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Scandal, Social Movement, and Change: Evidence from #MeToo in Hollywood*

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Abstract

Social movements have the potential to effect change in firm decision-making. In this paper, we examine whether the #MeToo movement, spurred by the Harvey Weinstein scandal, led to changes in the likelihood of Hollywood producers working with female writers on new movie projects. Since #MeToo affected the entire industry, we use variation in whether producers had past collaborations with Weinstein to investigate whether and how #MeToo may spur change. We find that producers previously associated with Weinstein are, on average, about 35-percent more likely to work with female writers after the scandal than they were before, relative to non-associated producers; and the size of this effect increases with the intensity of the association. Female producers are the main drivers of our results, which may be because they are more likely than male producers to be sympathetic to the movement's cause and face relatively low costs of enacting change. Changes made by other groups, such as production teams with the most intense association with Weinstein and less-experienced all-male teams, may be better explained by motivations to mitigate risk or guilt. We also find that producers do not sacrifice writer experience by hiring more female writers and that both experienced and novice female writers have benefited from the increased demand. Our study shows that social movements that seek to address gender inequality can, indeed, lead to meaningful change. It also provides perspective for thinking about whether, and to what extent, changes may occur in broader settings.

Keywords: Gender inequality; Social movements; Scandal; Project selection; Creative industries

JEL Codes: D83; J16; M14

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1 Introduction

The gender gap has narrowed in many sectors of the economy. While women accounted for one third of the U.S. labor force in the 1950s, they accounted for 46 percent in 2019.¹ Female representation has also made progress in many high-paying professional fields—e.g., it is about 50 percent in law and medicine and 44 percent in consulting. However, contrary to this trend, the gender gap in high-growth entrepreneurship, creative industries, and leadership positions has remained large and remarkably persistent. For example, Gompers and Wang (2017a) show that the percentage of female founders of VC-backed startups rose from 7.2 percent in the early 1990s to only about 10.7 percent after 2010. Similarly, female representation in the film industry has consistently been low, with women making up only 4.5 percent of directors and 14.4 percent of writers for top-grossing films (Smith et al., 2020). Among Fortune 500 companies, only 22 CEOs are female, and only 16.5 percent of top-five leadership positions are held by women.²

Such a large gender gap is concerning for a number of reasons. In particular, it may reflect gender-based frictions that prevent high-quality ideas from being funded and high-quality talent from being hired or promoted. Indeed, some of the commonly cited reasons for gender gaps in the above settings reflect systemic and entrenched biases that seem difficult to overcome (e.g., Gompers and Wang, 2017a; Fernandez-Mateo and Kaplan, 2018; Guzman and Kacperczyk, 2019). For instance, a shared feature of these settings is that gatekeepers are important and that they are predominantly male (Gompers and Wang, 2017a). For a variety of reasons, they tend to hire, invest in, or socialize with people who share similar characteristics and backgrounds (Ibarra, 1993; Botelho and Abraham, 2017). In addition, there may be the (mis)perception that women are poor fits for positions, activities, or product categories that are commonly associated with men or are of higher financial risk (Ding et al., 2012; Kacperczyk and Younkin, 2019), and this perception is difficult to change despite increasing evidence to the contrary (Gompers and Wang, 2017b). Moreover, even if individual decision makers (e.g., early investors) are not biased against women, the need to coordinate with the evaluation criteria of relevant others (e.g., later investors) often leads to conventional choices based on gender or status (Correll et al., 2017; Abraham, 2020).

In this paper, we examine the impact of the #MeToo movement—spurred by the 2017 reporting of sexual-abuse allegations against Harvey Weinstein—on the gender gap in the context of Hollywood. Social movements, by mobilizing broad alliances of people who are connected through their shared interests, have the potential to counteract the systemic biases and frictions underlying social issues and bring about change (e.g., Amenta et al., 2010; Ingram et al., 2010; McDonnell et al., 2015). We expect #MeToo, in particular, to potentially have a meaningful impact on the gender gap for two reasons. First, the specific issues underly-

¹Source: https://data.worldbank.org/indicator/SL.TLF.TOTL.FE.ZS?name_desc=true

²<https://www.weforum.org/agenda/2016/01/closing-the-gender-gap-in-senior-management/>.

ing #MeToo—sexual harassment and assault—are especially salient. Importantly, #MeToo has also led to a broader discussion of the root causes of sexual misconduct, which arguably stems from the persistent gender gap, both in representation and in power (Dobbin and Kalev, 2017). Second, #MeToo was aided by digital and social media, which not only led to a wide dissemination of the scandal in a short time, but also encouraged many individuals to participate by sharing their stories.³ Since actress Alyssa Milano asked women who have been sexually harassed or assaulted to write #MeToo after the Weinstein scandal was revealed, over 1.7 million tweets from 85 countries included the hashtag within the first week, and by September 30, 2018, #MeToo had been tweeted more than 19 million times (Pew Research Center). Within 24 hours, Facebook reported that 45 percent of its users in the U.S. are friends with someone who has posted a “#Me Too” status; reports of sexual crimes increased significantly after the scandal (Levy and Mattsson, 2019); and at least 200 prominent men in the U.S. lost their jobs after public allegations of sexual harassment.⁴ Taken together, the likelihood of exposure of sexual harassment and gender discrimination has credibly increased after #MeToo.

We focus on the movement’s impact in Hollywood—in particular, on producers’ decision of whether to work with female writers on their new projects—for several reasons. First, while it is difficult to find a control sector that has not been exposed to the movement, the Hollywood context allows us to exploit variation in whether producers had past collaborations with Weinstein to investigate whether and how #MeToo may spur change. Second, this industry also provides a valuable setting in which there are more opportunities to change (as producers start new projects), and in which the changes involve high-stakes financial decisions (each producer manages only a couple of projects at a time, and if a project goes into production, the median budget is about \$25 million). Third, for half of the sample, writers are the content creators and rights owners. These situations go beyond seeking employment and resemble ones in which entrepreneurs look for venture investment in a market for ideas (Luo, 2014). Producers resemble managers, in that they are responsible for attracting talent and obtaining financing from later investors. Thus, this setting may provide lessons that are potentially generalizable to other managerial and entrepreneurial settings.

Conceptually, the Weinstein scandal and #MeToo may have increased producers’ incentive to work with female writers for several reasons. They may want to mitigate risk both for the focal project and for their long-run reputation; to act upon intrinsic motivation stemming from sympathy or guilt; and to take advantage of a changing industry environment. While the above changes are likely to affect producers in general, we expect the impact to be greater for those who collaborated with Weinstein in the past (hereafter Weinstein-associated producers or associated producers), primarily for the first two reasons. Weinstein-associated producers may

³While the phrase “Me Too” was first invoked in this context in 2006 by Tarana Burke, it did not become viral until the addition of the # in 2017.

⁴“#MeToo Brought Down 201 Powerful Men. Nearly Half of Their Replacements Are Women,” October 23, 2018, *The New York Times*.

have greater incentives to mitigate risk because they received especially intense media and public scrutiny after the scandal, and the market may judge them as more likely to share Weinstein's traits or to have a higher tolerance for sexual misconduct compared to non-associated producers (Adut, 2005; Pontikes et al., 2010). Separately, Weinstein-associated producers may also be more intrinsically motivated to concede to the movement's demands because they are more likely to be aware of and feel responsible for the abusive culture. In addition, the association with Weinstein may prompt them to pay more attention to issues highlighted by #MeToo and, consequently, become more sympathetic to the movement's cause (e.g., McCarthy and Zald, 1977; Tarrow, 1998; Haidt, 2003).

To examine the movement's impact, we construct a dataset of 4,188 projects begun between January 2014 and September 2019. We find that relative to non-associated producers, associated producers were 30-percent more likely to work with female writers on their new projects after the scandal than before, and the size of this effect increased with the intensity of the association. The effect is not driven by any differential pre-trends between these two groups of producers and takes about two quarters to realize. The results are also robust to controlling for their quality differences and potential changes in their composition after the shock. The differential response by associated producers disappears by the end of our sample, but the convergence seems to be partially driven by the non-associated producers' catching up.

We explore the heterogeneity in the Weinstein-association effect and examine potential changes by different subgroups among non-associated producers. We find that female producers, including those who are associated with Weinstein regardless of experience level and those who are experienced and non-associated, are the main drivers of our results. This suggests that the most important mechanisms underlying the change seem to be that #MeToo appeals to a group of decision makers who are more likely to be sympathetic to the cause and face relatively low costs of enacting change (McCarthy and Zald, 1977; Ely, 1994; Tarrow, 1998). There is also evidence suggesting that risk and/or guilt mitigation may be important in effecting change for producers who have the most intense association with Weinstein and for the less-experienced all-male production teams (Barnett and King, 2008; Galasso and Luo, 2020).

Despite the fact that female writers are, on average, much less experienced than male writers, we do not find a significant decline in the writer's experience on projects by associated producers after the shock or any changes in average team size. This suggests that the producers are replacing male writers with female writers of similar experience levels, rather than expanding the writing team with a "token woman." In addition, the increased demand for female writers appears to have benefited both the most experienced writers as well as relatively novice writers. Finally, we find that associated producers are also more likely to hire female directors, which is deemed to be a more costly role to fill. Combined with the fact that non-associated producers have also increased their likelihood of working with female writers by the end of our sample

period, this is suggestive of wider and longer-term effects of #MeToo on the industry overall.

Taken together, our paper shows that social movements can have a meaningful impact on the gender gap in a major creative industry through firms' high-stakes project-selection decisions. We show that the magnitude of the change varies according to the incentives for and costs of initiating change. Beyond the movie industry, a wide variety of industries have also started to experience the impacts of #MeToo; and social movements in general have become an increasingly important force influencing firm decision-making (e.g., the Black Lives Matter movement). Our results provide a valuable lens through which to think about whether, and to what extent, changes may occur in these broader settings.

2 Related literature

Our paper contributes to and connects three distinct literatures. First, it relates to work on gender representation, especially for VC-backed startups (e.g., Gompers and Wang, 2017a; Guzman and Kacperczyk, 2019) and in organizations more broadly (e.g., Fernandez-Mateo and Kaplan, 2018). Prior work has documented both supply-side and demand-side reasons for the large gender gap in these settings, such as different types of experience and opportunities, and discrimination by investors and consumers (e.g., Blanchflower et al., 2003; Brooks et al., 2014; Abraham, 2020). However, as Jennings and Brush (2013) point out, research on how these biases might be mitigated is relatively scarce. An increasing number of studies have started to examine the potential impacts of firm and policy levers on participation, such as training programs (Lyons and Zhang, 2017, 2018) and access to networks (Howell and Nanda, 2019). Our study highlights the role of social movements in facilitating investment in female creators.⁵ Furthermore, we show that sufficient female presence in positions of power is not only positively correlated with female representation before the shock—which confirms the prior literature's findings (e.g., McGinn and Milkman, 2013)—but also facilitates change through the crisis. In our context, female producers help promote gender equality for both demand-side reasons (e.g., issues #MeToo highlights resonate more with female producers) and supply-side reasons, as female writers are more willing to participate, anticipating friendlier work conditions (Fernandez-Mateo and Kaplan, 2018).

Recent research in sociology and organizational theory has shown that social movements are capable of influencing corporate behavior and bringing about change (e.g., Ingram et al., 2010; McDonnell et al., 2015). Studies have found that the effects of social movements are likely to increase with the amount of (sustained) media attention (King, 2008; McDonnell and King, 2013), saliency of the issues (McDonnell and Werner, 2016), resources available (McCarthy and Zald, 1977), and society's receptivity to change (Amenta,

⁵A related but different force is political ideology, which is shown to have a significant impact on gender inequality (see, for example, Carnahan and Greenwood (2018) for evidence in organizational settings).

