Transnational Information Shocks*

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Abstract

Secrecy and anonymity are hallmarks of offshore finance, yet activists and civil society have sought to combat secrecy through information provision. How do transnational information shocks affect the governance of offshore finance? While major leaks like the 2016 Panama Papers and 2021 Pandora Papers did not directly lead to major public policy changes, they may have led to changes in the private governance behaviour of firms through their internal operations. To assess such effects, and the potential mechanisms behind them, we seek to evaluate the impact of these leaks on firms' recruiting of due diligence and anti-money laundering (AML) personnel. We measure recruitment using data from Lightcast on the near universe of online job postings in the United States beginning in 2012. Among a sample of financial firms, we compare AML hiring before and after each leak, and against "control" recruitment fields for the same firms over the same period. For the 2016 Panama Papers leak, we find a significant short-run increase in AML-related hiring. We assess robustness by also comparing against non-financial firms, and further also assess hiring trends among the "Big Four" accounting firms in order to capture contracted-out hiring. Finally, we assess the mechanisms through which information shocks operate by testing for heterogeneous effects across firms with varying forms of exposure to the information in the leaks. Effects of the Panama Papers leak are smaller among publicly-implicated firms, but larger among firms with higher total deposits. We also find no heterogeneous effects by varying of stakeholder exposure. We suggest this evidence, taken as a whole, is most consistent with information shocks having greater effects through shaping issue salience and enabling problem-solving, rather than through publicly revealing new information.

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1 Introduction

Everyone remembers Pablo Escobar and El Chapo, but we forget about Rafael Caro Quintero. Considered the first Mexican drug billionaire, and featured in Netflix's Narcos series, the man commanded the Guadalajara Cartel. He was imprisoned in Mexico after courts convicted him of participating in the torture and killing of US DEA agent Kiki Camarena in 1984 - Camarena had helped uncover the El Bufalo ranch where government authorities apparently went on to burn $160 million worth of marijuana. Before they could arrest him, Quintero escaped to his Costa Rican mansion that was bought after whitewashing his money with the help of offshore legal service providers. The individual that oversaw that purchasing process, Ramon Fonseca, said "Compared to Quintero even Pablo Escobar was a baby!", citing his fears of potential retaliation by Quintero as reason enough to avoid cooperating with the Costa Rican government.[1]

We know about Quintero's offshore dealings because of the Panama Papers. Released on April 3rd, 2016 after a whistle-blower shared 2.6 terabytes worth of data with journalist Bastian Obermayer. Coordinated by the International Consortium of Investigative Journalists (ICIJ), the data detailed 40 years of business by Panamanian firm Mossack Fonseca who, at the time of the leaks, ranked amongst the top five offshore incorporation providers in the world. The leak is our most granular look at how politicians, drug-dealers, arms traffickers, and just the regular super-rich protect their wealth. "John Doe", who worked at Mossack Fonseca, and ICIJ joined an important lineage of the democratic tradition that includes the likes of Sergei Magnitsky and Edward Snowden - releasing confidential or private information to reveal the wrongdoings of the powerful with the hope of reforming behavior in the process.

The Panama Papers has gone on to inspire a host of new leaks such as the Pandora Papers or the whistleblowing by Howard Wilkinson that alerted us to Danske Bank's $200 billion portfolio of Russian dirty money. The strategy of using coordinated information releases to alter governance practices is extending well beyond the money-laundering world to encompass environmental regulations, such as Volkswagen's "Dieselgate" scandal, or government wrongdoing, such as the various releases by Wikileaks. In other words, in an economically interdependent world, transparency shocks are a recurrent civil society tool to mitigate abuse by the rich and well-connected. But does this strategy work; and if so, how?

