchmark model *without* social activism ($\eta = 0$). In fact, for $\eta = 0$ the equilibrium expressions for the main model presented below cleanly map into their benchmark model counterparts from section 2.2.

Comparing the mark-up ψ to the mark-up $\hat{\psi}$ charged in the benchmark model (see equations (7) and (23)) leads to the following proposition:

Proposition 1. *The presence of social activism ($\eta > 0$)* increases *the mark-up over marginal costs charged by firms ($\psi > \hat{\psi}$). This effect is due to consumers'* lower *price elasticity of demand as compared to the benchmark model without social activism ($\eta = 0$).*

Proof. See appendix A.1.

The different price elasticities – and consequentially, different mark-ups – are the result of an additional channel through which price and demand interact. In the benchmark model, a price increase has only a single, *direct effect* on demand: demand declines, with an elasticity of $-\frac{1}{1-\hat{\rho}} = -\sigma$. In the model with social activism, this direct effect is present as well and is captured by $p_{ij}(\omega)^{-\sigma}$ in equation (18). However, a price increase also affects demand through a *novel second channel*: the feedback effect that stems from the interaction of demand and campaigns in equations (16) and (18). If demand for a variety declines (due to the direct channel), the number of campaigns targeting the producer declines as well – and this attenuates the demand-reducing effect of campaigns. As this novel channel *partially offsets* the direct channel, demand in the model with social activism is less elastic than in the benchmark model ($\rho < \hat{\rho}$). This elasticity difference then

[10] The main model with $\eta = 0$ is not completely identical to the benchmark model from section 2. Even with $\eta = 0$, consumers still draw utility from funding campaigns and consumption of good h will be lower than in the benchmark model. Yet, this does not influence the results for the differentiated good sector and can therefore be neglected.

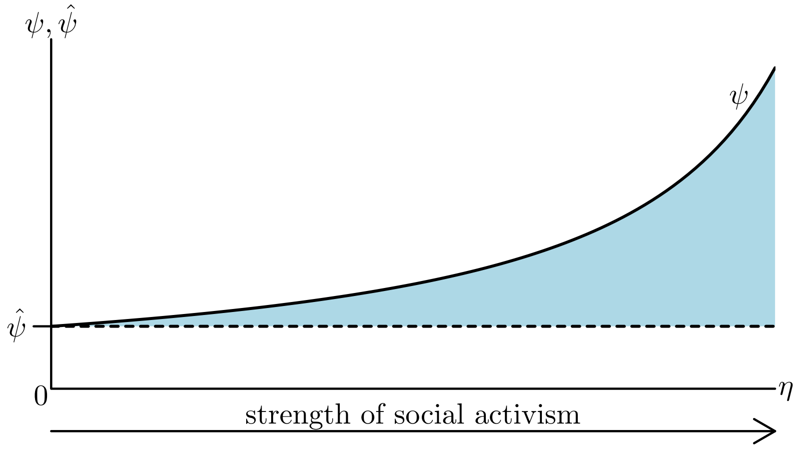

Figure 2: Effect of social activism on mark-ups. Social activism increases mark-ups ψ above the benchmark level $\hat{\psi}$. With $\eta = 0$, campaigns have no impact on demand and mark-ups are equalized: $\psi = \hat{\psi}$.

translates into higher mark-ups over marginal costs charged by firms if social activism is active: $\psi > \hat{\psi}$.

Figure 2 illustrates proposition 1: The stronger the impact of social activism (larger η), the more do mark-ups ψ increase compared to the benchmark level of $\hat{\psi}$. The blue "wedge" in the plot represents the effect of social activism on mark-ups. For $\eta = 0$, campaigns have no effect on demand and therefore the difference in mark-ups vanishes.

To characterize the remaining firm-level outcomes, consider sales, profits and campaigns per firm. It follows from equations (20) and (22) (see appendix D.2) that

$$x_{ij}(\varphi) = \mathcal{C}_j^{-\frac{\eta\,\psi}{\psi-1}} \left(\psi\ \frac{w_i\,\tau_{ij}}{\varphi}\right)^{-\frac{1}{\psi-1}} [P_j^{\sigma-1}\ \mu\, Y_j]^{\frac{\psi}{\sigma(\psi-1)}} \tag{24}$$

$$\text{and} \qquad \pi_{ij}(\varphi) = x_{ij}(\varphi)\ (1-\psi^{-1}). \tag{25}$$

Expressing sales and profits as far as possible in terms of the mark-up ψ makes evident how closely these expressions are linked to their benchmark model counterparts, equations (8) and (9). For $\eta \to 0$, it follows that $\psi \to \hat{\psi}$ (no difference in mark-ups, see proposition 1) and the leading scaling factor in equation (24) goes to 1. Most notably, in this case the exponent on the brackets enclosing price index and aggregate income in equation (24) cancels, such that this term is transformed into its usual linear form (see equation (8)), whereas with social activism aggregate income has a nonlinear effect on sales.

Finally, plugging price and demand into equation (16) yields for the number of campaigns targeting a firm with productivity φ from country i on market j:

$$n_{ij}(\varphi) = \mathcal{C}_j^{\frac{\psi}{\sigma(\psi-1)}} \left(\psi\ \frac{w_i\,\tau_{ij}}{\varphi}\right)^{-\frac{\beta\,\psi}{(1-\alpha)(\psi-1)}} [P_j^{\sigma-1}\ \mu\, Y_j]^{\frac{\beta\,\psi}{\sigma(1-\alpha)(\psi-1)}}. \tag{26}$$

Naturally, this term shares the structure of sales in equation (24) because, by equation (16), $n_{ij}(\varphi)$ is a transformation of demand $q_{ij}(\varphi)$.

3.4. Closing the Model

The analysis so far has been focused on the behavior of consumers, NGOs and firms for given overall price levels and income. Closing the model requires to derive the equilibrium price index as well aggregate profits. To determine the equilibrium price index, evaluate its definition from equation (19) using the pricing rule and campaigns (equations (22) and (26)). This requires:

Assumption 2. $\gamma > \dfrac{\sigma(1-\alpha)}{1-\alpha+\eta\sigma\beta} - 1.$

This assumption is the analog of $\gamma > \sigma - 1$ in e.g. Chaney (2008). Indeed, as demonstrated in appendix C.3, for $\eta = 0$ assumption 2 boils down to $\gamma > \sigma - 1$ (see assumption C.1). The price index in country j is then given by (see appendix D.3)

$$P_j^{\sigma-1} = \mathcal{C}_j^{\eta\sigma}\ \psi^{\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha}}\ (\mathcal{C}_P\,\theta_j)^{\frac{1-\alpha+\eta\sigma\beta}{1-\alpha}}\ [\mu\,Y_j]^{\frac{\eta\sigma\beta}{1-\alpha}}, \tag{27}$$

$$\text{where}\qquad \theta_j \equiv \Big[\sum_{n=1}^{N} w_n L_n\,(w_n\,\tau_{nj})^{-\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}}\Big]^{-1} \tag{28}$$

$$\text{and}\qquad \mathcal{C}_P \equiv \frac{(1+\gamma)(1-\alpha+\eta\sigma\beta)-\sigma(1-\alpha)}{\gamma\,(1-\alpha+\eta\sigma\beta)}.$$

While $\mathcal{C}_P$ just collects constants, θ_j is a multilateral trade resistance term that summarizes trade costs of country j with all potential exporters.

Note that equation (27) still depends on aggregate income Y_j, which is an endogenous object because it is a function of π, the dividends per share of the global mutual fund that collects aggregate profits (see equation (15)). Using the price index as well as firm-level profits (from equation (25)), dividends per share can be computed from

$$\pi \sum_{n=1}^{N} w_n L_n = \sum_{n=1}^{N} w_n L_n \int_1^{\infty} g_{\varphi}(\varphi) \sum_{l=1}^{N} \pi_{nl}(\varphi)\,\mathrm{d}\varphi.$$

Solving for dividends per share (see appendix D.4) yields:

$$\pi = \Big(\frac{1}{\mu(1-\psi^{-1})} - 1\Big)^{-1} = \frac{\mu(1-\alpha+\eta\sigma\beta)}{(\sigma-\mu)(1-\alpha)-\mu\eta\sigma\beta}. \tag{29}$$

From a technical point of view, the existence of such a closed form solution for π is notable: Considering firm-level profits (see equations (24) and (25)), the term $(1+\pi)$ has two nonlinear effects on profits: directly via Y_j as well as indirectly via P_j (see equations (15) and (27)). What permits a closed form solution is that the resulting *combined* effect is linear.

