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JEL Codes: F14, L67, L31
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Activism and Trade*

Pamina Koenig† Sandra Poncet‡

December 18, 2018

Abstract

This paper studies the effect of activism 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 hypothesize that this episode was a main shock in the perceived quality of clothing producers sourcing in Bangladesh. Using detailed import flows on textile goods from OECD countries, we analyze whether the imports of consumer products were affected by the disclosure of information, in countries differently exposed to the collapse. To proxy the amount of information received by individuals in different countries, we use the nationality of the firms involved in the Rana Plaza building: soon after the disaster, NGOs and the media insisted on the origin countries of the neglecting companies, publishing the list of misbehaving firms by nationality.

We use a difference-in-difference approach to compare the imports from Bangladesh of countries having been differently associated in the news to the Rana Plaza collapse. 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.

JEL Codes: *F14, L67, L31*
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1 Introduction

Do social responsibility scandals affect our decisions to purchase items made in afflicted countries ? When important corporate misbehaviors are uncovered abroad by activists or by tragic industrial

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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 activism ? 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 et al. (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 activism 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, critiques immediately turned towards developed countries companies, which had not sufficiently taken care of checking the implementation, by these factories, of security measures. The event released an important amount of negative information about the foreign multinationals, all from OECD countries, which contracted 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.

We investigate whether the negative news about the behavior of those firms in Bangladesh modified the amount of clothing imported from that country. We hypothesize that this episode was a main shock in the perceived quality of some clothing producers sourcing in Bangladesh: the information that some companies acted unethically could have deterred individuals from buying the products of those identified as 'guilty'. Using detailed import flows on clothing items from OECD countries, we analyze whether the imports of consumer products were affected by the disclosure of information, in countries differently exposed to the collapse. To proxy the extent of damage to the reputation of local clothing brands, we use the nationality of the firms involved in the Rana Plaza building. Soon after the disaster, NGOs and the media insisted on the origin countries of the neglecting companies, publishing counts of misbehaving firms by nationality. Assuming consumers' reaction is stronger when domestic firms are named and shamed, we use a difference-in-difference

[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.

approach to compare the imports from Bangladesh of countries having been differently associated in the news to the Rana Plaza collapse.

The cause possibly driving a change in import flows is not restricted to consumers' response to new information about goods. Two other channels could explain a decrease of clothing imports from Bangladesh. First, firms may anticipate a decrease in demand and thus prefer alternative sourcing origins. Second, the destruction of production facilities used by the named firms may have caused difficulties in the provision of clothing items after the disaster. To understand whether the effect is related to demand adjustments, to firms strategies or to supply conditions, 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" In Rana category, as well as the false assignment of the shock to another country of origin.

Analyzing the impact of activism 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 and 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 another aspect of activism, not addressed by any previous study, which is the relation between

[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.

activism and trade. We provide the first analysis of the effect of naming and shaming on trade flows involving consumers goods. Also, we investigate whether this effect varies with the intensity of NGO campaigning in the different importing countries.

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 et al., 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 et al., 2007, Pandya and 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 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 describes Bangladesh's textile industry, the Rana Plaza incident and communications about the firms that were held responsible for it. Stylized facts on the evolution of clothing imports from Bangladesh around the time of the event are shown in Section 3, allowing a descriptive analysis of our question. Section 4 sets out our empirical strategy and displays the baseline difference-in-difference results, while Section 5 reports the triple difference estimates. The analysis pursues with robustness checks including falsification exercises, and investigates the reasons behind the decrease in imports. Last, Section 6 concludes.

2 Ethics and Bangladesh's apparel industry

This section provides contextual information about the collapse of the building. We first highlight the importance of the apparel sector in Bangladesh's exports, and the country's leading role in world apparel trade. Then we recall the facts related to the exogenous event, and illustrate how the media and NGOs reported importantly about the news, and specifically about the multinational firms which were involved in the building.

2.1 Bangladesh's textile industry

The Rana Plaza collapse shook Bangladesh's main industry and had far-reaching repercussions on the global garment sector due to Bangladesh's leading role in the industry. Throughout our work we define the garment industry as activities corresponding to the 2-digit HS codes 61 (Apparel and clothing accessories knitted or crocheted), 62 (Apparel and clothing accessories not knitted or crocheted) and 63 (Textiles and made up articles).[5] In 2013 exports from Bangladesh in these

[5]Throughout the paper we equivalently use the words *garment*, *textile*, *apparel*, *clothing* to refer to the products within HS codes 61 to 63. We only use a broader definition when we build a control group of products that are not supposed to be affected by the collapse of the Rana Plaza. This "non-textile" group excludes sectors 61-66. This broader definition is intended to avoid including products from sectors 64 (Footwear) 65 (Headgear) and

3 sectors represented $28 billion and accounted for 4.7% of the world market. More relevant to understand why the Rana Plaza collapse had an echo in Bangladesh, exports of textiles and garments are the principal source of foreign exchange earnings for the country. Products from sectors 61 to 63 represent close to 90% of the country's exports.[6] The world export share of Bangladesh between 2010 and 2016 is similar to that of Vietnam (5.3%) and Italy (5.0%), so that the three countries are bunched closely together as second largest players in the world behind China (which dominates the market with a share of 40%). These proportions can be put into perspective with the country's share of world GDP (0.2%) and of world population (2.2%), to show the leading role of Bangladesh's industry in the global apparel value chain.

Bangladesh's export activities are particularly concentrated in the ready-to-wear sector. Table 1 uses data from the UN Comtrade database[7] and displays products defined at the 6-digit level of the Harmonized System. Immediately apparent is the high weight of Bangladesh in the world production of some products. Products are shown in decreasing order of Bangladesh's share in world exports. The country's share of world exports reaches 31% for jute bags and 19% for babies' garments of cotton. In terms of total value, Bangladesh's exports are dominated by two products: cotton men's trousers and cotton T-shirts. In 2013, exports of each of these two products reached 4 billion dollars. Each of these two products accounts for 14% of Bangladesh's total exports and has a 17% share of world exports in their category.

Bangladesh exports apparel products predominantly to OECD countries. OECD countries absorb 94% of the clothing products exported by Bangladesh in 2013 significantly higher than their share in the total world exports (88%). As reported in Table A-1, the main importers of Bangladeshi apparel goods in 2013 are among the world's richest economies: the US with a share of 21.3%, followed by Germany (12.9%), Great-Britain (10.9%) and Spain (6.5%).

2.2 Disasters in the textile industry

The textile industry stands among the manufacturing sectors having experienced major industrial disasters throughout history. While part of past industrial disasters were accidents in the early manufacturing times which eventually led to the implementation of tighter security legislations, others, such as the collapse of the factory building in Bangladesh's capital city in 2013, were caused by insufficient care and could have been easily prevented if the existing safety standards had been met.

The catastrophe which affected the second-largest exporter of clothes in the world is considered as the deadliest event in the textile industry. The building called the Rana Plaza was located in the western suburb of Dakha, Bangladesh's capital city. It housed five factories making shirts, trousers and leggings. On April 24, 2013, the construction crashed down while hosting textile workers,

66 (Umbrellas) which are standard accessories sold in fashion stores and hence could be also affected by demand adjustments following the Rana Plaza accident.

[6] Between 2010 and 2016, the export share of products within HS2 61, 62 and 63 are respectively 43.2, 41.3 and 3.2%.