The question has substantial academic and normative stakes. In this manuscript, we develop debates on transnational politics, private governance, and the effects of transparency (e.g. Fung, Graham and Weil, 2007; Eilstrup-Sangiovanni and Sharman, 2022; Seabrooke and Wigan, 2016) to detail why and how we might expect transnational information shocks to impact corporate behavior. Information shocks are often studied by focusing on the public content that they disclose: when the content singles out the negative performance by some actors, we expect those singled-out actors to change their behavior while their non-

[1] For details see: https://www.icij.org/investigations/panama-papers/20160403-mossack-fonseca-offshore-secrets/. Caro Quintero was eventually released from prison in Mexico on a legal technicality after serving nearly three decades in jail. He swiftly returned to Interpol's most wanted list and was eventually apprehended by US authorities roughly a decade later.

implicated peers remain unaffected. But information shocks can also have effects through two other channels. First, by enabling problem-solving learning, they might induce behavioral changes among other actors whose behavior features the same problems but were not implicated in the specific information shock. Second, they might induce behavioral changes across the board by raising the salience of the relevant issues, regardless of the specific content disclosed or actors' actual exposure to the problem.

We primarily focus on how the Panama Papers influenced American financial institutions' compliance with the global anti-money laundering (AML) regime, with secondary tests of later leaks. Focusing on the Panama Papers has a number of research design advantages - the initial reporting was covert and proved to be an exogenously-timed shock that we can exploit to assess the consequences of information provision. The leak was one of the first in what is now a staple model of civil society activism, where NGOs coordinate across borders in their attempts to raise salience. Moreover, our analysis focuses on US firms while the bulk of the media coverage around the leak revolved around foreign government officials - any positive effects would then be passing a particularly hard test.

Operationalizing firm compliance behavior has been a longstanding research challenge (Bernhagen and Mitchell, 2010; Berliner and Prakash, 2015; Thrall, 2021) since all of the relevant actions take place within the firm and deal with largely private or proprietary information. To address this measurement challenge, we use data on the online job postings by financial institutions seeking to hire compliance and due-diligence professionals. The data, collected by Lightcast, covers the full spectrum of companies in the banking industry and collates postings across more than 50,000 websites. The data has been used to study topics like the impacts of market concentrations (Schubert, Stansbury and Taska, 2022) or prosocial hiring (Wilmers and Zhang, 2022), but we are the first scholars to use it assess changes in due-diligence practices and the first political science project in general to work with job postings.

Our findings contradict the public narrative that the Panama Papers resulted in little change in attempts to tackle money laundering. We find a short run but substantive effect on compliance hiring across the 107 financial institutions that we study - hiring increased by between 6-11% in the month after the leaks. Importantly, this effect does not depend on any specific forms of stakeholder exposure such as past investigations against a firm by the US government, public shareholder pressure, or even a firm forming part of an ESG association. By contrast, we find that firms with the highest deposits, independent of whether they were implicated in the leak, are most likely to increase their hiring. The findings are most consistent with information shocks having greater effects through shaping issue salience and enabling problem-solving learning, rather than publicly revealing new information.

The manuscript has implications for a number of political science debates. Most directly, the paper contributes to assessments of the anti-money laundering regime. While early scholarship investigated the rise of the governing rules, researchers are increasingly deploying novel methods to understand the effectiveness of different international legal mechanisms (Findley, Nielson and Sharman, 2014; Morse, 2019). We go one step further by looking at

the internal workings of enforcement, theorizing and evaluating how firm heterogeneity influences the practices of the regime.

Money laundering is a particularly interesting regime to evaluate as it is an arena where private actors have a janus-faced role. They are the enablers of allowing dirty money into the mainstream financial system by accepting money from corrupt actors. But they simultaneously act as the first and primary line of defense as enforcement of money laundering regulations has been outsourced to banks through Know-Your-Customer rules and broader due-diligence checks (Nance, 2018). The paper should hopefully encourage scholars of private governance, who largely focus on voluntary activities, to instead focus on this increasingly common governance duality of corporate players where rather than acting as rule-takers or shapers, they instead share enforcer and complier characteristics. The sanctions regime is another arena where enforcement has been ambiguously outsourced to the private sector, and that role is likely to become a growing structuring feature of a geopolitically fragmented international landscape.

