



The Interplay Between Supply Chain Transparency and NGO Pressure: A Quantitative Analysis in the Fashion Industry Context

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Abstract

Companies have been experiencing increasing pressure from NGOs to overcome unethical and unsustainable behaviours. The purpose of this research was to study the interplay between supply chain transparency and NGO pressure. The analysis builds on the literature on supply chain transparency and institutional pressures. We conducted a time-lagged, multi-level regression analysis that included data from 270 fashion companies over a 5-year period to investigate the effect of NGO pressure on transparency and vice versa. The results revealed that companies with higher levels of transparency are more likely to be pressured by NGOs than less transparent companies. Furthermore, our findings show that, depending on the number of campaigns, NGO power and communication about campaigns, NGO pressure can either stimulate corporate transparency or turn into a negative effect that leads to lower levels of transparency.

Keywords Supply chain transparency · Sustainability · NGO pressure · Quantitative analysis

Introduction

In *A Business Guide to Development Actors*, Claude Martin, former general director of the World Wildlife Fund, claimed that “NGOs are now turning to market forces as a catalyst for change” (WBCSD, 2004, p. 12). Indeed, given the ethical controversies and sustainability challenges businesses are causing and facing, such as modern slavery (e.g. Islam & van Staden, 2022; Smith & Johns, 2020) and climate change (Fiandrino et al., 2022; Whiteman et al., 2013), businesses are in urgent need of such catalysts for change. Numerous NGOs aim to meet these expectations by pushing corporations towards higher levels of transparency. They reveal corporate contributions to incidents of unsustainability and unethicity. By fostering supply chain transparency, NGOs

also aim to drive companies towards the adoption of higher levels of sustainability in their supply chains (Meixell & Luoma, 2015). Based on Schäfer (2023), we define sustainable supply chain transparency as “the visibility and disclosure of sustainable supply chain information between actors within and outside the supply chain” (p. 597).

Transparency can be viewed as promoting ethical behaviour in multiple ways. First, through supply chain transparency, responsibility can be assigned and unethically behaving companies can be held accountable. This provides stakeholders with the opportunity to pressure companies to change their behaviour or to collaborate with companies to find ethical solutions (Gardner et al., 2019). Second, supply chain transparency creates trust among stakeholders. Consumers, for example, reward higher levels of transparency with an increased willingness to buy and thus provide incentives for ethical corporate practices (Egels-Zandén & Hansson, 2016). Third, transparency is seen as a driver of “ethics-oriented behavioural changes in supply chain management practices” (Pinnington et al., 2023, p. 620). However, the role NGOs can play in stimulating higher levels of transparency in the context of corporate sustainability and business ethics remains largely unexplored, as Brenkert (2019) emphasises. Likewise, for the specific context of supply chain transparency, Sodhi and Tang (2019) stress that the role of NGOs deserves further attention. Therefore, this

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research focuses on sustainable supply chain transparency to analyse the interplay between NGOs and corporations. Our work highlights the bidirectional nature of the relationship between NGO pressure and supply chain transparency, which has only received scant empirical attention in the extant literature.

To stimulate changes in corporate practices, NGOs need to decide whether to target companies and supply chains that are highly transparent (and thus offer the potential for revealing incidents of unsustainability) or those that are highly non-transparent (to improve their transparency in the first place). As an example of the former, the Clean Clothes Campaign (CCC) has set up the campaign #PayYourWorkers. The campaign targets fashion companies that are not paying workers in their supply chain entitled wages, lay off workers or provide unsafe workplaces. While the campaign previously targeted other fashion companies in 2022/2023, the campaign also accused Adidas of owing workers in eight Cambodian factories US\$11.7 million and made calls for individuals to participate in a petition against Adidas, write emails to the company and post on social media (Twitter and Instagram) in order to pressure Adidas to sign a negotiated severance guarantee fund and pay the workers (Adidas Steals, 2023; #PayYourWorkers, 2023).

While NGO pressure for sustainability and transparency in corporate supply chains can positively affect sustainable development (e.g., Govindan et al., 2021; Meixell & Luoma, 2015; Seuring et al., 2008), it can also be problematic for companies. For example, NGO pressure might damage a company's reputation and, thus, result in a loss of sales (Deri, 2003; Lo et al., 2018). Consequently, it is important for companies to know whether it is rewarding to proactively improve the level of supply chain transparency and, in turn, avoid undesired NGO pressure and accompanying threats to corporate reputation or whether such improvement with regard to transparency attracts additional NGO pressure.

To help resolve these dilemmas, we asked the following two research questions:

- RQ1 How does the level of NGO pressure a company receives with regard to sustainability influence its level of supply chain transparency?
- RQ2 How does the level of supply chain transparency of a company influence the level of NGO pressure the company experiences?

To address these research questions, the fashion industry was chosen as the context of this study. Fashion supply chains contribute to some of the most severe ethical and sustainability-related challenges, including the use of mandatory labour, climate change and further aspects of

environmental pollution (Jacobs et al., 2018; Mair et al., 2016). Therefore, it is not surprising that this specific industry is under pressure from new and potentially added regulation and NGOs (cf. Chowdhury, 2017).

Methodologically, the analysis builds on empirical data from two longitudinal datasets (2017–2021). One dataset offers information on NGO campaigns against fashion companies (Sigwatch), and the other dataset provides information on the transparency of fashion companies (Fashion Transparency Index [FTI]). The results show that NGO pressure can indeed lead to a subsequent increase in supply chain transparency but also that companies with a high level of transparency experience more pressure than companies with a lower level of transparency.

Literature Review and Development of Hypotheses

NGOs as a Source of Normative Pressure for Supply Chain Transparency

NGOs take on different roles to achieve their set sustainability goals. First, as 'watchdogs', they identify and report abuses in the supply chain (Doorey, 2011). NGOs use disclosed supply chain information from companies to check whether, for example, the working conditions in disclosed factories are respected. If not, they put pressure on the companies to improve the working conditions (e.g. Laudal, 2010). Second, as creators of supply chain transparency, NGOs provide supply chain information to the public. They do this, for example, by carrying out certifications and providing labels for companies (Gardner et al., 2019; Kashmanian, 2017). NGOs may also expose occurrences of unethically in supply chains and publicise these abuses with the intent to pressure companies to improve (Lo et al., 2018). Finally, as collaborators, NGOs can work together with companies to make supply chains more sustainable (Chen et al., 2017; Meixell & Luoma, 2015) and also improve the companies' efforts to be more transparent (Islam & van Staden, 2018).