2006). Our paper contributes to this literature by providing novel evidence that social movements seeking to address workplace inequality can lead to significant changes. We highlight that social movements may lead to change via the association with the perpetrator of the scandal that spurred the movement. Such a mechanism is important, as it significantly expands the impact of the movement to parties beyond the direct targets (Yue et al., 2013). Lastly, as mentioned above, our study identifies important facilitators of change (i.e., presence of women in power positions). This complements prior findings in this literature that decision makers who are sympathetic to a movement’s cause are crucial allies for realizing change (McCarthy and Zald, 1977; Tarrow, 1998; Briscoe et al., 2014; McDonnell and Cobb, 2019).

Finally, our paper relates to studies on the spillover effect of scandals or negative events (e.g., Adut, 2005; Devers et al., 2009). Spillover may happen through network ties (Jensen, 2006; Pontikes et al., 2010) or by similarities in terms of industry, product characteristics, or organizational forms (Jonsson et al., 2009; Vergne, 2012). Much of the prior literature focuses on the performance impacts on the associated parties due to third parties’ actions (e.g., customers refrain from buying goods). Our paper shows that the associated firms may respond with changes in line with societal demands. To this end, our paper highlights novel mechanisms that connect the scandal literature to studies of social movements. The scandal literature typically finds that associated parties, subjected to negative inferences, make changes to mitigate legal, market, and reputational risk (Barnett and King, 2008; Galasso and Luo, 2020). In our setting, this would imply a greater response by all-male production teams, as they are more likely to be perceived as sharing Weinstein’s negative traits. In contrast, we find female producers to be the primary driver of change. This suggests that scandal can instigate social change through channels beyond risk mitigation.

3 Background

3.1 Movie production in Hollywood

Making a movie is a long, costly, and uncertain process. Producers—often partners or executives of production companies and studios—are the managers of this process. They source projects by either acquiring finished scripts from screenwriters or by acquiring the adaptation rights to pre-existing works (e.g., a novel) and hiring writers to adapt them into scripts. With a project in place, producers are tasked with hiring directors and assembling cast and crew, and, importantly, securing financing. Often, the agency that represents the writer may leverage its client portfolio and attach key acting and/or directing talent to a project from the beginning (a practice called ‘packaging’). The most important financiers are movie studios (e.g., Warner Bros.). Projects developed by studio-affiliated production companies, often more-established ones, require the studio’s budget approval before going into production; and projects developed by independent production companies often need to partner with a movie studio later in the process to finance, distribute, and market the

movie. Luo et al. (2020) show that about 16 percent of the projects are eventually produced and theatrically released; for released movies, the median time from start to release is 2.1 years, and the median production budget is about \$25 million.

As noted earlier, female representation in Hollywood has traditionally been low in virtually every content-related position (Smith et al., 2020). We focus on writers for three reasons. First, scripts are the basis of movie projects, and writers are either the original creators or have major input in adapting screenplays. Second, the choice of the writer (and his/her gender), to a great extent, influences or correlates with later choices—including the hiring of a director and actors/actresses—and signals the type of working environment the producers want to create. Third, also because writers are crucial at the start of a project, they are systematically captured in our data for early-stage projects. In contrast, director information is available for only half of our sample projects. Data on acting talent are similarly incomplete; moreover, there is limited variation in whether or not a project includes an actress, and more-precise measures such as their share of speaking time are not systematically available for early projects.

3.2 The Harvey Weinstein scandal and the #MeToo movement

On October 5 and 15, 2017, *The New York Times* and *The New Yorker*, respectively, published two articles detailing allegations of decades of sexual harassment against Harvey Weinstein, including three accusations of rape.⁶ Since those two reports, more than 100 women have accused Weinstein of sexual harassment, assault, or rape, ranging from the 1980s to 2015.⁷ On October 15, 2017, actor and activist Alyssa Milano sent a tweet encouraging people to share their stories of harassment or assault by replying “me too” on social media. As mentioned earlier, her original tweet led to a surge of responses on various social media platforms and subsequently uncovered a large number of sexual misconduct cases in Hollywood and beyond.

Individuals that have worked with Weinstein in the past were some of the first people targeted by the media to respond, suggesting that Weinstein-associated individuals received especially heightened attention after the scandal.⁸ While some claimed that they were unaware of these allegations, many have since acknowledged knowing about Weinstein’s transgressions to various extents.⁹ This suggests that, while the

⁶“Harvey Weinstein Paid Off Sexual Harassment Accusers for Decades,” by Jodi Kantor and Megan Twohey, October 5, 2017, *The New York Times*. “From aggressive overtures to sexual assault: Harvey Weinstein’s accusers tell their stories,” by Ronan Farrow, October 10, 2017, *The New Yorker*.

⁷https://en.wikipedia.org/wiki/Harvey_Weinstein_sexual_abuse_cases#cite_note-32.

⁸Source: <https://www.theguardian.com/film/2017/oct/09/harvey-weinstein-hollywood-men-actors-directors#img-1>

⁹E.g., Meryl Streep claimed, “*Not everybody knew. [...] I didn’t know about these other offenses: I did not know about his financial settlements with actresses and colleagues; I did not know about his having meetings in his hotel room, his bathroom, or other inappropriate, coercive acts.*” Actress Rose McGowan claimed that when she told actor Ben Affleck about an incident with Weinstein, his response was, “*God damn it, I told him to stop doing this.*” Quentin Tarantino, a long-time collaborator of Weinstein’s, said “*I knew enough to have done something about it. There was more to it than just the normal rumors, the normal gossip. It wasn’t secondhand. I knew he did a couple of these things.*” Source: https://www.huffpost.com/entry/meryl-streep-harvey-weinstein_n_59db5d87e4b072637c45420e; <https://www.nytimes.com/2017/10/19/movies/tarantino-weinstein.html>

allegations against Weinstein may have been news to some, it was known in Hollywood to different degrees, particularly by individuals who had worked with Weinstein in the past.

The scandal and #MeToo were seen as a call for action in Hollywood. For instance, the Producers' Guild of America has created codes of conduct for producers and executives to refrain from holding professional meetings in 'high-risk locations.' Beyond preventing harassment, #MeToo appears to have led to a broader focus on female representation and their lack of opportunities. Major studios, film festivals, and celebrities have pledged varying commitments to promote gender parity.¹⁰ Anecdotal evidence suggests that the demand for female talent seems to have increased since the Weinstein scandal.¹¹

4 Conceptual Framework

We begin with a conceptual discussion that helps shed light on possible impacts of the Weinstein scandal and #MeToo and motivates our empirical strategy. In particular, we focus on how these events may have increased producers' incentives to work with female writers relative to male writers, which is in line with the movement's demands. Given the wide-reaching impact of #MeToo, our discussion is not intended to be exhaustive. Rather, we aim to capture mechanisms that are likely to be first-order by building on our understanding of the industry context and existing findings in the literature. In the following, we first discuss how the scandal and #MeToo likely affected Hollywood producers in general; we then explain why we expect the impact to be greater for producers who have collaborated with Weinstein on past projects.

4.1 What changed after the Weinstein scandal and #MeToo?

From the perspective of a producer, who is the decision maker at the time of setting up a project, the Weinstein scandal and #MeToo may have increased his/her incentive to work with female writers for three reasons: 1) to mitigate risk (both for the focal project and for the producer's long-run reputation); 2) to act upon intrinsic motivations stemming from sympathy or guilt; and 3) to take advantage of favorable opportunities that arise from a changing industry environment.

Risk mitigation. An important consequence of #MeToo is that the expected costs (legal, market, and reputational) associated with harassment-related issues have credibly increased. For any actual incidents, evidence suggests that #MeToo has significantly increased the likelihood of exposure (Levy and Mattsson, 2019). In addition, various stakeholders are also more likely to penalize projects known to, or perceived to, have more of these abusive issues. By exposing the misconduct that took place behind the scenes, #MeToo likely has lowered consumers'—especially more socially conscious ones'—willingness to pay for movies

¹⁰<https://www.nytimes.com/2019/06/19/movies/inclusion-rider.html>.

¹¹E.g., Salma Hayek said that her company had been struggling to find female writers and directors because they are all booked. Source: <https://apnews.com/20d161014e3c46dfa5dea469b14f34e1/A-year-after-Weinstein,-Hollywood-is-still-soul-searching>.

made under abusive working conditions. Critical industry stakeholders, such as acting and directing talent and studio executives, are also less likely to collaborate or to invest in such projects, both to avoid consumer sanction and potential legal hassles and to protect their own reputation (Lins et al., 2019).

After #MeToo, working exclusively with male writers risks greater scrutiny from the media, a higher risk of losing consumers, and greater difficulty in attracting talent and financing. In contrast, working with female writers helps mitigate such risks. First, such a choice may lower the probability of harassment—against anyone working on the project and potentially by anyone—for the focal project. Research suggests that a greater presence of women tends to promote more respectful work environments, where harassment is less likely to flourish and vulnerable parties are more comfortable reporting it (Dobbin and Kalev, 2017). Projects by female writers might be more attractive to other female talent; and the presence of female writers may also help signal the producer’s commitment to creating a better work culture and norms, thereby lowering the costs of recruiting other women. Second, working with female writers may also help mitigate media scrutiny and nurture (or restore) the producer’s reputation, which is beneficial in the long run.

Intrinsic motivations. Producers may also be more intrinsically motivated to improve female representation in this industry after the scandal and #MeToo. As discussed, these events have brought to the forefront not only problems of sexual harassment and assault, which are obvious violations of law and moral rules, but also issues of gender disparity in representation, pay, and power. The increased awareness and saliency of these issues may have triggered what social psychologists call “moral emotions” such as guilt and sympathy in the producers and motivated them to make pro-social changes, including providing women with more opportunities (e.g., Haidt, 2003).¹² These motivations are intrinsic, in that producers make changes not to mitigate risk, manage their reputation, or address other cost-benefit considerations, but because the producers are genuinely convinced by the movement’s calls to change.

Producers, among the gatekeepers of this industry, might be more inclined to feel partly responsible for the problematic culture exposed by #MeToo. While some may be guilty of actual wrong doings, many might feel the guilt of not having done enough (i.e., the “guilt of passivity” Jaspers (1947)). Alternatively, #MeToo may make producers more aware of and, consequently, more sympathetic to the mistreatment, biases, and barriers women face in the workplace. Though distinct, both emotions allow individuals to take the perspective of women and feel motivated to make changes either to compensate or to help (e.g., Eisenberg, 2000). An important distinction of sympathy—contrasting guilt and the risk-mitigation incentive discussed above—is that it potentially motivates individuals *beyond* those who are directly responsible for the problematic culture. As identified by the social movement literature, sympathetic allies, especially those

¹²See Goodwin et al. (2001) for a discussion about the importance of emotions in social movements and how emotions relate to many of the key social movement concepts.

who control resources and decision power, play a significant role in realizing reforms (McCarthy and Zald, 1977; McAdam, 1996; Tarrow, 1998).

Favorable opportunities. Apart from direct impacts, #MeToo may also indirectly affect a producer’s decision-making by influencing relevant stakeholders. For some of the same reasons discussed above, consumers, talent, and studio executives appear to have increased their demand for projects involving female talent. Notably, as discussed in Section 3.2, major studios have made various commitments to promote gender parity. Because the engagement of these parties is critical to a project’s success, their increased demand for female talent shifts the *economic* cost-benefit considerations in favor of projects by female writers, even if the producer him/herself does not need to mitigate risk or is not intrinsically motivated to change.

Of course, whether and to what extent we will see change will also depend on how costly it is to change. A number of factors affect the actual and the opportunity costs of working with female writers, including the quantity and quality of the supply of female writers and their ideas; the search and evaluation costs; the amount of resources a producer is able to mobilize (e.g., McCarthy and Zald, 1977); and, if necessary, the costs of improving the working conditions. Generally, the greater the costs of identifying, recruiting, and working with female writers, the more limited the change will be.