Many of the actors exposed in the Panama Papers and who are frequently subject to the AML regime have built up an arsenal to further illiberalism both at home and abroad (Farrell and Newman, 2021; Kalyanpur, 2023). Recently labelled "transnational uncivil society", kleptocrats and plutocrats are using shell companies to make anonymous donations to extremist parties and to launder their own reputations (Cooley, Heathershaw and Soares De Oliveira, 2023). They are borrowing the same set of tools, and benefiting from the economic interdependence, that early scholarship on transnational activism (e.g. Keck and Sikkink, 1998) viewed as conditions for the spread of more liberal outcomes. We are seeing an active response to this new boomerang in the form of NGOs adopting innovative strategies and acting as "vigilantes beyond borders" (Eilstrup-Sangiovanni and Sharman, 2022; Dancy and Michel, 2016). These dynamics are set to heighten going forward and scholars of social movements will need to assess how differences in direct and indirect forms of enforcement do not just alter government rules and regulations, but also how they rework the practices and, likely, the political strategies of enabling firms.

Our findings also have important implications for the study of information in global politics (e.g. Dai, 2002; Mitchell, 2011; Carnegie and Carson, 2018; Kelley and Simmons, 2019), beyond efforts to understand why some entities are more transparent than others (Grigorescu, 2007; Lall, 2023). We contribute to the empirical literature demonstrating effects of information revelation beyond the nation-state (e.g. Murdie and Davis, 2012; Honig, Lall and Parks, 2023; Thrall, 2023), extending this work to effects of information revealed by non-state actors and on the behavior of large financial firms. We also contribute to broader understandings of the mechanisms through which information can shape private actors' behavior (Mitchell, 2011; Loewenstein, Sunstein and Golman, 2014), with evidence that information effects can operate not through direct public implication but rather by shaping issue salience and enabling problem-solving.

2 Private Governance and Public Information

Our theory starts from assumptions based on recent findings on private governance that sees firms as both economic and social actors: profit-maximizing but unable to ignore the actions and perceptions of the many other stakeholders who can shape their economic value and who may care about values beyond the financial bottom line. These stakeholders can include shareholders, customers, employees, regulators, politicians, the general public, and civil society activists. Collectively they create what some call a "market for virtue" (Vogel, 2007) which can, under some circumstances, induce profit-maximizing firms to be attentive to environmental, social, and governance (ESG) values and to undertake costly activities in pursuit of social and policy goals (e.g. Cashore, Auld and Newsom, 2004; Vogel, 2007; Büthe, 2010; Chrun, Dolšak and Prakash, 2016). Although much of this literature focuses on collective private governance initiatives such as standards or membership-based bodies (e.g. Potoski and Prakash, 2013; Berliner and Prakash, 2015; Thrall, 2021), firms also routinely undertake private governance activities unilaterally, particularly by intensifying their efforts at going "beyond compliance" (Gunningham, Kagan and Thornton, 2004) with relevant laws, or at improving compliance where weak state monitoring and enforcement means that poor compliance is the norm (e.g. Greenhill, Mosley and Prakash, 2009; Berliner and Prakash, 2014; Andonova and Sun, 2019).

Past work in this literature has shown that firms often act in response to, or in anticipation of, pressures from various public and private stakeholders. These include regulators and policymakers, as firms undertake private governance efforts in an attempt to forestall increased enforcement efforts or new policy development on issues of public concern (Bartley, 2007; Vogel, 2007; Büthe, 2010; Berliner and Prakash, 2014). Shareholders and other investors can also be relevant, particularly as more "socially-responsible" investors and asset managers aim to center issues like climate change or inequality (Ayling and Gunningham, 2017). Civil society groups and social movements often target firms for "naming and shaming" or even boycotts (Bartley, 2007; McDonnell, King and Soule, 2015). And consumers and the broader public are also relevant stakeholders, particularly for firms with valuable public reputations (Locke, 2013).

In many settings, firms' private governance behavior is shaped by the revelation of new information. Often these revelations are routinized in the form of disclosure-based regulation (Fung, Graham and Weil, 2007), whereby firms are mandated to disclose information such as pollution, energy efficiency, or gender pay gaps. Many studies have demonstrated impacts of such disclosure requirements (e.g. Chatterji and Toffel, 2010; Downar et al., 2021), usually operating through either anticipated or realized stakeholder responses. These responses may take the form of "exit" – market choice by consumers or investors once the disclosures ameliorate some information asymmetry – or "voice" – public or political responses by civil society organisations, media, regulators, or policymakers.