[7] `https://comtrade.un.org/`

Table 1: Top 20 products in terms of Bangladesh world share (2013)

Product code HS6	Product description	World exports value (1000 US $)	Exports by Bangladesh value (1000 US $)	Share of Bangladesh in world exports (%)	Share of product in Bangladesh exports (%)
630510	Sacks & bags of jute	376 554	119 842	31.8	0.4
620920	Babies' garments of cotton	1 880 055	365 499	19.4	1.2
620342	Men's trousers of cotton	25 300 000	4 501 520	17.8	14.6
610910	T-shirts of cotton	24 900 000	4 298 402	17.3	13.9
620530	Men's/boys' shirts of man-made fibres	1 824 837	285 611	15.7	0.9
621111	Swimwear, men's/boys'	461 773	66 279	14.4	0.2
620520	Men's shirts (excl. knitted) of cotton	12 700 000	1 817 460	14.3	5.9
610510	Men's shirts, knitted of cotton	5 972 564	771 430	12.9	2.5
610721	Men's nightshirts, knitted of cotton	706 267	85 803	12.1	0.3
620462	Women's trousers (excl. knitted) of cotton	22 600 000	2 512 114	11.1	8.1
610610	Women's blouses, knitted of cotton	2 696 777	293 197	10.9	0.9
610831	Women's nightdresses knitted of cotton	1 779 633	168 742	9.5	0.5
620721	Men's nightshirts (excl. knitted) of cotton	268 777	25 236	9.4	0.1
610462	Women's trousers, knitted of cotton	6 654 378	606 554	9.1	2.0
611020	Jerseys, pullovers, knitted of cotton	23 300 000	2 122 774	9.1	6.9
630622	Tents, of synthetic fibres	1 548 645	138 571	8.9	0.4
611120	Babies' garments, knitted of cotton	5 983 410	516 628	8.6	1.7
620292	Women's anoraks of cotton	1 290 891	106 733	8.3	0.3
631090	Used/new rags of textile materials	348 447	28 752	8.3	0.1
620590	Men's shirts (excl knitted) other textile	827 094	67 823	8.2	0.2

Data source: Comtrade. HS 6 codes are in the 2007 nomenclature. Products are shown in decreasing order of Bangladesh's share in world exports.

even though the day before important cracks in the building were made public. The collapse, which killed 1,134 workers and injured thousands others, brought under the limelight the poor work conditions of garment factory employees. Immediately after the event, attempts to identify those who were responsible started. The cause of the collapse being clearly attributed to the lack of efforts regarding security measures for workers, the responsibility of major retail companies in Europe and North America was immediately questioned by NGOs and the media, as discussed in the following section.

2.3 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, as well as 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, with the help of the International Labor Organization ILO, to collect donations.[8] The Fund was a voluntary initiative, and intended to receive donations from firms contracting with Rana Plaza factories, but it was not restricted to them. 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

[8] `https://ranaplaza-arrangement.org/`.

Table 2: List of 31 brands linked to the Rana Plaza Building

Countries of origin	Brands
Belgium	C&A
Canada	Loblaw
Germany	Guldenpfennig, NKD, Kanz (Kids Fashion Group), Kik, Adler Modemarkte
Denmark	PWT (Texman), Mascot
Spain	Inditex, El Corte Ingles, Mango
France	Carrefour, Camaieu, Auchan
Great Britain	Bon Marche, Matalan, Grabalok Store 21
Ireland	Primark
Italy	Manifattura Corona, YesZee, Benetton, Kappa
Poland	LPP
Turkey	LC Waikiki
United States	J.C Penney, The Children's Place, Cato Fashions, Walmart, Iconix Lee Cooper, Ascena Retail

Source: Clean Clothes Campaign.

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.[9]

Table 2 reproduces this list. 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. Next to the names of the firms are their country of origin: they all come from an OECD country. This information was very much emphasized by the media, which pointed to their domestic firms being involved in the drama: 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?".[10]

Besides naming the firms linked with the Rana Plaza, the 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.[11] By contrast, the 26 companies that signed the Alliance, all North

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

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

[11] The Accord is often presented as a "European" initiative as its over 260 members comprise many top European

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.[12] 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 3 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 2), 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).

Let us summarize how these Post-Rana initiatives relate to our empirical approach. Our paper questions whether the information received by consumers in the different importing countries, regarding the implication of their domestic brands in the dramatic incident, had an impact on the volume of imports of textile made in Bangladesh. As detailed later in Section 4, we assume that the negative news on domestic companies being involved in the collapse of the building, may have acted as a decrease in the perceived quality of products manufactured in Bangladesh, and hence reduced demand in the destination country. In order to investigate this scenario, we compare the evolution of imports, after the event, of two groups of countries importing clothing and apparel from Bangladesh: those in which consumers heard about their domestic companies being associated to the responsibility of the collapse, and others in which no such news was disclosed. To proxy the importing countries in which negative information was received by consumers, we use the list of OECD members in which firms were found to be directly related to the Rana Plaza building (Table 3). In these countries, the media and NGOs communicated after the event, highlighting that garment factories' workers killed in the Rana Plaza were knitting clothing items for the domestic brands in the importing country. The variable identifying whether firms from a given importing country were subcontracting in the Rana Plaza building is our main explanatory variable. We thus investigate whether individuals reacted more strongly when not only hearing about the disaster but also understanding that their domestic brands were among the responsible parties.

Next to our main explanatory variable, we use, as a second proxy of importing countries in which consumers' attention might have been influenced, the list of countries in which multinational companies signed the Accord. This 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

companies, such as Benetton and Mango. Signatories of the Accord also include some American companies such as PVH and Abercrombie & Fitch.

[12] `http://bangladeshaccord.org/signatories/`.

Table 3: OECD importers from BGD 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`. All firms present in the building signed the Accord. The list of Accord signatories comes from `http://bangladeshaccord.org/signatories/`.

the firm.

2.4 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.[13] We use the existence of advocacy campaigns issued in each importing country (described below), in the months following the collapse, as a third proxy for the negative information coverage targeting firms importing from Bangladesh (next to the two variables described above). 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 corpora-

[13]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.

tions[14]. 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. Let us illustrate how the collapse of the Rana Plaza shaped the number of world campaigns. 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. Figure 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.

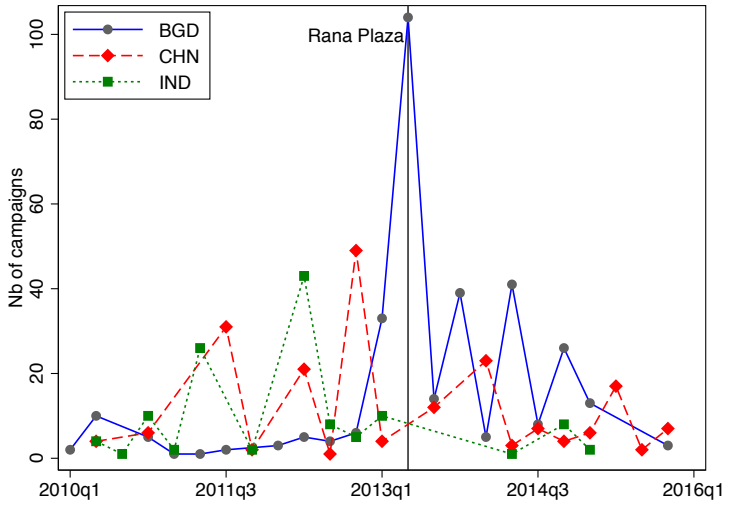


Figure 1: Number of activists' campaigns in the clothing industry referring to Bangladesh, China or India

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.[15] Figure 2 illustrates these 200 campaigns,

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

[15]Six campaigns mention the following very similar other cause of misbehavior: "corporate social responsibility

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.

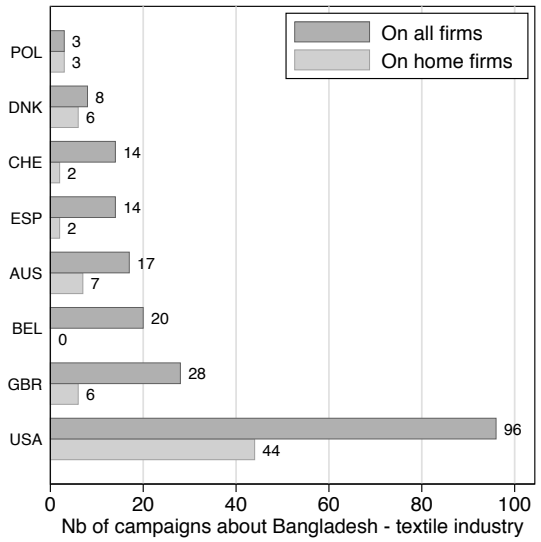


Figure 2: Number of activists' campaigns referring to Bangladesh, April to December 2013

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 5.3 when investigating the reasons behind the decrease in imports following the Rana Plaza collapse.

