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Social responsibility scandals and trade

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ABSTRACT

This paper studies the effect of social responsibility scandals on the imports of consumer products, by focusing on an event which generated massive consumer mobilization against neglecting firms, namely the collapse of the Rana Plaza building affecting the textile industry in Bangladesh. We investigate the import repercussions of this major shock in the perceived quality of clothing producers sourcing in Bangladesh. In line with the well-documented home bias in trade and home-country media slant, we assume that consumers' reaction will be stronger when domestic firms are named and shamed. Our empirical strategy uses a difference-in-difference approach that compares imports from Bangladesh of countries according to whether some of their companies were directly associated with the collapse of the Rana Plaza. Our results are consistent with demand being sensitive to social responsibility scandals. While aggregate imports from Bangladesh continue to increase during the whole period (2010–2016), there is a marked disruption that affects countries whose brands were named and shamed by activists and the media after the disaster. In addition, the decline in imports is all the greater as the number of NGO campaigns on the misbehavior of national textile retailers is high.

1. Introduction

Do social responsibility scandals affect our decisions to purchase items made in afflicted countries? When important corporate misbehaviour are uncovered abroad by activists or by tragic industrial accidents, pressure is put on firms to require improvements in selected parts of the production process (impact on resources, wages, working conditions...),[1] with the threat that a non-cooperative behavior will induce consumers to walk away from the misbehaving brands.[2] To what extent are demand and firms responsive to such scandals? Measuring the impact of citizens' mobilization on sales, work conditions or the environment is demanding. It requires not only to measure the intensity of collective action and the magnitude of damages done by firms, but also to isolate activism as a source of changes in sales or in firm behavior. Econometric evaluations of the effect of campaigns are therefore very rare: for instance, Harrison and Scorse (2010) analyze the effect of anti-sweatshop activism on wages in Indonesia in the 1990s, and Binder and Neumayer (2005) study the impact of environmental pressure groups on pollution. The effect of activism on sales is studied by Hendel, Lach, and Spiegel (2017), in the context of a consumer boycott targeting cottage cheese producers in Israel in 2006.[3]

This paper provides the first analysis of the impact of social responsibility scandals on trade. We analyze the imports of final products, and focus on an event which generated massive consumer mobilization against neglecting firms, namely the collapse of the Rana Plaza building affecting the textile industry in Bangladesh. On April 24, 2013, near Dakha the capital of Bangladesh, the construction hosting several factories producing clothing items collapsed. The origin of the disaster was a failure in the ability of the structure to support the load of heavy machinery. The contractors of these factories being mostly multinational brands, criticisms immediately turned towards developed countries' companies, which had not sufficiently taken care of checking the implementation, by these factories, of security measures. The disaster was widely covered in the media around the world. The search for the culprits logically led the news outlets to seek to identify the companies that had production in the building. The event released an important amount of negative information about the foreign multinationals, all from OECD countries, which con-

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[1] Examples of famous interactions between advocacy NGOs and firms are provided in Section 2 of Krautheim and Verdier (2016).

[2] Other ways to regulate multinationals' behavior when producing or selling abroad include self-regulation, see Graham and Woods (2006).

[3] Note that this boycott was intended to pressure firms to lower their prices, hence not exactly a social responsibility issue.

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tracted with the local garment factories. The media reported heavily on the event. NGOs launched campaigns pressuring firms on their forthcoming commitments about compensating victims and organizing better security in factories.

Reputation shocks caused by negative information on a good, a firm or a country has been the object of empirical work investigating the effects of the shock on consumers' behavior (Freedman, Kearney, & Lederman, 2012; Zhong, 2018). It is reasonable to think that in the case of Bangladesh, clothing purchases underwent a similar effect, the collapse of the Rana Plaza representing a major shock to the reputation of products manufactured in the country. We thus expect the negative news about the behavior of firms involved in the drama to reduce the perceived quality of goods produced in Bangladesh. As a consequence, these firms' clothing imports from Bangladesh could have been affected downward.

In this paper, we believe that there is cross-country variation in the way the population was informed about the misdeeds of the companies. In particular, we emphasize, and detail in the upcoming paragraph, that in some countries the attention of consumers was disproportionately called towards the domestic responsible parties: those are the headquarter countries of the firms that were found to have sourced from the collapsed building. Our hypothesis is thus that the effect of the shock on apparel imports could be felt more strongly in the origin countries of firms related to the disaster, because of the domestic bias in media coverage and NGOs' reports. Although the different media in each country mentioned the national and international brands whose labels were in the debris, they were keen to highlight the involvement of brands known to their audience, in line with the phenomenon of home-country media slant (Golez & Karapandza, 2018).

The second reason for which the effect of the shock could be larger in the origin countries of the named and shamed multinational firms, is the home-bias in firms' trade flows (Evans, 2003; Hummels & Hillberry, 2003). Indeed, a disproportionate share of the imports from Bangladesh of these firms is destined for their country of origin: numerous retailers sourcing from the Rana Plaza operate solely in their home country (such as J. C. Penney or Bonmarché) or have a limited presence outside of their home country. The bias is also present among those which are truly international, since a large number, like Zara, Benetton or Mascot use a highly centralized logistics system whereby production from the various suppliers throughout the world converges on the distribution platform hosted at home, before being sent to its brands' stores all over the world. The consequences of this home bias could be magnified by consumer nationalism (Pecotich & Rosenthal, 2001; Shimp & Sharma, 1987): consumers who tend to be chauvinistic in their purchases (Gerth, 2011) could overreact because of their disappointment with the misbehavior of the brands with which they usually identify.

These features imply that repercussions on sourcing from Bangladesh consecutive to the Rana Plaza drama could be particularly felt on imports into the home country of the firms linked to the building. Using detailed import flows on clothing items from OECD countries, we use a difference-in-difference approach and compare countries' imports from Bangladesh, according to whether they are the country of origin of brands directly associated with the collapse of Rana Plaza. To proxy the exposure of an importing country to the event, we exploit the list of firms found to be sourcing from the Rana Plaza building, together with the headquarter countries. To the extent that negative repercussions also exist on the other markets this would go against us finding significant results. We thus believe that our estimates of the import-reducing effect of the scandal represent a lower bound.

Note that the cause possibly driving a change in import flows is not restricted to consumers' response to new information about goods. Other channels could explain a decrease of clothing imports from Bangladesh. For example, firms may anticipate a decrease in demand and thus prefer alternative sourcing origins. To better characterize the effect, we investigate developed countries' textile imports from non-Bangladesh origins, and explore the effects of NGO campaigns on imports following the event. We also analyze the timing of the shock and compare our results with information about the deadlines in the production and shipping of garment products.

Results show a post-disaster decrease in imports for countries whose firms were directly involved in the Rana Plaza building. The effect has to be interpreted relatively to the evolution of imports of similar countries, however not linked to the collapsed Rana Plaza knitting factories. While aggregate imports from Bangladesh continue to increase during the whole period (2010–2016), there is a marked disruption that affects countries whose brands were named and shamed by activists and the media after the disaster. No such differential pattern is observed for non-textile goods. Our results are robust to a variety of checks, including looking for different pre-treatment time trends, sample checks, a number of placebo tests with the random assignment of importers to the "treated" Rana category, as well as the false assignment of the shock to another country of origin.

Analyzing the impact of social responsibility scandals on demand and firms' outcomes is central to understanding the role of civil society. Our contributions are threefold. First, previous studies mainly rely on case studies to document the impact of campaigns (O'Rourke, 2005; Spar & La Mure, 2003). Unlike these qualitative studies that discuss the functioning and implications of NGO campaigns in different industries and countries, we conduct a quantitative analysis dedicated to a major industrial accident. We seek to extract the causal effect of the associated reputation shock on imports of consumer goods of different countries in the textile industry depending on their respective exposure to the ethical shock.

Second, our analysis complements existing results by Harrison and Scorse (2010). Carefully identifying the impact of activism and focusing on wages,[4] the authors find that campaigns targeting Nike, Rebook and Adidas increased wages in the Indonesian clothing sector in the 1990s. A difference-in-difference methodology is used, comparing wages in the clothing sector and in the rest of manufacturing in Indonesia, before the 1990s and in 1996. The authors use a second difference-in-difference approach to compare wages in regions hosting the majority of textile subcontractors, to those in other Indonesian regions. Our paper follows a similar econometric approach and analyzes the impact of civil society and activism on trade, not addressed by any previous study.

Our third contribution fits into the related literature investigating the effects of boycotts against firms or products, with two caveats. Existing work on boycotts mainly analyze the consequences on trade, of a political conflict between countries: the Chinese boycott of French automobiles in 2008 (Hong, Hu, Prieger, & Zhu, 2011), the boycott of Danish products by Muslim countries (Heilmann, 2016), sanctions against Russia in Crozet and Hinz (2016), the US boycott of French products in 2003 (Ashenfelter, Ciccarella, & Shatz, 2007; Pandya & Venkatesan, 2016). These are different from a boycott intended to change a firm's behavior. More, after the Rana Plaza collapse, NGOs did not officially call for a boycott against any firm involved in the accident. Our analysis thus examines the existence of an indirect boycott effect, i.e. a

[4] Binder and Neumayer (2005) also investigate the impact of activism, however not focusing on campaigns targeting corporations. They study the influence of environmental NGOs on pollution levels between 1977 and 1988 using cross-country indicators from the United Nations' Global Environment Monitoring. They find that activism by these NGOs succeeded in lowering concentration levels of three indicators.

decrease in demand caused by activists and the media mentioning the damages but not officially calling to stop consuming the products.