But information revelations can also take non-routinized forms as well. In some cases, information comes from disasters that reveal lax practices, such as the Bhopal chemical leak or

the Deepwater Horizon oil spill (McGuire, Holtmaat and Prakash, 2022). In other cases, investigations by civil society and/or media organisations bring ongoing poor practices to light as has often been the case in the realms of labor rights violations (Bartley and Child, 2011; Locke, 2013), and environmental performance (Bloomfield, 2014; Anderson et al., 2019).

Precisely because of the potential impacts of information revelations on firm behaviour, both transnational and domestic activists and civil society groups regularly employ information politics as a key tactic. Keck and Sikkink (1998, 16) define information politics as "the ability to quickly and credibly generate politically usable information and move it to where it will have the most impact." Transnational civil society groups devote effort to the production and dissemination of high-profile information revelations in order to bring attention to issues and spark government action (e.g. Keck and Sikkink, 1998; Bartley and Child, 2011; Berliner et al., 2015). In more recent years, this has also taken the form of facilitating the leaking of information by whistleblowers, and the verification and interpretation of that information by media (Roberts, 2012).

Several other related literatures have also sought to study the impacts of information availability on the actions and performance of a range of political actors, including local government corruption (e.g. Bobonis, Cámara Fuertes and Schwabe, 2016; Avis, Ferraz and Finan, 2018), legislative responsiveness (e.g. Malesky, Schuler and Tran, 2012; Grossman and Michelitch, 2018; Kirkland and Harden, 2022), and the performance of foreign aid projects (Honig, Lall and Parks, 2023). Studies such as these have made major advances in the rigorous causal identification of information effects, through either randomized controlled trials or the study of natural-experimental settings where information availability varies as-if-randomly, as well as towards learning about the necessary scope conditions for information to shape behavior (e.g. Lieberman, Posner and Tsai, 2014; Adida et al., 2020; Berliner and Wehner, 2022).

But there are also reasons for skepticism as to the potential impacts of information disclosure on firms' behavior. Fung, Graham and Weil (2007) argue that information is unlikely to shape firm behavior when it cannot become embedded in their everyday decisionmaking routines. Loewenstein, Sunstein and Golman (2014) review how psychological factors may limit the extent to which disclosures can change the behaviors of consumers and potentially other stakeholders. Firms may also only be willing to change their behavior in more superficial ways that do not undertake substantial costs or threaten their core business model Berliner and Prakash (2015).

3 The Effects of Transnational Information Shocks

We draw these literatures together in order to investigate the consequences of transnational information shocks for private governance, in the domain of offshore finance. We define transnational information shocks as high-profile non-routine disclosure of novel information, pertaining to state or non-state actions, by transnational advocacy and/or media

entities. Offshore finance, in particular, is a setting where transnational civil society organizations have long sought to bring attention to problems of money laundering, tax evasion, and transnational crime, and their enabling by lax regulatory frameworks and the ease of creating shell corporations to obscure ownership. Over time, some of these organizations developed a new strategy of transnational information politics through leaks, by serving as trusted nodes linking anonymous leakers of information and global media organizations.

How might transnational information shocks specifically shape the private governance activities of financial firms? Information can operate through multiple mechanisms, both direct and indirect. Information effects also may or may not depend on firms' exposure to the threat of some sanction from other stakeholders, whether material or reputational. A standard approach to the effects of information on behavior focuses on how actors might rationally update in response to the public content of that information, in expectation of potential reward or punishment by other actors. However, both the mechanism through which information operates, and the expectations shaping firms' decisions in response, might differ from this standard approach.

At the broadest level, our aim in this study is to test whether transnational information shocks have an effect on firms' private governance efforts overall. Secondarily, however, to the extent that we can empirically distinguish among different mechanisms, we also aim to contribute to research on private governance, information disclosure, and global politics, by testing between them. Our approach to assessing and potentially empirically distinguishing between these different theoretical possibilities is by studying *which* firms do or do not change their private governance behavior after the revelation of leaked information.