Using the equilibrium price index and dividends per share π from above, the equilibrium expressions for the firm-level objects from equations (24), (25) and (26) are:

$$x_{ij}(\varphi) = \mu(1+\pi)\, \mathcal{C}_P\, \theta_j \left(\frac{w_i\, \tau_{ij}}{\varphi}\right)^{-\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}} w_j L_j, \tag{30}$$

$$\pi_{ij}(\varphi) = \mu(1+\pi)\, \mathcal{C}_P\, \theta_j \left(\frac{w_i\, \tau_{ij}}{\varphi}\right)^{-\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}} w_j L_j\, (1-\psi^{-1}) \tag{31}$$

and $$n_{ij}(\varphi) = \mathcal{C}_j \left(\mu(1+\pi)\, \frac{\mathcal{C}_P\, \theta_j}{\psi}\right)^{\frac{\beta}{1-\alpha}} \left(\frac{w_i\, \tau_{ij}}{\varphi}\right)^{-\frac{\sigma\beta}{1-\alpha+\eta\sigma\beta}} (w_j L_j)^{\frac{\beta}{1-\alpha}}. \tag{32}$$

3.5. Gravity Analysis with Social Activism

The focus of this section is on gravity for final goods, as analyzed in section 3.5.1. In addition, section 3.5.2 also presents a gravity equation for NGO campaigns.

3.5.1. Gravity for Final Goods

Before turning to the aggregate trade flows of final goods, consider the three firm-level equilibrium objects from equations (30), (31) and (32). Firm-level sales, profits and campaigns exhibit plausible comparative statics:[11]

$$\frac{\partial x_{ij}(\varphi)}{\partial\, \tau_{ij}} = -\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}\,\frac{x_{ij}(\varphi)}{\tau_{ij}} < 0,$$
$$\frac{\partial \pi_{ij}(\varphi)}{\partial\, \tau_{ij}} = -\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}\,\frac{\pi_{ij}(\varphi)}{\tau_{ij}} < 0,$$
$$\frac{\partial n_{ij}(\varphi)}{\partial\, \tau_{ij}} = -\frac{\sigma\beta}{1-\alpha+\eta\sigma\beta}\,\frac{n_{ij}(\varphi)}{\tau_{ij}} < 0.$$

Firm-level sales and profits decline with higher bilateral trade costs. The number of campaigns from country j targeting a given producer also decreases. The reason is that higher trade costs increase prices and hence decrease demand, which reduces the warm glow and ultimately the number of campaigns that receive funding.

Total exports from country i to country j can be derived by aggregating the sales to country j across all firms in country i: $X_{ij} = w_i L_i \int_1^\infty g_\varphi(\varphi)\, x_{ij}(\varphi)\, \mathrm{d}\varphi$. Weighting firm-level sales by the respective densities (using equations (1) and (30) and under assumption 2) gives

$$X_{ij} = \mu(1+\pi)\, \theta_j\, (w_i\, \tau_{ij})^{-\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}}\, w_i L_i\, w_j L_j, \tag{33}$$

where θ_j as well as dividends per share π are given by equations (28) and (29), respectively.

[11] Note that as a consequence of assumption 1, $(\sigma-1)(1-\alpha)-\eta\sigma\beta > 0$ (see also proof of proposition 2 in appendix A.2). This determines the signs of the partial derivatives in case of $x_{ij}(\varphi)$ and $\pi_{ij}(\varphi)$. In line with the literature, I assume that each country is small relative to the rest of the world, such that $\frac{\partial \theta_j}{\partial \tau_{ij}} \approx 0$ (see, e.g., Chaney 2008, footnote 20).

Equation (33) is a typical gravity equation: Aggregate bilateral sales increase in the size of the importing ($w_j L_j$) and the size of the exporting ($w_j L_j$) country. Bilateral trade costs τ_{ij} reduce bilateral trade flows ($\frac{\partial X_{ij}}{\partial \tau_{ij}} < 0$), as do wages w_i in the exporting country. Ceteris paribus, θ_j – a multilateral trade resistance term that summarizes the importer's trade costs with all potential trading partners – increases bilateral trade flows, because high multilateral resistance of country j improves the competitive position of firms from country i.

To sum up, all the typical gravity forces survive incorporating social activism into the model. Yet, what is the *impact of social activism* on these mechanisms? To answer this question, denote the elasticity of aggregate bilateral trade flows with respect to bilateral trade costs as $\zeta \equiv \frac{\partial \ln X_{ij}}{\partial \ln \tau_{ij}}$. Computing this elasticity using aggregate sales from equation (33) gives:

$$\zeta = -\frac{(\sigma - 1)(1 - \alpha) - \eta\sigma\beta}{1 - \alpha + \eta\sigma\beta}. \tag{34}$$

The following proposition points out the importance of the elasticity ζ and how it is related to the strength of social activism (captured in η):

Proposition 2. *The elasticity of aggregate bilateral trade flows (X_{ij}) with respect to bilateral trade costs (τ_{ij}) is given by ζ from equation (34).*

(i) This elasticity is negative: $\zeta < 0$.
(ii) The elasticity decreases (in absolute value) in the strength of social activism ($\frac{\partial |\zeta|}{\partial \eta} < 0$); i.e., a stronger effect of social activism reduces the impact of trade costs on aggregate trade flows.
(iii) The same applies to firm-level sales and profits ($x_{ij}(\varphi)$ and $\pi_{ij}(\varphi)$): their elasticity with respect to bilateral trade costs is also $\zeta < 0$. Therefore, a stronger effect of social activism reduces the impact of trade costs on firm-level sales and profits as well.

Proof. See appendix A.2.

Proposition 2 constitutes the second main contribution of the paper. It summarizes how the impact of bilateral trade costs on international trade in goods is attenuated by social activism. Compared to a model without social activism, this model predicts a less pronounced decline in bilateral trade flows in response to a positive bilateral trade cost shock. This weaker influence of trade costs also applies to the overall level of trade barriers reflected in the multilateral resistance term θ_j: it decreases in the strength of social activism ($\frac{\partial \theta_j}{\partial \eta} < 0$).

The reduction of the elasticity of trade flows with respect to trade costs through social activism is a consequence of the diminished price elasticity of demand. Changes in trade costs directly lead to corresponding price changes (see equation (22)). Due to the lower price elasticity of demand with social activism, however, firm-level sales are less affected by such a price increase as compared to a setting without social activism. Finally, the less pronounced response of firm-level sales then maps into a weaker trade cost elasticity of trade flows in the aggregate. Note that this mechanism operates purely on the intensive margin, i.e., the sales of incumbent firms. As this model, for tractability, features no fixed costs of production, changes in trade costs do not induce extensive margin effects that could affect the aggregate outcomes through market entry or exit of low-productivity firms.

A direct empirical test of proposition 2 would require data on the strength of social activism parameter η (and that it varies either across countries or time periods). An exogenous change of bilateral trade costs should then lead to a smaller change in trade flows for countries (or time periods) with stronger social activism (higher η). Besides, for empirical work the decrease of multilateral resistance through social activism implies that stronger social activism makes the "gold medal mistake" (Baldwin & Taglioni 2007) of not controlling for multilateral resistance less severe.

Beyond proposition 2, the effect of social activism on aggregate (or firm-level) sales remains ambiguous. While the strength of social activism η decreases the multilateral resistance term θ_j in the gravity equation (33), there is a countervailing effect through dividends per share π (besides the effect on trade costs): The strength of social activism increases mark-ups ψ (proposition 1) and therefore also raises dividends per share (see equation (29)). Whether this effect of higher income in the importing country on trade flows is larger or smaller than the negative effect from the multilateral resistance term seems to be a question of parameterization.

3.5.2. Gravity for Campaigns

Apart from the gravity analysis with respect to the flow of goods, the model also lends itself to an analysis of the "flow" of NGO campaigns between countries. This approach is similar in spirit to Koenig et al. (2021), where the geography of NGO campaigns takes center stage. The total number of campaigns by activists from country j targeting firms from country i (N_{ij}) can be computed by aggregating across the campaigns targeted at firms from country i on market j ($n_{ij}(\varphi)$):

$$N_{ij} = w_i L_i \int_1^\infty g_\varphi(\varphi)\ n_{ij}(\varphi)\, \mathrm{d}\varphi. \tag{35}$$

Evaluating equation (35), using equations (1) and (32), requires the following assumption:

Assumption 3. $\gamma > \dfrac{\sigma\beta}{1-\alpha+\eta\sigma\beta}$.