The remainder of the paper is structured as follows. The next section presents the Rana Plaza incident and communications about the firms that were held responsible for it. Section 3 sets out our empirical strategy. Section 4 reports the triple difference estimates. Section 5 investigates the reasons behind the decrease in imports. Last, Section 6 concludes.

2. Ethics and the Rana Plaza building collapse

This section recalls how the media and NGOs reported importantly about the news, and specifically about the multinational firms which were involved in the Rana Plaza building. We mention the initiatives fostered to have companies commit to more safety during production.

2.1. The firms involved in the Rana Plaza building

NGOs, together with local trade unions and international organizations, took care of organizing the immediate compensation of victims, and the commitments of multinational firms regarding future working conditions in the apparel industry. Compensating the victims was made through the signature of the Rana Plaza Arrangement in November 2013. This document officially created the Rana Plaza Donors Trust Fund, which collected donations.[5] The indirect effect of establishing a list of companies which were expected to compensate the victims, was to single out, and tag as probably guilty, multinational firms that had been contracting with the factories in the Rana Plaza building. The NGO Clean Clothes Campaign, as one of the largest, if not the largest alliance of labour unions and non-governmental organizations in the garment industry, participated in the gathering of these names. It published the list of brands that had been linked with the Rana Plaza building.[6]

The literature contains several examples of consumers' reaction to a shock affecting the reputation of goods, firms, or countries (Zhong, 2018). In the context of our analysis, we expect the negative news about the behavior of given firms in Bangladesh to decrease the perceived quality of goods produced by companies involved in the drama, in countries where the population has been made aware of the event. As a consequence, these firms' imports of clothing could be impacted downward as a result of the shock.

We believe that there is cross-country variation in the way the population was informed about the misdeeds of the companies. In particular, the attention of consumers was disproportionately called towards the domestic responsible parties: those are the headquarter countries of the firms that were named in the list established to compensate the victims. Our hypothesis is thus that the effect of the shock on apparel imports could be felt more strongly in the origin countries of firms related to the disaster.

Two reasons explain our hypothesis: the domestic bias in media coverage and NGOs' reports, and the home bias in the firms' trade flows, hence their disproportionate imports from Bangladesh to their country of origin.

We now detail both reasons, and show the list of named companies in Table 1. The firms are those that had recent or current orders with at least one of the five garment factories in the Rana Plaza building when it collapsed. Table 1 reports the type of each company (retailer, department store etc.) and its country of origin. It is interesting to note that, while transmitting the information about the collapse in Bangladesh, the media very much emphasized their domestic firms. Indeed newspapers readers or TV watchers have specific preferences over news, and rational media tend to cater to their audience's preferences (Gentzkow & Shapiro, 2006; Mullainathan & Shleifer, 2005). Emotional or geographical proximity is for example an essential vector of interest in all media around the world. When an event, such as the Rana Plaza collapse, happens far from "home" it has a disproportionate unimportance in comparison to minor events which are closer to home. The value of the story however increases if it involves national actors. Logically when covering the Rana Plaza, the media were keen to highlight the involvement of brands known to their audience, and thus stressed the involvement of their respective national brands beside worldwide known international brands such as Benetton or Mango. This phenomenon of home-country media slant has been put in light by Golez and Karapandza (2018) who look at the media coverage of large corporations. As an illustration, the German newspaper *Der Spiegel* reports for instance, on April 29, 2013, that "the five garment factories operating in Rana Plaza also produced textiles for German retailers (...)". In its June 3, 2013, edition, the French *L'Express* titles "Y avait-il des Français parmi les marques qui avaient recours à des sous-traitants au Rana Plaza?".[7] In its May 4, 2013 edition, the Italian journal Il Manifesto titled "Rana Plaza, Bangladesh chiama Italia" ["The Rana plaza, Bangladesh calls Italy"] where it listed the Italian brands involved in the disaster. When covering the first year anniversary of the Rana Plaza incident, the New York times (April 14, 2014) writes "How does the Rana Plaza collapse relate to the lives of Americans? Much more than you might think. Companies and brands associated with factories in Rana Plaza include Joe Fresh, Mango, Walmart, J.C. Penney and The Children's Place (though it's unclear whether all of these had active manufacturing there at the time of the collapse)". Note that the home country bias has also been shown to apply to advocacy campaigns of NGOs (Hatte & Koenig, 2018): NGOs strongly bias their reports toward home firms, or foreign firms with domestic action. Campaigns appear to be designed so as to include at least one element of proximity drawing the attention of consumers.[8]

Besides the domestic bias of media and NGO communications, there is a second reason for which we believe that the repercussions of the event may be felt more strongly on the imports of the named firms' headquarter countries. It appears that international groups that have stores in many countries often import a substantial part of production made abroad to their home country (and main hub) before they distribute the goods into the foreign markets they operate in. Under these conditions, the reduction in imports of clothing produced in Bangladesh will mainly be felt on imports from the company's home country, which serves as a logistics platform. The case of the Spanish retailer Inditex is particularly emblematic of the high degree of centralization of global logistics in the fast fashion sector. A large share of all clothing produced by Inditex itself or by its various suppliers throughout the world converges to one of the 11 distribution centres (all located in Spain) before being sent to its brands' stores all over the world (Escalona-Orcao & Pérez, 2007). While it is not possible to know exactly the supply chain of all the brands listed in Table 1, particularly that specific to garments produced in Bangladesh, it seems that most of the truly international brands (Inditex, Benetton, Mango, Kik, LPP) rely on a highly centralized supply chain

[5] https://ranaplaza-arrangement.org/.

[6] https://cleanclothes.org/safety/ranaplaza/who-needs-to-pay-up.

[7] "Were there French brands among the firms contracting with Rana Plaza factories?".

[8] Examples from their paper, outside of the clothing sector, include: Action on Sugar, a British NGO, criticizes the German Lidl Group for Breakfast biscuits sold in the UK containing excessive sugar. In 2011, World Wildlife Fund (WWF) Italy complains about Solvay, a Belgian chemical firm, for asking and obtaining the renewal of a salt extraction right in Val di Cecina, threatening the area's drinking water supply.

Table 1
List of companies linked to the Rana Plaza Building.

Company	Type	Country of operations in 2013 Headquarter in bold	World sales apparel (2012) (millions US $)	Home country sales apparel (2012) (million US $)	Share in headquarter country's sales of apparel (2012)	Share of sales in Headquarter country (2012)	Distribution through own-brand stores?
Joe Fresh/Loblaw	Private label and apparel retail chain	**Canada** (Loblaw) & US (in J. C. Penney)	–	738	3.0%	–	Yes and sold through Loblaw stores
J. C. Penney	Department store chain	**US**	–	7,272	2.9%	100%	Yes
The Children's Place	Kids' fashion retailer	**US**/Canada	1,530	1,300	0.5%	85%	Yes
Cato Fashions[a]	Fashion retailer	**US**	934	933	0.4%	100%	Yes
Walmart	Big-box retailer	**US** & Worldwide	–	7,689	3.0%	59%[i]	Yes
Ascena[b]	Fashion retailer	**US**	1,690	1,690	0.7%	100%	Yes
Lee cooper	Clothing brand	**UK/US** & Worldwide	465[i]	–	–	–	Yes and multi-brand stores
Bonmarché	Fashion retailer	**UK**	708	705	1.2%	100%	Yes
Matalan	Fashion retailer	**UK**	1,480	1,470	2.5%	100%	Yes
Stores Twenty-one	Fashion retailer	**UK**	–	–	–	–	Yes
Penneys/Primark	Fashion retailer	**Ireland** & **UK** & Western Europe	5,530 630 (Ireland)	2,910 (UK) 5.9% (UK)	25% (Ireland) Primark: 45% (UK)	Penneys: 11%[c]	Yes
C&A	Fashion retailer	**Belgium/Germany &** Worldwide	8,745	3,970 (Germany) 679 (Belgium)	9.5% (Germany) 8.6% (Belgium)	35% (Germany) 6% (Belgium)	Yes
Güldenpfennig	Apparel Wholesaler	**Germany** & abroad	–	–	–	–	No
NKD	Textile retailer	**Germany**/Austria/Italy	560	416	0.7%	74%	Yes
Kids Fashion Group[d]	Manufacturer and retailer	**Germany** and & Worldwide	–	–	–	–	Yes and multi-brand stores
KiK	Textile retailer	**Germany**/Austria	–	1,130	1.6%	75%	Yes
Adler Modemarkte	Textile retailer	**Germany**/Austria	–	–	–	–	Yes
PWT[d]	Manufacturer/retailer	**Denmark** and Scandinavia	–	79	1%	–	No but 2 own retail chains[d] & independent retailers
Mascot	Workwear producer	**Denmark** & abroad	–	–	–	–	No
Inditex[f]	Fashion retailer	**Spain** & Worldwide	18,900	4 140	17.4%	22%	Yes
El Corte Ingles	Department store chain	**Spain**/Portugal	566	552	2.3%	97%	Yes
Mango	Fashion retailer	**Spain** & Worldwide	2110	425	1.8%	20%	Yes
Carrefour (Private label)	Big-box retailer	**France** & Worldwide	–	1,160	2.7%	–	Yes
Camaïeu	Fashion retailer	**France** & Europe	–	913	2.2%	–	Yes
Auchan (Private label)	Big-box retailer	**France** & Worldwide	–	950	2.2%	–	Yes
Manifattura Corona	Wholesaler of apparel	**Italy** & abroad	–	–	–	–	No
Essenza/YesZee	Wholesaler of apparel	**Italy** & Southern Europe	–	–	–	–	Multi-brand stores
Benetton	Fashion retailer	**Italy** & Worldwide	3,250	1,640	2.9%	50%	Yes
Kappa	Sportswear brand	**UK/US** & Worldwide	–	–	–	–	Yes & multi-brand stores
LPP[g]	Fashion retailer	**Poland** & Eastern Europe	990	558	6%	56%	Yes
LC Waikiki	Fashion retailer	**Turkey** & Eastern Europe	2,500	2,210	12%	88%	Yes