3 Preliminary statistical evidence

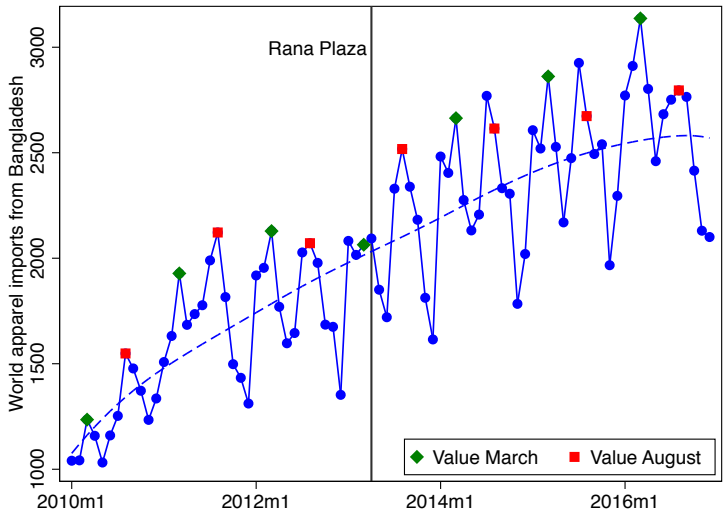
We begin our investigation by describing clothing import data from Bangladesh for different countries. For this we use monthly world trade data from the UN Comtrade database (2010-16), with clothing defined as products within the following 2-digit HS trade categorization: 61 (apparel and clothing accessories knitted or crocheted), 62 (apparel and clothing accessories not knitted or crocheted) and 63 (textiles and made up articles).We first show the evolution of aggregate imports from Bangladesh in Figure 3. Figure 4 then zooms on different categories of importers to investigate possible different trends that could be visible to the naked eye.

The monthly evolution of total clothing imports from Bangladesh is displayed in Figure 3, for 2010-2016. Just over 96% of flows go to OECD countries over the period. The data indicate a

(CSR) standards and reporting".

strong seasonality: peaks are reached in March and August (respectively shown by the diamonds and squares), reflecting a double summer-winter cycle.

Figure 3: World clothing imports from Bangladesh (in logs)



Note: The dots indicate the value of total clothing imports from Bangladesh in a given month. The values for March and August have been highlighted by diamonds and squares. The dashed line corresponds to the Lowess smoothing.

Clothing imports originating from Bangladesh do not exhibit any immediately visible inflection at the time of the Rana Plaza accident. Imports follow a continuous progression over the period: the clothing import activities from Bangladesh do not seem to have suffered any important repercussions following the collapse of the Rana Plaza.

We now direct our attention to countries in which importing firms possibly behaved in a different manner after the largely shared news of the collapse. The left panel in Figure 4 displays the monthly imports of apparel from Bangladesh (as a share), separating the evolution of flows into two groups of OECD countries: the 12 countries from which originated the companies linked to the Rana Plaza[16] (the square patterns), and the other OECD countries (the round patterns). There is a continuous rise in the share of clothing imports from Bangladesh over the period 2010-2016. There is no clear trend break in the data in the aftermath of the Rana Plaza collapse. Nevertheless, particularly compared to the trajectory of imports from countries where no national brand has been involved in the tragedy, it seems that the trend slows down from 2014 onwards. Since it takes at least one quarter for a product exported by Bangladesh to clear customs in importing countries, this decline seems to indicate that imports from so-called "In Rana" countries have indeed been affected.

In order to investigate the generality of this effect within other types of trade flows, the right panel in Figure 4 plots the monthly import share from Bangladesh in industries not linked to apparel and clothing.[17] Again, we compare the imports of countries linked, through their companies, to

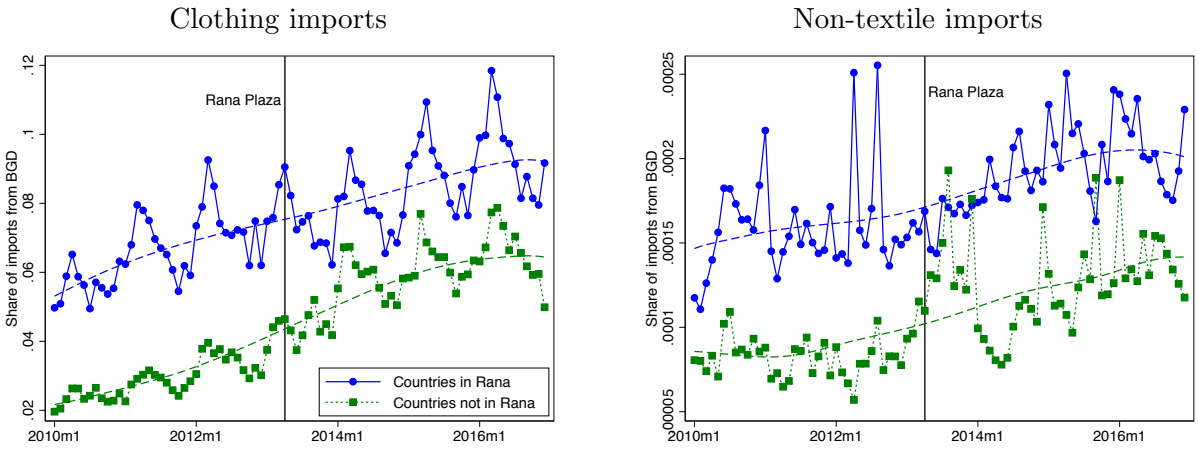
[16] A country is counted as being linked to the Rana Plaza if at least one of its clothing brand was represented in the building.

[17] Non-Textile is defined as all products except those in sectors within HS2 codes 61 to 66.

the Rana Plaza, to those of other OECD importing countries. Import shares of the two groups of countries follow a parallel trajectory: the two curves do not come closer to one another in the second part of the period, contrary to what happens for the imports of apparel after 2013. This points to the possibility that imports of apparel, after the Rana collapse, fell in relative terms for the group of countries affected by the disaster: There seems to be a relative drop for the 12 "In Rana" countries, that could be associated with the unethical behavior of companies revealed by the accident.

This double comparison illustrates the question we pursue econometrically in the following section. In the remaining of the paper, we go beyond these coarse statistics and develop a careful difference-in-difference estimation to assess the import-reducing effect of the Rana Plaza incident.

Figure 4: Share of imports from Bangladesh: countries linked or not with the Rana Plaza



Note: Both panels display the share of OECD imports from Bangladesh, according to whether the importer is the origin country of firms linked to the Rana Plaza or not (see Table 3). The left panel shows only clothing imports and the right panel zooms on non-textile products, which are defined as all products except those with HS2 codes from 61 to 66. The dashed line corresponds to the Lowess smoothing.

4 Empirical strategy

To analyze world import flows of apparel, we estimate a structural gravity equation with a triple difference approach. In this section, we first explain how the disclosure of negative information on companies after the disaster may affect trade flows in the structural gravity equation. Then we detail our empirical specification, provide information on the dataset, and show baseline results from the double difference specifications.

4.1 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 and Mayer (2014):

$$M_{ijt} = \frac{Y_{jt}}{\Omega_{jt}} \frac{X_{it}}{\Phi_{it}} \phi_{ijt}, \tag{1}$$

with Y_{jt} the value of total production of clothing items, X_{it} the value of the importer i's total expenditure in the sector, and Ω_{jt} and Φ_{it} the multilateral resistance terms.[18] Bilateral trade costs ϕ_{ijt}, with $0 \leq \phi_{ijt} \leq 1$, 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 and 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 $\times$ *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. To investigate whether we should believe in an adjustment in consumer demand, we interact, in the last section, our treatment variable with a measure of the intensity of NGO campaigns on the disaster in the importing country.