Similar to assumption 2, which ensures that the sales distribution has a finite mean, this assumption keeps the average number of firm-level campaigns finite. The number of campaigns by NGOs from country j targeting firms from country i is then given by (see appendix D.5)

$$N_{ij} = \frac{\mathcal{C}_j \, \gamma(1-\alpha+\eta\sigma\beta)}{\gamma(1-\alpha+\eta\sigma\beta)-\sigma\beta} \left(\mu(1+\pi) \, \frac{\mathcal{C}_P \, \theta_j}{\psi}\right)^{\frac{\beta}{1-\alpha}} (w_i \, \tau_{ij})^{-\frac{\sigma\beta}{1-\alpha+\eta\sigma\beta}} \, w_i L_i \, (w_j L_j)^{\frac{\beta}{1-\alpha}}. \tag{36}$$

Like equation (33), equation (36) is a gravity equation as well: the total number of campaigns depends on the size of the firm country ($w_i L_i$), the size of the activists' country ($w_j L_j$), multilateral trade resistance of that country (θ_j) as well as bilateral trade costs (τ_{ij}). Note that $w_j L_j$ enters the gravity equation for campaigns with an exponent of $\frac{\beta}{1-\alpha}$, whereas in the gravity equation for goods country size enters linearly. This is because in equation (16), demand (and hence the linear country size) is raised to the power of $\frac{\beta}{1-\alpha}$ to determine firm-level campaigns. That transformation is preserved during aggregation to the country level and is therefore reflected in the gravity equation for campaigns.

The comparative statics from the firm-level campaigns apply to the aggregate as well: $\frac{\partial N_{ij}}{\partial \tau_{ij}} < 0$, because higher bilateral trade costs, through their negative effect on demand, reduce warm glow and therefore the number of campaigns that receive funding. Further, to ascertain the effect of the strength of social activism on the impact of trade costs on bilateral campaigns, denote the elasticity of aggregate bilateral campaigns (N_{ij}) with respect to bilateral trade costs τ_{ij} as $\zeta^N \equiv \frac{\partial \ln N_{ij}}{\partial \ln \tau_{ij}}$ to get

$$\zeta^N = -\frac{\sigma\beta}{1-\alpha+\eta\sigma\beta}. \tag{37}$$

Analog to proposition 2, the following corollary summarizes the role of the elasticity ζ^N and how it depends on the strength of social activism η:

Corollary 1. *The elasticity of aggregate bilateral campaigns (N_{ij}) with respect to bilateral trade costs τ_{ij} is given by ζ^N from equation (37).*

(i) This elasticity is negative: $\zeta^N < 0$.

(ii) The elasticity decreases (in absolute value) in the strength of social activism ($\frac{\partial |\zeta^N|}{\partial \eta} < 0$); i.e., a stronger effect of social activism reduces the impact of trade costs on aggregate bilateral campaigns.

(iii) The same applies to firm-level campaigns ($n_{ij}(\varphi)$): their elasticity with respect to bilateral trade costs is also $\zeta^N < 0$. Therefore, a stronger effect of social activism reduces the impact of trade costs on firm-level campaigns as well.

Proof. See appendix A.3.

Taking into account that firm-level campaigns $n_{ij}(\omega)$ are technically a transformation of firm-level demand (see equation (16)), it is not surprising that the trade cost elasticity of aggregate campaigns (ζ^N) is closely related to that of trade flows (ζ), including the comparable impacts of social activism in proposition 2 and corollary 1.

4. Conclusion

This paper studies the effects of incorporating reputation-damaging activist pressure into a model of international trade. Campaigns are funded by consumers, who draw warm glow utility from supporting campaigns that target well-known – domestically active and large – firms. As larger target firms attract more campaigns and campaigns are themselves demand-reducing, a feedback effect between demand and campaigns arises. This feedback effect makes final demand less elastic, which allows firms to charge higher mark-ups in the presence of social activism.

The model gives rise to a gravity equation for trade in final goods. Also here the presence of social activism interferes with the usual determinants of trade flows: The elasticity of aggregate bilateral trade flows with respect to trade costs is attenuated by the effect of activist campaigns on demand.

References

Aldashev, G., M. Limardi & T. Verdier (2015). "Watchdogs of the Invisible Hand: NGO monitoring and industry equilibrium". In: *Journal of Development Economics* 116, pp. 28–42. DOI: 10.1016/j.jdeveco.2015.03.006.

Aldashev, G. & T. Verdier (2009). "When NGOs go global: Competition on international markets for development donations". In: *Journal of International Economics* 79 (2), pp. 198–210. DOI: 10.1016/j.jinteco.2009.07.007.

Amiti, M. & A. K. Khandelwal (2013). "Import Competition and Quality Upgrading". In: *Review of Economics and Statistics* 95 (2), pp. 476–490. DOI: 10.1162/REST_a_00271.

Andreoni, J. (1989). "Giving with Impure Altruism: Applications to Charity and Ricardian Equivalence". In: *Journal of Political Economy* 97 (6), pp. 1447–1458. DOI: 10.1086/261662.

Andreoni, J. (1990). "Impure Altruism and Donations to Public Goods: A Theory of Warm-Glow Giving". In: *The Economic Journal* 100 (401), pp. 464–477. DOI: 10.2307/2234133.

Baldwin, R. & J. Harrigan (2011). "Zeros, Quality, and Space: Trade Theory and Trade Evidence". In: *American Economic Journal: Microeconomics* 3 (2), pp. 60–88. DOI: 10.1257/mic.3.2.60.

Baldwin, R. & D. Taglioni (2007). "Trade Effects of the Euro: a Comparison of Estimators". In: *Journal of Economic Integration* 22 (4), pp. 780–818. DOI: 10.11130/jei.2007.22.4.780.

Baron, D. P. (2001). "Private Politics, Corporate Social Responsibility, and Integrated Strategy". In: *Journal of Economics & Management Strategy* 10 (1), pp. 7–45. DOI: 10.1111/j.1430-9134.2001.00007.x.

Baron, D. P. (2003). "Private Politics". In: *Journal of Economics & Management Strategy* 12 (1), pp. 31–66. DOI: 10.1111/j.1430-9134.2003.00031.x.

Baron, D. P. (2012). "The Industrial Organization of Private Politics". In: *Quarterly Journal of Political Science* 7 (2), pp. 135–174. DOI: 10.1561/100.00011065.

Baron, D. P. (2016). "Self-Regulation and the Market for Activism". In: *Journal of Economics & Management Strategy* 25 (3), pp. 584–607. DOI: 10.1111/jems.12162.

Baron, D. P. & D. Diermeier (2007). "Strategic Activism and Nonmarket Strategy". In: *Journal of Economics & Management Strategy* 16 (3), pp. 599–634. DOI: 10.1111/j.1530-9134.2007.00152.x.

Besley, T. & M. Ghatak (2005). "Competition and Incentives with Motivated Agents". In: *American Economic Review* 95 (3), pp. 616–636. DOI: 10.1257/0002828054201413.

Chaney, T. (2008). “Distorted Gravity: The Intensive and Extensive Margins of International Trade”. In: *American Economic Review* 98 (4), pp. 1707–1721. DOI: 10.1257/aer.98.4.1707.

Couttenier, M. & S. Hatte (2016). “Mass media effects on non-governmental organizations”. In: *Journal of Development Economics* 123, pp. 57–72. DOI: 10.1016/j.jdeveco.2016.07.001.

Crozet, M., K. Head & T. Mayer (2012). “Quality Sorting and Trade: Firm-level Evidence for French Wine”. In: *Review of Economic Studies* 79 (2), pp. 609–644. DOI: 10.1093/restud/rdr030.

Cushman Junior, J. H. (May 13, 1998). *Nike Pledges to End Child Labor And Apply U.S. Rules Abroad*. New York Times. URL: https://www.nytimes.com/1998/05/13/business/international-business-nike-pledges-to-end-child-labor-and-apply-us-rules-abroad.html (visited on 03/05/2021).

Daubanes, J. & J.-C. Rochet (2019). “The Rise of NGO Activism”. In: *American Economic Journal: Economic Policy* 11 (4), pp. 183–212. DOI: 10.1257/pol.20180027.