Institutional theory is often applied to explain how NGO pressure affects the decisions of companies to change their behaviour regarding sustainable development (e.g. Glover et al., 2014; Zhu & Sarkis, 2007). Three types of isomorphic processes have been distinguished: coercive, normative and mimetic (DiMaggio & Powell, 1983). Coercive pressure includes pressure from governments or authorities. With an increasing number of legal regulations in many countries, companies are being forced to respond to due diligence obligations towards people and nature in their supply chains. Examples include the California Transparency Act (2010) (Birkey et al., 2018), the UK Modern Slavery Act (2015)

(Islam & van Staden, 2022) and the German Due Diligence Act (2023) (Weihrauch et al., 2022). In addition to the main concern of these laws in improving working conditions, they also include a reporting obligation for companies, forcing them to higher levels of transparency (Pinnington et al., 2023). Mimetic pressure refers to competitors that adopt practices to avoid experiencing a competitive disadvantage (Glover et al., 2014; Saeed & Kersten, 2019). Lastly, normative pressure refers to pressure from NGOs or society. Thus, when analysing NGO pressure on companies, normative pressure, in particular, is of high relevance.

While companies are likely to react to NGO pressure regarding supply chain sustainability, it remains unclear *how* they will react. Oliver (1991) created a prominent typology of different possible strategic responses to institutional pressures by companies. These strategies include rather passive strategies of conformity (labelled ‘acquiesce’ and ‘compromise’ as appropriate), avoidance strategies and more active strategies of resistance (e.g. ‘defy’ and ‘manipulate’). Acquiescence implies *inter alia* accepting external advice and compliance, understood as conscious obedience to institutional requirements, values and norms. Companies may choose such strategies if they anticipate associated benefits, such as social support, legitimacy, stability or the avoidance of negative assessment (see also DiMaggio, 1988; Meyer & Rowan, 1983; Meyer & Scott, 1983; Pfeffer & Salancik, 1978). Like acquiescence, compromise strategies imply a high degree of conformity to institutional rules, norms and values. Still, with these strategies, companies take a somewhat less passive role, as they try to balance, pacify or bargain with regard to institutional pressures (Oliver, 1991). For example, concerning NGO pressure, companies will frequently feel the necessity of balancing the interests and pressure of NGOs with the interests of other stakeholders, such as shareholders. Thus, while complete conformity to the pressure of one group of stakeholders is not shown under a compromise strategy, companies following such a strategy will aim to conform, at least to a certain minimum standard. In contrast, avoidance, defiance and manipulation strategies imply far lower levels of conformity to institutional pressures. Avoidance may, for instance, include disguising nonconformity with institutional pressure. Likewise, Oliver (1991) states that ignoring and contesting institutional pressures are examples of defiance strategies. Lastly, manipulation strategies imply an attempt to influence and eventually control sources of institutional pressure.

Picking up this differentiation of possible strategic responses to institutional pressures, companies are primarily likely to conform to normative NGO pressure when they choose acquiescence or compromise strategies. Still, which of the above strategies is chosen depends on numerous factors. Oliver (1991) suggested that in contexts characterised by high levels of uncertainty, organisations are more likely

to conform to institutional pressure and choose strategies of acquiescence or compromise. Likewise, companies are more likely to accede to the requirements of the institutional environment and show high levels of conformity to isomorphic pressures when the context shows high levels of interconnectedness among the different relevant actors (see also DiMaggio & Powell, 1983). As supply chain sustainability is a context characterised by high degrees of uncertainty and interconnectedness, it can be expected that NGO pressure on supply chain sustainability will create a reaction by companies that conform to the demands of NGOs. Thus, the first hypothesis was as follows:

H1 Companies that experience higher levels of NGO pressure with regard to sustainability will subsequently increase their levels of transparency in supply chains.

Supply Chain Transparency as an Antecedent of NGO Pressure

The previous section highlighted the role of normative pressure in creating transparency in supply chains. Stakeholders are an important source of these pressures, as they can influence companies and their supply chains (Govindan et al., 2021; Saeed & Kersten, 2019). As shown in the development of H1, NGOs play a particularly important role in influencing corporate supply chains by creating normative pressure. Indeed, Deri (2003) argued that NGOs are the key driver behind the increasing public expectation that corporations need to act in a socially responsible manner. However, the role of NGOs in fostering sustainable supply chain transparency and reacting to supply chain transparency remains largely unexplored.

In earlier literature, the pressure of stakeholders is identified as a main driver for the extension of sustainability practices in supply chains (e.g. Meixell & Luoma, 2015; Seuring & Müller, 2008). In a systematic literature review, Schäfer (2023) points out that “[d]espite the ample research on supply chain transparency and sustainability, the relationship between these concepts remains unclear (Mol, 2015). Results do not provide a clear picture when it comes to the direction of an effect, whether it is positive (e.g., Dubey et al., 2017) or negative (e.g., Gold & Heikkurinen, 2018) or if there is any effect at all (e.g., Longoni & Cagliano, 2018)” (p. 580). Based on the ambiguous results of earlier studies, researchers have discussed whether supply chain transparency should be understood as a means to improve sustainability (e.g. Lo et al., 2018; Searcy et al., 2022) or whether supply chain transparency should be seen as an end in itself (Dingwerth & Eichinger, 2010; Egels-Zandén et al., 2015).

Looking at the understanding of supply chain transparency as a means to achieve sustainability (this concept has been coined ‘transformational transparency’ by Searcy et al.,

2022), three different modes of action can be distinguished. First, supply chain transparency can be understood as an internal change tool. Companies may make more sustainable choices with more knowledge about their supply chains (e.g. Busse et al., 2017; Doorey, 2011; Fritz et al., 2017; Hess, 2018). Second, supply chain transparency can be seen as a lever for achieving sustainability in supply chains. From the perspective of a specific company, transparency may serve to pressure suppliers towards higher levels of sustainability (Egels-Zandén et al., 2015). From a stakeholder perspective, by disclosing violations of human rights or environmental impacts of production, NGOs can use supply chain transparency to pressure companies (Lo et al., 2018). Third, supply chain transparency can be viewed as a tool to ‘control’ companies. Stakeholders, such as NGOs, may use disclosed information to scrutinise the performance of companies and put pressure on them as an outcome if a company is not living up to its expectations (Birkey et al., 2018; Hess, 2018). This ‘increased surveillance and control pressure’ (Egels-Zandén et al., 2015, p. 102) leads to more sustainability in the behaviour of companies to reduce the risk of stakeholders discovering unethical behaviour (Busse et al., 2017; Mol, 2015; Pinnington et al., 2023).