4.2 The Association with Weinstein

While the shock is likely to affect Hollywood producers in general, we expect the impact to be greater for producers who have collaborated with Weinstein in the past. In particular, the association with Weinstein is likely to lead to a greater incentive to mitigate risk and more-heightened intrinsic motivations to change. We do not expect the third mechanism—opportunities that arise from a more favorable industry environment—to work differentially solely due to the association.¹³

We expect the incentive to mitigate risk to be greater for Weinstein-associated producers for two reasons. First, as explained in Section 3.2, after the shock, associated producers received significantly greater media attention than non-associated producers did. This heightened scrutiny implies a greater likelihood of exposure of any potential harassment or discrimination incidences for associated producers. Second, associated producers are also more likely than non-associated producers to (or be perceived to) share similar traits with Weinstein or to have a higher tolerance for misconduct in the workplace. Research in economics and sociology has consistently shown that people with similar traits are more likely to attract and to influence each other (e.g., McPherson et al., 2001). Because information about a producer’s past behavior and true attitudes towards women is incomplete, even a ‘mere association’ may lead to a negative inference and adversely

¹³Note that, as we show later, Weinstein-associated producers are more successful and have higher status than non-associated producers, which may make them more capable of taking advantage of such opportunities. Here, we consider why past collaborations with Weinstein may lead to a differential increase in the incentive to work with female writers, holding the quality aspects of the producers constant. We address such a selection effect empirically in the paper (see Section 5.2).

affect the producer’s reputation (Adut, 2005; Jensen, 2006; Devers et al., 2009; Pontikes et al., 2010).

We also expect associated producers to be more intrinsically motivated than non-associated producers to concede to the movement’s demands. As discussed in Section 3.2, people who have worked with Weinstein are more likely to be aware of his behavior and the widespread abusive culture or even to be complicit in such behavior themselves, both of which are likely to lead to a greater level of guilt. It is also possible that, without necessarily feeling guiltier, associated producers are more likely than non-associated producers to pay more attention to these issues and, consequently, become more cognizant of and more sympathetic to the movement’s cause (Dickert and Slovic, 2009).

The above discussion motivates our main empirical strategy of comparing Weinstein-associated producers with non-associated producers. In particular, we hypothesize that *after the shock, the increase in the likelihood of working with female writers will be greater for Weinstein-associated producers than for non-associated producers*. To be precise, non-associated producers help to control for: (i) any industry-level impacts of #MeToo that affect associated versus non-associated producers similarly; and (ii) other confounding factors that are unrelated to the scandal or #MeToo but may have separately encouraged greater female participation in the industry around the same time.

It is certainly possible that after the shock, the negative reputational impact due to the association increased the cost of recruiting female writers, but this effect will work *against* us finding a differentially positive change for associated producers. Finally, as discussed above, a differential impact via the Weinstein association may be due to multiple possible mechanisms. However, the relative importance of each mechanism and the cost of recruiting female writers will likely vary for different types of producers. In addition to the average Weinstein-association effect, we will also explore the heterogeneity of this effect and how changes after #MeToo may vary across subgroups of non-associated producers. These additional results, though short of precisely pinning down a specific mechanism, help sharpen our interpretation of the changes we observe.

5 Data and Empirical Specification

5.1 Data

Our primary data source is Done Deal Pro (DDP), an internet database that tracks script transactions—both acquisitions of original screenplays and adaptation contracts—on a daily basis. DDP is recognized by various industry organizations (e.g., the Writers Guild of America) as one of the leading movie project information sources. We also use the Internet Movie Database (IMDb), the most comprehensive publicly available database containing information on movies, casts, and crews, to obtain information on a person’s industry experience and past collaborations with Weinstein.

Our sample period starts in January 2014 and ends in September 2019. To the best of our knowledge, the DDP records provide the earliest systematic (and publicly available) measure of the start of a movie project.¹⁴ The DDP database contains 4,836 records during this period. We drop 572 observations that have no information about the writers or producers. We also drop 76 observations by the Weinstein company or by producers who subsequently faced allegations of sexual harassment themselves after #MeToo.¹⁵ The sample has a total of 4,188 observations after these exclusions.

Our main outcome variable is whether the writers of a project include at least one female. The majority of the observations (76.6 percent) involve a single writer; 20.9 percent consist of two writers; and the remaining 2.5 percent have three or more writers. For each writer, we use the software *genderize.io* to predict gender based on the person's first name. If the confidence level is below 95%, we manually confirm the writer's gender using additional sources. 23.5 percent of the 3,728 unique writers are female, and 25.5 percent of our sample projects include at least one female writer.

As explained above, our main empirical strategy exploits the differential responses of associated versus non-associated producers following the shock. We define a Weinstein association based on whether the producers of a project had (observable) collaborations with Weinstein before the shock. The DDP records identify one producer for 19.0 percent of the projects; two to four producers for 57.3 percent of the projects; and five or more for the remaining 23.7 percent. For each individual producer, we identify the number of 'joint movies'—movies for which this focal producer was credited for any of the four major roles (producing, directing, acting, and writing) and for which Weinstein was credited as a producer—that were released at any time before the shock. Twelve percent of the 5,430 unique producers had past collaborations. We then define a Weinstein association (at the project level) as indicating whether at least one of the producers had a joint movie with Weinstein before the shock. Close to half (43 percent) of our sample projects were managed by production teams with a Weinstein association.

We explore the heterogeneity in the Weinstein-association effect along a number of dimensions, one of which is the gender composition of the production team. We identify the gender of each producer in much the same way that we identify writers and find that 25.7 percent of the 5,430 unique producers are female, and 50.4 percent of our sample projects have at least one female producer.

Another dimension of heterogeneity that we explore is the producers' experience level. Our main measure is the number of *producing* credits that a producer obtained in the previous ten years for movies dis-

¹⁴Our data, thus, include producers who are on board with a project early on and are less likely to capture the scenario in which a Weinstein-associated producer may elbow his/her way into a late-stage project with female writers.

¹⁵Vox compiles a list of people who have been accused of sexual misconduct since April 2017 (<https://www.vox.com/a/sexual-harassment-assault-allegations-list>). We found 17 unique producers in our sample on this list. By excluding these people and the Weinstein company itself, we isolate producers for which the negative publicity and potential litigations may be too disruptive for them to implement the changes we study in this paper (e.g., the Weinstein company filed for bankruptcy).

tributed by the top-30 movie studios; and the maximum is taken for production teams with multiple producers. Producers with zero past (major) credits managed 12.92 percent of the projects, and the median is six credits. We also construct three other variables to capture a producer’s quality and industry status: the number of Best Picture Academy Awards (the Oscars) a producer had won or been nominated for, and the likelihood of working with major studios and the largest agencies on past projects (as captured by the DDP database since 2004). Again, the maximum is taken for production teams with multiple producers.

We construct a measure of writer experience as the number of *writing* credits a writer obtained in the previous ten years for movies distributed by the top-30 movie studios, with the maximum taken for teams with multiple writers. The majority of the projects (62.0 percent) are by writing teams with zero past major writing credits. We include this variable as a control in regressions on the likelihood of having at least one female writer. Additionally, we explore whether the shock had an impact on the experience level of the writing team. For this analysis, writer experience becomes the dependent variable.

Table 1a provides a summary of the variables by Weinstein association. The summary shows that Weinstein-associated producers are significantly more experienced; have won or been nominated for more awards; are more likely to work with the top-30 movie studios and the largest talent agencies on past projects; are less likely to include female producers; and work in larger teams. Please see the table notes for the definitions of other control variables. Table A1 in the appendix provides a correlation table.

5.2 Empirical specification

Figure 1a provides a first look at our main result. It plots the likelihood of having at least one female writer for projects set up in a given quarter by Weinstein-associated production teams and for non-associated teams. The vertical line indicates the quarter before the scandal. For non-associated producers, the likelihood stays relatively stable before and for many quarters after the shock. For associated producers, this likelihood appears to follow a trend similar to that for non-associated producers, but it experiences a sharp jump starting in the third quarter after the scandal. On average, this likelihood increased by 3.6 percentage points for non-associated producers (from 0.251 to 0.287, p-value is 0.081), whereas it increased by 11.1 percentage points for associated producers (from 0.219 to 0.331, p-value is 0.000).

To put the above comparison into a regression framework, we estimate the following difference-in-differences (DID) style regressions:

$$Y_i = \alpha + \delta \text{Weinstein association}_i \times \text{Post shock}_t + \gamma \text{Weinstein association}_i + y_t + \beta X_i + \varepsilon_i, \quad (1)$$

where Y_i equals one if project i has at least one female writer; Post shock_t equals one for the time period after (and including) the fourth quarter of 2017; $\text{Weinstein association}_i$ indicates whether any producer on

the production team had collaborations with Weinstein before the shock; X_i are control variables, and y_t are quarterly fixed effects. We cluster standard errors at the studio level.¹⁶ As discussed in Section 4.2, non-associated producers help to control for any industry-level changes in response to #MeToo and any confounding factors unrelated to the shock. Under the parallel-trend assumption, δ captures the effect of the scandal and #MeToo via the association with Weinstein.

Potential concerns of anticipation effects are, to a large extent, mitigated by the following observations. First, Figure A1 shows that Google search interests experienced a sharp and immediate increase in the week of October 8, 2017 (the week after the *The New York Times*'s reporting) for the keywords Harvey Weinstein and Me Too movement. This suggests that the public, at least, did not anticipate the reporting and #MeToo. Second, a vast majority of the ties were formed long before the reporting of the scandal. Lastly, as suggested by Figure 1a and confirmed by a time-specific DID regression that we report later, we do not observe any pre-trend in the difference between associated and non-associated producers leading up to the shock.

The lack of pre-trend supports our parallel-trend assumption. That said, this assumption may be violated later in our sample, as producers associated with Weinstein are different from non-associated producers, in both observable and potentially unobservable ways. As described above, associated producers are significantly more experienced and are higher-status than non-associated producers. Thus, one concern is that, as #MeToo raises the demand for female writers in general, associated producers may be more likely to work with female writers after #MeToo not because of the association per se, but because they are better able to attract female writers. The second concern is about endogenous entries or exits. For example, it is possible that low-quality and more-abusive producers were driven out of the market after #MeToo and that such exits may have been disproportionately large for Weinstein-associated producers. Then, a positive DID coefficient estimated from the above equation may reflect a change in the composition of producers, rather than a change in decision-making by the same person.

We address the first concern (quality as a confounder) in two ways. First, we control for a large number of observables that may affect both association and outcomes. The inclusion of these controls does not significantly change the magnitude or precision of our estimates, while generating a relatively large increase in R-squared. This suggests that omitted variables are unlikely to be severe in this setting (Oster, 2019). Second, we examine whether our results are robust to matched samples for which the two groups are statistically similar in observable characteristics.¹⁷

¹⁶Our results are robust to other methods of estimating standard errors, such as robust standard errors and two-way clustering at the studio and the year level.

¹⁷Matching samples are generated by the coarsened exact matching method (Iacus et al., 2012). At the project level, the matching is based on the characteristics of the production teams—Producer experience, Prior awards, Producer experience with major studios, Producer experience with top agencies, Include female producers, and Producer team size—and Post-shock. Table 1b shows that the two groups of projects are well-balanced along these characteristics and most of the other variables, as well. As explained in

We address concerns of endogenous entries or exits via two sets of producer-level analyses: one at the producer-project level and the other with a balanced panel dataset at the producer-quarterly level. These analyses allow us to control for producer fixed effects, which is difficult to do in a project-level sample because a producer may work with different teams for different projects. The inclusion of producer fixed effects mitigates the concern that the effect is driven by changes in the composition of producers because the identification comes from variation within the same producer before and after the shock. An important downside of these specifications, however, is that a producer's decision is correlated with that of his/her production team; and, relatedly, some of the producers in the control group will be 'contaminated' due to their team members' association with Weinstein.

Finally, because all producers compete for the same pool of scripts and female writers, it is possible that part of the differential response is due to a competition effect, whereby associated producers compete female writers away from non-associated producers. This suggests that the increase in female writers' participation in projects by Weinstein-associated producers, estimated from equation (1), may overestimate the absolute increase relative to the counterfactual scenario without the shock.