Dixit, A. K. & J. E. Stiglitz (1977). “Monopolistic Competition and Optimum Product Diversity”. In: *American Economic Review* 67 (3), pp. 297–308.

Egorov, G. & B. Harstad (2017). “Private Politics and Public Regulation”. In: *Review of Economic Studies* 84 (4), pp. 1652–1682. DOI: 10.1093/restud/rdx009.

Fan, H., Y. A. Li & S. R. Yeaple (2015). “Trade Liberalization, Quality, and Export Prices”. In: *Review of Economics and Statistics* 97 (5), pp. 1033–1051. DOI: 10.1162/REST_a_00524.

Flach, L. & F. Unger (2022). “Quality and gravity in international trade”. In: *Journal of International Economics* 137, 103578. DOI: 10.1016/j.jinteco.2022.103578.

Hainmueller, J., M. J. Hiscox & S. Sequeira (2015). “Consumer Demand for Fair Trade: Evidence from a Multistore Field Experiment”. In: *Review of Economics and Statistics* 97 (2), pp. 242–256. DOI: 10.1162/REST_a_00467.

Hallak, J. C. (2006). “Product quality and the direction of trade”. In: *Journal of International Economics* 68 (1), pp. 238–265. DOI: 10.1016/j.jinteco.2005.04.001.

Harrison, A. & J. Scorse (2010). “Multinationals and Anti-sweatshop Activism”. In: *American Economic Review* 100 (1), pp. 247–273. DOI: 10.1257/aer.100.1.247.

Hatte, S. & P. Koenig (2020). “The Geography of NGO Activism against Multinational Corporations”. In: *World Bank Economic Review* 34 (1), pp. 143–163. DOI: 10.1093/wber/lhy007.

Head, K. & T. Mayer (2014). “Gravity Equations: Workhorse, Toolkit, Cookbook”. In: *Handbook of International Economics*. Ed. by G. Gopinath, E. Helpman & K. Rogoff.

Vol. 4. Amsterdam: North-Holland. Chap. 3, pp. 131–195. DOI: 10.1016/B978-0-444-54314-1.00003-3.

Herkenhoff, P. & S. Krautheim (2020). *The International Organization of Production in the Regulatory Void*. CESifo Working Paper 6922. URL: http://ifo.de/w/hsVU3u4a.

Hiscox, M. J. & N. F. B. Smyth (2011). *Is there consumer demand for fair labor standards? Evidence from a field experiment*. SSRN Working Paper 1820642. DOI: 10.2139/ssrn.1820642.

Innes, R. (2006). “A Theory of Consumer Boycotts under Symmetric Information and Imperfect Competition”. In: *The Economic Journal* 116 (511), pp. 355–381. DOI: 10.1111/j.1468-0297.2006.01084.x.

International Labour Organization (Dec. 21, 2017). *The Rana Plaza Accident and its aftermath*. URL: https://www.ilo.org/global/topics/geip/WCMS_614394 (visited on 11/16/2021).

Koenig, P., S. Krautheim, C. Löhnert & T. Verdier (2021). *Local Global Watchdogs: Trade, Sourcing and the Internationalization of Social Activism*. CESifo Working Paper 9068. Version November 2021. URL: https://www.cesifo.org/node/63229.

Koenig, P. & S. Poncet (2019). “Social responsibility scandals and trade”. In: *World Development* 124, 104640. DOI: 10.1016/j.worlddev.2019.104640.

Krautheim, S. & T. Verdier (2016). “Offshoring with endogenous NGO activism”. In: *Journal of International Economics* 101, pp. 22–41. DOI: 10.1016/j.jinteco.2016.03.009.

Kugler, M. & E. Verhoogen (2012). “Prices, Plant Size, and Product Quality”. In: *Review of Economic Studies* 79 (1), pp. 307–339. DOI: 10.1093/restud/rdr021.

Loureiro, M. L. & J. Lotade (2005). “Do fair trade and eco-labels in coffee wake up the consumer conscience?” In: *Ecological Economics* 53 (1), pp. 129–138. DOI: 10.1016/j.ecolecon.2004.11.002.

Lyon, T. P. & S. W. Salant (2013). *Linking Public and Private Politics: Activist Strategy for Industry Transformation*. Working Paper. URL: http://www.parisschoolofeconomics.eu/IMG/pdf/lyon_salant_paper.pdf.

Melitz, M. J. & S. J. Redding (2014). “Heterogeneous Firms and Trade”. In: *Handbook of International Economics*. Ed. by G. Gopinath, E. Helpman & K. Rogoff. Vol. 4. Amsterdam: North-Holland, pp. 1–54. DOI: 10.1016/B978-0-444-54314-1.00001-X.

O’Rourke, D. (2005). “Market Movements: Nongovernmental Organization Strategies to Influence Global Production and Consumption”. In: *Journal of Industrial Ecology* 9 (1–2), pp. 115–128. DOI: 10.1162/1088198054084608.

Putnam, T. (1993). “Boycotts Are Busting Out All Over”. In: *Business & Society Review* 85, pp. 47–51.

Zyglidopoulos, S. C. (2002). “The Social and Environmental Responsibilities of Multinationals: Evidence from the Brent Spar Case”. In: *Journal of Business Ethics* 36 (1–2), pp. 141–151.

Appendix A. Proofs

A.1. Proof of Proposition 1

Using $\hat{\rho} \equiv \frac{\sigma-1}{\sigma}$, the demand function in the benchmark model (equation (4)) can be written as

$$\hat{q}_{ij}(\omega) = \hat{p}_{ij}(\omega)^{-\frac{1}{1-\hat{\rho}}} \ \hat{P}_j^{\sigma-1} \ \mu \hat{Y}_j.$$

Hence, the price elasticity of demand in the benchmark model is $-\frac{1}{1-\hat{\rho}}$. The price elasticity of demand in the main model is $-\frac{1}{1-\rho}$ (see equation (20)).

Note that $0 < \hat{\rho} < 1$ is true by $\sigma > 1$. For ρ, assumption 1 ensures that $0 < \rho < 1$: assumption 1 follows from imposing $\frac{1}{1-\rho} > 1$, which implies $0 < \rho < 1$.

Comparing $\rho = \frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{\sigma(1-\alpha)}$ (equation (21)) to $\hat{\rho}$, clearly $\rho < \hat{\rho}$ (for $\eta > 0, \beta > 0, \sigma > 1$ and $\alpha < 1$). This makes demand in the main model with $\eta > 0$ less elastic than in the benchmark model ($-\frac{1}{1-\rho} > -\frac{1}{1-\hat{\rho}}$).

Besides, as $\hat{\psi} = \frac{1}{\hat{\rho}}$ and $\psi = \frac{1}{\rho}$ (see equations (7) and (23)), $0 < \rho < \hat{\rho} < 1$ implies $\psi > \hat{\psi}$, i.e., a higher mark-up in the main model with $\eta > 0$. □

A.2. Proof of Proposition 2

To confirm equation (34), log-linearize equation (33) to obtain

$$\begin{aligned}\ln X_{ij} = \ln(\mu(1+\pi)\ \theta_j) &- \frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta} \ln w_i \\ &- \frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta} \ln \tau_{ij} + \ln(w_i L_i \ w_j L_j).\end{aligned}$$

Then, the partial derivative $\frac{\partial \ln X_{ij}}{\partial \ln \tau_{ij}}$ is clearly equal to $\zeta = -\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}$.

(i) $\zeta < 0$ is true if the fraction in equation (34) is positive. The denominator is clearly positive because $\alpha < 1$ (and η, σ, β are non-negative). The numerator is positive if $(\sigma-1)(1-\alpha) > \eta\sigma\beta$. This is ensured by assumption 1: starting from $\sigma > \frac{1-\alpha}{1-\alpha-\eta\beta}$, multiply by the denominator of the right-hand side (which is positive by the second part of assumption 1: $\eta < \frac{1-\alpha}{\beta}$), subtract $(1-\alpha)$ and add $\eta\sigma\beta$ to get the required inequality.

(ii) $\frac{\partial|\zeta|}{\partial\eta}$ must be negative because the numerator of $\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}$ (the fraction in equation (34)) decreases in η and the denominator increases in η.