Through the disclosure of information, companies also reduce existing information asymmetry and therefore empower stakeholders (Egels-Zandén & Hansson, 2016; Searcy et al., 2022). In this case, through supply chain transparency, power can be shifted from companies to stakeholders (Martinez & Crowther, 2008). In the case of consumers as stakeholders, Egels-Zandén and Hansson (2016) show in their case study that consumers do not actually gain power despite the endeavours of companies to create higher levels of transparency. One explanation could be that published information is not presented in a way that consumers can understand or even use to draw comparisons between different companies (Egels-Zandén & Hansson, 2016) when making purchasing decisions. While consumers might not always know how to process and understand the disclosed information, experts working in NGOs will be able to do so (Gardner et al., 2019). Consequently, NGOs can play an important role in translating sustainable supply chain information for stakeholders.

Deri (2003) highlighted the important role of NGOs in increasing public expectations concerning corporations’ ethical business conduct. Thus, when companies increase levels of supply chain transparency, they might indeed empower NGOs to reduce information asymmetry by making complex information on unsustainable practices in supply chains visible and understandable to other stakeholders, such as consumers (cf. Egels-Zandén & Hansson, 2016) or by focusing on their role in monitoring companies (Searcy et al., 2022). Thus, endeavours to increase transparency in supply chains by companies might result

in higher levels of NGO pressure if NGOs decide to primarily target companies and supply chains that are highly transparent, as they offer greater potential for revealing instances of unsustainability. Following this argument, we created the following hypothesis:

H2a Companies with higher levels of transparency experience higher levels of NGO pressure with regard to sustainability.

As seen in the development of H2a, researchers discuss supply chain transparency as an essential driver of sustainable supply chains (Seuring & Müller, 2008). The disclosure of sustainability information is therefore seen as a first step towards a process of organisational change (Hess, 2018). However, some proponents of this argumentation have fallen into what Hess (2018) calls a ‘transparency trap’ or follow a so-called ‘transparency fallacy’ (Gold & Heikkurinen, 2018) by not realising the limitations of the transformative power of transparency. Thus, in contrast to considering supply chain transparency as a pathway to achieving higher levels of sustainability, supply chain transparency may also be beneficial for other reasons. Depending on how sustainability is understood, some authors even include supply chain transparency in definitions of sustainability. If transparency is understood as an element of sustainability, it can be approached by increasing transparency (Brun et al., 2020). Furthermore, supply chain transparency can be desirable for companies for other reasons. If companies can make use of transparency, they will be able to sell more products, as research shows that the willingness to buy increases through supply chain transparency (Egels-Zandén & Hansson, 2016). Finally, supply chain transparency reduces operational risk by building trust through disclosing information to stakeholders and enabling collaboration with them (Montecchi et al., 2021). Following the logic brought forward by Montecchi et al. (2021), efforts by companies to increase transparency concerning their supply chains will create higher levels of trust among NGOs. As a result, NGOs might be less likely to put pressure on companies that experience a high level of trust. Thus, following this argument, increasing transparency proactively may reduce the external pressure by NGOs regarding supply chain sustainability. This argument led to the creation of the following alternative hypothesis:

H2b Companies with higher levels of transparency experience lower levels of NGO pressure with regard to sustainability.

Figure 1 provides a visual summary of the hypotheses.

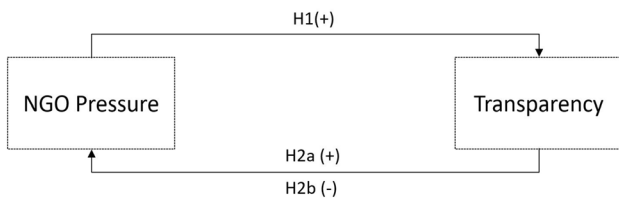


Fig. 1 Summary of the hypotheses

Methodology

Dataset

For this research, we used two distinct datasets. The first dataset, the FTI database, was set up by the initiative Fashion Revolution (2021). It measures the public disclosure of information shared directly by fashion brands or retailers with an annual turnover of at least US\$400 million. The disclosed information includes commitment, traceability, impact and activity information. Since 2017, the FTI has been published annually. The second database, compiled by the Sigwatch consultancy, contains information on NGOs and their campaigning activities from 2010 to 2021. A campaign is defined “as a series of events over time, usually designed to achieve a specific objective of the NGO or coalition of NGOs” (Koenig, 2017, p. 2).

Table 1 provides an overview of the two databases, their content and the items used in conducting our research. For the purpose of this research, we selected NGO campaigns

targeting fashion brands or retailers that also appeared in the FTI. The match of the FTI and Sigwatch datasets resulted in 270 fashion brands or retailers (not necessarily represented in each year) and their associated campaign events. Given the comprehensive nature of the Sigwatch database, companies represented only in the FTI but not in the former were assumed not to have been targets of NGO campaign activities.

One example of such a campaign in the Sigwatch dataset is the previously mentioned #PayYourWorkers campaign. In 2021, the CCC targeted Amazon, Nike, Next, H&M and Primark (#PayYourWorkers, 2021). While it was one campaign of the CCC, it was counted as one case for each company for the year 2021. The campaign presented the companies in a specific context of unsafe working places, minimisation of wages and layoffs due to the pandemic. Therefore, the companies were mentioned in a negative tone (sentiment: -1). While Amazon, Nike and Next were directly named in the headline of the campaign “Amazon, Nike, and Next: It’s Time to Pay Your Workers” (prominence: 4), H&M and Primark were named in the section *News*, where headlines of articles regarding wages in the pandemic were named and the full article was linked (prominence: 2). Since the CCC was organised as a network of different NGOs, five specific NGOs that carried out the campaign were mentioned. Each was rated by geographical reach (NGO power: Clean Cloth Campaign International 2.5; Green America 1.5; Labour Behind the Label 1.5; European Coalition for Corporate Justice 2.5; Action Consommateurs Travailleurs 1.5).