6 Results

6.1 Average effect of Weinstein association

Table 2 presents the regression results as specified in equation (1). Column 1 includes the basic DID variables without additional controls; Column 2 includes the full set of controls. The DID coefficient that we are interested in is consistent across different specifications, in terms of both economic and statistical significance. Relative to projects by non-associated producers, projects by associated producers are 8.9 percentage points more likely to have at least one female writer after the shock than before (Column 2). Assuming the same difference between these two groups of projects before and after the shock, this increase represents a 35-percent increase relative to the counterfactual level without the scandal.¹⁸

Figure 1b plots the quarter-specific DID coefficients. Before the shock, the estimated difference in the likelihood of including female writers between these two groups of projects are not statistically different from that for the baseline quarter (the quarter before the scandal). Starting from the second quarter of 2018, the DID coefficients become positive and significant, with the largest difference being 20 percentage points.

the next paragraph, we use producer-level regressions for robustness checks. For these regressions, a matched sample is generated at the producer level based on Producer experience, Prior awards, Producer experience with major studios, and Producer experience with top agencies. The person-level characteristics are defined based on their resumes before the Weinstein scandal and #MeToo. Table A2b shows that the two groups of producers are similar in their characteristics in the matched sample.

¹⁸Among projects by non-associated producers, the likelihood of a project having at least one female writer is 0.251 before the shock and 0.287 after the shock, and this likelihood is 0.219 for projects by Weinstein-associated producers before the shock. Assuming the same difference between the two groups of projects before and after the shock, the counterfactual level for associated producers after the shock is 0.255.

The difference becomes smaller and statistically insignificant six quarters after the shock. Judging from the raw data, this convergence is driven partly by the increase in this likelihood by non-associated producers in the last two quarters of our sample; in other words, the control group partially catches up.

For reasons discussed in Section 5.2, we provide two sets of robustness checks. First, in Columns 4 and 5 of Table 2, we show that our baseline conclusion is robust to using a matched sample. This mitigates the concern that quality might be a potential confounder. Second, to address concerns over changes in the composition of producers, we report regression results that allow us to control for producer fixed effects. Table A3 reports results from a producer-project-level analysis. The DID coefficients of different specifications, including those using matched producers, are all positive and statistically significant. Table A4 reports fixed-effects Poisson regressions, based on balanced producer-quarterly data, in which the dependent variables are, respectively, the number of projects, the number of projects that include at least one female writer, and the number of projects that include no female writers set up by a given producer in a given quarter. Note that the data are extremely sparse; over 90 percent of the observations have zero projects.¹⁹ The first three columns use all the producers, whereas the last three use the matched producers. Though quantitatively different, the results from both samples suggest that, relative to non-associated producers, associated producers have increased the number of projects with female writers relative to projects with only male writers. Moreover, we do not see a significant negative impact on the quantity of projects due to a Weinstein association. This is consistent with the idea that associated producers may be able to minimize the negative impact of the scandal by making changes in line with the demands of the movement.²⁰

The previous analysis treats the Weinstein association as a binary variable. Columns 3 and 6 of Table 2 examine Weinstein association at different intensity levels—‘low’ if the total number of past joint movies with Weinstein among all producers in the team is equal to one (43.89 percent of the treatment group); ‘medium’ if the total number of past joint movies is more than two but less than or equal to six (49.89 percent); and ‘high’ if the total number is more than six (6.23 percent). We find that the increase is the largest for the small number of producers whose association with Weinstein was the most intense, and this increase is statistically greater than that for producers with ‘low’ and ‘medium’ associations.²¹

¹⁹We use the Quasi-ML method to compute robust standard errors for the Poisson model, which produces consistent estimates under relatively weak assumptions, allowing for overdispersion and a large mass point at zero for the dependent variable.

²⁰Note that the impact of the shock on the quantity of projects that associated producers are able to set up is theoretically ambiguous. On the one hand, they have a greater incentive to set up projects including female writers; on the other hand, they may face greater difficulty attracting talent and investors, in general, due to a negative impact on their reputation. Thus, it is plausible that they set up fewer projects after the shock, but the percentage of these projects that include female writers increases.

²¹The results by association intensity are robust to using the total number of past joint movies with Weinstein as a continuous treatment variable. The DID coefficient is 0.13 (p-value < 0.05) for both the baseline and the matched samples.

6.2 Heterogeneous effects of Weinstein association and potential mechanisms

The above findings are consistent with the idea that the scandal and #MeToo have increased producers' incentives to work with female writers, and the increase is particularly strong for those associated with Weinstein. Given the wide-reaching impact of #MeToo, different (and not mutually exclusive) mechanisms are likely to be present. In the following, we examine potential heterogeneities in the Weinstein-association effect and the potential changes by different subgroups among non-associated producers (the control group). These additional results help shed light on the relative importance of various mechanisms in driving both the differential change by Weinstein-associated producers and the overall change we observe.

6.2.1 Heterogeneity in Weinstein-association effect by gender composition of production teams

We first explore how the Weinstein-association effect may vary by the gender composition of a production team. As discussed in Section 4, the differential increase by Weinstein-associated producers may be due to multiple reasons—in particular, a greater incentive to mitigate risk and a greater intrinsic motivation driven by sympathy or guilt. While all may be at play, their relative importance is likely to vary by the gender of the producers. In addition, the cost of change may also be different.

Intuitively, male producers are more likely to be driven by an incentive to mitigate risk or to alleviate guilt. Male producers may face greater public scrutiny and market risk than female producers because they are more likely to be perceived as sharing traits with Weinstein or having a higher tolerance for misconduct. This is consistent with anecdotal evidence that male producers associated with Weinstein may have been more “in the know” regarding his behavior; the fact that producers who were later accused of misconduct were almost all male;²² and prior findings in the literature that scandals may have negative spillover effects on parties sharing similar characteristics or organizational/product categories (e.g., Jonsson et al., 2009; Vergne, 2012). Similarly, male producers may also be more likely to feel guilty about being directly or indirectly complicit in the problematic culture and are, hence, more intrinsically motivated to change.

In contrast, we expect female producers to be more motivated by a greater degree of sympathy. Research finds that the strength of sympathy depends on factors such as whether one is in the same state as the victim, shares similar past experience, and has social proximity (e.g., same racial and gender groups) (Loewenstein and Small, 2007). Studies of social movements also stress the importance of collective identity, solidarity, and commonly shared beliefs and ideologies as powerful motivations to participate in and support a movement (e.g., Briscoe et al., 2014; McDonnell and Cobb, 2019). This suggests that female producers are more likely than male producers to be sympathetic to the call of #MeToo to empower women.²³ In addition, production

²²Source: <https://www.vox.com/a/sexual-harassment-assault-allegations-list>

²³Anecdotal evidence suggests that women in positions of power in Hollywood are more likely to push for hiring female talent and producing more complex female-led stories. Source: <https://www.reuters.com/article/us-television-women/after-metoo-hollywood->

teams with female producers may face lower costs of identifying and evaluating female writers and their ideas via their social networks (Ely, 1994). On the supply side, female writers may also be more reluctant to work with all-male production teams (Fernandez-Mateo and Fernandez, 2016). All-male teams may try to adjust their work conditions, but such adjustments are costly and may not be effective. Our data show that before the shock, Weinstein-associated production teams with at least one female producer were almost twice as likely to work with female writers than were associated teams with all-male producers (0.28 versus 0.14). This contrast is consistent with our above depiction of the differences by gender.

The split-sample results in Columns 1 and 2 in Table 3a show that, despite a much lower prior level of working with female writers, the Weinstein-association effect for all-male production teams is less than half that for teams with at least one female producer (5.7 versus 13.4 percentage points). Columns 3 and 4 further restrict the sample to production teams in which there is sufficient female representation; that is, the two measures—(i) the total experience of all female producers divided by the total experience of all producers; and (ii) the proportion of female producers relative to the total number of producers—are above 0.25. The results show that the magnitude of change is economically larger for teams with sufficient female presence. The result that production teams with female producers are the main driver of the average Weinstein-association effect suggests that one set of mechanisms—a greater degree of sympathy and a lower cost of change—seems more important than the incentives to mitigate risk or to alleviate guilt.²⁴

6.2.2 Heterogeneity in Weinstein-association effect by gender composition and producer experience

To sharpen our interpretation, we further break down our sample by producer experience and also consider changes by various groups among non-associated producers. Table 3b shows that for production teams both with and without female producers, the Weinstein-association effect is economically larger and statistically more significant for less-experienced production teams (i.e., the most experienced producer in the team had six or fewer major producing credits—the median). In contrast, for more-experienced production teams, the association with Weinstein does not make a significant difference. A closer look at changes by the various control groups (the bottom two rows of this table) reveals some interesting differences. The reason that we do not observe a standalone Weinstein-association effect for more-experienced teams with female producers is that both the control and treatment groups increase their likelihood of working with female writers similarly (Column 4). The only group among teams with female producers that does not change are less-experienced non-associated teams (Column 3). In contrast, for production teams with only male producers (Columns 1

women-seize-power-behind-tv-camera-idUSKBNIL1119.

²⁴Unreported results show that the Weinstein-association effect is economically and statistically greater when the female producers are themselves associated with Weinstein than when the unassociated female producers are only teaming up with male Weinstein-associated producers. This is consistent with the idea that a woman's *own* association with Weinstein may generate greater sympathy for a female producer than an indirect association through her male colleagues. Separately, but not mutually exclusively, it is also possible that with male associates of Weinstein on the team, it is more difficult to attract female talent after #MeToo.

and 2), the only group that significantly changes are the less-experienced teams associated with Weinstein.

The broad changes by production teams with female producers—including those associated with Weinstein regardless of experience level and those who are experienced and non-associated—further supports the idea that the issues that #MeToo highlights resonate with female producers and that they have a cost advantage to initiate change. The finer breakdowns also allow for more-nuanced interpretations. For teams with female producers, both the extra incentives that arise from being associated with Weinstein and the ability to mobilize resources seem to be sufficient to incite change by themselves. Non-associated, less-experienced teams lack both, which could explain their lack of change.²⁵ For experienced production teams, the lack of a standalone Weinstein-association effect is likely to be driven by the fact that after the shock, the share of projects with female writers is close to 50 percent for both control and treatment groups. For male production teams, the differential Weinstein-association effect by experience can be explained by risk mitigation—experienced producers may be buffered from reputational threat (Flammer, 2012; Sharkey, 2014) either because their reputation is already established or because they face little difficulty in attracting talent or financing, even in the absence of change.²⁶

As we discuss in Section 4, another possible reason for producers to hire more female writers is to take advantage of the more favorable industry environment after #MeToo. Such increased opportunities are likely to apply to producers generally, regardless of their association with Weinstein. Results on the control groups (the last two rows in Table 3b) suggest that this factor, though likely present, is not particularly strong, at least in the short run. Except for non-associated, experienced teams with female producers, none of the other control groups significantly increased their hiring of female writers.

Taken together, the collective set of results suggests that the most important mechanisms underlying the change seem to be that #MeToo and the scandal appeal to a group of decision makers—female producers, in particular—who are sympathetic to the cause and face relatively low costs of enacting change (e.g., McCarthy and Zald, 1977; Ely, 1994; Tarrow, 1998). There is also evidence suggesting that risk and/or guilt-mitigation are also likely to be important (Barnett and King, 2008; Galasso and Luo, 2020), which may explain the large response by the small group of production teams that are most intensely associated with Weinstein (who are mostly male), and the small but statistically significant change among the less-experienced all-male production teams.²⁷

²⁵Note that their level of working with female writers was quite high before #MeToo. It seems that not being associated with Weinstein does not give them the extra incentive to change; or not having sufficient resources makes them less competitive in the post-shock world in which competition for female writers is high.

²⁶This result is also consistent with less-experienced all-male production teams being more intrinsically motivated. This is possible if, for example, less-experienced teams are younger and more-convinced by #MeToo's cause.

²⁷The DID coefficient for the subset of projects by production teams that are most intensely associated with Weinstein is 0.199 (p-value < 0.001, where the control group is non-associated producers). Sixty-four percent of these projects are by all-male production teams. When considering these projects only, the DID coefficient is economically larger at 0.230 (p-value < 0.001, the control group

6.3 Impacts on writer experience

Having shown that producers associated with Weinstein have differentially increased their likelihood of working with female writers after the shock, an important question is whether this has led producers to sacrifice writer's experience level. After all, the average experience level of female writers is substantially lower than that of male writers. In particular, 61 percent of the writer-project-level observations by male writers are by those with zero credits, whereas this number is 76 percent for female writers; and the average number of past credits is 0.40 for female writers and 0.96 for male writers (p-value = 0.000).