3.1 Mechanisms of Firm Response to Information Shocks

Most standard approaches to the effects of information on behavior focus on comparing directly-implicated actors — about whom relevant information has become public — with other non-implicated actors. The assumption is that the newly public information leads other key audiences to update their assessments of the implicated actors, and those actors in turn respond to the new environment. For instance, in studies of the effects of pollution information (e.g. Stephan, 2002; Anderson et al., 2019), the presumption is that firms who have their behavior revealed will update that behavior in order to shape future consumer or regulator decisions. In studies of the effects of performance information of politicians' behavior (e.g. Bobonis, Cámara Fuertes and Schwabe, 2016; Grossman and Michelitch, 2018), the presumption is that politicians who have their behavior revealed will update that behavior in order to shape future voter responses.

Information shocks might indeed have effects as actors rationally update in response to the revealed content of the information; but they might also have two other types of effects, both operating through heightened attention to the issue, but neither depending on the actual content of public revelations. One of these is a "problem-solving" mechanism, whereby public revelations induce learning by other firms with poor performance on the relevant issue, but which were not publicly implicated. In our case, this would mean other firms with

serious exposure to AML problems but which were not publicly implicated in the Panama Papers leak. Through this mechanism, information revelations can play "educating" roles (Mitchell, 2011) by helping firms better understand the nature of the problem or their own exposure to it, or may help bring the issue to the attention of key decisionmakers within the firm. This can be especially valuable for problems where firms face challenges monitoring complex multi-level supply chains (e.g. Locke, 2013) or, in this case, ownership structures.

Another possibility is an "issue salience" mechanism, whereby public revelations serve to heighten attention across the board to the subject matter of the information shock without regard to the degree of actors' exposure to the problem, whether publicly implicated or not. Such a salience effect might also be considered an instance of Keck and Sikkink's (1998) "symbolic politics" by transnational activists, in contrast with "information politics." Here, in both cases information is being disseminated by transnational activists, but the difference is in whether it potentially operates primarily via symbolic effects on issue salience, via the actual content of publicly revealed information, or through an intermediate route of internal problem-solving.

Information shocks can thus lead to behavioral changes through three different mechanisms: direct implication, problem-solving, and issue salience. If information shocks operate through a channel of direct implication, then we expect only firms with greater public exposure to change their behavior. If shocks operate through a channel of problem-solving, then we expect firms with greater latent exposure to the problem change their behavior. And finally, if shocks operate through an issue salience channel, then we expect all firms in the relevant industry to change their behavior following information revelation, regardless of their own problem exposure.

The hypotheses that we test are thus as follows, with specific measurement and estimation strategies developed in later sections:

Hypothesis 1: Main effect
Transnational information shocks increase the private governance effort of firms.

Hypothesis 2: Direct implication mechanism
Transnational information shocks only increase private governance effort for publicly-implicated firms.

Hypothesis 3: Internal learning mechanism
Transnational information shocks increase private governance effort to a greater extent for firms with greater latent problem exposure.

Hypothesis 4: Issue salience mechanism
Transnational information shocks increase private governance effort even for firms with low problem exposure, whether public or latent.

3.2 Firms' Stakeholder Exposure

Stakeholder pressures that can potentially impose market or non-market costs on firms may condition the type of learning that they engage in. Whichever of the above mechanisms is at work, information effects might operate due to direct concerns over some reward or sanction from stakeholders to which specific firms are exposed, or alternately through more diffuse industry-wide concerns, regardless of an individual firms' specific stakeholder exposure. Firms vary in their exposure to different kinds of stakeholders, and some firms have lower exposure than others. In a standard account of information effects, we would thus expect larger behavioral changes among firms with greater exposure to stakeholders that care about the issue in question and can impose some meaningful reward or sanction, such as future regulatory actions, civil society campaigns, or divestment.