The companies whose names are underlined are those for which we can measure sales in different countries. Companies in italics sell their products exclusively in stores with the same name as the company, allowing direct identification of the brands owned by the company. [a] Cato Fashions operates stores under the names Cato, Cato Plus, It's Fashion, It's Fashion Metro and Versona. [b] Ascena operates stores for its eight brands (Ann Taylor, LOFT, Lou & Grey, Dressbarn, Lane Bryant, Cacique, Catherines, and Justice). [c] Primark is named Penneys in the Republic of Ireland where it originates. The company could not use the name "Penneys" in Europe outside Ireland because J. C. Penney had the name registered. [d] Kids Fashion Group markets has, in 2019, more than 280 own-brand shops as well as a further 3,500 points of sale (2,000 in Germany) for its several brands (Kanz, Bellybutton, Ticket to Heaven, lief! lifestyle, Lemmi and Marc O'Polo Junior). [d] PWT's goods are sold through the group's two retail chains Tøjeksperten and Wagner as well as by independent retailers. [f] Inditex has stores for its various brands Zara, Zara Home, Pull&Bear, Massimo Dutti, Bershka, Stradivarius, Oysho, and Uterqüe. [g] LPP has stores for each of its brands which include Reserved, Reserved Kids, Cropp, House, Mohito and Sinsay. [i] Total sales (all products including non-apparel goods).

Source: Data from EuroMonitor are supplemented by data from Statista and individual company reports (such as 10-K filings with the U.S. Securities and Exchange Commission for the US listed firms).

(Dapiran, 1992; Rodríguez Donaire et al., 2010). For example, on its website Benetton Group explains that is has "direct control of the logistics phase for both own-manufactured and sourced products" and that its state-of-the-art logistics operation at Castrette (Italy) handles individual orders for the 5,000 Benetton shops worldwide.[9] On its website, Mascot (corporate clothing and workwear, mostly online) explains that its warehouse located in Denmark can ship goods that will reach its customers in a few days around the world. Carrefour also as a single very large and automated textile warehouse (100,000 m^2 in Sénart, France) serving its many stores in France and neighboring countries.

The apparent national bias in companies' trade flows is also reflected in the geographical distribution of their sales activities. Table 1 indicates in which countries the firms were operating in 2013. Only a few really have an international dimension. For many (such as Cato Fashions, Ascena Retail and J. C. Penney, Bonmarché, Malatan, Store Twenty One), their notoriety and activities are limited to their country of origin. Among the others, international expansion often is limited to a few neighboring countries (Joe Fresh, The Children's Place, PWT, NKD, Güldenpfennig, Adler Modemarkte, Camaïeu, LPP, Essenza, El Cortes Ingles, LC Waikiki). There are in fact very few firms that have a worldwide nature such as Walmart, Lee Cooper, C&A, Mango, Inditex, Kappa, Benetton, Carrefour, Auchan. These international firms also have a clear home bias in their sales. We use data from Euromonitor and the 10-K filings[10] with the U.S. Securities and Exchange Commission for the US listed firms to compute the share of the sales they generate from their headquarter country. Even though we do not have data for all companies,[11] we find that the market share held by firms in the country of their headquarters is systematically much higher than the country's weight in the world textile sector. As an illustration, according to Euromonitor data, Mango and Inditex generated around 20% of their 2012 sales in Spain. Benetton's share of sales in Italy reached 49%. This is despite the fact that clothing sales in Italy and Spain represent 2 and 4% of the world total respectively.

Summarizing, we argue that the effect on imports caused by the Rana Plaza collapse in April 2013, can be expected to be magnified in the headquarter countries of the firms named as potentially guilty. The reasons for this come from the tendency of news outlets to overwhelmingly cite domestic firms, and from the overrepresentation of companies' trade flows in their home country's imports.

Next to our main explanatory variable based on the home-country of the firms reported, we use two additional proxies for the countries in which consumers' attention might have been disproportionately influenced with regards to the disaster of Bangladesh.

Our second proxy is the list of countries in which multinational companies signed the official document aimed at preventing future accidents, named the Accord. Besides naming the firms linked with the Rana Plaza, other initiatives, supervised by international organizations and NGOs, focused on preventing future similar accidents. Three documents emerged: the Accord on Fire and Building Safety in Bangladesh (the Accord), the Alliance for Bangladesh Worker Safety (the Alliance) and the National Tripartite Plan of Action on Fire Safety and Structural Integrity in the Garment Sector of Bangladesh (the National Initiative). Both the Accord and the Alliance are based on the National Tripartite Plan and share the goal of preventing fires and building safety hazards in Bangladesh. They however differ in that the Accord is a legally binding agreement between brands and trade unions: companies must work with suppliers to ensure that remedial measures are financially possible and ensure factory workers' employment during fire and building safety resolution.[12] By contrast, the 26 companies that signed the Alliance, all North American, among which J.C. Penney, GAP and Walmart, have no such obligation. The Accord (hence the binding agreement) was signed by more than 180 apparel brands, as indicated in the publicly available list on the Accord's website.[13] All the 31 firms that were identified as linked with the Rana Plaza signed the Accord. Besides, other companies, unrelated to the Rana Plaza factories, also signed the document. Almost all of these companies originate from OECD countries (3 firms were from non-OECD countries: Malta, Malaysia and Hong Kong). Table 2 lists the origin countries of multinational companies according to their relation with the Rana Plaza. From the perspective of the information received by Western consumers regarding whether their domestic firms were involved in the industrial disaster, there are thus three categories of multinational companies: the ones that were directly linked to the Rana Plaza building (12 countries shown in Table 1), the ones that signed the Accord document (9 countries), and the ones on which a priori nothing specifically oriented towards domestic firms was said during and after the collapse (14 countries).[14]

The last proxy uses information from the number of NGO campaigns issued in consumers' importing countries. We dedicate the next section to detailing this variable.

2.2. NGO campaigns related to Bangladesh

One could also think that individuals' attitudes and hence purchase decisions are influenced by the campaigns issued by NGOs. NGOs provide an in-depth channel of information about unethical practices of firms, and their campaigns are often relayed by the media. Fortunately academic research is now able to use NGO campaign data, which cover the years 2010 to 2016.[15] We use the existence of advocacy campaigns issued in each importing country, in the months following the collapse, as a third proxy for the negative information coverage targeting firms importing from Bangladesh. Note however that, while the publication of campaigns mentioning Bangladesh after the event does represent an indication of a negative reputation shock, it also has the disadvantage of being less exogenous than our main variable. This is because the dynamism of local NGOs reflects the degree of freedom and democratic functioning of a country as a whole, which may be correlated with its level of development and possibly the extent of demand for consumer goods such as clothing.

Our variable originates in the Sigwatch NGO campaign data targeting multinational corporations.[16] The data records campaign events, hence significant news published by NGOs on their own websites, including date and names of firms and NGOs, regarding the behavior of companies in all countries of the world, in all sectors.

[9] http://www.benettongroup.com/the-group/business/logistics/.

[10] Public companies in the US are required to fill this report annually about their financial performance by the U.S. Securities and Exchange Commission (SEC).

[11] We could only collect data for the companies whose names are underlined in Table 1.

[12] The Accord is often presented as a "European" initiative as its members comprise many top European companies, such as Benetton and Mango. Signatories of the Accord also include some American companies such as PVH and Abercrombie & Fitch.

[13] http://bangladeshaccord.org/signatories/.

[14] We recognize that the Accord proxy variable may be criticized as being less exogenous than the information regarding the firms which production was located in the Rana building. We still believe that the news mentioning domestic firms signing a binding document related to the disaster might be assimilated by consumers as a sign of guiltiness and hence as a negative information about the firm.