Columns 1 to 4 in panel (a) of Table 4 present DID regressions as specified in equation (1), except that the dependent variables are measures of writer experience. Because a quarter of the writing teams have more than one writer, we examine the mean, the maximum, the minimum, and the total number of past major writing credits of the writers on a given project. The DID coefficients are all small and statistically insignificant. These results suggest that, on average, associated producers do not appear to sacrifice writers' experience as they shift towards female writers. Column 5 shows that Weinstein-associated producers are also not using a significantly larger writing team. Thus, associated producers appear to maintain the writers' experience level by *replacing* male writers with female writers with similar experience, rather than by expanding the size of the writing team. This result also suggests that our main result of an increase in the likelihood of hiring female writers is not driven by simply adding a "token woman."

A related question is whether the increase in the demand for female writers is concentrated among experienced writers or if it also benefits novice writers. Panel (b) of Table 4 explores this question: the dependent variables in Columns 1-3 are indicators of whether the writing team includes female writers with (i) three or more credits (nine percent of the writer-project observations by female writers); (ii) one to two credits (14 percent); and (iii) zero past credits (77 percent). The results show that the increase is significant both for the most-experienced female writers and for those with no major credits in the past ten years. In Columns 4 and 5, we increasingly relax the experience measure in order to capture the less-experienced ones among writers examined in Column 3. In particular, Column 4 examines whether the project includes female writers with no movie-writing credits (i.e., released by any company at any time before the focal project); and Column 5 examines whether the project includes female writers who, in addition to having no movie-writing credits, also have not sold any scripts since 1998 (according to the DDP database). The results confirm that the increased demand for female writers also benefits novice writers.

is non-associated all-male production teams).

6.4 Impacts on the gender of non-writer roles

Finally, we examine whether the shock also affected the hiring of women in other roles. Columns 1-2 of Table A5 examine the gender of directors using the 2,005 observations (about half of our sample) for which director information is available at the time of the DDP record. Column 1 shows that relative to non-associated producers, Weinstein-associated producers are also more likely to work on projects with the commitment of a female director (p-value is 0.061). While the statistical significance is weaker than the conventional level, the economic magnitude is large, as only 12 percent of projects had female directors in the pre-shock period. Thus, 8.9 percentage points represent an increase of over 70 percent. Column 2 controls for the gender of the writer; the estimated coefficient, though statistically insignificant (p-value is 0.111), is economically non-trivial (representing a 37-percent increase). The smaller estimate reflects a positive correlation between the gender of the writers and that of the directors (the correlation is 0.53).²⁸ Overall, given that directors are often deemed a more expensive role to fill and that directors tend to have substantial power over casting and other creative decisions, these findings point to a broader and more significant change in the industry.

Columns 3-4 show that there are no differential changes by Weinstein association with respect to the share of actresses among the early-committed talent who tend to be top-billed actresses. This result is not entirely surprising given that casting is not yet complete at the time the project enters the database. Furthermore, because all projects include actresses, their relative importance, such as the share of screen and speaking time, is hard to gauge with the count data.

The final two columns show that Weinstein-associated production teams do not differentially change the presence of female producers on their teams. This lack of change might be because the supply of female producers with relevant experience is relatively more constrained, and entry barriers to becoming a producer (e.g., connections to studios, agencies, talent, and other producers) are particularly challenging to overcome quickly. Furthermore, producers tend to be either partners of a production company or executives of a movie studio, which are long-run positions for which turnover is relatively costly.

6.5 Discussion

6.5.1 Limitations

Our paper has a few limitations. First, given that the median time to release is more than two years, we do not observe the final outcome of these projects. However, historical data show that projects with female writers are statistically similar to projects with all-male writers in terms of the probability of release and return on investment conditional on the same budget level (see Table A6). In addition, we do not find any sacrifice of

²⁸This positive correlation is consistent with our discussion in Section 4 that an increased demand for female directors may be partly translated through demand for female writers, either because female writers tend to work on projects that are attractive to other female talent or because they help signal and cultivate a female-friendly work environment.

writing experience by associated producers after the shock. For these reasons, we do not expect the increase in projects with female writers to lead to a lower rate of release, investment returns, or quality.

Second, we also lack data on payments to the writers and do not assess general-equilibrium effects (e.g., competition effect between associated and non-associated producers or potential impacts on the supply of female writers). Our results on writer experience in Section 6.3 suggest an increased demand for female writers among both the most-experienced writers and relatively novice ones. A more intense competition for the most-experienced female writers is likely to bid up payments to this small subset of writers, for which the supply is relatively inelastic, as experience is hard to accumulate quickly. For relatively inexperienced female writers, however, the significant increase in demand may have a more muted impact on payments, as the supply of these writers is likely to be more elastic.

Third, our paper raises the question of whether we would have seen similar changes to Weinstein-associated producers if the scandal had not been accompanied by #MeToo. This question is difficult to answer, as the Weinstein scandal, the movement, and the fact that both took place in the era of social media are all intimately connected. Our conjecture is that the impact of the scandal would have been much more muted in the absence of #MeToo for two reasons. First, there have been numerous historical examples of harassment in Hollywood and other industries, but they have rarely led to convictions or substantive changes.²⁹ In contrast, Weinstein has been sentenced to 23 years in prison for criminal sexual acts and rape. Many commentators suggest that #MeToo, amplified by social media, mobilizes a large number of victims to speak out, which provides evidence that was “much larger than the sum of its parts.”³⁰ Such collective power of women’s voices is at the core of #MeToo and, in our view, fundamental to propelling changes on a broader scale. In addition, the literature on scandal focuses on risk mitigation and reputation management as the primary mechanisms for enacting change, which suggests that all-male production teams would be the most responsive. The fact that we find female producers (both associated and non-associated) to be the primary drivers of change suggests mechanisms beyond risk mitigation, which also suggests that we are unlikely to observe changes of the same magnitude in the absence of #MeToo.³¹

6.5.2 External validity

Our study provides a framework for thinking about whether #MeToo will lead to similar changes in other settings. As *The New York Times* reported, since the start of #MeToo, over 200 men in powerful positions

²⁹The first known sex scandal in Hollywood, for example, dates back to 1921, when comedian Roscoe “Fatty” Arbuckle’s sexual assault of actress Virginia Rappe led to her eventual death. Arbuckle was acquitted after three trials. Source: <https://apnews.com/dea7a81f65e64db5ac9de6f30943a803/Hollywood’s-long-ugly-history-with-sexual-harassment>

³⁰<https://www.nytimes.com/2020/02/24/us/harvey-weinstein-verdict-metoo.html>.

³¹In addition, among producers that are *not* associated with Weinstein or any other producers subsequently accused of sexual misconduct (that is, isolating the effect of being associated with any scandals), we also find that experienced production teams with female producers are the only group that significantly increased their share of projects with female writers after #MeToo.

have been fired for alleged sexual misconduct in various media and entertainment industries. These sectors tend to draw significant media attention and are generally ideologically aligned with #MeToo's call to empower women. They also exhibit collaboration networks similar to those in the movie industry, where central figures have far-reaching industry networks. Thus, as in our setting, we may expect similar association effects through collaboration or social networks. While it is unclear how costly change is in these contexts, the fact that 43% of the replacements for the fired individuals cited in the NYT article are women suggests that the so-called "pipeline problem" may be less constraining than assumed. In contrast, #MeToo may have a limited impact in geographies and sectors that do not typically attract media attention, in which stakeholders tend to be ideologically opposed to the movement's claims (Marquis et al., 2006; McDonnell and Cobb, 2019), or if changes are genuinely costly.

A setting that provides many parallels to our context is high-growth entrepreneurship. Not only is the gender gap also notoriously large, but evidence also suggests that sexual harassment of female founders is prevalent in this industry, which suggests that there is ample room for change.³² Two factors underlie our conjecture that changes in this industry may not be as significant as those in the film industry, at least in the near term. First, allegations of sexual harassment in this industry do not appear to be as highly publicized as such allegations in other industries, perhaps due to the fact that many employees are required to sign non-disclosure agreements. Second, to the extent that a sufficient presence of women in power positions is critical for facilitating change after a scandal, such a presence is extremely scarce in VC firms.³³

Our findings also provide perspective on the types of changes that we may expect from other scandals and social movements and who may affect the change. While the specifics may vary by context, the magnitudes of change should generally depend on the incentives to change and the associated costs. A particularly interesting observation from our study is that the interaction between the scandal and #MeToo is important. The Weinstein scandal not only brought heightened attention to harassment and sexual misconduct, but also highlighted broader and deep-seated social and economic issues surrounding gender inequality. #MeToo, on the other hand, is crucial for disseminating the scandal and for mobilizing the public to share their stories and to support one another. When scandals uncover social and economic issues that resonate with a broad set of stakeholders, they can: 1) extend the scope of changes beyond narrow fixes focused on the perpetrators and problems directly related to the scandal; and 2) motivate people beyond those who are responsible for the problem. Framed in this way, we may expect some scandals (e.g., academic paper retractions) to lead to relatively narrow responses, while others (e.g., the killing of George Floyd and the subsequent Black Lives Matter protests across the country and the world) may have the potential to instigate changes of a greater

³²<https://www.wired.com/story/its-way-too-early-to-talk-about-metoo-and-redemption/>

³³Gompers and Wang (2017b) show that less than ten percent of VC investors were female after 2010.

magnitude by a broader set of individuals and organizations.

7 Conclusion

In this paper, we examine whether the #MeToo movement, spurred by the Harvey Weinstein scandal, led to changes in Hollywood producers' likelihood of working with female writers on new movie projects. We find that Weinstein-associated producers, relative to non-associated producers, are, on average, about 30-percent more likely to work with female writers after the shock than before. Additional results suggest that the most important mechanisms underlying the change seem to be that #MeToo and the scandal appeal to a group of decision makers—female producers, in particular—who are sympathetic to the cause and face relatively low costs of enacting change. There is also evidence suggesting that risk and/or guilt-mitigation are likely to be important in explaining the response by production teams that are most intensely associated with Weinstein and by less-experienced, all-male production teams. Overall, our study shows that in settings where large gender gaps persist due to systemic market frictions and biases, a large and all-encompassing shock such as #MeToo may engender positive and meaningful change.