Coming back to Equation 1, bilateral imports M_{ijt} are a function of supply, demand, and bilateral frictions. The supplier term in the structural gravity $S_{jt} = \frac{Y_{jt}}{\Omega_{jt}}$ weights total production Y_{jt} by the exporter's multilateral resistance Ω_{jt}, and the demand term $D_{it} = \frac{X_{it}}{\Phi_{it}}$ weights total expenditure X_{it} by the importer's multilateral resistance Φ_{it}. Taking logs of Equation 1 leads to:

$$\ln M_{ijt} = \ln S_{jt} + \ln D_{it} + \ln \phi_{ijt}. \tag{3}$$

The next section explains, among others, how we control for the unilateral country-level determi-

[18] defined as

$$\Phi_{it} = \sum_j \frac{\phi_{ijt}}{Y_{jt}} \Omega_{jt} \qquad \text{and} \qquad \Omega_{jt} = \sum_i \frac{\phi_{ijt}}{X_{it}} \Phi_{it}. \tag{2}$$

nants 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*.

4.2 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 a triple-difference estimation which compares 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:

$$\begin{aligned} \ln \text{Imports}^{i}_{jp,ym} = \beta \text{ In Rana country}^{i} \times \text{Post}_{ym} \times \text{Bangladesh}_{j} \\ + \lambda^{i}_{p,ym} + \mu_{jp,ym} + \nu^{i}_{jp} + \epsilon^{i}_{jp,ym}, \end{aligned} \tag{4}$$

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 In Rana country^{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 3. 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.[19] 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 hence 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.[20] 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 (Equation 1) are taken into account by the unilateral country fixed-effects, which vary by year and month. $\lambda^{i}_{p,ym}$ and $\mu_{jp,ym}$,

[19] The list of countries covered in our sample is given in Table 3.

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

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-year fixed effects $\lambda^i_{p,ym}$ capture country-level variations in the demand of apparel goods irrespective of their geographical provenance. Origin country-product-year 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.

Our regressions only cover apparel since these are the goods involved in the Rana Plaza event. We use non-textile products as one of our control groups to gauge the magnitude of the impact of the Rana plaza collapse on clothing imports from Bangladesh. This comparison should however be interpreted with caution, because of Bangladesh's extreme specialisation in textile products. Over 2010-16, goods outside HS codes 61 to 66 accounted for less than 10% of imports from Bangladesh. Imports of these products are therefore marginal and may not be optimal points of comparison for studying the evolution of clothing flows.[21]

To summarize our analysis, we thus investigate the differential response, after, compared to before the Rana Plaza disaster, of imports from Bangladesh for countries whose importing firms were named by the media and by activists. Contrasting two groups of countries with different exposure to the incident in the eyes of the public allows to ensure that our findings do solely reflect the repercussions on sourcing from Bangladesh caused by the aftermath of the Rana Plaza incident.

4.3 Difference in difference results

Table 4 provides preliminary evidence that the presence of national brands inside the Rana Plaza affected negatively the propensity of the brands' country of origin to import apparel from Bangladesh. We estimate Equation 4 on imports from Bangladesh (hence without variations in origin country j's information). We run a difference in difference approach where our key variable of interest In Rana country^i $\times$ Post$_{ym}$ is the interaction between a dummy equal to one for imports by coun-

[21]The most important (non-apparel) products over 2010-16 are vegetable textile fibers (HS2=53) accounting for 1.9% of Bangladesh's exports, fish and crustaceans (HS2=03) accounting for 0.9% and raw hides and skins (HS2=41) accounting for 0.8%.

tries with national brands in the Rana Plaza and a dummy equal to one after the building collapsed, that is from May 2013 onwards.

Note that running our estimations on import flows from one origin country only (Bangladesh) impedes the use of importer-product-year-month fixed-effects, which are part of our preferred specification of Equation 4. Instead of these, we introduce product-year-month fixed effects to account for worldwide trade shocks affecting products, and importer-product-month fixed effects, to account for the seasonality of apparel imports for each importing country. The results in column 1 of Table 4 show that the interaction attracts a negative and significant coefficient. This is suggestive of negative repercussions, for a country's import intensity from Bangladesh after the Rana plaza collapse, of the presence of its firms in the building. The next columns check the persistence of the negative coefficient throughout specifications, and break down the measured Rana effect over time.

In columns 2 and 3 we complement the fixed effects by adding country variables with importer-year and importer-year-month dimensions: the importer's GDP and population in year y, its total imports of apparel for year y, month m, and its imports of product p for the period (year y, month m). In the first row, the interacted coefficient on the treated In Rana countries remains negative and significant throughout the inclusion of these additional country level variables. Finally in column 4 we investigate the time profile of the average impact found in the previous columns. The interaction is decomposed into four parts corresponding to monthly trade in the years 2013, 2014, 2015 and 2016. Estimated coefficients appear negative and significant throughout the period, suggesting a relatively durable impact.

The estimates presented in Table 4 apply only to non-zero flows. Logarithmic transformation leads to leaving aside a significant number of observations corresponding to zero exports for a given period (year-month) at the level of a country-product-destination triad. A standard approach to incorporate the zero trade flows is the Poisson pseudo-maximum likelihood estimator (Silva and Tenreyro, 2006). Silva and Tenreyro (2011) show that it is generally well behaved, even when the proportion of zeros in the sample is very large, as in our case. The sample including all monthly flows, whether null or not, for all the country-product pairs which report at least one positive flow from Bangladesh over the period 2010-16, is a third larger than the one covering solely positive flows. Table A-3 reproduces the results of Table 4 using the Poisson estimator. The point estimates are rather similar, suggesting that endogenous selection of the months in which imports occur is not a major threat to our analysis.

Table 5 reproduces the results of Table 4 on trade data excluding clothing products.[22] In the case the Rana Plaza incident had an impact on the import behavior of some OECD countries, we expect the non-textile sector not to be impacted by the collapse. Non-textile products account for a rather small fraction of exports from Bangladesh, as exports are dominated by apparel. Following the top three HS sectors 61, 62 and 63, with respective weights of 42.5, 42.6 and 3.5% of Bangladesh's exports in 2013, the next two HS sectors in importance are the following: 03 (Fish and crustaceans) and 53 (Vegetable textile fibers). These respectively weight 1.9 and 1.8% in exports from Bangladesh in 2013. Table A-2 reports the shares for some of the main non-textile

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

Table 4: Country-level Double difference: baseline

Explained variable	Ln import value of product p by OECD country i from Bangladesh in month m of year y (2010-2016)			
Products	HS4 p Clothing and Apparel			
	1	2	3	4
In Rana country^i × Post	-0.339^b	-0.326^b	-0.333^b	
	(0.154)	(0.148)	(0.147)	
In Rana country^i × May-Dec 2013				-0.353^a
				(0.119)
In Rana country^i × 2014				-0.331^b
				(0.160)
In Rana country^i × 2015				-0.327^c
				(0.163)
In Rana country^i × 2016				-0.329^c
				(0.191)
Ln Importer GDP^i_y	0.315	-0.151	-0.177	-0.181
	(0.556)	(0.528)	(0.524)	(0.535)
Ln Importer Population^i_y	-5.423	-4.813	-4.711	-4.689
	(4.751)	(4.606)	(4.551)	(4.616)
Ln Importer total apparel import$^i_{ym}$		1.046^a	0.293	0.292
		(0.169)	(0.185)	(0.185)
Ln Importer product import$^i_{p,ym}$			0.732^a	0.732^a
			(0.066)	(0.066)
Observations	82,091	82,091	82,091	82,091
R-squared	0.88	0.88	0.88	0.88
Product-period Fixed effects	Yes	Yes	Yes	Yes
Importer-product-month Fixed effects	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. In 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 3. Post is a dummy taking the value 1 from May 2013 onwards.