[15] Hatte and Koenig (2018) analyze the campaigning behavior of NGOs using the Sigwatch Campaign database. Covalence EthicalQuote is the other existing database listing NGOs' campaigns against multinational firms, and available to researchers. However, contrary to the Sigwatch database, it concentrates on the largest firms: see for example Couttenier and Hatte (2016). See Aldashev and Navarra (2018) for a survey of empirical work related to NGOs, centered on development NGOs.

[16] Sigwatch is a European consultancy firm which compiles NGO campaign data and provides companies with indices measuring NGO activity on their sector, among other.

Table 2
OECD importers from Bangladesh and relation to the Rana Plaza accident.

OECD Countries with national brands present in the Rana Plaza: Belgium, Canada, Denmark, France, Germany, Ireland, Italy, Poland, Spain, Turkey, Great Britain, USA
OECD Countries with firms signing the Accord (but not In Rana Plaza): Australia, Austria, Chili, Finland, Japan, Netherlands, Norway, Sweden, and Switzerland
OECD non-involved countries: Czech republic, Estonia, Greece, Hungary, Iceland, Israel, Luxembourg, Latvia, Mexico, New Zealand, Portugal, Slovakia, Slovenia and South Korea

Note: Information on firms with links to the Rana Plaza comes from https://cleanclothes.org/safety/ranaplaza/who-needs-to-pay-up and https://cleanclothes.org/safety/ranaplaza/rana-plaza-actual-and-potential-donors-listed-by-g7-country/view (see Table 1). All firms present in the building signed the Accord. The list of Accord signatories comes from http://bangladeshaccord.org/signatories/.

We aggregate the data by country in which the unethical behavior is alleged to have taken place, and select the campaigns targeting firms in the clothing and apparel sector. Fig. 1 displays the total number of NGO campaigns, that mentioned damages in one of the following three important textile producing countries, namely Bangladesh, China and India. Campaigns have been summed by quarters of years.

Two interesting patterns emerge. First, campaigns about Bangladesh (and about China and India) existed before the Dakha accident. This can be expected, given the extreme specialization of the country in the textile industry, and the relatively long-term focus of many NGOs on labor conditions within sweatshops. Second, the data shows a clear peak of the number of campaigns related to Bangladesh at the time of the disaster, which is identifiable through the vertical line on the graph. This confirms our assumption that the collapse of the building, and hence the release of information regarding the unethical behavior of some firms, acted like a gigantic campaign against producers subcontracting in Bangladesh.

It is useful for our analysis to consider the country heterogeneity of NGO reports published at the time of the accident: this is, the countries in which the reports were broadcasted or published. We compute the number of local NGO campaigns issued in each importing country, between April and December 2013, in the textile industry, related to a damage done in Bangladesh. Note that 97% of those refer to a "supply chain responsibility" issue.[17] Fig. 2 illustrates these 200 campaigns, originating from 8 different countries. For a given country in which the action has taken place, the data lists local NGOs campaigns against firms that are either domestic (from the same country as the NGO) or foreign (from any other country, including possibly the action country). The dark bars represent campaigns against all firms. The lighter bars display the campaigns that targeted domestic firms.

The variability of the number of campaigns between reporting country naturally reflects different determinants, such as the size of the country, the domestic legislation regarding associations, or the country's income. Controlling for unilateral county-level explanations for the number of campaigns, we use this variable in Section 5 when investigating the reasons behind the decrease in imports following the Rana Plaza collapse.

3. Empirical strategy

To analyze world import flows of apparel, we estimate a structural gravity equation with a triple difference approach.

[17] Six campaigns mention the following very similar other cause of misbehavior: "corporate social responsibility (CSR) standards and reporting".

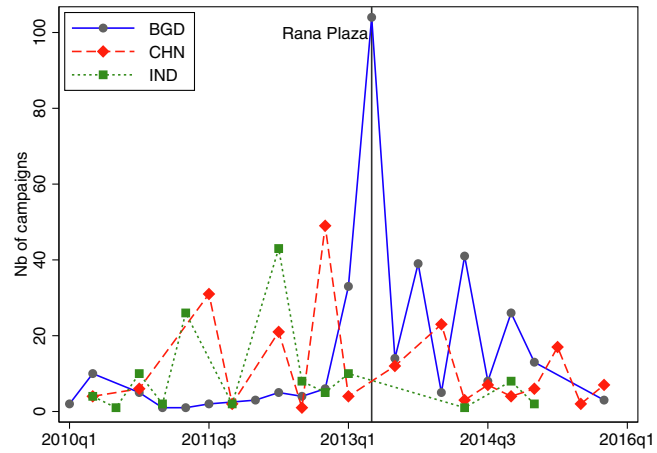

Fig. 1. Number of activists' campaigns in the clothing industry referring to Bangladesh, China or India.

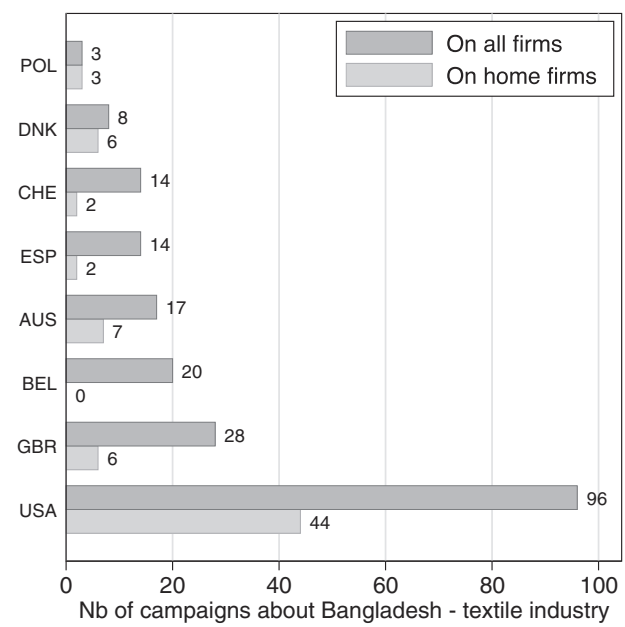

Fig. 2. Number of activists' campaigns referring to Bangladesh, April to December 2013.

3.1. Trade equation

Let us describe international trade flows M_{ijt} from country j to country i, in the apparel sector, by the following structural gravity equation, following Head & Mayer (2014):

$$M_{ijt} = S_{jt} D_{it} \phi_{ijt}, \tag{1}$$

with S_{jt} the supplier term, and D_{it} the demand term.

Bilateral trade costs ϕ_{ijt}, with $0 \leqslant \phi_{ijt} \leqslant 1$, comprise time-fixed, and time-varying trade cost determinants. Within the latter, we assume a preference parameter which can be thought of as an index of the quality of country j's products, as proposed in the Armington-type utility function and in the border effects literature (Head & Mayer, 2000). We assume that the effects of the Rana Plaza collapse act as a reduction in the perceived quality of products manufactured in Bangladesh. The decrease in perceived quality is likely to be more important in importing countries having been well informed about the disaster. This implies that the impact

of the collapse on import flows is expected to be specific to the pairs of countries *importer i×Bangladesh*, for the months following the event, where country *i* belongs to the group of countries intensely associated in the news to the Rana Plaza disaster.

Note that within the bilateral and time-varying trade cost ϕ_{ijt}, the effect of a change in the quality parameter is not distinguishable from a trade cost shock (an increase in insurance costs for example). This is why we carefully study the monthly effects, compare them with the timing of the collapse, and control for other factors with bilateral and product dimension such as seasonality. We detail our specification in the next section. It is also important to note that our equation estimated at the sectoral level does not only measure the effects of an aversion of consumers for products manufactured unethically. It also incorporates the reaction of firms in order to counter the decrease in demand. Our estimates quantify the total effect related to the Rana Plaza collapse, including any supply-side response from firms.

In Eq. (1), bilateral imports M_{ijt} are a function of supply, demand, and bilateral frictions. Taking logs of Eq. (1) leads to:

$$\ln M_{ijt} = \ln S_{jt} + \ln D_{it} + \ln \phi_{ijt}. \tag{2}$$

The next section explains, among others, how we control for the unilateral country-level determinants of trade. For the rest of the empirical analysis, we switch to more detailed subscripts and indices for the variables, in order to represent the dimensions of our database. While *i* and *j* still represent the importing and exporting countries, let from now on *p* be the product, *y* the year and *m* the month. When referring a combination of year and month, we use the word *period*.