Table 1 Overview of the database

	FTI database	Sigwatch database ¹	
Scope	5 data sets 2017–2021	12 data sets 2010–2021	
Content	Fashion Transparency Index (FTI) among brands and retailers Transparency scores of commitment, traceability, impact, activity and key topic and overall FTI	NGO campaign events addressing companies in multiple industries	
Variables used for analysis	Overall FTI score (total combined score)	Case count	Number of NGO activities per company [count]
		NGO power	Geographical reach of NGO group [1 ‘local’ to 9 ‘global’]
		Prominence	Prominence of mentioning the company in the NGO communication [1 ‘mentioned only in accompanying report or document, if there is one’ to 4 ‘mentioned in the headline’]
		Sentiment	Tone of mentioning the company in NGO communication [-2 ‘very negative’ to 2 ‘very positive’]
		Industry selection	Classification as fashion company [0 other; 1 fashion]

¹Descriptions of variables from the Sigwatch database are quoted from Koenig (2017)

Table 2 Descriptive statistics of model variables

	Min	Max	Mean	Standard deviation	Skewness	(Excess) kurtosis	% of zeroes	<i>N</i>
FTI (current year)	0.00	196.0	56.72	44.32	0.73	−0.34	3.55	1099
FTI (previous year)	0.00	196.0	55.07	42.33	0.76	−0.25	3.37	949
FTI change (current vs. previous year)	−145.75	109.5	5.41	17.37	0.78	11.87	5.27	929
Campaign event count (current year)	0.00	55.0	2.22	4.74	5.20	37.79	48.59	1350
Campaign event count (previous year)	0.00	55.0	1.98	4.41	5.69	45.66	49.85	1350
Average sentiment (previous year)	−2.00	2.0	−0.42	1.21	0.29	−1.03	7.09	677
Average prominence (previous year)	1.00	4.0	2.07	0.64	0.83	1.65	0.00	677
Average total NGO power (previous year)	1.00	9.0	2.67	1.56	1.69	3.70	0.00	677
Pure fashion company (dummy variable)	0.00	1.0	0.85	0.36	−1.94	1.78	15.19	1350

Variables

We used the overall FTI score as an indicator of a company's transparency. However, the operationalisation of NGO pressure on a company was less straightforward. As a first approach, we extracted the total number of campaign events for each company in each year, counting each instance where the company was recorded as the target of an NGO campaign in the Sigwatch database. To reflect the widely varying impact of individual campaign events, we also included available data describing the sentiment, prominence and power of the involved NGOs for each campaign event (Koenig, 2017), based on the assumption that a given event exerts more pressure when (i) its sentiment appears more strongly negative, (ii) it attains a higher prominence and (iii) if the involved NGOs are more powerful. More specifically, we used the respective averages of the sentiment score, the prominence score and the total of the power scores of the NGOs involved, taken across all campaign events for a given company in a specific year. In a case where these averages were not well-defined because the number of relevant events equalled zero, we replaced them with the respective grand means so as to neutralise their effects in the model.

The descriptive statistics of the variables are presented in Table 2. Because explanatory variables enter the models with a time lag of 1 year (see below), we provide separate accounts of the descriptives for current year values and previous year values, where applicable. For example, FTI (current year) spans the years 2017–2021, whereas FTI (previous year) refers only to values from 2017 to 2020. For campaign event counts, data going further back were available, so current year values refer to 2017–2021, whereas previous year values cover the years 2016–2020.

Analysis

We used linear and generalised linear multi-level regression models to evaluate our hypotheses. The use of separate models for each dependent variable with time-lagged explanatory

variables helped to establish the direction of cause–effect relationships as much as possible in a context where experimental control of independent variables is not feasible. The results were robust to the lag introduced, which we varied between 1 and 5 years. To avoid multicollinearity issues and ensure the largest possible sample sizes, we retained only the one-year lags in our models.

To control for confounding effects at the company level and for general time-dependent influences, we adopted a cross-classified multi-level structure with random intercepts for both companies and years. Whereas the normal distribution assumption for the residuals of the linear model predicting transparency scores seemed well justified, regressing NGO pressure as the dependent variable called for a generalised linear model fitting case counts with a zero-inflated generalised Poisson distribution. This approach allowed for the endogenous modelling of companies' not being targeted by NGO activity in any or all of the years covered.

The model parameters were estimated using the restricted maximum likelihood (REML) method, which is the method of choice with repeated measures and corresponding random effects of different years and companies (e.g., Snijders & Bosker, 2012).

Computations were performed with version 4.2.1 of the statistics software R (R Core Team, 2022), using version 1.1.4 of the glmmTMB package (Brooks et al., 2017).

Results

Effects of NGO Activity on Transparency

To investigate H1 ('Companies that experience higher levels of NGO pressure with regard to sustainability will subsequently increase their levels of transparency in supply chains'), a linear multi-level model was used. This model regressed the annual change of the overall FTI score for each company and each year on the following four independent variables: (1) the total number of campaign events targeting

Table 3 Results of the model for the effects of NGO activity on transparency

Dependent variable Predictors (previous year's values)	Change in transparency		
	Estimate	95% CI	<i>p</i>
Fixed effects			
(Intercept)	-1.24	[-13.57, 11.09]	.843
Campaign event count	-0.62	[-2.96, 1.73]	.606
Average campaign sentiment	1.51	[-3.18, 6.20]	.528
Average campaign prominence	5.22	[-0.03, 10.47]	.051
Average total NGO power	4.55	[0.95, 8.15]	.013*
FTI/100	0.01	[-3.00, 3.01]	.996
Pure fashion company (dummy variable)	-1.79	[-4.93, 1.35]	.264
Event count × sentiment	-0.14	[-0.58, 0.30]	.534
Event count × prominence	0.82	[0.01, 1.63]	.048*
Event count × NGO power	-0.47	[-0.89, -0.05]	.029*
Sentiment × prominence	0.36	[-1.35, 2.06]	.683
Sentiment × NGO power	-0.69	[-1.36, -0.02]	.043*
Prominence × NGO power	-2.41	[-4.21, -0.61]	.009**
Random effects			
Within-group (residual) variance	275.09		
Between-years variance	24.41		
Between-companies variance	0.00		
Intra-class correlation	0.08		
Group count: years	5		
Group count: companies	263		
Observations	929		
Marginal R ² /conditional R ²	0.029/0.108		

p* ≤ 0,05; ** *p* ≤ 0,01; * *p* ≤ 0,001

the company in question in the preceding year, as recorded by Sigwatch; (2) the average sentiment index recorded for all those campaign events; (3) the average of the NGO power index totals for the NGOs participating in those events; and (4) the average prominence of those campaign events. We also included all two-way interactions of these four variables and controlled for the previous year's FTI score (to detect scale or saturation effects) and for the industry sector, differentiated pure fashion companies from those offering a wider range of products with a dummy variable. The restricted maximum likelihood (REML) parameter estimates are shown in Table 3.