(iii) By inspection of equations (30) and (31), $\frac{\partial \ln x_{ij}(\varphi)}{\partial \ln \tau_{ij}}$ and $\frac{\partial \ln \pi_{ij}(\varphi)}{\partial \ln \tau_{ij}}$ are both equal to ζ from equation (34). Therefore, the reasoning presented above for aggregate trade flows equally applies to firm-level sales and profits. □

A.3. Proof of Corollary 1

To confirm equation (37), log-linearize equation (36) to obtain

$$\ln N_{ij} = \ln\Big(\frac{\mathcal{C}_j\ \gamma(1-\alpha+\eta\sigma\beta)}{\gamma(1-\alpha+\eta\sigma\beta)-\sigma\beta}\Big) + \frac{\beta}{1-\alpha}\ln\Big(\mu(1+\pi)\ \frac{\mathcal{C}_P\,\theta_j}{\psi}\Big) + \ln(w_i L_i) \\ + \frac{\beta}{1-\alpha}\ln(w_j L_j) - \frac{\sigma\beta}{1-\alpha+\eta\sigma\beta}\ln w_i - \frac{\sigma\beta}{1-\alpha+\eta\sigma\beta}\ln\tau_{ij}.$$

Then, the partial derivative $\frac{\partial \ln N_{ij}}{\partial \ln \tau_{ij}}$ is clearly equal to $\zeta^N = -\frac{\sigma\beta}{1-\alpha+\eta\sigma\beta}$.

(i) $\zeta^N < 0$ is true because $\alpha < 1$ and η, σ, β are non-negative.

(ii) $\frac{\partial|\zeta^N|}{\partial \eta}$ must be negative because η occurs only once and with positive sign in the denominator of $|\zeta^N|$.

(iii) By inspection of equation (32), $\frac{\partial \ln n_{ij}(\varphi)}{\partial \ln \tau_{ij}}$ is equal to ζ^N from equation (37). Therefore, the reasoning presented above for aggregate campaigns equally applies to firm-level campaigns. □

Appendix B. Consumers and Firms in a Dixit-Stiglitz CES Setup

This appendix presents utility maximization, price setting and firm-level equilibrium outcomes in a Dixit-Stiglitz CES setup (Dixit & Stiglitz 1977). While these results are generally well-known, the derivations set the stage for the benchmark model in appendix C, for the results when taking into account social activism in appendix D and for the modeling alternative (see footnote 7) in appendix E.

Note that the notation used in the general derivations of this appendix is independent of the notation in the remainder of the paper.

B.1. Demand and Price Index

Consider the CES utility function

$$u = \int_\Omega s(\omega)^a\ q(\omega)^{\frac{\sigma-1}{\sigma}}\,\mathrm{d}\omega,$$

where Ω is the set of available varieties, $s(\omega) \geq 0$ is a preference shifter that is exogenous to the consumer and shaped by the parameter a, $q(\omega)$ denotes the consumption of variety ω and $\sigma > 1$. The consumer maximizes utility by solving

$$\max_{q(\omega)} u \quad \text{s.t.} \quad \int_\Omega p(\omega)\ q(\omega)\,\mathrm{d}\omega \leq E,$$

where $p(\omega)$ is the price of variety ω and E is total income allocated to consumption of differentiated varieties.

The Lagrangian is

$$\mathcal{L} = \int_{\Omega_j} s(\omega)^a \; q(\omega)^{\frac{\sigma-1}{\sigma}} \, \mathrm{d}\omega \; - \lambda\Big(\int_{\Omega} p(\omega) \; q(\omega) \, \mathrm{d}\omega - E \Big).$$

Compute the first order conditions $\frac{\partial \mathcal{L}}{\partial q(\omega_1)}$, $\frac{\partial \mathcal{L}}{\partial q(\omega_2)}$ (where ω_1 and ω_2 refer to two arbitrary varieties) as well as $\frac{\partial \mathcal{L}}{\partial \lambda}$ and rearrange to obtain:

$$\lambda = \frac{\sigma-1}{\sigma} \; s(\omega_1)^a \; \frac{q(\omega_1)^{-\frac{1}{\sigma}}}{p(\omega_1)}, \qquad \lambda = \frac{\sigma-1}{\sigma} \; s(\omega_2)^a \; \frac{q(\omega_2)^{-\frac{1}{\sigma}}}{p(\omega_2)} \quad \text{and} \quad E = \int_{\Omega} p(\omega) \; q(\omega) \, \mathrm{d}\omega.$$

Equating the two expressions for λ yields

$$q(\omega_1) = \left(\frac{s(\omega_1)}{s(\omega_2)} \right)^{-a\sigma} \left(\frac{p(\omega_2)}{p(\omega_1)} \right)^{\sigma} q(\omega_2). \tag{B.1}$$

Note that ω_1 in equation (B.1) can refer to any variety ω and plug into the budget constraint to get:

$$E = s(\omega_2)^{a\sigma} \; p(\omega_2)^{\sigma} \; q(\omega_2) \; P^{1-\sigma},$$

$$\text{where} \qquad P^{1-\sigma} \equiv \int_{\Omega} s(\omega)^{-a\sigma} \; p(\omega)^{1-\sigma} \, \mathrm{d}\omega. \tag{B.2}$$

$$\Leftrightarrow \qquad q(\omega) = s(\omega)^{-a\sigma} \; p(\omega)^{-\sigma} \; P^{\sigma-1} \; E. \tag{B.3}$$

B.2. Firm-Level Optimum

Consider a firm under monopolistic competition that has marginal costs of $c > 0$ (and no fixed costs) and faces demand of the form

$$q(\omega) = A \; p(\omega)^{-\frac{1}{1-r}}. \tag{B.4}$$

The term $A > 0$ captures factors that are exogenous to the firm and $0 < r < 1$ is a measure of substitutability such that $\frac{1}{1-r}$ is the elasticity of demand (elasticity of substitution as well as absolute value of price elasticity). The firm maximizes its profits, $\pi(\omega)$, by choosing the optimal price:

$$p(\omega) = \underset{p(\omega)}{\arg\max} \left[\pi(\omega) = p(\omega) \; q(\omega) - c \; q(\omega) \right],$$

where, using equation (B.4), profits can be expressed as $\pi(\omega) = A \; p(\omega)^{-\frac{1}{1-r}+1} - c \; A \; p(\omega)^{-\frac{1}{1-r}}$. Then solve the first order condition $\frac{\partial \pi(\omega)}{\partial p(\omega)} \overset{!}{=} 0$ for $p(\omega)$ to obtain the optimal pricing rule:

$$p(\omega) = \frac{1}{r}\, c. \tag{B.5}$$

Denoting revenue as $x(\omega) = p(\omega)\; q(\omega)$, it follows from equations (B.4) and (B.5) that

$$x(\omega) = A\, \left(\frac{1}{r}\, c\right)^{-\frac{r}{1-r}} \tag{B.6}$$

$$\text{and} \qquad \pi(\omega) = x(\omega)\; (1-r), \tag{B.7}$$

where profits are computed from $\pi(\omega) = x(\omega)\left(1 - \frac{c}{p(\omega)}\right)$.

Appendix C. Benchmark Model: No Social Activism – Derivations

This appendix presents derivations of the benchmark model. The benchmark model is a simple model of international trade without social activism. The differentiated goods sector of the main model collapses to that of the benchmark model when setting $\eta = 0$.

C.1. Demand and Price Index

The representative agent maximizes utility from consuming differentiated varieties by solving

$$\max_{\hat{q}_j(\omega)} \hat{U}'_j \quad \text{s.t.} \quad \int_{\Omega_j} \hat{p}_j(\omega)\, \hat{q}_j(\omega)\, \mathrm{d}\omega \leq \mu \hat{Y}_j,$$

where $\hat{U}'_j$ is a monotonous transformation of the CES sub-utility term in equation (3):

$$\hat{U}'_j \equiv \int_{\Omega_j} \hat{q}_j(\omega)^{\frac{\sigma-1}{\sigma}}\, \mathrm{d}\omega.$$

As shown in appendix B.1 (with $a = 0$, $E = \mu\hat{Y}_j$ and upon adding country indices), constrained utility maximization yields $\hat{q}_j(\omega) = \hat{p}_j(\omega)^{-\sigma}\; \hat{P}_j^{\sigma-1}\; \mu\hat{Y}_j$ and $\hat{P}_j^{1-\sigma} = \int_{\Omega_j} \hat{p}_j(\omega)^{1-\sigma}\, \mathrm{d}\omega$ as analog expressions of equations (B.3) and (B.2).