3.2. Specification

We regress the monthly imports of *i* from *j* on a dummy that singles out importers which had national branded apparel goods produced in the Rana Plaza, and interact it with a dummy signaling imports from Bangladesh after the Rana incident. This corresponds to triple-difference estimates which compare (i) import transactions before and after the Rana Plaza collapse (the first difference), (ii) countries with national brands inside the building vs. not present (the second difference), and (iii) from Bangladesh vs. other origins (the third difference). We estimate the following equation on our panel of product-level bilateral monthly import data of apparel over 2010–16:

$$\begin{aligned}\ln \text{Imports}^i_{jp,ym} = {} & \beta\ \text{Ranacountry}^i \times \text{Post}_{ym} \times \text{Bangladesh}_j \\ & + \lambda^i_{p,ym} + \mu_{jp,ym} + \nu^i_{jp} + \epsilon^i_{jp,ym},\end{aligned} \tag{3}$$

where $\text{Imports}^i_{jp,ym}$ denotes imports of product *p* by country *i* from country *j* in month *m* of year *y*. Our sample contains 44 products, defined as HS4 categories of apparel and clothing products. Our explanatory variable of interest is Ranacountry^i, which is a dummy which is equal to one for imports of the 12 countries with at least a national firm present in the Rana Plaza when it collapsed, as reported in Table 2. We focus on the triple interaction between this dummy, a second dummy called Post which takes the value 1 from May 2013 onwards, and a third dummy indicating that imports originate from Bangladesh.

We restrict our sample to the bilateral imports of OECD countries.[18] The reason we only consider OECD importers relates mostly to the fact that only OECD countries had national brands produced in the Rana Plaza. These countries' firms most likely chose to produce in Bangladesh for cost-related motives. Restricting our sample to OECD countries allows to compare agents with similar behaviors, hence importers of apparel which were present in the building with others that could have but were not. The choice is also motivated by data limitations in the UN monthly data. Only a subset of countries declare monthly trade relations to the UN, most of which are OECD countries. Our baseline sample covers all 35 OECD countries in 2016.[19] We cluster regression standard errors at both the importer country level and the product level. This two-way clustering accounts for the correlation between products and periods within the treated units (here the importer country) as well as for the correlation between partner pairs and periods for a given product.

The supplier and demand terms in the structural gravity equation (Eq. (1)) are taken into account by the unilateral country fixed-effects, which vary by year and month. $\lambda^i_{p,ym}$ and $\mu_{jp,ym}$, respectively the importer-product-period and origin-product-period fixed effects, allow to control for time-varying importer-specific and exporter-specific factors at the product level: They pick up the uneven economic development and retail-market regulations of apparel importers and exporters, and control for shocks to market conditions in a given location that affect the demand or the supply for a specific product. Importer-product-period fixed effects $\lambda^i_{p,ym}$ capture country-level variations in the demand of apparel goods irrespective of their geographical provenance. Origin country-product-period fixed effects $\mu_{jp,ym}$ capture country-level variations in the supply of goods over time. These shocks, that are common to all importing countries, could be product-specific (export taxes) or not (exchange rate movements).

We further control for importer-product-origin fixed effects, ν^i_{jp}, to account for specialization patterns at the bilateral level. A country may have a natural inclination to import specific apparel goods from a partner for historical reasons or because of the presence of immigrants from that country. Bilateral time-varying factors also have to be considered, since we want to control for omitted variables. Within this category, seasonality is a key concern (Ashenfelter et al., 2007). To account for seasonality in bilateral relations for a particular good, in our preferred specification we allow importer-product-origin fixed effects, ν^i_{jp}, to vary by month. Our specification hence includes $\Sigma_m \nu^i_{jp} \times d_m$, where d_m is a dummy for each of the twelve months in a year. This helps to distinguish the impact of the Rana plaza incident from general seasonal shocks affecting bilateral trade flows.

4. Triple difference estimates

We estimate the gravity equation with a triple difference approach. The sample includes OECD countries' imports from all origins: we thus compare, in an integrated framework, imports from Bangladesh before and after the shock, with the evolution of imports from other origins. We first display the baseline estimates in Table 3, which we complement by plotting graphically the estimated coefficients for different time periods (Fig. 3).

4.1. Did the disaster affect import flows?

Table 3 contains the main outcomes of the paper: our key variable of interest *Rana×Post×*BGD is the interaction between a dummy equal to one for imports by countries with national brands in the Rana Plaza, a dummy for import flows from Bangladesh, and a dummy equal to one after the building collapsed, from May 2013 onwards. In columns 2 and 3 results are contrasted with the estimated impact of the two other variables measuring the visibility of the event in different countries. Column 1 shows that the key

[18] The list of countries covered in our sample is given in Table 2.

[19] The list is taken from http://www.oecd.org/about/membersandpartners/list-oecd-member-countries.htm.

Table 3
Country-level Triple difference: baseline.

Explained variable Products	Ln import value of product *p* by OECD country *i* from country *j* in month *m* of year *y* (2010–2016) HS4 *p* Clothing and Apparel				
	1	2	3	4	5
Rana country^i × Post × BGD	−0.335^b	−0.374^c	−0.314^b		
	(0.156)	(0.211)	(0.147)		
Signed Agreement country^i (not in Rana) × Post × BGD		−0.086			
		(0.259)			
0/1 NGO campaign on BGD textile^i × Post × BGD			−0.057		
			(0.138)		
Rana country^i × 2010 × BGD					0.015
					(0.199)
Rana country^i × 2011 × BGD					0.104
					(0.083)
Rana country^i × Jan-April 2013 × BGD					−0.199
					(0.130)
Rana country^i × May-Dec 2013 × BGD				−0.286^b	−0.262^c
				(0.124)	(0.141)
Rana country^i × 2014 × BGD				−0.349^b	−0.337^c
				(0.170)	(0.172)
Rana country^i × 2015 × BGD				−0.347^b	−0.335^c
				(0.168)	(0.170)
Rana country^i × 2016 × BGD				−0.337^c	−0.325
				(0.197)	(0.200)
Observations	4,274,140	4,274,140	4,274,140	4,274,140	4,274,140
R-squared	0.88	0.88	0.88	0.88	0.88
Importer-Product-period Fixed effect	Yes	Yes	Yes	Yes	Yes
Exporter-Product-period Fixed effect	Yes	Yes	Yes	Yes	Yes
Importer-Exporter-Product-month Fixed effect	Yes	Yes	Yes	Yes	Yes

Heteroskedasticity-robust standard errors clustered using two-way clustering at the importing country level and at the product level appear in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels. Period corresponds to a year-month combination. Clothing and Apparel is defined as products from HS2 between 61 and 63. *Rana country^i* is a dummy denoting the 12 countries with at least a national firm present in the Rana Plaza when it collapsed as reported in Table 2. *Signed Agreement country^i(not in Rana)* denotes the 9 OECD countries whose firms have signed the Accord on Fire and Building Safety in Bangladesh even though they were not directly implicated in the Rana incident. *0/1 NGO campaign on BGD textile^i* is a dummy for the 8 countries home of activists' campaigns referring to Bangladesh between April to December 2013 (Fig. 2). *Post* is a dummy taking the value 1 from May 2013 onwards.

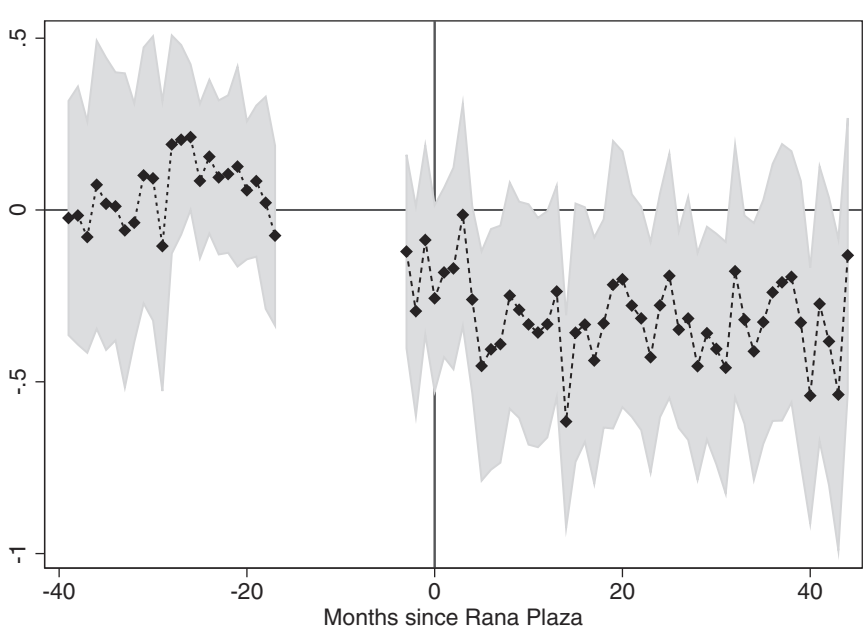

Fig. 3. Monthly triple difference estimates. Time = 0 for April 2013. The point estimates with their standard error are reported in the Online Appendix.

interaction term is negative and significant: this reflects a lower propensity to import apparel and clothing from Bangladesh for countries whose brands were produced in the Rana Plaza compared to the other OECD countries following the Rana Plaza collapse. The magnitude of the estimated effect appears relatively important: being directly linked to the Rana Plaza through one or

more subcontracting domestic companies is associated with a 40 percent relative fall in the bilateral imports of the countries.[20] While this outcome does not indicate an absolute fall of imports for countries exposed to the negative reputation shock, it does mean that the value of import flows of a group of countries has been, in the period following the disaster, at a level 40% below the one it would have reached without the shock, everything equals.