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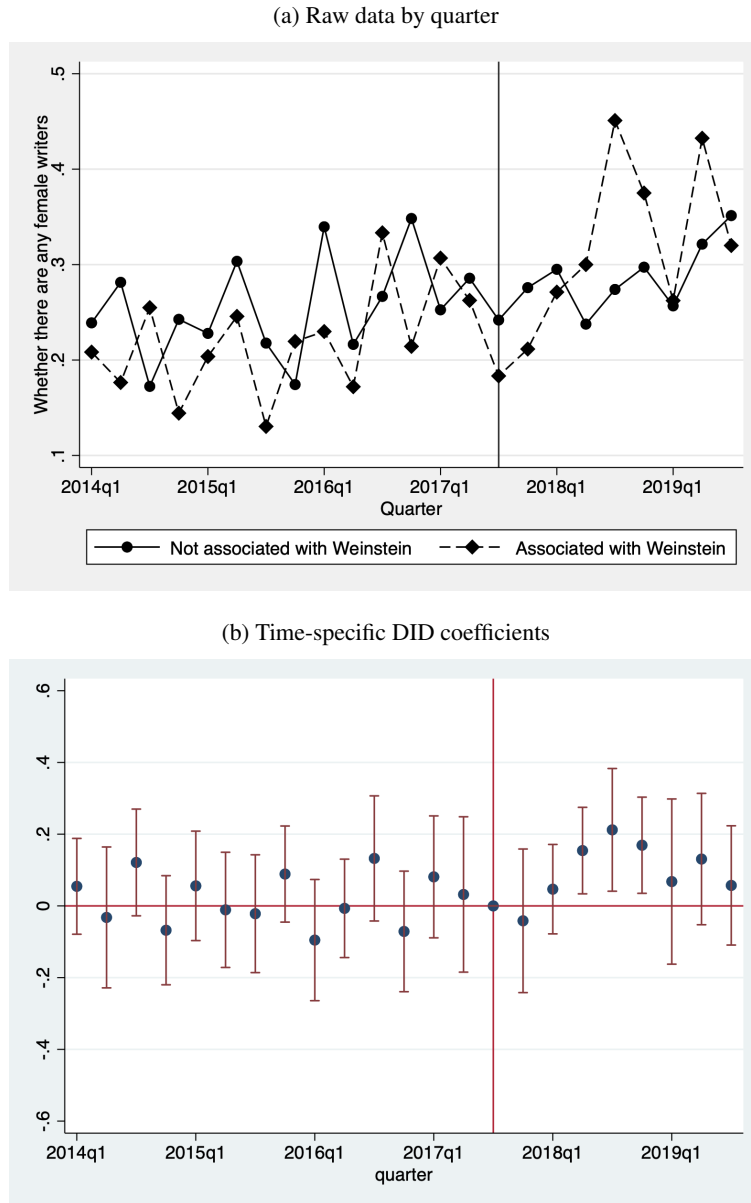
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Figure 1: Whether producers work with female writers, by Weinstein association



Note: Panel (a) is based on raw data and plots the likelihood of a project including any female writers for production teams with versus without any Weinstein association for a given quarter. Panel (b) plots quarter-specific DID coefficients estimated from the following equation: $Y_i = \alpha + \sum_t \delta_t \text{Weinstein association}_i \times y_t + \gamma \text{Weinstein association}_i + y_t + \beta X_i + \varepsilon_i$, with the same control variables used in Column 2 of Table 2. The vertical line indicates the quarter before the reporting of the scandal and #MeToo.

Table 1: Summary statistics

(a) Baseline sample							
	Weinstein association = 0			Weinstein association = 1			(p-value)
	Obs	Mean	SD	Obs	Mean	SD	
Include female writers	2380	0.26	0.44	1808	0.25	0.43	(0.41)
Post shock	2380	0.25	0.43	1808	0.27	0.44	(0.29)
Include female producers	2380	0.48	0.50	1808	0.53	0.50	(0.00)
Producer experience	2380	6.35	7.47	1808	11.90	9.31	(0.00)
Prior awards	2380	0.32	0.99	1808	1.23	2.07	(0.00)
Producer exp. w/ major studios	2380	0.50	0.43	1808	0.66	0.35	(0.00)
Producer exp. w/ top agencies	2380	0.55	0.39	1808	0.76	0.25	(0.00)
Producer team size	2380	2.79	1.70	1808	3.85	2.09	(0.00)
Writer experience	2380	0.80	1.54	1808	1.03	1.71	(0.00)
Writer team size	2380	1.27	0.50	1808	1.24	0.49	(0.08)
Top 4 agencies	2380	0.48	0.50	1808	0.60	0.49	(0.00)
Original	2380	0.65	0.48	1808	0.65	0.48	(0.92)
Complete script	2380	0.59	0.49	1808	0.56	0.50	(0.03)
Talent attached	2380	0.54	0.50	1808	0.59	0.49	(0.00)
Rights purchase	2380	0.17	0.38	1808	0.16	0.37	(0.40)

(b) Matched sample							
	Weinstein association = 0			Weinstein association = 1			(p-value)
	Obs	Mean	SD	Obs	Mean	SD	
Include female writers	1029	0.23	0.42	1029	0.24	0.43	(0.57)
Post shock	1029	0.23	0.42	1029	0.23	0.42	(1.00)
Include female producers	1029	0.51	0.50	1029	0.51	0.50	(1.00)
Producer experience	1029	9.54	8.03	1029	9.17	7.55	(0.28)
Prior awards	1029	0.41	1.00	1029	0.41	1.00	(1.00)
Producer exp. w/ major studios	1029	0.66	0.39	1029	0.66	0.36	(0.79)
Producer exp. w/ top agencies	1029	0.74	0.28	1029	0.74	0.28	(0.82)
Producer team size	1029	3.42	1.79	1029	3.50	1.76	(0.29)
Writer experience	1029	0.97	1.71	1029	0.92	1.65	(0.56)
Writer team size	1029	1.28	0.51	1029	1.24	0.48	(0.06)
Top four agencies	1029	0.57	0.50	1029	0.57	0.50	(0.82)
Original	1029	0.62	0.48	1029	0.65	0.48	(0.25)
Complete script	1029	0.57	0.50	1029	0.55	0.50	(0.51)
Talent attached	1029	0.52	0.50	1029	0.58	0.49	(0.01)
Rights purchase	1029	0.16	0.37	1029	0.16	0.37	(0.91)

Note: Panel (a) summarizes variables by Weinstein association for our baseline sample. The last column reports the p-values of two-sample t-tests for equal means. Panel (b) summarizes the matched sample, which is generated based on the coarsened exact matching method (Iacus et al., 2012). The matching is based on the characteristics of the production teams—Producer experience, Prior awards, Producer exp. w/ major studios, Producer exp. w/ top agencies, Include female producers, and Producer team size—and Post-shock. The p-values show that the two groups of projects are well-balanced along these characteristics and most of the other variables. Top four agencies indicate that the writer is represented by one of the four largest talent agencies in Hollywood; Original indicates that the script is based on original content rather than on existing properties such as books and short stories; Talent attached indicates that some directing and/or acting talent was committed at the time of the record; and Rights purchase indicates that the transaction is about adaptation rights, and the writers are the authors or creators of the pre-existing properties. Other control variables include a set of dummy variables indicating 15 genres and 28 movie studios.

Table 2: Weinstein-association effect on whether producers work with female writers

DV Sample	Whether have female writers					
	Baseline sample			Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)
W Association \times Post Shock	0.079*** (0.022)	0.089*** (0.027)		0.124*** (0.035)	0.102*** (0.033)	
W Association	-0.035 (0.025)	-0.023 (0.024)		-0.017 (0.019)	-0.012 (0.016)	
W Association (low) \times Post Shock			0.078*** (0.027)			0.082** (0.037)
W Association (medium) \times Post Shock			0.095** (0.035)			0.126*** (0.041)
W Association (high) \times Post Shock			0.179*** (0.037)			0.268*** (0.046)
W Association (low)			-0.009 (0.018)			-0.005 (0.014)
W Association (medium)			-0.042 (0.035)			-0.022 (0.028)
W Association (high)			-0.070* (0.037)			-0.171*** (0.041)
Whether includes female producers		0.162*** (0.009)	0.162*** (0.010)		0.175*** (0.016)	0.175*** (0.017)
Producer experience		0.001* (0.001)	0.001** (0.001)		0.001 (0.001)	0.001 (0.001)
Prior awards		0.004 (0.005)	0.004 (0.005)		0.017* (0.009)	0.016* (0.009)
Other controls	N	Y	Y	N	Y	Y
Genre FE	N	Y	Y	N	Y	Y
Studio FE	N	Y	Y	N	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y
Observations	4188	4188	4188	2058	2058	2058
R^2	0.015	0.156	0.156	0.024	0.182	0.185

Note: OLS regressions. The dependent variable of all columns is whether the project includes at least one female writer. Columns 1-3 use the baseline sample, and Columns 4-6 use the matched sample. The matching is based on the characteristics of the production teams—Producer experience, Prior awards, Producer exp. w/ major studios, Producer exp. w/ top agencies, Include female producers, and Producer team size—and Post shock. W Association (low) = 1 if total number of past collaborations with Weinstein is equal to one; W Association (medium) = 1 if total number of past collaborations with Weinstein is more than two but less than or equal to six; and W Association (high) = 1 if total number of past collaborations with Weinstein is more than six. Other controls include Producer experience with major studios; Producer experience with top agencies; Dummies indicating the number of writers in the team; Producer team size; Top four agencies; Original; Complete script; Talent attached; and Rights purchase. Standard errors clustered at the studio level (in parentheses). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Heterogeneity in the Weinstein-association effect

(a) By whether the production team has female producers

DV Sample	Whether have female writers			
	Without female producers	With female producers	Female producer experience $> \frac{1}{4}$	Female producer proportion $> \frac{1}{4}$
	(1)	(2)	(3)	(4)
W Association \times Post Shock	0.057* (0.031)	0.133*** (0.045)	0.210** (0.078)	0.173*** (0.054)
W Association	-0.031 (0.021)	-0.012 (0.034)	-0.048 (0.041)	-0.023 (0.034)
Other controls	Y	Y	Y	Y
Genre FE	Y	Y	Y	Y
Studio FE	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y
Observations	2076	2112	1147	1784
R^2	0.133	0.159	0.199	0.172
E(DV non-associated producers pre shock)	0.178	0.332	0.382	0.353
E(DV non-associated producers post shock)	0.175	0.397	0.412	0.427

(b) By whether the production team has female producers and by producer experience

DV Sample	Whether have female writers			
	Without female producers		With female producers	
	Less-experienced	More-experienced	Less-experienced	More-experienced
	(1)	(2)	(3)	(4)
W Association \times Post Shock	0.081*** (0.024)	0.050 (0.063)	0.303*** (0.041)	-0.055 (0.084)
W association	-0.063*** (0.022)	-0.019 (0.019)	-0.022 (0.021)	0.004 (0.044)
Other controls	Y	Y	Y	Y
Genre FE	Y	Y	Y	Y
Studio FE	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y
Observations	1055	1021	1046	1066
R^2	0.144	0.179	0.179	0.204
E(DV non-associated producers pre shock)	0.182	0.171	0.366	0.273
E(DV non-associated producers post shock)	0.180	0.163	0.363	0.478

Note: Split-sample OLS regressions. The dependent variable of all columns is whether the project includes at least one female writer. In Panel (a), Column 1 uses all production teams with no female producers; Column 2 uses all production teams including at least one female producer; Column 3 uses production teams for which the total experience of all female producers divided by the total experience of all producers is greater than 1/4; and Column 4 uses production teams for which the proportion of female producers is greater than 1/4. In Panel (b), more-experienced production teams are those for which the (maximum) experience of producers in the team is greater than six (which is the median experience); and less-experienced teams are those for which the (maximum) experience of the producers in the team is less than or equal to six. All regressions use the same set of controls as in Column 2 of Table 2. Standard errors clustered at the studio level (in parentheses). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Weinstein-association effect on the experience of writers on a project

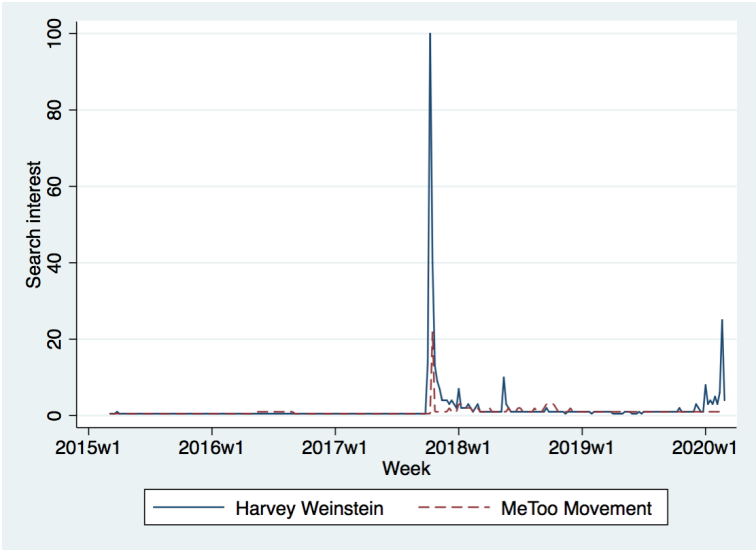
(a) Average experience, measured by major credits in past 10 years					
DV	Writer team experience defined as				Num of writers
	mean	max	min	total	
	(1)	(2)	(3)	(4)	(5)
W Association \times Post Shock	-0.014 (0.073)	-0.013 (0.058)	-0.021 (0.097)	0.009 (0.084)	0.011 (0.026)
W Association	-0.010 (0.050)	0.009 (0.046)	-0.026 (0.058)	-0.075 (0.062)	-0.047* (0.023)
All controls	Y	Y	Y	Y	Y
Observations	4188	4188	4188	4188	4188
R^2	0.164	0.169	0.162	0.185	0.057