Explicitly using indices for the origin and destination of varieties results in:

$$\hat{q}_{ij}(\omega) = \hat{p}_{ij}(\omega)^{-\sigma}\; \hat{P}_j^{\sigma-1}\; \mu\hat{Y}_j \tag{4}$$

$$\text{and} \qquad \hat{P}_j^{1-\sigma} = \sum_{n=1}^{N} \int_{\Omega_{nj}} \hat{p}_{nj}(\omega)^{1-\sigma}\, \mathrm{d}\omega. \tag{5}$$

C.2. Firm-Level Optimum

As shown in appendix B.2, a firm that faces demand with elasticity $\frac{1}{1-r}$ charges a mark-up over marginal costs of $\frac{1}{r}$ (see equation (B.5)). Here, the elasticity is given by σ (see equation (4)) and – for consistency – represented by $\frac{1}{1-\hat{\rho}} = \sigma$ (i.e., $\hat{\rho} \equiv \frac{\sigma-1}{\sigma}$). Therefore, the mark-up over marginal costs $\frac{w_i \tau_{ij}}{\varphi}$ is $\hat{\psi} = \frac{1}{\hat{\rho}}$:

$$\hat{p}_{ij}(\varphi) = \hat{\psi}\, \frac{w_i\, \tau_{ij}}{\varphi}, \tag{6}$$

$$\text{where} \qquad \hat{\psi} \equiv \frac{\sigma}{\sigma - 1}. \tag{7}$$

It follows from equations (4) and (6) that $x_{ij}(\varphi) = \left(\frac{1}{\hat{\rho}} \frac{w_i\, \tau_{ij}}{\varphi}\right)^{-\frac{\hat{\rho}}{1-\hat{\rho}}} \hat{P}_j^{\sigma-1}\, \mu \hat{Y}_j$ and $\hat{\pi}_{ij}(\varphi) = \hat{x}_{ij}(\varphi)\ (1 - \hat{\rho})$, as shown in appendix B.2, where the analog equations are equations (B.6) and (B.7) (substituting $A = \hat{P}_j^{\sigma-1}\, \mu \hat{Y}_j$, $c = \frac{w_i\, \tau_{ij}}{\varphi}$ and $r = \hat{\rho}$). Using $\hat{\psi} = \frac{1}{\hat{\rho}}$, these equations can be written as:

$$\hat{x}_{ij}(\varphi) = \left(\hat{\psi}\, \frac{w_i\, \tau_{ij}}{\varphi}\right)^{-\frac{1}{\hat{\psi}-1}} \hat{P}_j^{\sigma-1}\, \mu \hat{Y}_j \tag{8}$$

$$\text{and} \qquad \hat{\pi}_{ij}(\varphi) = \hat{x}_{ij}(\varphi)\ (1 - \hat{\psi}^{-1}). \tag{9}$$

C.3. Closing the Model

To derive the equilibrium price index, rewrite the price index from equation (5) as $\hat{P}_j^{1-\sigma} = \sum_{n=1}^{N} w_n L_n \int_1^\infty g_\varphi(\varphi)\ \hat{p}_{nj}(\omega)^{1-\sigma}\, \mathrm{d}\varphi$ and plug in equations (1) and (6) to obtain

$$\hat{P}_j^{1-\sigma} = \hat{\psi}^{1-\sigma} \int_1^\infty \gamma\ \varphi^{\sigma-\gamma-2}\, \mathrm{d}\varphi\ \hat{\theta}_j^{-1},$$

where $\hat{\theta}_j$ is given by equation (11). Convergence of the integral requires:

Assumption C.1. $\gamma > \sigma - 1$.

Then, the integral converges to $\hat{\mathcal{C}}_P^{-1}$ (as defined in section 2.2) and the (transformed) price index is

$$\hat{P}_j^{\sigma-1} = \hat{\psi}^{\sigma-1}\ \hat{\mathcal{C}}_P\ \hat{\theta}_j. \tag{10}$$

To derive dividends per share, plug equations (1), (9) and (10) into

$$\hat{\pi} \sum_{n=1}^{N} w_n L_n = \sum_{n=1}^{N} w_n L_n \int_1^\infty g_\varphi(\varphi) \sum_{l=1}^{N} \hat{\pi}_{nl}(\varphi)\, \mathrm{d}\varphi$$

to get

$$\hat{\pi} \sum_{n=1}^{N} w_n L_n = (1 - \hat{\psi}^{-1})\, \mu(1 + \hat{\pi})\ \hat{\mathcal{C}}_P \int_1^\infty \gamma\ \varphi^{\sigma-\gamma-2}\, \mathrm{d}\varphi \sum_{n=1}^{N} \sum_{l=1}^{N} w_n L_n (w_n\, \tau_{nl})^{1-\sigma}\ w_l L_l\ \hat{\theta}_l.$$

The integral in the last line is the same integral as in the derivation of the price index above; given assumption C.1, it evaluates to $\hat{\mathcal{C}}_P^{-1}$. Therefore, changing the order of summation gives:

$$\hat{\pi} \sum_{n=1}^{N} w_n L_n = (1 - \hat{\psi}^{-1})\, \mu(1 + \hat{\pi}) \,\sum_{l=1}^{N} w_l L_l \,\hat{\theta}_l \sum_{n=1}^{N} w_n L_n (w_n\, \tau_{nl})^{1-\sigma}.$$

By equation (11), the last sum is equal to $\hat{\theta}_l^{-1}$. Cancel and solve for $\hat{\pi}$ to get:

$$\hat{\pi} = \Big(\frac{1}{\mu(1 - \hat{\psi}^{-1})} - 1\Big)^{-1} = \frac{\mu}{\sigma - \mu}. \tag{12}$$

Appendix D. Main Model: Social Activism – Derivations

D.1. Demand and Price Index

Taking into account that due to the outer Cobb-Douglas structure of equation (13) a consumer's optimal expenditure on differentiated goods is given by $\mu\tilde{Y}_j$, the consumer maximizes utility from consuming differentiated varieties by solving

$$\max_{\tilde{q}_j(\omega)} \tilde{U}_j' \quad \text{s.t.} \quad \int_{\Omega_j} p_j(\omega)\, \tilde{q}_j(\omega)\, \mathrm{d}\omega \le \mu\, \tilde{Y}_j,$$

where $p_j(\omega)$ is the price charged from a consumer in country j for variety ω and $\tilde{U}_j'$ is a monotonous transformation of the CES sub-utility term in equation (13):

$$\tilde{U}_j' \equiv \int_{\Omega_j} n_j(\omega)^{-\eta}\, \tilde{q}_j(\omega)^{\frac{\sigma-1}{\sigma}}\, \mathrm{d}\omega.$$

As shown in appendix B.1 (substituting $s(\omega) = n_j(\omega)$, $a = \eta$, $E = \mu\tilde{Y}_j$ and upon adding country indices), constrained utility maximization yields

$$\begin{aligned} \tilde{q}_j(\omega) &= n_j(\omega)^{-\eta\sigma}\, p_j(\omega)^{-\sigma}\, P_j^{\sigma-1}\, \mu\, \tilde{Y}_j \\ \text{and} \qquad P_j^{1-\sigma} &= \int_{\Omega_j} n_j(\omega)^{-\eta\sigma}\, p_j(\omega)^{1-\sigma}\, \mathrm{d}\omega \end{aligned}$$

as analog expressions of equations (B.3) and (B.2).