We now investigate whether the two other initiatives that brought firms under the limelight in the weeks and months following the collapse, are also associated to a decrease in imports. Firms from nine OECD countries which were not directly implicated in the Rana incident (listed in Table 2), signed the binding agreement on Fire and Building Safety (called the Accord). Column 2 questions whether signing the Accord could have had the same effect on trade as the one linked to the negative reputation shock associated to the presence in the Rana Plaza. It reproduces the results from column 1 and adds an additional interaction term identifying the behavior of the group of countries whose firms have signed the Accord, even though they have not been named as being accountable due to their presence in the Rana. The coefficient on the triple interaction term *Signed agreement (not in Rana)×Post×BGD* is insignificant, indicating that the import dynamics from Bangladesh of these countries cannot be distinguished from that of OECD countries whose firms where not mentioned in the Accord. Note that one could have expected either a negative effect of the Accord (signalling a connection to the Rana Plaza) or a positive effect on trade flows (denoting firms' efforts to promote social responsibility in Bangladesh). The results suggest that the signing of the Accord had no specific trade implication on the country's imports.

This could cast doubt on the possible trade gains to expect from an ethical positioning strategy for brands. Our results suggest that signing the Accord did not mitigate the relative trade loss experienced by the Rana importers (all of whom signed the agreement with a view to enhancing their reputation) due to their public image deterioration from the Rana plaza collapse.

The third and last variable that we use to measure the negative reputation shock created by the industrial catastrophe focuses on NGO reports published in each importing country after the collapse of the building. Using the Sigwatch campaign data restricted to the textile industry and to reports mentioning Bangladesh, we aggregate the number of campaigns by country of the NGOs, year and month, and create a dummy indicating whether or not importing countries have had campaigns published by their NGOs in the months following the event. The dummy is thus equal to one for the eight countries shown in Fig. 2. Column 3 uses this dummy in an additional interaction term, next to the Rana term, looking into the specific import patterns of the 8 countries home of activists' campaigns referring to Bangladesh between April to December 2013. The interaction enters with an insignificant coefficient, suggesting that the existence of a reporting by activists did not influence the import pattern of countries in which they were published. Note that the NGO campaign interaction term also enters with a non significant impact when used on its own (without the Rana term) in the specification. Similar findings are obtained when we restrict our attention to the countries where NGO campaigns targeted domestic textile firms. The take-away from comparing the three alternative treatment variables (Origin country, Accord, and NGO campaigns) thus highlights a specific post-shock trend in clothing imports for those countries home to the firms involved in the drama. We believe this outcome may originate in a large media and NGO coverage on domestic firms in those locations, alternatively it can be caused by the trade bias of Rana firms in their home country.

Let us investigate with more details the time profile of the relative import decline found in column 1. Column 4 decomposes the triple interaction *Rana×Post×BGD* into its four yearly components (2013, 2014, 2015 and 2016). Each term measures the average effect for the twelve months of each corresponding year (but 2013, for which only the last eight months are used). Estimated coefficients reveal that the dampening effect of the Rana Plaza event is not short-lived since statistically significant effects are found for 2014 through 2016.

Column 5 ensures that the negative and significant coefficient on *Rana×Post×BGD* does not solely reflect pre-existing (negative) different trends. The year 2012 is used as the reference period and the interactions for the two previous years are added. This means that we are comparing the average relative level of imports of this group of countries in a given year (before and after the Rana collapse) to the average relative level of imports of the same group of countries in 2012. We want to make sure that there is no pre-trend. If the Rana countries were on a decreasing trend from the beginning of the period, we should find positive and significant coefficients for the years before the benchmark. Results show that both interactions of Rana countries in 2010 and 2011 are not significant, suggesting that there was no significant difference between the import dynamics from Bangladesh of Rana countries compared to other OECD countries before the incident. The two groups of countries seem to pursue separate trends after May 2013: the trend shift appears significant exactly over the months following the collapse of the building, suggesting that the relative decline is related to this event.

It is possible to further decompose the yearly triple interaction terms into their monthly components. The estimates correspond to the level of imports from Bangladesh (compared to other sources) for Rana countries compared to others, using the full year of 2012 as the reference. The coefficients are displayed in Fig. 3.[21] Each diamond represents the estimated coefficient for a given month between January 2010 and December 2016. The months during the year 2012 appear as blanks since they are the benchmark. The figure shows a clear break in the trend between, on the one side, the pre-2012 months, and on the other side the months in 2013 and following. There seems to be no specific difference between the benchmark year 2012 and the preceding period. On the contrary, coefficients estimated for the months consecutive to the disaster are clearly beneath the benchmark level, even though not all of them are significant.

The relative drop in imports from Bangladesh for Rana countries continues over the medium term (at least until 2016). The results suggest that there is no return to normal despite the often intense efforts of the firms pinned down to meet the demands of NGOs and restore their image. For example, as explained in Section 2.1, a number of firms reacted quickly to the Rana disaster by contributing to the fund set up by the ILO to compensate the family of the workers who died in the disaster in November 2013. Some have been at the forefront in supporting NGO initiatives such as the Accord on Fire and Building Safety in Bangladesh and pledged to change their policies regarding their suppliers and ensure that similar accidents do not happen again. One could hence expect a short-lived impact, as the raison d'être of NGO denunciations disappeared. Several factors are however likely to explain the persistence of the import losses. First of all, regaining consumer confidence after a scandal may require more than compensating victims. The media coverage of the event, as well as the bad practices it revealed lasted well beyond 2013. The successive anniversaries of the collapse in 2014 and 2015 were also an opportunity to recall the horror of the disaster, the working conditions in the Bangladeshi textile sector, and to name once more the companies

[20] This is calculated as 100× [exp(0.335)-1].

[21] The coefficients are reported with their standard error in the Online Appendix.

involved. Often the media wondered about the changes observed since the disaster without reporting much progress. These reminder shots may have been of such a nature as to make consumers feel uncomfortable and prevent a return to normalcy. It is also possible that consumption practices by consumers and sourcing practices by involved firms were permanently modified. Overall observing a loss of trade over the medium term without rebound despite the commitments of companies is consistent with our results in column 2 of Table 3: We found that the signing of the Accord did not mitigate the relative trade loss experienced by the Rana importers, casting doubt on the possible trade gains to expect from an ethical positioning strategy for brands.

Our results concentrate on apparel imports. In the case the Rana Plaza incident had an impact on the import behavior of some OECD countries, we expect the non-textile sectors not to be impacted by the collapse. Results reported in the Online Appendix display double-difference estimates on trade data excluding clothing products.[22] None of the results obtained for apparel products appear for non-textile goods. The Online Appendix also reports the results corresponding to different double differences included in Eq. 3. They include the double-difference estimates corresponding to the different evolution of imports from Bangladesh by countries with national brands inside the building vs. not present. They also look at the corresponding difference for all alternative origin countries. While the interaction for Rana countries' imports from Bangladesh after the shock attracts a negative and significant coefficient, none of the interaction terms involving the Rana dummy are significant when focusing on alternative textile exporters in double-difference.

Remaining robustness checks, reported in the Online Appendix, address the following issues. Table A-8 excludes one by one countries from the Rana group in order to check whether one of them is driving the entire effect. Our main results hold. Results from falsification tests are displayed in Tables A-10 and A-11. We falsely assign the Rana Plaza shock to another country of origin than Bangladesh: none of the triple interactions are significant.

5. Why did the disaster affect import flows?

Our results suggest that the ethical debate that followed the industrial disaster in Bangladesh has had a downward effect on clothing imports in the origin countries of companies directly involved in the collapsed building. It is hasty to interpret this effect as channeled by a reputation shock affecting exclusively demand: as emphasized in Section 3.1, changes in the supply side may also be causing the outcome. In this section we investigate three new characteristics of the impact of the collapse, providing further evidence for interpretation. We first analyze the evolution of clothing prices in Bangladesh, and show that the effect did not involve a change in the price of apparel. Second, we derive new results comparing the origin country dummy with a variable measuring the market share of firms involved in the drama. Then we study the timing of the result, confronting our outcome to documented facts in the fashion industry supply chain. Last, we investigate the existence of supply reallocation among neighboring countries, and analyze the role of NGO campaigns.

5.1. Price effects

Changes in import values may reflect changes in prices. After the Rana Plaza collapse, the Bangladesh Accord on Fire and Building Safety committed a great number of retailers[23] to improve security conditions in their supplying factories. The Accord implied inspections, remediation, the set up of occupational health and safety committees, and workers training. All these costs borne by the production plants or retailers themselves are likely to increase the price of clothing imported from Bangladesh.

To study the possibility of an increase in the price of clothing imported from Bangladesh in the countries of origin of the brands that signed the agreement, we use information on trade volumes to calculate import unit values. Import quantities are however much less well reported than import values, so there are many missing observations. Table 4 applies the triple difference approach (as in Table 3) with the average price (calculated as the value divided by the volume) as the explained variable. Interaction terms capture the adjustment of imports prices from Bangladesh, for countries of origin of firms that signed the Accord or sourced from the Rana Plaza after the incident. None of the coefficients on the interaction terms are significant, suggesting that the evolution of prices of clothing imports from Bangladesh has been the same for all OECD importing countries. There may be several explanations for this. It is possible that the safety improvements have been minimal and have not resulted in any additional costs for importers. Alternatively, the cost increases may have affected only a small part of the firms so as not to affect the average price on all import transactions from a given country. Finally, cost and price rises may have spread throughout the sector without difference according to the degree of firms' involvement in post-Rana initiatives.