The estimates for the fixed intercept and the coefficient of the fashion industry control dummy were not significantly different from zero, meaning that there did not appear to be a general or fashion industry-specific tendency of the companies' transparency scores over time. The effect of the previous year's FTI score was close to zero, indicating that the predicted changes in FTI were virtually independent of the prior transparency score. The random intercepts reflected varying general tendencies for FTI changes in different years (such as caused by the changing composition of the index over time), but there was hardly any change for different companies (as could arise from company-specific

longer-term transparency development efforts) over and above the variation explained by the fixed effects.

NGO power exerted a significant positive main effect on changes in transparency. This main effect describes how an isolated variation of NGO power affects transparency when the remaining independent model variables are equal to zero, which is the case when no campaign events have occurred, sentiment is neutral, and prominence is low. In such a hypothetical scenario, the FTI tends to increase with an increasing total NGO power score. If estimates with a *p* < .1 are accepted as significant, another significant main effect was found for average campaign prominence (*p* = .051), showing that companies increase their levels of transparency subsequent to increased NGO pressure in terms of more prominent campaigns. It must be noted, however, that both of these main effects, regardless of their statistical significance, are of minor substantive relevance in the presence of significant interaction effects involving the variables in question. Given such interaction effects, the main effects merely refer to a situation in which the interacting variables are equal to zero, which in principle is an arbitrary reference frame. Hence, a meaningful assessment of the effect of NGO pressure must consider the present interactions between the different variables measuring pressure.

Table 4 Results of the model for the effects of transparency on NGO activity

Dependent variable	NGO campaign event count		
	Estimate (delogarithmised)	95% CI	<i>p</i>
Conditional count model			
(Intercept)	1.07	[0.87, 1.32]	.507
FTI/100	1.51	[1.30, 1.75]	< .001***
Campaign event count > 0	0.63	[0.43, 0.90]	.011*
log(Campaign event count) if count > 0	2.21	[2.07, 2.36]	< .001***
Zero-inflated model			
(Intercept)	0.07	[0.01, 0.46]	.006**
FTI/100	0.24	[0.06, 0.97]	.045*
Campaign event count > 0	6.89	[0.77, 61.56]	.084
log(Campaign event count) if count > 0	1.10	[0.42, 2.89]	.850
Random effects			
Within-group (residual) variance	0.35		
(Between-companies variance	0.00—random intercept removed from model)		
Between-years variance	0.03		
Intra-class correlation	0.08		
(Group count: companies	266—random intercept removed from model)		
Group count: years	5		
Observations	949		
Marginal R ² /conditional R ²	0.692/0.716		

* $p \leq 0,05$; ** $p \leq 0,01$; *** $p \leq 0,001$

In fact, there are four significant interaction effects, three of which involve NGO power as one of the participating variables.

First, a significant positive interaction effect links the campaign event count with campaign prominence, such that a higher prominence per campaign enhances transparency the more numerous those campaigns are. This implies that even numerous campaigns can exert a notable effect on a company's transparency only when these campaigns gain a sufficiently high level of prominence.

Second, there was a significant negative interaction effect of NGO power and sentiment, which strengthened the effect of NGO power for campaigns with negative sentiment and weakened it for campaigns with positive sentiment.

The third interaction effect was a significant negative interaction of NGO power with prominence, meaning that the positive main effect of prominence could be neutralised or even reversed by high NGO power. Campaigns reaching high levels of prominence thus tend to enhance the targeted companies' transparency scores only when those campaigns are not initiated by high-power NGOs and might even do harm otherwise.

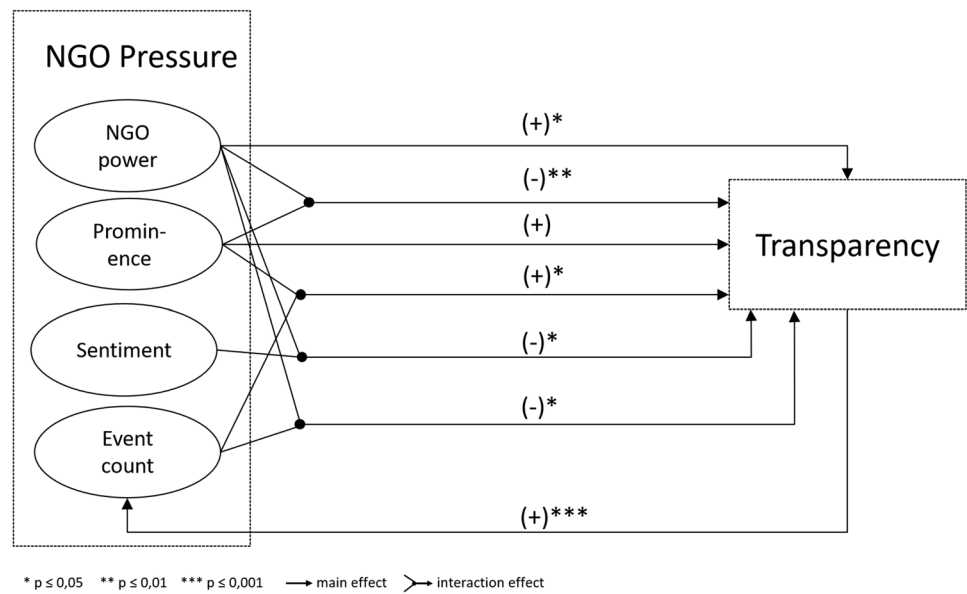
Fourth, NGO power significantly interacted negatively with the campaign event count. This means that the negative but non-significant main effect of the latter only reflects the situation for an NGO power of zero, whereas for sufficiently high levels of NGO power, campaign event counts did have

an impact on transparency that goes beyond what can be explained by chance. More specifically, an increase in the number of campaigns is counterproductive towards enhancing transparency when the campaigns in question are driven by powerful (groups of) NGOs. As a corollary, for a given high number of campaigns, the impact on transparency of higher NGO power might even be detrimental.¹

The multitude of relevant main and interaction effects showing influences in opposing directions reveals that H1 can neither be clearly rejected nor clearly confirmed. Depending on the operationalisation of 'NGO pressure', there are situations in which higher pressure tends to enhance transparency, and there are scenarios in which higher pressure works to the opposite effect. For instance, an increasing number of campaigns will be beneficial only if those campaigns achieve

¹ The complex interplay between some of these interactions (and main) effects is illustrated in Fig. 3 in the Appendix, which shows how the predicted change in FTI was affected by campaign event counts for varying values of average total NGO power (increasing between the columns of panels from left to right) and average prominence (increasing between the rows of panels from top to bottom). All other variables, including the average sentiment, were held at their respective grand means, so the interaction of NGO power and sentiment is not shown in the figure. Negative sentiment would imply a slight upward shift of the lines in the right-hand panels and a slight downward shift in the left-hand panels, and vice-versa for positive sentiment.