(b) Distribution of experience					
DV	Include female writers with				
	≥ 3 Major credits in past 10 years	1-2	zero	zero past credits	zero past credits & zero past sales
	(1)	(2)	(3)	(4)	(5)
W Association \times Post Shock	0.019* (0.011)	-0.011 (0.016)	0.076*** (0.018)	0.062*** (0.015)	0.041*** (0.013)
W Association	-0.005 (0.006)	0.013** (0.006)	-0.029 (0.018)	-0.019 (0.013)	-0.022* (0.012)
All controls	Y	Y	Y	Y	Y
Observations	4188	4188	4188	4188	4188
R^2	0.048	0.047	0.132	0.129	0.142

Note: OLS regressions. In Columns 1-4 of Panel (a), the dependent variable is the experience of the writing team, which is measured by the mean experience of all the writers on the team, the maximum, the minimum, and the total experience. For any individual writer, we use our main measure of writer experience, which counts the number of writing credits that he/she obtained in the previous ten years that are distributed theatrically by the top-30 distributors. The dependent variable of the last column is the total number of writers on the team. In Columns 1-3 of Panel (b), we maintain the same experience measure for individual writers as in Panel (a), and we use a dummy variable indicating whether the team includes female writers with more than three, one to two, or zero major writing credits in the past ten years. In Column 4 of Panel (b), the dependent variable is a dummy variable indicating that the team includes female writers with zero past writing credits for movies released in any year before the focal project and by any company; and Column 5 uses a dummy variable indicating that the team includes female writers who, in addition to having zero past credits as measured in Column 4, have zero past sales recorded in the DDP database since 1998. All regressions use the same set of controls as in Column 2 of Table 2, except for writer experience, as it is now the dependent variable. Standard errors clustered at the studio level (in parentheses). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Online Appendices (not for publication)

Figure A1: Google search interests



Note: Obtained from Google Trend for two keywords—Harvey Weinstein and Me Too Movement—in the United States. Numbers represent search interest relative to the highest point on the chart for the given region and time. A value of 100 is the peak popularity for the term.

Table A1: Correlation table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Post shock	1	1.00														
Include female writers	2	0.07	1.00													
W Association	3	0.02	-0.01	1.00												
Include female producers	4	0.02	0.20	0.05	1.00											
Producer experience	5	-0.02	-0.03	0.31	-0.02	1.00										
Prior awards	6	0.01	0.02	0.28	0.05	0.51	1.00									
Producer exp. w/ major studios	7	-0.01	-0.01	0.20	0.10	0.37	0.16	1.00								
Producer exp. w/ top agencies	8	0.01	-0.03	0.29	0.12	0.39	0.20	0.65	1.00							
Producer team size	9	0.07	-0.02	0.27	0.33	0.24	0.10	0.23	0.35	1.00						
Writer experience	10	-0.01	-0.15	0.07	-0.05	0.21	0.10	0.17	0.16	0.03	1.00					
Writer team size	11	0.01	0.03	-0.03	-0.02	0.03	0.04	0.01	0.02	0.06	0.11	1.00				
Top four agencies	12	0.02	-0.05	0.12	-0.02	0.21	0.10	0.27	0.31	0.10	0.26	0.07	1.00			
Original	13	0.00	-0.06	0.00	-0.02	-0.02	-0.03	-0.09	-0.04	0.02	-0.03	0.03	-0.03	1.00		
Complete script	14	0.04	-0.12	-0.03	-0.04	-0.04	-0.06	-0.08	-0.06	0.02	0.05	0.08	0.07	0.57	1.00	
Talent attached	15	0.04	-0.09	0.05	0.00	0.01	0.03	-0.15	-0.07	0.11	0.12	0.08	0.09	0.12	0.20	1.00
Rights purchase	16	-0.03	0.16	-0.01	0.06	-0.02	0.03	0.02	0.00	-0.06	-0.19	-0.09	-0.25	-0.52	-0.30	1.00

Note: Baseline sample.

Table A2: Summary statistics of producer-level samples

(a) All producers							
	Weinstein association = 0			Weinstein association = 1			(p-value)
	Obs	Mean	SD	Obs	Mean	SD	
Producer experience	4787	1.73	3.86	643	5.46	6.54	(0.00)
Prior awards	4787	0.07	0.41	643	0.37	0.98	(0.00)
Producer exp. w/ major studios	4787	0.18	0.34	643	0.36	0.38	(0.00)
Producer exp. w/ top agencies	4787	0.13	0.30	643	0.27	0.36	(0.00)
Female producer	4787	0.26	0.44	643	0.23	0.42	(0.05)

(b) Matched producers							
	Weinstein association = 0			Weinstein association = 1			(p-value)
	Obs	Mean	SD	Obs	Mean	SD	
Producer experience	608	5.40	7.76	608	5.01	5.73	(0.32)
Prior awards	608	0.25	0.90	608	0.31	0.85	(0.27)
Producer exp. w/ major studios	608	0.37	0.39	608	0.36	0.39	(0.82)
Producer exp. w/ top agencies	608	0.27	0.38	608	0.27	0.37	(0.94)
Female producer	608	0.24	0.43	608	0.23	0.42	(0.74)

Note: There are 5,430 unique producers in our sample. Panel (a) summarizes their characteristics by Weinstein association. The person-level characteristics are defined based on their resumes before the Weinstein scandal. Panel (b) summarizes the matched sample, where the matching is based on Producer experience, Prior awards, Producer exp. w/ major studios, and Producer exp. w/ top agencies. The t-tests show that the two groups of producers are well-balanced in their characteristics.

Table A3: Weinstein-association effect: Robustness to individual producer fixed effects

DV Sample	Whether have female writers			
	All		Matched	
	(1)	(2)	(3)	(4)
W Association \times Post Shock	0.041** (0.020)	0.042* (0.024)	0.091*** (0.019)	0.094*** (0.024)
Writer experience		-0.030*** (0.006)		-0.027*** (0.006)
Producer experience		0.006*** (0.002)		0.003 (0.004)
Prior awards		-0.006 (0.026)		0.031 (0.031)
Producer exp. w/ top agencies		-0.017 (0.019)		0.006 (0.032)
Producer exp. w/ major studios		0.014 (0.026)		0.093 (0.080)
Two-writer team		0.066** (0.029)		0.058** (0.023)
Three-writer team		0.157*** (0.037)		0.130** (0.049)
Four (and more)-writer team		0.094 (0.244)		0.047 (0.286)
Total number of producers		-0.006* (0.003)		-0.005 (0.003)
Other controls	N	Y	N	Y
Studio FE	N	Y	N	Y
Quarter FE	Y	Y	Y	Y
Individual Producer FE	Y	Y	Y	Y
Observations	10199	10199	4262	4260
R^2	0.333	0.382	0.277	0.336

Note: OLS regressions at the producer-project level, including individual producer fixed effects. Columns 1-2 use all producers in our sample, and Columns 3-4 use matched producers based on their pre-shock characteristics—Producer experience, Prior awards, Producer exp. w/ major studios, and Producer exp. w/ top agencies. Two-way clustered standard errors at the studio and the project level (in parentheses). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A4: Weinstein-association effect on the quantity of projects

Sample DV	All			Matched		
	Projects	Projects w/ female writers	Projects w/o female writers	Projects	Projects w/ female writers	Projects w/o female writers
	(1)	(2)	(3)	(4)	(5)	(6)
W Association \times Post Shock	0.024 (0.062)	0.079 (0.113)	0.003 (0.066)	0.223*** (0.085)	0.411*** (0.150)	0.148 (0.093)
Producer experience	0.044*** (0.010)	0.073*** (0.017)	0.039*** (0.011)	0.035*** (0.011)	0.058*** (0.020)	0.032** (0.012)
Prior awards	0.166** (0.065)	0.147 (0.102)	0.172** (0.073)	0.202** (0.081)	0.379*** (0.120)	0.148* (0.088)
Producer exp. w/ major studios	0.654*** (0.103)	0.537** (0.244)	0.686*** (0.111)	0.669*** (0.257)	1.540*** (0.584)	0.537** (0.247)
Producer exp. w/ top agencies	1.334*** (0.096)	1.669*** (0.201)	1.227*** (0.102)	1.557*** (0.189)	2.220*** (0.385)	1.332*** (0.191)
Producer FE	Y	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y
Observations	124867	45034	102557	27968	12535	24058

Note: Fixed-effects Poisson regressions using balanced panels at the producer-quarterly level. Columns 1-3 use all producers in our sample, and Columns 4-6 use matched producers based on their pre-shock characteristics—Producer experience, Prior awards, Producer exp. w/ major studios, and Producer exp. w/ top agencies. For the three columns for each sample, the dependent variables are the number of projects, the number of projects that include at least one female writer, and the number of projects that include no female writers set up by a given producer in a given quarter, respectively. We use the Quasi-ML method to compute robust standard errors, which produces consistent estimates under relatively weak assumptions, allowing for overdispersion and a large mass point at zero for the dependent variable. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Weinstein-association effect on the gender of other roles

DV	Whether female director		Share of actresses		Female producers	
	(1)	(2)	(3)	(4)	whether any (5)	share (6)
W Association × Post Shock	0.089* (0.045)	0.050 (0.030)	0.034 (0.031)	0.009 (0.022)	-0.020 (0.023)	0.006 (0.020)
W Association	-0.025 (0.029)	-0.012 (0.019)	-0.025 (0.031)	-0.027 (0.024)	-0.028 (0.017)	-0.035*** (0.010)
Whether includes female writers		0.434*** (0.043)		0.371*** (0.031)		
Whether includes female producers	0.139*** (0.012)	0.064*** (0.010)	0.182*** (0.017)	0.124*** (0.016)		
Two-writer team	-0.014* (0.007)	-0.047*** (0.013)	-0.043* (0.022)	-0.074*** (0.016)	-0.016 (0.010)	-0.024*** (0.008)
Three-writer team	-0.012 (0.032)	-0.097*** (0.033)	-0.016 (0.037)	-0.110* (0.056)	-0.023 (0.039)	-0.027 (0.020)
Four (or more)-writer team	-0.093 (0.089)	-0.247 (0.186)	0.000 (0.000)	0.000 (0.000)	-0.120 (0.102)	-0.142*** (0.022)
Total number of producers	-0.012*** (0.003)	-0.007*** (0.002)	-0.027*** (0.006)	-0.021*** (0.003)	0.091*** (0.002)	0.006*** (0.002)
Writer experience	-0.013*** (0.002)	-0.000 (0.002)	-0.013 (0.009)	0.000 (0.008)	-0.009** (0.003)	-0.010*** (0.002)
Producer experience	0.000 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.002 (0.001)	-0.008*** (0.001)	-0.006*** (0.001)
Prior awards	0.003 (0.006)	0.005 (0.004)	-0.004 (0.008)	-0.003 (0.007)	0.024*** (0.007)	0.014** (0.006)
Other controls	Y	Y	Y	Y	Y	Y
Genre FE	Y	Y	Y	Y	Y	Y
Studio FE	Y	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y
Observations	2005	2005	1123	1123	4188	4188
R ²	0.123	0.342	0.177	0.289	0.175	0.096

Note: OLS regressions. Columns 1-2 use observations for director information that is available at the time of the DDP record. Because there is almost always a single director, we use a dummy variable indicating whether the director is female as the dependent variable. Columns 3-4 use observations for which actor/actress information is available, and because there may be multiple actors/actresses attached, we use the share of females as the dependent variable. Using an indicator of whether an actress is included does not change the results. Columns 5 and 6 use all the observations, and the dependent variable indicates whether any female producers are included and, if so, the share of female producers. Standard errors clustered at the studio level (in parentheses). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Release and performance: Historical data