5.2. Evidence from the sales channel

Our main results rely on the dummy identifying headquarter countries of companies linked to the Rana Plaza. This dummy proxies several effects at work: a greater public awareness relative to the misbehavior of domestic firms (home-country media slant) and a greater response to the accident (due to the home bias in trade). While it is difficult to distinguish among these effects, we have the possibility to investigate the importance of the sales

Table 4
Firm-level Triple difference: price.

Explained variable	Ln unit value product *p* by OECD country *i* from country *j* in month *m* of year *y* (2010–2016)		
Products	HS4 *p* Clothing and Apparel		
	1	2	3
Rana × Post × BGD		−0.029	−0.012
		(0.096)	(0.073)
Signed agreement (in or not in Rana) × Post × BGD	−0.002	0.017	
	(0.070)	(0.100)	
Signed agreement (not in Rana) × Post× BGD			0.017
			(0.100)
Observations	2,939,831	2,939,831	2,939,831
R-squared	0.77	0.77	0.77
Importer-Product-period Fixed effect	Yes	Yes	Yes
Exporter-Product-period Fixed effect	Yes	Yes	Yes
Importer-Exporter-Product-month Fixed effect	Yes	Yes	Yes

Heteroskedasticity-robust standard errors clustered using two-way clustering at the importing country level and at the product level appear in parentheses. [a], [b] and [c] indicate significance at the 1%, 5% and 10% confidence levels. Period corresponds to a year-month combination. Clothing and Apparel is defined as products from HS2 between 61 and 63. *Rana country*^{i} is a dummy denoting the 12 countries with at least a national firm present in the Rana Plaza when it collapsed as reported in Table 2. *Signed Agreement country*^{i}*(not in Rana)* denotes the 9 OECD countries whose firms have signed the Accord on Fire and Building Safety in Bangladesh even though they were not directly implicated in the Rana incident. *Post* is a dummy taking the value 1 from May 2013 onwards.

[22] We exclude sectors with HS2 codes from 61 to 66.

[23] The Accord was signed by more than 180 apparel brands, most of which did not produce in the Rana Plaza.

channel: is the import-reducing effect of the Rana Plaza collapse proportional to the Rana firms' sales per country?

We use data from Euromonitor to compute country-level retail sales of apparel by the various companies sourcing from the Rana Plaza in 2012. The data is unfortunately not exhaustive as we could only obtain information for the 22 companies (out of the 31) whose names are underlined in Table 1. We compute two (imperfect) proxies of the importing countries' exposure to the shock through the sales channel: *Rana firms' market share*^{i} is the total market share, in country *i*, of all companies involved in the Rana Plaza, regardless of their origin (hence the ratio of their sales over total national sales in country *i*). *Domestic Rana firms' market share*^{i} is the total market share, in country *i*, of *i*'s domestic companies involved in the Rana Plaza. Hence the domestic companies for which consumer reactions could be amplified by increased media coverage or greater identification.

Table 5 reproduces the triple-difference specification from column 1 of Table 3 and includes those two alternative proxies. In column 1, the coefficient on the interaction term *Rana firms' market share*^{i} × *Post* × *BGD* is positive and insignificant. In column 2, the interaction *Domestic Rana firms' market share*^{i} × *Post* × *BGD* comes out with a negative and significant sign. Our results hence suggest that the impact of the collapse of the Rana Plaza on a country's imports is proportional to the local sales of the companies involved in the drama, if they originate from the country but not if they are of another nationality. The effect does not only depend on the importance of companies in a market, they mainly reflect the fact that these companies are perceived as local. Results in column 3 indicate that the sales channel is not the only channel at play. When *Domestic Rana firms' market share*^{i} × *Post* × *BGD* and *Rana*^{i} × *Post* × *BGD* are simultaneously included, only the latter is significant, albeit to a lesser extent than in the basic specification. This empirically justifies the choice of our key indicator of an importing country's exposure to the Rana Plaza collapse focused on the headquarters countries of the Rana companies.

Table 5
Country-level Triple difference based on retail sales.

Explained variable	Ln import value of product *p* by OECD country *i* from country *j* in month *m* of year *y* (2010–2016) from country *j* in month *m* of year *y* (2010–2016)		
Products	HS4 *p* Clothing and Apparel		
	1	2	3
Rana firms' market share^i × Post × BGD	0.190		
	(0.968)		
Domestic Rana firms' market share^i × Post × BGD		−1.774^c	0.094
		(1.035)	(1.206)
Rana country^i × Post × BGD			-0.344^c
			(0.202)
Observations	4,274,140	4,274,140	4,274,140
R-squared	0.88	0.88	0.88
Importer-Product-period Fixed effect	Yes	Yes	Yes
Exporter-Product-period Fixed effect	Yes	Yes	Yes
Importer-Exporter-Product-month Fixed effect	Yes	Yes	Yes

Heteroskedasticity-robust standard errors clustered using two-way clustering at the importing country level and at the product level appear in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels. Period corresponds to a year-month combination. Clothing and Apparel is defined as products from HS2 between 61 and 63. *Rana country*^{i} is a dummy denoting the 12 countries with at least a national firm present in the Rana Plaza when it collapsed as reported in Table 2. Data from Euromonitor is used to compute the share of the involved firms in the retail apparel sales at the country level in 2012. We use two measures: the total market share of the companies sourcing from the Rana Plaza (*Rana firms' market share*^{i}) and the market share of these companies headquartered in the country in question (*Domestic Rana firms' market share*^{i}). *Post* is a dummy taking the value 1 from May 2013 onwards.

5.3. Destruction of production capacity

The collapse of the Rana Plaza in itself is not likely to significantly affect the country's textile exports. Although it is impossible to know how much Rana Plaza's production accounted for in the country's total exports, this share is probably very small. Indeed, the building housed five factories while the country had more than 3,500 export-oriented ready-to-wear companies. These factories may have employed 4,000 workers, which is a drop in the bucket compared to the 4 million workers employed in the garment industry in Bangladesh.

Outsourcing garments to Bangladesh by retailers is the object of well-documented deadlines: it takes about 60 days between the order being sent to a factory in Bangladesh and the production being finalised. This period corresponds to the order of raw materials and to the production itself. It takes on average 30 additional days to transport the items from Bangladesh to Western port cities.[24] The final products thus arrive three months after the initial order is placed. Also, orders are not placed with more than the required advance related to production and transport, due among others to storage costs and seasonality of collections.

These facts indicate that a demand effect originating in consumers' aversion for products made in Bangladesh cannot be observed in the first three months after the disaster: taking into account the time the changes in demand are converted in lesser orders placed to Bangladesh, such effects will materialize in the trade data from August or September of 2013 on, and not before. On the contrary, the sudden shutdown of a garment factory in Bangladesh could generate an earlier decline in declared imports from OECD countries. As a matter of fact, any drop in imports measured one month and up to three months after the collapse should be attributed to the destruction of facilities. Could the effect of capacity destructions last more than three months? Yes, in the case multinational firms are unable or unwilling to redirect orders within Bangladesh. However given the specialization of the country and thus the significant number of alternative clothing factories in Bangladesh, this hypothesis seems very unlikely.

According to Fig. 3, imports from countries whose brands are associated to the disaster do not exhibit any specificity in the first three months: they are lower than the benchmark right after April 2013, however this difference is not significant. Estimated coefficients are, on the contrary, visibly lower from September 2013 on. The break in import values between the two groups of countries occurring three months after the event, and lasting until the end of our sample period, appears consistent with a demand-side explanation.

5.4. Reallocation of orders to alternative countries

An eventual reallocation of orders to other providers of apparel occurred either within Bangladesh, or outside, in the case multinational firms decided to contract with factories not bearing the mark of the disaster. If firms placed new orders within Bangladesh, we will not be able to observe anything in the data, at the country level. Alternatively, if firms relocated production in nearby countries, we should notice a relative upward effect on trade after the collapse, in other textile producing countries, in parallel to the downward effect found for Bangladesh.

[24] https://www.freightos.com/freight-resources/transit-time-calculator-for-international-freight-free/.

Table 6 replicates the main estimates (column 1 in Table 3) but this time looking at imports from the top three competitors of Bangladesh in the OECD apparel market. In 2013, 37% of the clothing imports to OECD came from China. Bangladesh was the second largest exporter, with a market share at 6.6%, followed by Vietnam with 4.8% and Turkey with 4.3%. We hence refer to China, Vietnam and Turkey as the top 3 competitors of Bangladesh on the OECD apparel and clothing market.