Fig. 2 Summary of results



high levels of prominence, even though they are not backed by powerful NGOs (lower right-hand panels), whereas in most other scenarios, higher pressure, as measured by campaign event counts, might make companies more reluctant to share information rather than promote transparency.

Effects of Transparency on NGO Activity

To evaluate H2a and H2b, we estimated a generalised linear multi-level model explaining the campaign event count for each year and each company as a zero-inflated generalised-Poisson-distributed variable dependent on the previous year’s FTI score. Hence, we separately predicted the probability for a number of campaign events equal to zero (zero-inflated model component) and the expected number of campaign events for a specific company in a specific year, conditional on this number being positive (conditional count model component). We controlled for the previous year’s campaign event counts and included random intercepts for years and companies accordingly. To match the zero-inflated nature of the dependent variable, the previous year’s campaign event count was modelled with both a dummy variable indicating a nonzero value (rows labelled “Campaign event count > 0” in Table 4) and the logarithm of the count proper, conditional on that count being positive [entries labelled “log(Campaign event count) if count > 0” in Table 4]. The restricted maximum-likelihood (REML) parameter estimates (back-transformed by exponentiation from their logarithmic scales to incidence rate ratios) are summarised in Table 4.

The constant and random intercept terms were not significant, showing that there was neither a general nor a company-specific tendency of NGO activity over time reflected

in the data.² The effect of the FTI score (scaled by a factor of 1/100) on NGO activity was significant both in the conditional and the zero-inflated model parts, with higher FTI scores consistently giving rise to higher campaign activity. An increase in FTI by 100 points entails an expected rise by 51% of the campaign activity count conditional on there being campaign activity in the first place (as indicated by a parameter estimate of log 1.51) and reduces by a factor of 0.24 the probability of a complete absence of such campaign activity (according to the parameter estimate of log 0.24).

These estimates take into account the effects of the control variables on the previous year’s activity counts. The zero-inflated model predicts an average increase in the probability for zero campaign events by a factor of 6.89 due to the absence of campaign events in the preceding year. This remanence effect, although numerically large, is not statistically significant due to its high error margin. A statistically significant remanence effect was observed only in the conditional model. The estimated coefficient of log 2.21 refers to the effect of an increase of the previous year’s campaign count by a factor of ca. 2.72 (the base of the natural logarithm); the effect of an increase of the (positive) number of campaign events in the preceding year by a factor of 2 is correspondingly predicted as a 1.53-fold increase [as (log 2) (2.21) = 1.53] in the current year’s campaign event count, conditional on both counts being positive. This increase is offset by a fixed factor

² The between-companies variance was so close to zero that we removed it from the model altogether to improve the numerical stability; the parameter estimates were unaffected to the precision reported, but the conditional R² could only be estimated after this removal.

of 0.63, by which the conditional campaign event count is reduced when the preceding year's campaign count is positive with respect to the case when that count is zero. Thus, a single campaign event in the preceding year implies a lower expected case count in the current year than no campaign event at all, which could be an artefact of the non-linearity of the observed remanence effect.

The results for the effect of FTI clearly support H2a, whereas H2b must be rejected: Companies with higher levels of transparency attract higher levels of NGO pressure with regard to sustainability in the subsequent year.

Figure 2 graphically summarises all the results described in “Results” section (including signs and significance levels) for H1, H2a and H2b. In the figure, simple arrows represent main effects, and solid dots link the variables involved in interaction effects.

Discussion and Conclusions

Theoretical Implications

This research contributes to the literature on sustainable supply chain transparency by addressing the research gaps identified by Brenkert (2019) and Sodhi and Tang (2019), in other words, the role NGOs can play in stimulating higher levels of transparency in the context of corporate sustainability. Previous research has highlighted the important role of NGOs in fostering the transparency of corporations with regard to sustainability in supply chains (Chen et al., 2017; Muratore & Marques, 2022; Sodhi & Tang, 2019). As a first key result, our analysis confirms that NGO pressure may indeed stimulate higher levels of transparency among corporations. However, the results also specify previous findings in some cases, as we show that such a positive effect of NGO pressure on transparency exists only under specific circumstances. As indicated by the significant positive interaction effect of event count and prominence of the campaigns, such a positive outcome seems most likely to evolve when companies experience numerous campaigns with highly prominent naming of the pressured company in reporting about the campaign by the NGOs. Likewise, the significant positive main effects of ‘NGO power’ as well as of ‘prominence’ (with $p = .051$) suggest that primarily powerful NGOs, as well as campaigns with prominent company identification in the media reports of the NGOs, are likely to stimulate higher levels of transparency among corporations. These findings are thus in line with Deri's (2003) more general claim that NGOs are key drivers behind increasing public expectations towards corporations to act more socially responsible.

Still, the influence of ‘NGO power’ pressure is highly debatable, as indicated by the negative interaction effects

of NGO power with ‘event count’ and ‘prominence’. Going beyond earlier analyses that suggest a positive influence of NGO pressure on sustainable supply chain transparency (e.g. Chen et al., 2017; Muratore & Marques, 2022; Sodhi & Tang, 2019), we show that an increase in the number of campaigns or in prominence can be counterproductive towards enhancing transparency if the campaigns in question are driven by powerful (groups of) NGOs. This finding raises the question of whether a ‘too much of a good thing’ tendency exists with regard to NGO pressure and sustainable supply chain transparency, in other words, whether NGO pressure can also be too high and thus may provoke resistance towards transparency calls. Certainly, our findings reveal that, depending on the circumstances, NGO pressure can lead to decreasing levels of transparency. Thus, the desired effect of achieving more transparency through NGO pressure could be reversed. Therefore, while we can confirm Deri's (2003) claim that NGOs are key drivers behind increasing public expectations towards corporations, we also specify circumstances under which this claim is true, as well as circumstances that might lead to inefficient or even counterproductive NGO campaigning.