(a) Likelihood of release				
	Release (1)	Release (2)	Release (3)	Release (4)
At least one female writer	-0.001 (0.013)	0.011 (0.013)	0.010 (0.012)	0.007 (0.013)
Major writer experience		0.047*** (0.004)	0.036*** (0.003)	0.036*** (0.003)
At least one female producer			0.014 (0.009)	0.014 (0.009)
Major producer experience			0.006*** (0.001)	0.006*** (0.001)
Other controls	N	N	Y	Y
Genre FE	N	N	Y	Y
Year FE	N	N	Y	Y
Studio FE	N	N	N	Y
<i>N</i>	6415	6415	6270	6268
R-squared	0.000	0.025	0.072	0.080

(b) Box office performance and production budget						
	OLS regressions			Quantile regressions		
	log(Box Office) (1)	log(Budget) (2)	log(ROI) (3)	25th ROI (4)	50th ROI (5)	75th ROI (6)
At least one female writer	-0.208* (0.106)	-0.268*** (0.050)	-0.033 (0.142)	-0.088 (0.071)	0.017 (0.123)	0.267 (0.396)
At least one female producer	-0.345* (0.197)	-0.107 (0.067)	0.086 (0.099)	0.006 (0.062)	0.054 (0.085)	-0.045 (0.313)
log(Budget)			-0.057 (0.083)	0.131*** (0.035)	0.153*** (0.035)	-0.208 (0.192)
Other controls	Y	Y	Y	Y	Y	Y
Other investment controls	N	N	Y	Y	Y	Y
Release Year FE	Y	Y	Y	Y	Y	Y
Studio FE	Y	Y	Y	Y	Y	Y
<i>N</i>	970	723	702	725	725	724

Note: Panel (a) shows OLS regressions using records from the Done Deal Pro database from 1998 to 2013 (that is, before the start of our sample period). The dependent variable is whether the script is theatrically released. Other controls for panel (a) include Top Agency; Complete script; Original; Talent Attached; and Genre dummies. Panel (b) uses movies that are released. Columns 2-6 in this panel use released movies for which production budget information is available. ROI is defined as the ratio between worldwide box office revenues and production budget. Other controls for panel (b) include whether a movie belongs to a franchise in addition to all variables controlled for in panel (a). Other investment controls include star score (an index created by the DDP database based on the total box office revenues of movies in which a given actor/actress performed); award-winning cast; the number of screens during the opening weekend; and a seasonality index. Standard errors are clustered by studio. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Appendix B. a conceptual framework

In this appendix, we provide more-formal reasoning for our conceptual framework.³⁴ A producer’s choice of working with a given writer may reflect or correlate with many different reasons. For the purpose of our paper, we categorize these reasons into two buckets: reasons related to harassment and gender discrimination issues and those that are not.

Let b_i be the *net* payoff from working on projects with a writer of gender $i \in \{\text{Female, Male}\}$ due to considerations that are *not* related to harassment and gender discrimination issues. This net payoff may capture both economic cost-benefit considerations—such as the expected quality of the writer’s idea and his/her craft, various cost factors, and his/her ability to attract other talent and investors—and intrinsic considerations such as in-group preference.

Let p_i be the probability of sexual harassment and gender discrimination issues that may arise at any time during the development and production process of a project for which the writer’s gender is i . We assume that the probability of harassment issues is lower for projects with female writers;³⁵ that is,

Assumption 1. $p_F < p_M$.

Let H be the expected cost due to harassment and discrimination issues that stem from the focal project.³⁶ One way to micro-found H is $H = \alpha L + \delta C$, where α is the probability that a given harassment issue will be publicly exposed, and L is the expected cost given such exposure, including the monetary and time costs associated with lawsuits, loss in revenue, and reputation damages. In addition, the producer may need to incur harassment-related costs before any incident actually happens and is exposed. For example, the producer may have to make extra efforts to persuade talent or investors to work with him or pay a premium to compensate the risk they undertake, as talent and investors also face their own reputation and legal costs, C , in case of harassment issues. Because p_i is not perfectly observable, the market will respond according to the perception of such risk. A reduced-form way to represent such a perception is $p_i \delta$, where δ is equal to one if the market has an unbiased perception, is greater than one if the market perceives a higher risk than the actual level, and less than one otherwise.

A producer’s expected payoff from working with a writer of gender i can be written as:

$$b_i - p_i H,$$

With this simple setup, producers will work on projects with female writers if

$$b_F - p_F H \geq b_M - p_M H \Rightarrow b_F - b_M - (p_F - p_M)H \geq 0.$$

To translate the above decision rule to an empirical likelihood of working with female writers, we add a

³⁴This model is adapted from the appendix model in Galasso and Luo (2019) [“Risk-Mitigating Technologies: the Case of Radiation Diagnostic Devices,” September 2019, NBER Working Paper No. 26305.]

³⁵As we discuss in the paper, research suggests that a greater presence of women tends to promote more respectful work environments, where harassment is less likely to flourish and vulnerable parties are more comfortable reporting it (Dobbin and Kalev, 2017). Projects by female writers might be more attractive to other female talent; and the presence of female writers may also help signal the producer’s commitment to creating better work culture and norms, thereby lowering the costs of recruiting other women.

³⁶These costs will apply to the producer’s focal and future projects.

random parameter $\varepsilon \sim F$ to the right-hand side of the above equation. Thus,

$$P(\text{work with female writers}) = P(b_F - b_M - (p_F - p_M)H \geq \varepsilon) = F(b_F - b_M + (p_M - p_F)H). \quad (\text{A1})$$

B.1. Impact of the Weinstein scandal and #MeToo

In the context of this model, the Weinstein scandal and #MeToo may affect a producer’s expected payoff by (i) increasing H ; and/or (ii) increasing b_F .³⁷

An increase in H captures the risk-mitigation incentive as discussed in Section 4 in the paper. As discussed, the likelihood of exposure of harassment issues (α) increases after #MeToo, both because public scrutiny has increased and because the costs of sharing personal experience and reporting crime seem to have decreased (Levy and Mattsson, 2019). Furthermore, various stakeholders may also be more likely to penalize projects known to or perceived to have these abusive issues (that is, L is also likely to increase). In addition, the scandal and #MeToo may also have increased the overall perception of the prevalence of harassment issues (that is, δ will increase), and, for the same reasons discussed above for L , C will also likely increase, as it reflects the expected costs associated with such issues borne by talent and investors.

An increase in b_F may capture both an increase in the intrinsic motivations and a change in the economic cost-benefit considerations due to a changing industry environment. As discussed in the paper, the increased awareness and saliency of harassment and gender-inequality related issues may have triggered guilt or sympathy in the producers. Regardless of the precise reasons, these events may increase the producer’s preference for projects involving female talent; that is, the intrinsic components in b_F become higher after #MeToo. Similarly, the net payoff b_F may also increase because the greater demand for projects with female writers or with content that features strong women leads by studios and other talent after #MeToo makes it easier to get them on board for projects by female writers relative to projects by male writers.

B.2. The association with Weinstein

As discussed in the paper, it is difficult to find a control group that has not been exposed to the #MeToo movement. We use variation in the association with Weinstein to investigate the specific channel through which the movement may spur change—via the association with Weinstein and the scandal. In particular, we posit that both the increase in H and the increase in b_F would be greater for Weinstein-associated producers than for non-associated producers.

The greater increase in H for Weinstein-associated producers may arise for two reasons. First, as explained in the paper, associated producers received significantly greater scrutiny, implying a greater increase in α for them. Second, the public and various stakeholders may infer that associated producers are more likely to exhibit similar behaviors and/or a high tolerance for such behaviors than non-associated producers. This suggests that the increase in δ is also greater for associated producers after #MeToo.

As discussed in the paper, the increase in b_F may also be greater for Weinstein-associated producers due to intrinsic motivations. People who have worked with Weinstein are more likely to be aware of his

³⁷Note that for simplicity, we assume that the gender-specific probabilities of harassment incidences, p_i ’s, do not change, even though they are likely to decrease after the shock. It seems more intuitive that such decrease, if any, will be greater for projects with male writers than for projects with female writers. If so, this force alone, should lead to a decrease in the likelihood of projects with female writers, which is against what we find in the paper.

behavior and the widespread abusive culture or are even complicit in such behavior themselves, which all likely to lead to a greater level of guilt. It is also possible that, without necessarily feeling more guilty, past collaborations with Weinstein prompt them to pay more attention to these issues than non-associated producers and, consequently, become more cognizant of and more sympathetic to the movement's cause.

Under the premise that the increase in H and/or the increase in b_F are greater for Weinstein-associated producers than for non-associated producers, we have the following prediction:

Prediction 1. *Relative to non-associated producers, associated producers have a greater likelihood of working with female writers after #MeToo than before.*

Proof. The above result is straightforward. Take the derivative of equation (A1) with respect to H :

$$\frac{\partial P(\text{work with female writers})}{\partial H} = f(b_F - b_M + (p_M - p_F)H)(p_M - p_F),$$

which is positive under Assumption 1.

Similarly, take the derivative of equation (A1) with respect to b_F , we get

$$\frac{\partial P(\text{work with female writers})}{\partial b_F} = f(b_F - b_M + (p_M - p_F)H) > 0.$$

□

Thus, after #MeToo, we expect the likelihood of working with female writers to increase for Weinstein-associated producers, and this increase could be driven by either an increase in H and/or an increase in b_F .

B.3. Heterogeneity in the Weinstein-association effect

Prediction 1 shows that, on average, #MeToo is likely to have a greater impact for Weinstein-associated producers than for non-associated producers. But this differential change by Weinstein association may be heterogeneous, because different producers may face different extents of increase in H and/or b_F . In addition, the level of b_F may be different for different producers. For example, some producers face a lower cost of identifying and recruiting female writers than others. Such a cost advantage may or may not be changed by #MeToo. But even if it is not changed by #MeToo, it will affect the magnitude of change, holding the increase in the incentives to change constant. Thus,

Prediction 2. *The Weinstein-association effect is greater when the increase in H is greater or when the increase in b_F is greater. Moreover, when the proportion of female writers before #MeToo is lower than 50 percent, the W-association effect is also greater when the level of b_F is higher (e.g., for producers facing a lower cost of change), holding the increase in H (or b_F) constant.*

Proof. The first two results in the above prediction follow directly from the result that $\frac{\partial P(\text{work with female writers})}{\partial H} > 0$ (under Assumption 1) and $\frac{\partial P(\text{work with female writers})}{\partial b_F} > 0$. The third result comes from the following two second derivatives.

First, take the second derivative of equation (A1) with respect to b_F , we get

$$\frac{\partial^2 \text{P(work with female writers)}}{\partial b_F^2} = f'(b_F - b_M + (p_M - p_F)H)$$

The above expression may be positive or negative, depending on the sign of the derivative of the density function f' . For a symmetric density function (e.g., in the case of a normal distribution), $f' > 0$ for $\varepsilon < 0$ and $f' < 0$ for $\varepsilon > 0$. The gender gap in this industry is large before scandal; that is, the proportion of female writers is lower than 50 percent. This suggests that $(b_F - b_M + (p_M - p_F)H)$ is negative, which, in turn, implies that $f'(\cdot) > 0$. Thus, $\frac{\partial^2 \text{P(work with female writers)}}{\partial b_F^2} > 0$.

Second, take the cross-partial with respect to H and b_F , we get

$$\frac{\partial^2 \text{P(work with female writers)}}{\partial H \partial b_F} = f'(b_F - b_M + (p_M - p_F)H)(p_M - p_F),$$

which is also positive because $f' > 0$ when the starting proportion of female writers is relatively small. □

In Section 6.2, we explore potential heterogeneity in the Weinstein-association effect along a number of dimensions, including the gender composition of the production team and producer experience. We interpret these results by how these dimensions may reflect (i) variation in the increase in H ; (ii) variation in the increase in b_F ; and (iii) variation in the overall level of b_F .