Table 5: Country-level Double difference: non textile products

Explained variable	Ln import value of product p by OECD country i from Bangladesh in month m of year y (2010-2016)			
Products	HS4 p non-textile			
	1	2	3	4
In Rana country^i × Post	0.046	0.049	0.051	
	(0.078)	(0.077)	(0.079)	
In Rana country^i × May-Dec 2013				-0.068
				(0.098)
In Rana country^i × 2014				0.042
				(0.095)
In Rana country^i × 2015				0.115
				(0.100)
In Rana country^i × 2016				0.072
				(0.097)
Ln Importer GDP^i_y	0.144	0.050	-0.165	-0.204^c
	(0.148)	(0.121)	(0.116)	(0.110)
Ln Importer Population^i_y	-1.632	-1.724	-1.259	-1.101
	(1.467)	(1.450)	(1.384)	(1.406)
Ln Importer total apparel import$^i_{ym}$		0.182	0.077	0.078
		(0.183)	(0.169)	(0.188)
Ln Importer product import$^i_{p,ym}$			0.524^a	0.523^a
			(0.115)	(0.116)
Observations	51,126	51,126	51,126	51,126
R-squared	0.86	0.86	0.86	0.86
Product-period Fixed effects	Yes	Yes	Yes	Yes
Importer-product-month Fixed effects	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. Non-textile products are defined as all products except those with HS2 codes from 61 to 66. In Rana 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 3. Post is a dummy taking the value 1 from May 2013 onwards.

products imported from Bangladesh, defined at the HS4 level. The most important category 0306 (Crustaceans (in shell or not)) accounts for 1.6% of total imports from Bangladesh in 2013. The next products in decreasing order have shares below 1% and rapidly falling.

We again only consider imports from Bangladesh (hence without variations in country j's information). Interestingly none of the results obtained for apparel products appear for non-textile goods. We measure no significant post-Rana differences when looking at the import intensity of non-textile products from Bangladesh between countries which had national firms producing in the Rana Plaza and those which did not. While this is reassuring on our baseline results not to simply pick up trends in bilateral links between Bangladesh and importers, we admit that non-textile goods may not be an appropriate control group to gauge evolutions characterizing imports of apparel products from Bangladesh. This is because Bangladesh basically only exports textile products.

As an alternative control group for imports of clothing and apparel products from Bangladesh, we use apparel products imported from elsewhere than Bangladesh. Table 6 reproduces the estimation in Table 4, on OECD countries' imports from all declared origins except Bangladesh. The

estimation sample thus recovers variability in the origin country j's dimension as in Equation 4. We focus on the first two terms of the triple interactions in Equation 4 and measure any difference in imports after the shock, between countries with and without national brands present in the Rana Plaza. Estimating this relation on the wider set of clothing-producing countries allows to assess whether the trends in clothing imports from Bangladesh reflect broader developments affecting the world as a whole.

Both specifications, without and with decomposition of the post-incident time structure, are presented respectively in columns 1 and 2. Three sets of fixed-effects account for shocks in the bilateral links between importing and origin countries (origin-product-period fixed effects, importer-origin-product fixed effects and importer-product-month fixed effects). In columns 3 and 4, the same two specifications are shown estimated with more encompassing importer-origin-product-month fixed effects. None of the interaction terms involving the In Rana dummy after the building collapse are significant, suggesting that there are no intrinsic differences in imports from elsewhere than Bangladesh, characterizing the countries which firms were tagged as responsible for the collapse. While results from Table 6 highlight no visible effect on import flows from other clothing producers, one could argue that a too large number of origin countries in the sample creates a dilution of the estimated effect. We report, later in Table 12, triple-difference estimates on the top three competitors of Bangladesh in terms of world exports of textile (China, Vietnam and Turkey). In none of the cases is the interaction term significant. Refer to Section 5.2 for detailed comments on these results.

Summarizing double-difference outcomes, the three first tables (Tables 4, 5 and 6) investigate the generality of the significantly lower import propensity in clothing from Bangladesh after May 2013 of "In Rana" countries. No such difference is measured for non-textile imports from Bangladesh (Table 5) nor for clothing imports from elsewhere than Bangladesh (Table 6). These results highlight that there is no post-Rana specificity in the "In Rana" countries' patterns of either non-textile imports from Bangladesh or clothing imports from the rest of the world.

5 Triple difference estimates

We proceed to estimating the gravity equation with a triple difference approach, on the sample including all textile exporters. This approach bears the advantage of comparing, in an integrated framework, the results from the previous section, focused on Bangladesh, with the evolution of imports from other origins. Results are presented with the following structure. We first display the baseline estimations in Table 7, which we complement by plotting graphically the estimated coefficients for different time periods (Figure 5). Then we perform robustness checks based on changes in the samples of importing and exporting countries. Finally we examine the reasons behind the effect of the industrial disaster on trade.

Table 6: Country-level Double difference: Apparel imports from non-Bangladesh origins

Explained variable	Ln import value of product p by OECD country i from country $j \neq$ Bangladesh in month m of year y (2010-2016)			
Products	HS4 p Clothing and Apparel			
	1	2	3	4
In Rana country^i × Post	0.017		0.016	
	(0.042)		(0.042)	
In Rana country^i × May-Dec 2013		-0.056^c		-0.052
		(0.033)		(0.032)
In Rana country^i × 2014		0.036		0.033
		(0.055)		(0.054)
In Rana country^i × 2015		0.028		0.028
		(0.047)		(0.048)
In Rana country^i × 2016		0.030		0.027
		(0.046)		(0.047)
Ln Importer GDP^i_y	-0.067	-0.076	-0.081	-0.090
	(0.175)	(0.167)	(0.167)	(0.161)
Ln Importer Population^i_y	0.753	0.789	0.708	0.743
	(0.823)	(0.825)	(0.833)	(0.837)
Ln Importer total Apparel import$^i_{ym}$	0.717^b	0.712^b	0.688^b	0.683^b
	(0.320)	(0.316)	(0.302)	(0.298)
Ln Importer product import$^i_{ym}$	0.493^a	0.493^a	0.525^a	0.525^a
	(0.022)	(0.022)	(0.023)	(0.023)
Observations	4,403,119	4,403,119	4,192,167	4,192,167
R-squared	0.84	0.84	0.87	0.87
Origin-product-period Fixed effects	Yes	Yes	Yes	Yes
Importer-origin-product Fixed effects	Yes	Yes	-	-
Importer-product-month Fixed effects	Yes	Yes	-	-
Importer-origin-product-month Fixed effects	No	No	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 within HS2 61 to 63 codes. In 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 3. Post is a dummy taking the value 1 from May 2013 onwards.

5.1 Did the disaster affect import flows ?

Table 7 contains the main outcomes of the paper: column 1 reports the results for Equation 4, and contrasts them in columns 2 and 3 with the estimated impact of the two other variables measuring the visibility of the event in different countries. Column 1 shows that the key interaction term In Rana×Post×BGD 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.[23] 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 3), 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 triple interaction term Signed agreement (not in Rana)×Post×BGD explores whether these countries also experiment a post-Rana relative decline of their import activities from Bangladesh that is similar to that for the countries directly involved in Rana incident. The coefficient 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 In 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,

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

Table 7: Country-level Triple difference: baseline

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	5
In 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)		
In Rana country^i × 2010 × BGD					0.015
					(0.199)
In Rana country^i × 2011 × BGD					0.104
					(0.083)
In Rana country^i × Jan-April 2013 × BGD					-0.199
					(0.130)
In Rana country^i × May-Dec 2013 × BGD				-0.286^b	-0.262^c
				(0.124)	(0.141)
In Rana country^i × 2014 × BGD				-0.349^b	-0.337^c
				(0.170)	(0.172)
In Rana country^i × 2015 × BGD				-0.347^b	-0.335^c
				(0.168)	(0.170)
In 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. In 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 3. 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 (Figure 2). Post is a dummy taking the value 1 from May 2013 onwards.