In addition to categorising different types of institutional pressure, institutional theory suggests different possible strategic responses to these pressures. As Oliver's (1991) typology of strategic responses to institutional pressures suggests, companies choose acquiescence and compromise strategies in the context of high levels of uncertainty, as well as with high levels of interconnectedness between the different relevant actors (DiMaggio & Powell, 1983). Because the context of the sustainability of supply chains can be seen as a context of high uncertainty and high interconnectedness, our research empirically confirms Oliver's (1991) conceptual assumptions. Going beyond these assumptions, our research adds further conditions under which acquiescence and compromise strategies are likely to emerge. We show that companies are more likely to show such strategies (e.g. by reacting to NGO pressure with increased levels of transparency), for example, when many campaigns are run against a company and the company's name is displayed very prominently in the reporting of the campaign event. In addition, going beyond Oliver (1991), we show that even in an uncertain and interconnected context of sustainability in supply chains, companies are unlikely to choose acquiescence and compromise strategies when, for example, powerful NGOs start too many campaigns. In such circumstances, we show that companies are even likely to opt for what Oliver (1991) described as defiance strategies, for instance, by simply ignoring the pressure. In fact, we show that once a certain amount of pressure (e.g. numerous campaigns by powerful NGOs) is reached, companies tend to block and might even react by decreasing the level of transparency. Again, these findings raise the question of whether a ‘too

much of a good thing' tendency exists in the context of NGO pressure and corporate transparency.

Another key finding of our analysis comes from highlighting the bidirectional nature of the relationship between NGO pressure and transparency. Our research shows that not only does NGO pressure influence transparency but that higher levels of transparency also attract NGO pressure. Thus, NGOs primarily aim to put under pressure those companies that are already more transparent than their peers. This indicates that most NGOs regard supply chain transparency as a tool to achieve sustainability rather than as an aim in itself. In line with Doorey (2011), we confirm that NGOs regard themselves as watchdogs that detect and report deficiencies in supply chains (Doorey, 2011; cf. Laudal, 2010) and thus do not hesitate to bring up a painful subject for a company, even when the given company might be a front runner with regard to transparency. Consequently, it seems that NGOs primarily regard supply chain transparency as a means to pressure companies and achieve improvements for sustainable development, as well as for eradicating unethical corporate behaviour (e.g. Lo et al., 2018).

In contrast, we did not find indications that NGOs consider supply chain transparency to be an end in itself, as suggested by Egels-Zandén et al. (2015) or Dingwerth and Eichinger (2010), and stop putting those companies under pressure that have already shown high levels of transparency. Thus, our findings do not support Montecchi et al. (2021) logic that increases in transparency concerning supply chains will create higher levels of trust among external stakeholders like NGOs and, as a result, NGOs might put less pressure on companies that experience a high level of trust. One explanation for this finding could be that, even following higher levels of transparency, NGOs do not trust a company as quickly as other stakeholders do. They might fear that companies only create an 'illusion of transparency', for example, through extensive transparency reports, while those reports do not allow real conclusions about the actual level of (un)sustainability and (un)ethicality in supply chains, and thus, the company might remain untrustworthy (Gold & Heikkurinen, 2018; Strathern, 2000).

Practical Implications

The key insights of this study provide numerous practical implications, not only for corporations but also for NGOs and legislators. First, our results highlight the danger of companies being reluctant to be transparent in order to avoid pressure from NGOs. Thus, opportunistic corporate sustainability managers might interpret our findings as a recommendation not to increase levels of transparency. Indeed, if sustainability management primarily aims to establish the legitimacy of corporate activities (cf. Schaltegger & Hörisch, 2017), our findings show that increasing transparency can be

accompanied by higher levels of NGO pressure and might cause challenges to corporate legitimacy, as NGO pressure can, for example, damage a company's reputation and result in a loss of sales (Deri, 2003; Lo et al., 2018).

However, NGO pressure not only challenges legitimacy but can also help to identify opportunities for corporations to improve their sustainability performance when companies purposely make use of the function of NGOs as watchdogs. Likewise, efforts to increase transparency might uncover unused potential to make use of current trends in sustainability management. Thus, while opportunistic sustainability managers interested in securing legitimacy might read our results as reasons not to increase transparency, those interested in identifying shortcomings in current supply chains and in improving material sustainability-related problems of specific corporate supply chains should be motivated to increase transparency, even though (or even because) this might attract the attention and pressure of NGOs. Furthermore, supply chain transparency can be desirable for companies in itself; for example, Egels-Zandén and Hansson (2016) show that more transparent companies are able to create a higher willingness to buy. Finally, supply chain transparency may reduce operational risk (Montecchi et al., 2021).

NGOs can learn from our results that they need to be aware of the different possible roles they can play with regard to corporate transparency and sustainability in supply chains. Currently, NGOs seem to perform well in their role as watchdogs (Doorey, 2011), as they use disclosed supply chain information to put pressure on companies to work on problems related to unethical or unsustainable practices. In contrast, our results suggest that NGOs fall short of their potential role as creators of supply chain transparency. NGOs that intend to focus on this role as creators of supply chain transparency should stop primarily targeting companies with high levels of transparency. Instead, they are advised to make a greater effort to create incentives for companies to improve transparency, for instance, by offering certifications or labels (cf. Gardner et al., 2019; Kashmanian, 2017). Furthermore, our results suggest that it is not the mere number of campaigns that leads to improvements in transparency. Instead, NGOs should purposely decide how many campaigns they should run and which reporting strategy to choose for their campaigns to achieve more transparency from companies.

In general, our results indicate that campaigns primarily by powerful NGOs as well as campaigns prominently mentioning respective companies are promising means to increase the level of transparency of companies. However, the mechanism regarding which types of campaigns really exert positive effects and avoid negative effects on transparency is relatively complex due to numerous significant interaction effects. To avoid a campaign that leads to less transparent companies,

NGOs with local reach (low NGO power) should pursue a strategy of running multiple campaigns and reporting positively about the prominently named targeted company. NGOs with global reach (high NGO power) should rather report negatively about the company, mentioning the targeted company name in a sidelining manner, while concentrating on a few campaigns. Lastly, NGOs that do not consider transparency itself as a goal but only as a means to achieve the ultimate goal of eradicating unethical and unsustainable practices may keep pressuring transparent companies.

Finally, our findings provide implications for legislators. When laws concerning due diligence are passed, legislators should include mandatory reporting policies to help companies become more transparent. Otherwise, if high levels of transparency remain voluntary for companies, those companies that voluntarily show high levels of transparency might be punished by NGOs, as the NGOs tend to put pressure on those companies that are more transparent. Higher levels of transparency enforced by law will lead to more NGO scrutiny and, therefore, will trigger all companies to actively manage their supply chain risks concerning unsustainable and unethical behaviour (Pinnington et al., 2023).

Our last implication for government is also linked to the *theoretical implications* of our analysis. We show that normative pressure by NGOs can indeed be effective; however, this is only under specific circumstances (e.g. if NGOs with local reach run many campaigns), and it can turn out to be ineffective or even counterproductive (e.g. if NGOs with global reach run too many campaigns). Hence, we reveal that types of institutional pressure other than normative pressure by NGOs play an important role in increasing transparency. Thus, we highlight the importance of coercive pressure by governments and mimetic pressure, for instance, by frontrunners in the industry (cf. DiMaggio & Powell, 1983).