Explicitly using indices for the origin and destination of varieties (along the lines of footnote 6) as well as aggregating individual consumers' demand to the country level ($q_{ij}(\omega) = L_j\, \tilde{q}_{ij}(\omega)$) results in:

$$q_{ij}(\omega) = n_{ij}(\omega)^{-\eta\sigma}\, p_{ij}(\omega)^{-\sigma}\, P_j^{\sigma-1}\, \mu\, Y_j \tag{18}$$

$$\text{and} \qquad P_j^{1-\sigma} = \sum_{n=1}^{N} \int_{\Omega_{nj}} n_{nj}(\omega)^{-\eta\sigma}\, p_{nj}(\omega)^{1-\sigma}\, \mathrm{d}\omega. \tag{19}$$

D.2. Firm-Level Optimum

As shown in appendix B.2, a firm that faces demand with elasticity $\frac{1}{1-r}$ charges a mark-up over marginal costs of $\frac{1}{r}$ (see equation (B.5)). Here, the elasticity is given by $\frac{1}{1-\rho}$ (see equations (20) and (21)) and therefore, the mark-up over marginal costs $\frac{w_i\,\tau_{ij}}{\varphi}$ is $\psi = \frac{1}{\rho}$:

$$p_{ij}(\varphi) = \psi\ \frac{w_i\,\tau_{ij}}{\varphi}, \tag{22}$$

$$\text{where} \qquad \psi \equiv \frac{\sigma(1-\alpha)}{(\sigma-1)(1-\alpha)-\eta\sigma\beta}. \tag{23}$$

It follows from equations (20) and (22) that

$$x_{ij}(\varphi) = \mathcal{C}_j^{-\frac{\eta}{1-\rho}} \left(\psi\ \frac{w_i\,\tau_{ij}}{\varphi}\right)^{-\frac{\rho}{1-\rho}} [P_j^{\sigma-1}\ \mu\,Y_j]^{\frac{1}{\sigma(1-\rho)}}$$

$$\text{and} \qquad \pi_{ij}(\varphi) = x_{ij}(\varphi)\ (1-\rho),$$

as shown in appendix B.2, where the analog equations are equations (B.6) and (B.7) (substituting $A = \mathcal{C}_j^{-\frac{\eta}{1-\rho}}\ [P_j^{\sigma-1}\ \mu\,Y_j]^{\frac{1}{\sigma(1-\rho)}}$, $c = \frac{w_i\ \tau_{ij}}{\varphi}$ and $r = \rho$). Using $\psi = \frac{1}{\rho}$, these equations can be written as:

$$x_{ij}(\varphi) = \mathcal{C}_j^{-\frac{\eta\,\psi}{\psi-1}} \left(\psi\ \frac{w_i\,\tau_{ij}}{\varphi}\right)^{-\frac{1}{\psi-1}} [P_j^{\sigma-1}\ \mu\,Y_j]^{\frac{\psi}{\sigma(\psi-1)}} \tag{24}$$

$$\text{and} \qquad \pi_{ij}(\varphi) = x_{ij}(\varphi)\ (1-\psi^{-1}). \tag{25}$$

Further, plugging equations (20) and (22) into equation (16) yields (using $\rho = \frac{1}{\psi}$ and equation (23)):

$$n_{ij}(\varphi) = \mathcal{C}_j^{\frac{\psi}{\sigma(\psi-1)}} \left(\psi\ \frac{w_i\,\tau_{ij}}{\varphi}\right)^{-\frac{\beta\,\psi}{(1-\alpha)(\psi-1)}} [P_j^{\sigma-1}\ \mu\,Y_j]^{\frac{\beta\,\psi}{\sigma(1-\alpha)(\psi-1)}}. \tag{26}$$

Note (for convenience in subsequent derivations) that by substituting ψ in the exponents of equations (24) and (26), these equations can be rewritten as

$$x_{ij}(\varphi) = \mathcal{C}_j^{-\frac{\eta\sigma(1-\alpha)}{1-\alpha+\eta\sigma\beta}} \left(\psi\ \frac{w_i\,\tau_{ij}}{\varphi}\right)^{-\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}} [P_j^{\sigma-1}\ \mu\,Y_j]^{\frac{1-\alpha}{1-\alpha+\eta\sigma\beta}}, \tag{24'}$$

$$n_{ij}(\varphi) = \mathcal{C}_j^{\frac{1-\alpha}{1-\alpha+\eta\sigma\beta}} \left(\psi\ \frac{w_i\,\tau_{ij}}{\varphi}\right)^{-\frac{\sigma\beta}{1-\alpha+\eta\sigma\beta}} [P_j^{\sigma-1}\ \mu\,Y_j]^{\frac{\beta}{1-\alpha+\eta\sigma\beta}}. \tag{26'}$$

D.3. Derivation of Price Index

Rewrite equation (19) as $P_j^{1-\sigma} = \sum_{n=1}^{N} w_n L_n \int_1^\infty g_\varphi(\varphi)\, n_{nj}(\varphi)^{-\eta\sigma}\, p_{nj}(\varphi)^{1-\sigma}\, \mathrm{d}\varphi$ and plug in equations (1), (22) and (26') to obtain

$$P_j^{1-\sigma} = \mathcal{C}_j^{-\frac{(1-\alpha)\,\eta\sigma}{1-\alpha+\eta\sigma\beta}}\; \psi^{-\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}}\; \theta_j^{-1}\; [P_j^{\sigma-1}\; \mu\, Y_j]^{-\frac{\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}} \int_1^\infty \gamma\; \varphi^{\sigma-\gamma-\frac{\eta\sigma^2\beta}{1-\alpha+\eta\sigma\beta}-2}\, \mathrm{d}\varphi,$$

$$\text{where} \qquad \theta_j \equiv \Big[\sum_{n=1}^{N} w_n L_n\, (w_n\, \tau_{nj})^{-\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}}\Big]^{-1}. \tag{28}$$

Under assumption 2 ($\gamma > \frac{\sigma(1-\alpha)}{1-\alpha+\eta\sigma\beta} - 1$) the integral converges to $\mathcal{C}_P^{-1}$, where

$$\mathcal{C}_P \equiv \frac{(1+\gamma)(1-\alpha+\eta\sigma\beta) - \sigma(1-\alpha)}{\gamma\,(1-\alpha+\eta\sigma\beta)}.$$

Therefore:

$$P_j^{1-\sigma} = \mathcal{C}_j^{-\frac{(1-\alpha)\,\eta\sigma}{1-\alpha+\eta\sigma\beta}}\; \psi^{-\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}}\; (\mathcal{C}_P\, \theta_j)^{-1}\; [P_j^{\sigma-1}\; \mu\, Y_j]^{-\frac{\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}},$$

$$\Leftrightarrow \qquad P_j^{\sigma-1} = \mathcal{C}_j^{\eta\sigma}\; \psi^{\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha}}\; (\mathcal{C}_P\, \theta_j)^{\frac{1-\alpha+\eta\sigma\beta}{1-\alpha}}\; [\mu\, Y_j]^{\frac{\eta\sigma\beta}{1-\alpha}}. \tag{27}$$

D.4. Derivation of Dividends per Share

Plug equations (1), (25) and (27) into

$$\pi \sum_{n=1}^{N} w_n L_n = \sum_{n=1}^{N} w_n L_n \int_1^\infty g_\varphi(\varphi) \sum_{l=1}^{N} \pi_{nl}(\varphi)\, \mathrm{d}\varphi$$

to get

$$\pi \sum_{n=1}^{N} w_n L_n = (1-\psi^{-1})\; \mu(1+\pi)\; \mathcal{C}_P \int_1^\infty \gamma\; \varphi^{-\gamma-1+\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}}\, \mathrm{d}\varphi \,\cdot$$
$$\sum_{n=1}^{N}\sum_{l=1}^{N} w_n L_n (w_n\, \tau_{nl})^{-\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}}\; w_l L_l\; \theta_l.$$

The integral in this equation is the same integral as in the derivation of the price index (see appendix D.3); given assumption 2, it evaluates to $\mathcal{C}_P^{-1}$. Therefore, changing the order of summation gives:

$$\pi \sum_{n=1}^{N} w_n L_n = (1-\psi^{-1})\; \mu(1+\pi)\; \sum_{l=1}^{N} w_l L_l\; \theta_l \sum_{n=1}^{N} w_n L_n (w_n\, \tau_{nl})^{-\frac{(\sigma-1)(1-\alpha)-\eta\sigma\beta}{1-\alpha+\eta\sigma\beta}}.$$

By equation (28), the last sum is equal to θ_l^{-1}. Cancel and solve for π to get:

$$\pi = \left(\frac{1}{\mu(1-\psi^{-1})} - 1\right)^{-1}. \tag{29'}$$

Using equation (23):

$$\pi = \frac{\mu(1-\alpha+\eta\sigma\beta)}{(\sigma-\mu)(1-\alpha)-\mu\eta\sigma\beta}. \tag{29”}$$

D.5. Gravity for NGO Campaigns

Plug equations (1) and (32) into equation (35) to get

$$N_{ij} = \mathcal{C}_j \left(\mu(1+\pi)\ \frac{\mathcal{C}_P\,\theta_j}{\psi}\right)^{\frac{\beta}{1-\alpha}} (w_i\,\tau_{ij})^{-\frac{\sigma\beta}{1-\alpha+\eta\sigma\beta}}\ w_i L_i\ (w_j L_j)^{\frac{\beta}{1-\alpha}} \int_1^\infty \gamma\ \varphi^{\frac{\sigma\beta}{1-\alpha+\eta\sigma\beta}-\gamma-1}\,\mathrm{d}\varphi.$$