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 Figure 2. Column 3 uses this dummy in an additional interaction term, next to the In 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 In Rana term) in the specification. Similar findings are obtained when we restrict our attention to the countries where NGO campaigns targeted domestic textile firms.

Having highlighted the stable effect of the In Rana interaction term in the first three columns, let us investigate with more details the time profile of the impact. Column 4 decomposes the triple interaction In Rana×Post×BGD into its four yearly components (2013, 2014, 2015 and 2016). Each term thus 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 the interaction In 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. An existing pre-trend would mean positive estimated coefficients for the years before the benchmark, indicating that the In Rana countries were on an overall decreasing trend from the beginning of the period. Results show that both interactions of In Rana countries in 2010 and 2011 are not significant, suggesting that there was no significant difference between the import dynamics from Bangladesh of In 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 relative import performance of imports from Bangladesh (compared to other sources) for countries In Rana compared to others, using the full year of 2012 as the reference. The coefficients are reported in Table A-4 in the Appendix and displayed in Figure 5. 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 period preceding it. 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.

These results suggest that, although textile imports of OECD countries from Bangladesh increased continuously during the whole period (see Table 3), the social responsibility scandal brought by the Rana Plaza collapse had a non-negligible impact on the trade flows of some countries. These countries are precisely those that faced important domestic criticism after the disaster. The next section provides robustness checks on this outcome, and the last section explores its determinants.

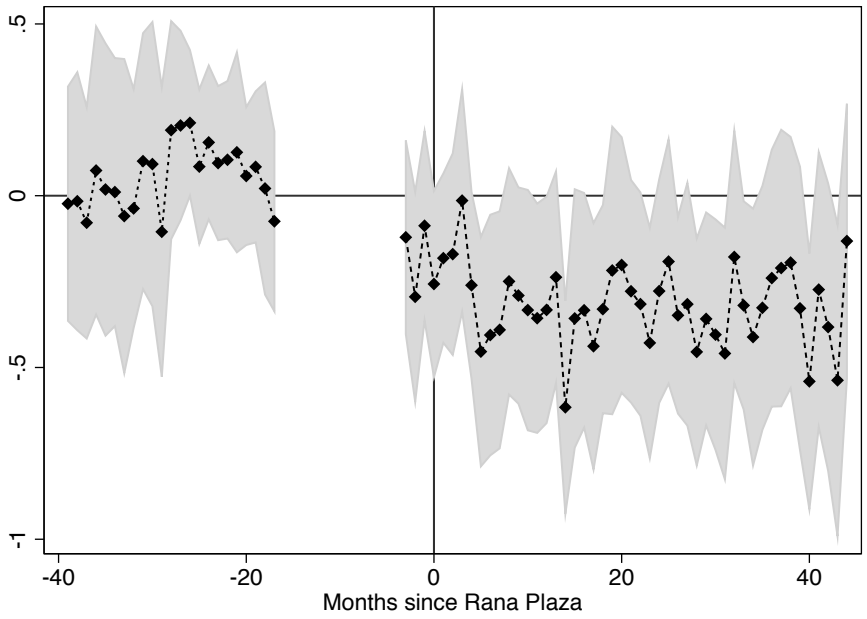


Figure 5: Monthly triple difference estimates
Time=0 for April 2013. The point estimates are reported in Table A-4 in the Appendix.

5.2 Robustness and falsification checks

Table 8 and Table 9 ensure that our findings of a negative and significant coefficient on the interaction In Rana×Post×BGD are not driven by a specific country in our "treated group". Both tables follow the specification from column 1 of Table 7, excluding sequentially the trade flows for each of the "In Rana countries" importers. Column 1 of Table 8 excludes imports into the United States, column 2 excludes those of Great-Britain, while the following columns consider Germany, France, Spain and Italy respectively. Our main results hold. Table 9 follows the same logic and removes sequentially the observations from Belgium, Turkey, Canada, Poland, Ireland and Denmark respectively. The results of a negative and significant coefficient on our triple difference term are reassuring on that the negative repercussions we attribute to the Rana Plaza incident does not reflect the peculiarity of one of the 12 countries in the treated group.

We next run a series of falsification tests in which we falsely assign the Rana Plaza shock to another country of origin than Bangladesh. Specifically, Table 10 randomly selects a major exporting country from the top 50 apparel exporters in our data and assigns it as "BGD". We then

Table 8: Robustness checks: excluding key countries from In Rana group (1)

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	5	6
Excluded country	USA	UK	Germany	France	Spain	Italy
In Rana country^i × Post × BGD	-0.292^c	-0.319^c	-0.323^c	-0.359^b	-0.370^b	-0.353^b
	(0.162)	(0.166)	(0.167)	(0.165)	(0.162)	(0.165)
Observations	4,061,519	4,104,456	4,064,219	4,073,423	4,122,657	4,121,435
R-squared	0.87	0.87	0.88	0.88	0.88	0.88
Importer-Product-period Fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Exporter-Product-period Fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Importer-Exporter-Product-month Fixed effect	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. In 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 3. Post is a dummy taking the value 1 from May 2013 onwards.

Table 9: Robustness checks: excluding key countries from In Rana group (2)

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	5	6
Excluded country	Belgium	Turkey	Canada	Poland	Ireland	Denmark
In Rana country^i × Post × BGD	-0.313^c	-0.320^b	-0.293^c	-0.369^b	-0.309^c	-0.332^b
	(0.155)	(0.155)	(0.153)	(0.145)	(0.154)	(0.153)
Observations	4,668,783	4,705,820	4,602,793	4,664,389	4,699,232	4,678,793
R-squared	0.88	0.88	0.88	0.88	0.88	0.88
Importer-Product-period Fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Exporter-Product-period Fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Importer-Exporter-Product-month Fixed effect	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. In 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 3. Post is a dummy taking the value 1 from May 2013 onwards.

Table 10: Placebo: random assignment of Rana Plaza shock to another origin country

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
Selection constraint on BGD^{False}	Top 50 exporters		Top 28 non-OECD exporters	
In Rana country^i × Post × BGD^{False}	-0.041		-0.143	
	(0.164)		(0.169)	
In Rana country^i × May-Dec 2013 × BGD^{False}		-0.011		-0.123
		(0.136)		(0.142)
In Rana country^i × 2014 × BGD^{False}		-0.039		-0.201
		(0.185)		(0.183)
In Rana country^i × 2015 × BGD^{False}		-0.168		-0.169
		(0.191)		(0.191)
In Rana country^i × 2016 × BGD^{False}		0013		-0.115
		(0.205)		(0.199)
Observations	4,274,140	4,274,140	4,274,140	4,274,140
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 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. In 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 3. "BGD^{False}" is a dummy for an exporting country randomly selected from the top 50 apparel and textile exporters (columns 1 and 2) or from to top 28 non-OECD apparel and textile exports (columns 3 and 4). Post is a dummy taking the value 1 from May 2013 onwards.

construct a false treatment variable, i.e. In Rana×Post×BGD^{False}. The randomization means that a significant impact of this newly-constructed regressor of interest would indicate that there are significant omitted variables behind the relative decline of imports from Bangladesh. We conduct this random data-generating process 100 times to avoid contamination by rare events. The results from our triple difference specification corresponding to the columns 1 and 2 of Table 7 appear in columns 1 and 2 of Table 10. These correspond to the mean value of the estimates from the 100 random assignments. None of the triple interactions are significant. Columns 3 and 4 adopt the same approach but force the random selection of the "false BGD" exporting country to occur within the list of non OECD countries (28 countries out of the top 50 apparel and textile exporters in our data). The obtained coefficients are again non-significant. This indicates that our true estimates (corresponding to a specific pattern for imports from Bangladesh) are clear outliers in the placebo tests, and suggests that they are not strongly biased by omitted variables.