Limitations and Further Research

Based on our findings that NGO pressure can lead to decreasing levels of transparency, particularly when powerful NGOs start numerous campaigns towards one specific company or when powerful NGOs mention a specific company very prominently, we identified the need to explore the possibility of a ‘too much of a good thing’ tendency in the context of NGO pressure and sustainable supply chain transparency. However, based on our dataset, we were unable to identify indicators for a potential tipping point beyond which increasing levels of NGO pressure might lead to lower rather than higher levels of transparency. Future research should

address this limitation by identifying and analysing cases of intense NGO campaigning that have led to decreasing transparency. Quantitative research could elaborate on the ‘too much of a good thing’ hypothesis more thoroughly by testing potential non-linear relationships between NGO pressure and corporate transparency.

As another limitation, our dataset lacked certain variables that might have increased the explanatory power of our models. When developing H2a, for instance, we argued for a potential mediating effect. First, we assumed that higher levels of transparency would empower NGOs, which in turn would lead to higher levels of NGO pressure. However, based on our dataset, we were unable to observe the potential mediator (empowerment of NGOs).

Future research drawing on qualitative case studies or more detailed quantitative datasets could build on our findings to explore the relevance of this and further potential mediators. Such qualitative case studies could help to better understand the mechanisms of pressure and supply chain transparency that we have identified but not explained in detail. Likewise, our analysis provides little information on the content of NGO campaigns. While we were able to distinguish positive from negative campaigning, we could not differentiate campaigning on different aspects of unsustainable or unethical corporate behaviour. Future research should, for example, test whether campaigning on all negative aspects, such as modern slavery, has different effects on corporate transparency than campaigning on trending issues, such as climate change, which can also enhance corporate reputation. Future research could also draw on the role of NGOs as partners and show what effect a partnership with a company versus pressuring a company has on supply chain transparency.

In conclusion, our results challenge how well NGOs act as catalysts for change (cf. WBCSD, 2004). While NGO pressure can clearly stimulate higher levels of transparency, it can also result in the exact opposite effect, depending on the intensity of the NGO pressure. We find that if NGOs really want to be catalysts for change, they need to go beyond their role as watchdogs of corporations and improve their potential role as creators of supply chain transparency. In so doing, they are challenged to carefully regulate the amount of NGO pressure to avoid creating *too much of a good thing*.

Appendix

See Fig. 3.

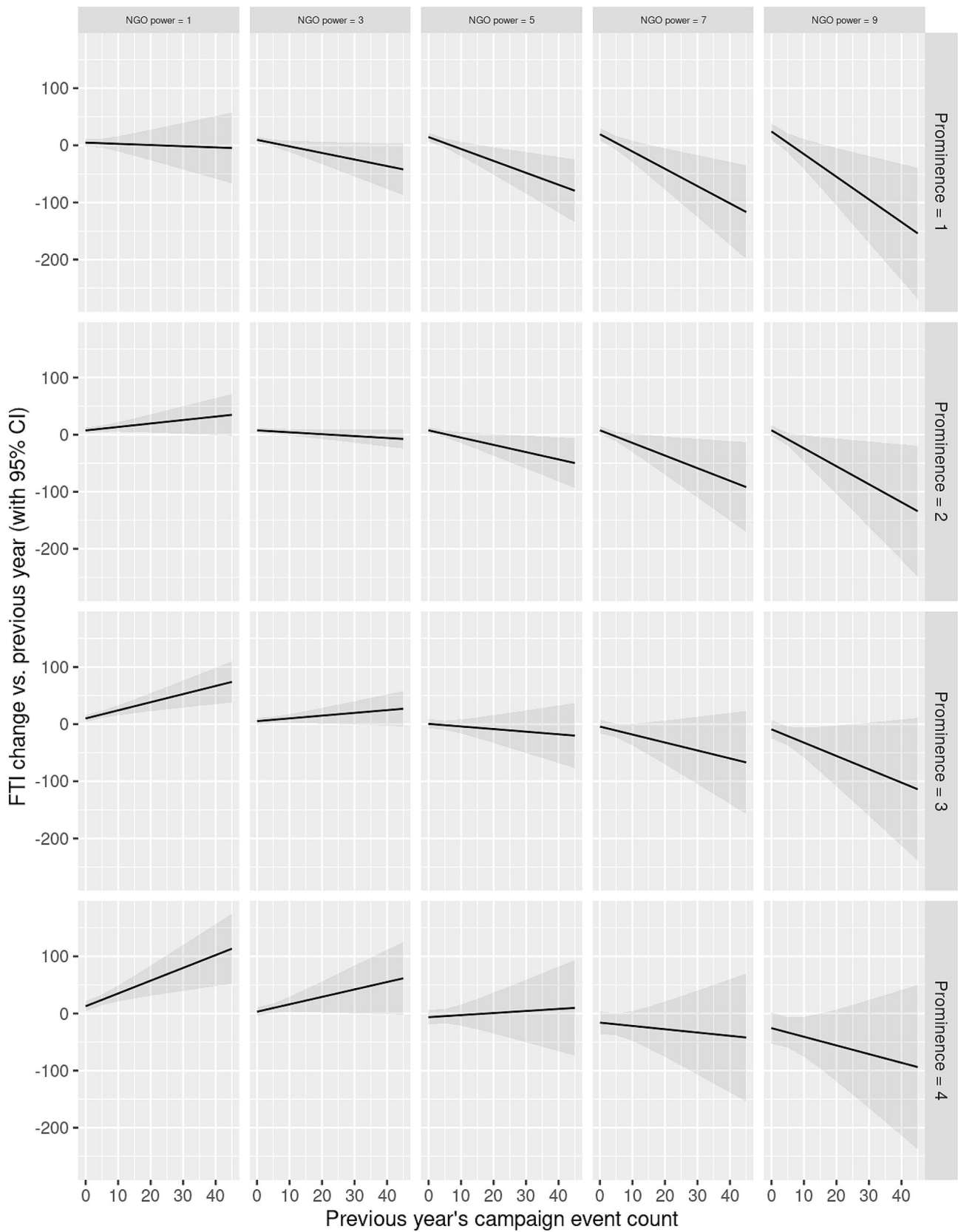


Fig. 3 Interaction effects of NGO campaign event count with prominence and NGO power averaged over the remaining variables (i.e., sentiment and the control variables)

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Declarations

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