Under assumption 3, the integral converges to $\frac{\gamma(1-\alpha+\eta\sigma\beta)}{\gamma(1-\alpha+\eta\sigma\beta)-\sigma\beta}$. Therefore:

$$N_{ij} = \frac{\mathcal{C}_j\ \gamma(1-\alpha+\eta\sigma\beta)}{\gamma(1-\alpha+\eta\sigma\beta)-\sigma\beta} \left(\mu(1+\pi)\ \frac{\mathcal{C}_P\,\theta_j}{\psi}\right)^{\frac{\beta}{1-\alpha}} (w_i\,\tau_{ij})^{-\frac{\sigma\beta}{1-\alpha+\eta\sigma\beta}}\ w_i L_i\ (w_j L_j)^{\frac{\beta}{1-\alpha}}. \tag{36}$$

Appendix E. Modeling Alternative: Sales in Warm Glow

This appendix sketches the alternative modeling approach outlined in footnote 7, where $q_{ij}(\omega)$ in equation (14) is replaced by the firm's sales volume $x_{ij}(\omega)$. Notation in this appendix matches notation in the main model, but objects that are specific to the modeling alternative are indicated with a prime (e.g., x' vs. x).

Instead of equation (14), warm glow is given by

$$\tilde{\mathcal{S}}'_{ij}(\omega) = \xi_j\ x'_{ij}(\omega)^\beta\ \tilde{n}'_{ij}(\omega)^\alpha. \tag{E.1}$$

The funding condition is $\frac{\partial\,\tilde{\mathcal{S}}'_{ij}(\omega)}{\partial\,\tilde{n}'_{ij}(\omega)} \geq p_C$, which implies (as counterpart of equation (16))

$$n'_{ij}(\omega) = \mathcal{C}_j\ p'_{ij}(\omega)^{\frac{\beta}{1-\alpha}}\ q'_{ij}(\omega)^{\frac{\beta}{1-\alpha}}, \tag{E.2}$$

where $\mathcal{C}_j$ is given by equation (17). Plugging equation (E.2) into demand (which is structurally identical to equation (18)) and solving for $q'_{ij}(\omega)$ gives

$$q'_{ij}(\omega) = \mathcal{C}_j^{-\frac{\eta\sigma(1-\alpha)}{1-\alpha+\eta\sigma\beta}}\ p'_{ij}(\omega)^{-\frac{1}{1-\rho'}}\ [P_j'^{\sigma-1}\ \mu Y'_j]^{\frac{1-\alpha}{1-\alpha+\eta\sigma\beta}} \tag{E.3}$$

as counterpart of equation (20), with

$$\rho' \equiv \frac{(\sigma-1)(1-\alpha)}{\sigma(1-\alpha)+\eta\sigma\beta}. \tag{E.4}$$

This implies for the pricing rule (along the lines of appendices B.2 and D.2):

$$p'_{ij}(\varphi) = \psi' \ \frac{w_i\,\tau_{ij}}{\varphi}, \tag{E.5}$$

$$\text{where} \qquad \psi' \equiv \frac{\sigma(1-\alpha)+\eta\sigma\beta}{(\sigma-1)(1-\alpha)}. \tag{E.6}$$

Note that $\psi' > \hat{\psi}$, as is $\psi > \hat{\psi}$ (see proposition 1 and equation (7)): Also in this modeling approach, social activism ($\eta > 0$) increases mark-ups.

Sales, profits and firm-level campaigns (analog to equations (24'), (25) and (26')) are given by:

$$x'_{ij}(\varphi) = \mathcal{C}_j^{-\frac{\eta\sigma(1-\alpha)}{1-\alpha+\eta\sigma\beta}} \left(\psi' \ \frac{w_i\,\tau_{ij}}{\varphi}\right)^{-\frac{(\sigma-1)(1-\alpha)}{1-\alpha+\eta\sigma\beta}} \ [P_j'^{\sigma-1} \ \mu\,Y'_j]^{\frac{1-\alpha}{1-\alpha+\eta\sigma\beta}}, \tag{E.7}$$

$$\pi'_{ij}(\varphi) = x'_{ij}(\varphi) \ (1-\psi'^{-1}) \tag{E.8}$$

$$\text{and} \qquad n'_{ij}(\varphi) = \mathcal{C}_j^{\frac{1-\alpha}{1-\alpha+\eta\sigma\beta}} \left(\psi' \ \frac{w_i\,\tau_{ij}}{\varphi}\right)^{-\frac{(\sigma-1)\beta}{1-\alpha+\eta\sigma\beta}} \ [P_j'^{\sigma-1} \ \mu\,Y'_j]^{\frac{\beta}{1+\alpha+\eta\sigma\beta}}. \tag{E.9}$$

The price index can be derived along the lines of appendix D.3, using equations (E.5) and (E.9). The assumption required to compute the equilibrium price index is:

Assumption E.1. $\gamma > \dfrac{\sigma(1-\alpha)+\eta\sigma\beta}{1-\alpha+\eta\sigma\beta} - 1.$

Then, the price index can be expressed as

$$P_j'^{\sigma-1} = \mathcal{C}_j^{\eta\sigma} \ \psi'^{\sigma-1} \ (\mathcal{C}'_P\,\theta'_j)^{\frac{1-\alpha+\eta\sigma\beta}{1-\alpha}} \ [\mu\,Y'_j]^{\frac{\eta\sigma\beta}{1-\alpha}}, \tag{E.10}$$

$$\text{where} \qquad \theta'_j \equiv \Big[\sum_{n=1}^{N} w_n L_n \,(w_n\,\tau_{nj})^{-\frac{(\sigma-1)(1-\alpha)}{1-\alpha+\eta\sigma\beta}}\Big]^{-1} \tag{E.11}$$

$$\text{and} \qquad \mathcal{C}'_P \equiv \frac{\gamma(1-\alpha+\eta\sigma\beta)-(\sigma-1)(1-\alpha)}{\gamma\,(1-\alpha+\eta\sigma\beta)}. \tag{E.12}$$

Using the price index, equilibrium sales and campaigns can be computed from equations (E.7) and (E.9), analog to equations (30) and (32):

$$x'_{ij}(\varphi) = \mu(1+\pi') \ \mathcal{C}'_P\,\theta'_j \left(\frac{w_i\,\tau_{ij}}{\varphi}\right)^{-\frac{(\sigma-1)(1-\alpha)}{1-\alpha+\eta\sigma\beta}} \ w_j L_j, \tag{E.13}$$

$$n'_{ij}(\varphi) = \mathcal{C}_j \left(\mu(1+\pi') \ \mathcal{C}'_P\,\theta'_j\right)^{\frac{\beta}{1-\alpha}} \left(\frac{w_i\,\tau_{ij}}{\varphi}\right)^{-\frac{(\sigma-1)\beta}{1-\alpha+\eta\sigma\beta}} \ (w_j L_j)^{\frac{\beta}{1-\alpha}}. \tag{E.14}$$

Note that there is no term ψ' in equation (E.14) – as opposed to equation (32). This is one of the few structural differences to the main model and stems from the additional term $p'_{ij}(\omega)$ in equation (E.2), which reflects that sales volume, not quantity, determines warm glow in this modeling approach.

Dividends per share are (computed along the lines of appendix D.4) are given by:

$$\pi' = \left(\frac{1}{\mu(1-\psi'^{-1})} - 1\right)^{-1} = \frac{\mu(1-\alpha+\eta\sigma\beta)}{(\sigma-\mu)(1-\alpha)+(1-\mu)\eta\sigma\beta}. \tag{E.15}$$

The gravity equation for trade in final goods (analog to equation (33)) is

$$X'_{ij} = \mu(1+\pi')\ \theta'_j\ (w_i\,\tau_{ij})^{-\frac{(\sigma-1)(1-\alpha)}{1-\alpha+\eta\sigma\beta}}\ w_i L_i\ w_j L_j. \tag{E.16}$$

Comparably to proposition 2, $\frac{\partial \ln X'_{ij}}{\partial \ln \tau_{ij}} = -\frac{(\sigma-1)(1-\alpha)}{1-\alpha+\eta\sigma\beta}$, which is negative and decreases (in absolute value) in η.

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