We next propose a falsification test with the random assignment of countries into the "In Rana" exposed category to further check whether our results are biased due to the omission of factors that vary differently over time for this subset of countries. Specifically, in our regression sample 12 importing countries are coded as exposed to the Rana plaza incident out of the 35 OECD countries. We first randomly select 12 countries from the total 35 countries and assign them as "In Rana", with the remainder being in the control group. We then construct a false treatment variable, i.e. In $Rana^{False}$×Post×BGD. The randomization means that this newly-constructed regressor of

Table 11: Placebo: random assignments of "In Rana" countries

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
Selection constraint on In Rana^{False}	OECD countries		OECD with Signed Accord	
In Rana^{False} × Post × Bangladesh	0.008		-0.146	
	0.18		0.163	
In Rana^{False} × May-Dec 2013 × Bangladesh		-0.012		-0.146
		0.148		0.128
In Rana^{False} × 2014 × Bangladesh		-0.002		-0.216
		0.198		0.171
In Rana^{False} × 2015 × Bangladesh		0.001		-0.161
		0.1946		0.173
In Rana^{False} × 2016 × Bangladesh		-0.005		-0.061
		0.229		0.209
Observations	4,823,863	4,823,863	4,823,863	4,823,863
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 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. "In Rana^{False}" is a dummy for 12 countries randomly selected from the list of 35 OECD countries (columns 1 and 2) or from the list of 21 OECD countries whose national firms signed the Accord (Table 3). Post is a dummy taking the value 1 from May 2013 onwards.

interest should have no effect on import flows. In other words, any significant results would indicate that there are significant omitted variables. We conduct this random data-generating process 100 times to avoid contamination by rare events. The results from our triple difference specification appear in column 1 of Table 11. These correspond to the mean value of the estimates from the 100 random assignments. The mean value is not different from zero (with a mean of 0.008 and standard deviation of 0.180). Column 2 adopts the same approach but forces the random selection of the "false" twelve "In Rana" countries to occur within the list of countries that signed the Accord (see Table 3). The obtained coefficient is again non-significant. This indicates that our true estimates are clear outliers in the placebo tests, and suggests that they are not strongly biased by omitted variables.

5.3 Why did the disaster affect import flows ?

Our results seem to indicate that the ethical debate that followed the industrial disaster in Bangladesh had a downward effect on import flows, in selected countries. Our assumption about the reason behind this effect relies on a negative reputation effect on imports from Bangladesh: In the 12 countries whose brands were found to have close links with Rana Plaza factories, individuals are likely to have been exposed to severe negative news about their domestic firms' unethical behavior. This in turn could have deterred consumers from purchasing clothing items made in Bangladesh, at least more than in other importing countries.

While the results so far highlight a negative impact of the Rana Plaza collapse on imports,

Table 12: Placebo: other major apparel exports

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
In Rana country^i × Post × China	-0.250			
	(0.155)			
In Rana country^i × Post × Vietnam		-0.144		
		(0.138)		
In Rana country^i × Post × Turkey			-0.134	
			(0.126)	
In Rana country^i × Post × Top 3				-0.193
				(0.127)
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 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. In 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 3. 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). Post is a dummy taking the value 1 from May 2013 onwards.

we however cannot ensure that it originates in a demand effect. As detailed in Section 4.1, the estimated effect captures not only the possible aversion of consumers for unethical products, but also the potential reaction of firms facing a decrease in demand or problems with production capacities. We now review additional results which may provide guidance to understand the precise cause behind the decrease in imports.

Let us first consider firms' supply conditions in the direct aftermaths of the disaster and confront them with our results. Production capacities were either suddenly inexistant (at least for the orders placed to the factories in the building), or slowed down by strikes, riots and discussions with the labor force regarding implementation of future security measures. Also, multinational companies may have needed (for some) or wanted (for others) to find alternative providers for clothing items, anticipating repercutions on demand. 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: by the time that decreases in demand are converted in lesser orders placed to Bangladesh, any effect of this type

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

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. As for the episodes of strikes and riots that followed the incident and the increased costs associated with additional security requirements, they apply to all assembly activities in Bangladesh after 2013. Any effect that applies only to a given group of importers cannot originate in more difficult manufacturing conditions in the producing country. According to Figure 5 (which corresponds to the results reported in Table A-4 in the Appendix), 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, is hence more consistent with a demand-side explanation.

The second element of interest, in order to investigate the determinants of the relative decrease in imports, relates to the reallocation of production in alternative producing countries. The 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.

Table 12 replicates the main estimates (column 1 in Table 7) 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 whether the pattern of imports highlighted for Bangladesh is also at play for those three main manufacturers of apparel. This allows to see whether the relative decline of imports for In Rana countries from Bangladesh was simultaneous with a reinforcement of imports from other parts of the world, which would suggest that the Rana collapse has induced involved retailers to replace the supply of clothing from Bangladesh with products from other origins. Column 1 focuses on China, the world's largest textile exporter and possibly Bangladesh's largest competitor. Columns 2 and 3 investigate the evolution of imports from Vietnam and Turkey respectively. Column 4 looks at the three previous countries together. In all cases the interaction term capturing the way the difference in apparel imports between importing countries linked to

the Rana Plaza and the others evolved after the incident fails to be significant. This suggests that, contrary to the imports from Bangladesh, there was no divergence in import behavior from other top apparel sources between the two groups of countries according to their exposure to the Rana shock. The decline in supply from Bangladesh for the affected countries is not paralleled by a substitution effect where declining imports from Bangladesh are offset by an increase in imports from these other countries.

We finally investigate the effect of a variable that is expected to influence demand. We explore whether, 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 2.4, 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 13 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. The baseline specification (column 1 in Table 7) corresponds to column 1 in Table 13. The first two columns consider NGO campaigns denouncing misconduct in the Bangladeshi clothing industry. The existence (0/1 dummy) and the number is 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. 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. This is consistent with a demand channel effect whereby the loss of reputation and the disaffect expressed by customers could grow with the intensity of the campaigning by local NGOs. By contrast the supply channel repercussions would not depend on this factor.

6 Conclusion

Our results shed light on the trade effects of the major industrial disaster that took place in Bangladesh's capital city in 2013. By investigating the effect of an important shock on the reputation of exporting countries, this paper quantifies the role of activism in influencing product-level outcomes. 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 whose brands were most tightly associated to the responsibility of the event.

Table 13: Repercussions for In 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
In Rana country^i × Post × BGD	-0.381^b	-0.265	-0.389^b	-0.282^c
	(0.163)	(0.161)	(0.155)	(0.158)
In Rana × Post × BGD × 0/1 NGO campaign on BGD textile^i	0.092			
	(0.167)			
In Rana country^i × Post× BGD × Nb NGO campaigns on BGD textile^i		-0.005^a		
		(0.001)		
In Rana × Post × BGD × 0/1 NGOs campaign on			0.129	
home textile retailers in BGD^i			(0.181)	
In Rana country^i × Post× BGD × Nb of local NGOs campaigns on				-0.010^a
home textile retailers in BGD^i				(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. In 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 3. 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 Figure 2. Post is a dummy taking the value 1 from May 2013 onwards.

Our estimations measure the impact on imports of the Rana Plaza collapse, including demand aversion for products manufactured unethically, but also the reaction of firms to counter the decrease in demand. We provide a detailed investigation of the determinants of the trade decrease. The discussion involving the timing of orders in the textile industry, the possible reallocation of production to other countries, and the communications made by NGOs, all tend to point to the prevalence of the demand channel. Hence according to our results, the assumption that demand is sensitive to social responsibility scandals involving firms should not be discarded.