We investigate the pattern of apparel imports for those three main manufacturers of apparel, to see whether the relative decline of imports for Rana countries from Bangladesh was simultaneous with a reinforcement of imports from other parts of the world. This would suggest that the Rana collapse has induced Rana firms to replace the supply of clothing from Bangladesh with products from other origins. Column 1 focuses on China, columns 2 and 3 investigate the evolution of imports from Vietnam and Turkey respectively. Column 4 looks at the three previous countries together. The interaction terms fail to be significant. In the three following columns, we look at the imports from three South Asian countries with a similar profile to Bangladesh that have become new places of production for fast fashion. Columns 5, 6 and 7 of Table 6 consider the triple interaction terms for Nepal, Cambodia, and Myanmar respectively. Here too none of the interaction terms are significant.

The results of the first seven columns of Table 6 could in fact be consistent with a scenario of a regional decline not restricted to Bangladesh following the disaster. This regional shock would cancel out the initial substitution effect. It is indeed possible that consumer disaffection in the aftermath of the Rana Plaza was not limited to Bangladeshi products: there could have been a halo effect where all countries traditionally associated with fast fashion, because of their low production and low social standards, were relatively sanctioned. The last column of Table 6 investigates this issue for imports from five countries in the Mediterranean basin: Spain, Italy, Portugal, Morocco and Turkey. Since 2012, some manufacturers, following Inditex's strategy based on proximity, have returned to Europe. They benefit, despite higher production costs, from greater responsiveness to consumer tastes and a lower image of exploiting workers in factories with poor working conditions. The coefficient is positive but not significant. Several explanations can be put forward for the lack of substitution effect for the countries considered, A first explanation is that the decline in imports from Bangladesh does not benefit other suppliers and thus corresponds to a real loss of trade (relative to what it would have been in the absence of the shock). The second possible explanation is that redeployment does not benefit a single country but is shared by several countries so that the benefit that is sprinkled is not significantly apparent in the empirical results.

5.5. The role of NGO activism

Our results so far showed an effect of the Rana Plaza collapse on trade, concentrated in the countries of origin of companies that were named and shamed after the disaster. We now investigate whether the intensity of NGO campaigns in those specific countries, nuanced the effect of the scandal. We explore whether, in the 'Rana countries', the more individuals were confronted with negative news about the collapse and the unethical behaviors of firms, the more they would turn away from importing made-in-Bangladesh items. To do this we rely on the NGO campaign data presented in Section 2.2, which we use to proxy the intensity of the news coverage about unappropriate behaviors of multinational firms. Collapsing campaigns by country of origin of the NGO, during the months in 2013 following the collapse of the Rana Plaza, provides two variables: the number of campaigns, by country, targeting any firm in the world for her behavior in Bangladesh, and the same variable however restricted to campaigns targeting domestic firms. All campaigns refer to firms in the clothing industry.

Table 6
Reallocation to other major apparel exports.

Explained variable Products	Ln import value of product *p* by OECD country *i* from country *j* in month *m* of year *y* (2010–2016) HS4 *p* Clothing and Apparel							
	1	2	3	4	5	6	7	8
Rana country^i × Post × China	−0.250							
	(0.155)							
Rana country^i × Post × Vietnam		−0.144						
		(0.138)						
Rana country^i × Post × Turkey			−0.134					
			(0.126)					
Rana country^i × Post × Top 3				−0.193				
				(0.127)				
Rana country^i × Post × Nepal					0.025			
					(0.110)			
Rana country^i × Post × Cambodia						−0.075		
						(0.213)		
Rana country^i × Post × Myanmar							−0.171	
							(0.341)	
Rana country^i × Post × Med. Basin5								0.021
								(0.057)
Observations		4,274,140				4,274,140		
R-squared	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Importer-Product-period Fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exporter-Product-period Fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Importer-Exporter-Product-month Fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Heteroskedasticity-robust standard errors clustered using two-way clustering at the importing country level and at the product level appear in parentheses. [a], [b] and [c] indicate significance at the 1%, 5% and 10% confidence levels. Period corresponds to a year-month combination. Clothing and Apparel is defined as products from HS2 between 61 and 63. *Rana country*^{i} is a dummy denoting the 12 countries with at least a national firm present in the Rana Plaza when it collapsed as reported in Table 2. *Top 3* is a dummy for the three major exporters of apparel and clothing to OECD countries in 2013 beside Bangladesh (i.e. China, Vietnam and Turkey). *Mediterranean Basin 5* is a dummy for the 5 main apparel producers around the Mediterranean Basin: Spain, Italy, Portugal, Morocco and Turkey. *Post* is a dummy taking the value 1 from May 2013 onwards.

Table 7
Repercussions for Rana depending on denunciations of local firms by local NGOs.

Explained variable	Ln import value of product *p* by OECD country *i* from country *j* in month *m* of year *y* (2010–2016)			
Products	HS4 *p* Clothing and Apparel			
	1	2	3	4
Rana country^i × Post × BGD	−0.381[b]	−0.265	−0.389[b]	−0.282[c]
	(0.163)	(0.161)	(0.155)	(0.158)
Rana country^i × Post × BGD × 0/1 NGO campaign on BGD textile^i	0.092			
	(0.167)			
Rana country^i × Post × BGD × Nb NGO campaigns on BGD textile^i		−0.005[a]		
		(0.001)		
Rana country^i × Post × BGD × 0/1 NGO campaign on home textile retailers in BGD^i			0.129	
			(0.181)	
Rana country^i × Post × BGD × Nb NGO campaigns on home textile retailers in BGD^i				−0.010[a]
				(0.002)
Observations	4,274,140	4,274,140	4,274,140	4,274,140
R-squared	0.88	0.88	0.88	0.88
Importer-Product-period Fixed effect	Yes	Yes	Yes	Yes
Exporter-Product-period Fixed effect	Yes	Yes	Yes	Yes
Importer-Exporter-Product-month Fixed effect	Yes	Yes	Yes	Yes

Heteroskedasticity-robust standard errors clustered using two-way clustering at the importing county level and at the product level appear in parentheses. [a], [b] and [c] indicate significance at the 1%, 5% and 10% confidence levels. Period corresponds to a year-month combination. Clothing and Apparel is defined as products from HS2 between 61 and 63. *Rana country*^{i} is a dummy denoting the 12 countries with at least a national firm present in the Rana Plaza when it collapsed as reported in Table 2. *0/1 NGO campaign on BGD textile*^{i} is a dummy for the 8 countries home of activists' campaigns referring to Bangladesh between April to December 2013 while *Nb NGO campaigns on BGD textile*^{i} is the corresponding number of NGO campaigns as reported in Fig. 2. In columns 3 and 4, the variables on NGO campaigns correspond to campaigns on local textile firms. *Post* is a dummy taking the value 1 from May 2013 onwards.

Table 7 analyzes the extent to which the relative import decline is a function of the intensity of NGO activism targeting multinational firms in Bangladesh: the triple interaction terms are interacted with NGO variables into quadruple interaction terms in all four columns. Various factors can make some countries more receptive to NGO campaigns. We can think of the level of education of the population, the level of development, freedom of expression, etc. These factors, which vary at the country level and over time, are taken into account in the fixed effects included in the regressions. The possibility that a country (clothing importer) may be structurally more receptive to information about Bangladesh, for example because of its geographical proximity or the presence of a strong community, is taken into account through the fixed effect which has the double importer-exporter dimension.

The first two columns consider NGO campaigns denouncing misconduct in the Bangladeshi clothing industry. The existence (0/1 dummy) and the number are used respectively in column 1 and column 2. In columns 3 and 4 the measures only consider the misconduct by firms headquartered in the importing country. This specification examines the possibility that trade losses could be increased for the six countries for which both firms were directly associated with the disaster and national NGOs conducted denunciation campaigns on this event.[25]

Results suggest that the decrease in imports takes place in both types of countries, with and without the presence of activists. There is no heterogeneous effect when the triple difference term is further interacted with a dummy distinguishing between countries where local NGOs conducted campaigns denouncing practices of multinational textile firms in Bangladesh (columns 1 and 3). In columns 2 and 4, by contrast, the quadruple interaction enters with a negative and significant coefficient, indicating that negative effects on trade are felt in proportion to the number of campaigns. Said differently, the countries of origin of companies involved in the disaster thus experienced a greater import decrease when the number of activists' campaigns increased.

[25] These countries are Belgium, Denmark, Spain, United States, Great Britain and Poland.

6. Conclusion

Our paper is the first large-scale analysis of the impact on trade of social responsibility scandals involving firms. Our results shed light on the trade effects of the major industrial disaster that affected the clothing industry in Bangladesh's capital city in 2013. In the aftermaths of the catastrophe, multinational firms subcontracting in the Rana Plaza building were the object of intense naming and shaming addressed at consumers in OECD importing countries. We show that the scandal linked to multinational companies' lack of care about security measures in the knitting factories has been followed by a relative decrease in imports by around 40%, in the countries of origin of the brands that were associated to the responsibility of the event. The intensity of NGO campaigning is shown to enhance the trade-reducing effect.

Our results are consistent with demand being sensitive to social responsibility scandals. Nevertheless it seems hasty to interpret the outcome as exclusively driven by a demand effect. In the context of the increasing globalization of production and supply chains, the task of future work will be to obtain new data to unravel the different channels related to supply and demand.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.worlddev.2019.104640.

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