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Appendix

Table A-1: Main apparel importers in 2013

Country name	Apparel imports value (US billions)	Share of world apparel imports (in %)	Share sourced from Bangladesh (in %)	Share in Bangladesh's apparel exports (in %)	In Rana	OECD
USA	194.5	24.2	2.7	21.3	Yes	Yes
Germany	72.6	9.0	4.4	12.9	Yes	Yes
Japan	70.9	8.8	0.8	2.4		Yes
Great Britain	53.3	6.6	5.0	10.9	Yes	Yes
France	48.1	6.0	2.8	5.4	Yes	Yes
Italy	31.8	4.0	3.2	4.1	Yes	Yes
Spain	30.4	3.8	5.2	6.5	Yes	Yes
Hong Kong	28.8	3.6	0.3	0.3		
Netherlands	23.3	2.9	6.4	6.1		Yes
Canada	20.7	2.6	5.3	4.5	Yes	Yes
Belgium	19.1	2.4	3.6	2.8	Yes	Yes
Russia	18.6	2.3	2.7	2.1		
South Korea	15.6	1.9	1.0	0.7		Yes
Australia	14.6	1.8	3.1	1.8		Yes
Austria	12.5	1.6	0.6	0.3		Yes
Switzerland	12.2	1.5	2.6	1.3		Yes
Sweden	9.4	1.2	4.0	1.5		Yes
Denmark	9.0	1.1	4.5	1.7	Yes	Yes
Poland	8.8	1.1	4.7	1.7	Yes	Yes
Mexico	7.0	0.9	2.8	0.8		Yes
Chile	6.4	0.8	0.5	0.1		Yes
Singapore	6.1	0.8	1.3	0.3		
Norway	6.0	0.7	3.1	0.8		Yes
Turkey	5.9	0.7	13.2	3.2	Yes	Yes
Brazil	5.2	0.7	3.5	0.7		
Portugal	4.7	0.6	0.7	0.1		Yes
Czech rep	4.4	0.5	5.3	0.9		Yes
Ireland	4.2	0.5	2.5	0.4	Yes	Yes
South Africa	4.1	0.5	1.5	0.2		
Finland	4.0	0.5	2.4	0.4		Yes

Source: Comtrade, 2013. Apparel is defined as products within HS codes 61 to 63. The 30 countries in the table account for 93.7% of world apparel imports and 96.3% of apparel imports from Bangladesh.

Table A-2: Main non-textile products imported from Bangladesh in 2013

Product code	Product name	Total imports from Bangladesh value (US billions)	Share in Bangladesh exports (in %)
0306	Crustaceans (in shell or not)	442.3	1.6
5307	Yarn of jute	219.7	0.8
4107	Leather further prepared after tanning or crusting	123.7	0.4
8712	Bicycles and other cycles	74.0	0.3
4104	Tanned or crust hides and skins of bovine	67.7	0.2
4202	Trunks; suit, camera, jewellery, cutlery cases or bags	67.2	0.2
6911	Household articles of China	50.0	0.2
2401	Tobacco, unmanufactured	48.3	0.2
7404	Copper	36.6	0.1
2710	Petroleum oils and oils from bituminous minerals	34.1	0.1
3923	Plastic articles for the conveyance or packing of good	33.0	0.1
5310	Woven fabrics of jute	26.4	0.1
9404	Furnishing articles	23.7	0.1
0303	Fish (frozen, excluding fish fillets)	21.0	0.1
6704	Wigs, false beards, eyebrows and eyelashes	15.8	0.1
1605	Crustaceans, molluscs and other aquatic invertebrate	15.3	0.1
5607	Twine, cordage, ropes and cables	13.9	0.1

Source: Comtrade, 2013. Non-textile is defined as products outside of HS2 categories 61 to 66.

Table A-3: Country-level Double difference: Poisson (accounting for zeros)

Explained variable	Import value product p by OECD country i from Bangladesh) including 0, in month m of year y (2010-2015)	
Products	HS4 p Clothing and Apparel	
Estimator	Poisson pseudo-maximum likelihood estimator	
	1	2
In Rana country^i × Post	-0.328^a	
	(0.074)	
In Rana country^i × May-Dec 2013		-0.314^a
		(0.075)
In Rana country^i × 2014		-0.386^a
		(0.095)
In Rana country^i × 2015		-0.272^a
		(0.084)
In Rana country^i × 2016		-0.332^a
		(0.089)
Ln Importer GDP^i_y	-0.831^a	-0.845^b
	(0.320)	(0.339)
Ln Importer Population^i_y	-4.459^b	-4.433^b
	(1.769)	(1.798)
Ln Importer total apparel import$^i_{ym}$	-0.187	-0.204
	(0.143)	(0.138)
Ln Importer product import$^i_{p,ym}$	1.232^a	1.235^a
	(0.097)	(0.097)
Observations	109,626	109,626
Product-period Fixed effects	Yes	Yes
Importer-product-month Fixed effects	Yes	Yes

Heteroskedasticity-robust standard errors clustered at the importing county 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 defined as products within HS2 61 to 63. In 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 3. Post is a dummy taking the value 1 from May 2013 onwards.

Table A-4: Monthly coefficients from Triple difference: 2012 as reference

Month (before)	Coefficient	Standard error	Month (after)	Coefficient	Standard error
Jan.-10	-0.023	0.208	mai-13	-0.182	0.150
Feb.-10	-0.016	0.229	juin-13	-0.170	0.179
March-10	-0.079	0.205	juil-13	-0.014	0.198
April-10	0.073	0.256	aot-13	-0.261	0.166
May-10	0.018	0.259	sept-13	-0.454^{b}	0.204
juin-10	0.011	0.238	oct-13	-0.406^{c}	0.214
juil-10	-0.059	0.279	nov-13	-0.390^{c}	0.210
aot-10	-0.037	0.212	Dec-13	-0.249	0.201
sept-10	0.101	0.227	Jan.-14	-0.291	0.192
oct-10	0.092	0.252	Feb.-14	-0.333	0.213
nov-10	-0.105	0.257	March-14	-0.357	0.204
dc-10	0.191	0.194	April-14	-0.333	0.201
Jan.-11	0.204	0.168	May-14	-0.237	0.188
Feb.-11	0.212	0.129	June-14	-0.616^{a}	0.189
March-11	0.085	0.137	July-14	-0.357	0.229
April-11	0.155	0.137	August-14	-0.334	0.208
May-11	0.095	0.137	Sept-14	-0.438^{c}	0.219
June-11	0.105	0.140	Oct-14	-0.330^{c}	0.185
July-11	0.126	0.177	Nov-14	-0.218	0.255
August-11	0.057	0.122	Dec-14	-0.202	0.227
sept-11	0.084	0.134	Jan.-15	-0.278	0.198
Oct-11	0.021	0.188	Feb.-15	-0.316	0.198
Nov-11	-0.075	0.160	March-15	-0.429^{b}	0.205
Dec-11	0.181	0.187	April-15	-0.278	0.198
			May-15	-0.192	0.217
			June-15	-0.348^{c}	0.174
Jan.-13	-0.121	0.172	July-15	-0.316	0.216
Feb.-13	-0.294	0.186	August-15	-0.455^{b}	0.202
March-13	-0.088	0.168	sept-15	-0.359^{c}	0.189
April-13	-0.257	0.165	Oct-15	-0.405^{c}	0.205
			Nov-15	-0.459^{b}	0.223
			Dec-15	-0.178	0.224
			Jan.-16	-0.319^{c}	0.185
			Feb.-16	-0.411^{c}	0.228
			March-16	-0.326	0.216
			April-16	-0.240	0.228
			May-16	-0.211	0.245
			June-16	-0.195	0.223
			July-16	-0.328	0.251
			August-16	-0.541^{b}	0.227
			sept-16	-0.273	0.244
			Oct-16	-0.383	0.255
			Nov-16	-0.537^{b}	0.277
			Dec-16	-0.132	0.244

The table reports all monthly components for the interaction between In Rana country^{i} and BGD. The specification is that of Table 7, which includes Importer-Product-period fixed effects, Exporter-Product-period fixed effects and Importer-Export-Product-month fixed effect. Heteroskedasticity-robust standard errors clustered at the importing county level appear in parentheses. ^{a}, ^{b} and ^{c} indicate significance at the 1%, 5% and 10% confidence levels. Sample includes 4,274,140 observations. R-squared is 0.88.