But potential information effects can also go beyond this, as firms might change their behavior even if they themselves have no direct exposure to such stakeholders, as long as their industry as a whole faces diffuse stakeholder pressure. There are a few potential sources of such a dynamic. Financial firms may view their industry's reputation as a "club good" held collectively (Potoski and Prakash, 2009). Concerns about future costs may be mediated not through individual firms' specific stakeholder exposure but rather through perceptions of stakeholder pressure on the entire industry, including potential public opinion towards demands for increased regulation (e.g. Culpepper, Jung and Lee, 2024). Another possibility is a sociological mechanism of mimetic isomorphism (DiMaggio and Powell, 1983), as the relevant behavioral changes take on symbolic value across an entire field. Finally, changes might also be driven by a genuine principled commitment to tackle the problem itself, either on the part of firms' leadership or in demands within the firm such as by employees or environmental, social, and governance committees.

To test between these possibilities, we focus empirically on firm-specific exposure to stakeholder pressure from shareholders, regulators, and civil society. We do not focus on customers because of the highly diffuse nature of depositors. If information effects operate primarily by activating concerns about specific stakeholders such as these, then we expect firms with greater stakeholder exposure to undertake greater governance activities following information revelation. If we do not observe such differences, then this would suggest that information effects operate instead through more diffuse industry-wide considerations. This leads to the following hypothesis, again with measures of the specific forms of stakeholder exposure in question to be developed in the relevant later section.

Hypothesis 5: Firm-specific stakeholder pressure
Transnational information shocks increase private governance effort to a greater extent for firms with greater exposure to potential stakeholder pressure.

Hypothesis 6: Diffuse industry-wide pressure
Transnational information shocks increase private governance effort even for firms without exposure to potential stakeholder pressure.

4 Offshore Finance and Transnational Leaks: Background and Context

4.1 Governing dirty money

Money laundering is generally considered the process of concealing the origins and profits of criminal wealth. It usually involves three complementary phases: placement of the funds into the formal legal system, obfuscating the ownership of the funds through layering, and finally converting the ill-gotten wealth into apparently legitimate income streams and thereby completing the integration (Levi and Reuter 2006, 311). The United States was the first to begin tackling the issue in 1970 with the passage of the Bank Secrecy Act, initially targeting foreign banks facilitating laundering and tax evasion. Legislative moves sped up through the '80s as tackling money laundering became a core part of the War on Drugs.The Treasury Department then took on a central role through 1986's Money Laundering Control Act that formally turned money laundering into a criminal offense (Levi and Reuter 2006, 296).

Contra popular depictions, we now have built up an army of global laws to tackle money laundering rooted around efforts by the Financial Action Task Force (FATF). In terms of sheer numbers, the success of the transnational network is virtually unrivaled - although only a handful of countries had national AML rules when the organization formed, 180 countries had adopted policies largely based on FATF standards by 2010 (Sharman, 2010).

Nonetheless, rule-making is just one aspect of global governance, and we know that on the ground reality can contradict apparent legislative progress. Arguably, no regime matches up to that statement more than AML. Sharman (2010) argues that the broad adoption of FATF standards fits more of a world-polity approach - diffusion is driven by the desire to seem more like a modern state rather than actual willingness to tackle money laundering. His field experiments with Findely and Nielson (2014) make this point stark. Posing as individuals hoping to set up offshore accounts, the authors approached 3,771 corporate service providers in 181 jurisdictions that nominally adopted rules based on FATF standards. Disregarding the law, even when prompted in the email sent by the researchers, was much the norm. Remarkably, conventionally defined offshore centers were the ones most likely to comply with international standards while the traditional global financial centers - the US and the UK - were the biggest culprits. An even more elaborate experiment involving 15,000 banks illustrated that the largest entities appear to barely respond to the risks of laundering dirty money, but the money at stake negligibly impacts their decision to provide services(Findley, Nielson and Sharman, 2024). Instead, following social scripts most likely drives compliance.

Our project builds on such recent attempts to understand the on the ground reality of AML compliance. We differ by using observational data and focus on the United States's role - not only is it the central actors within the global financial system, but we know from both academic and journalistic accounts that much of the offshore world that drives money

laundering is still directed by banks with bases in New York, and their compliance behaviors are lacking at best.

4.2 The False Dawn of the Panama Papers?

While anecdotes of the super-rich starving governments of needed tax revenues flourished after the 2008 financial crisis, April 3rd 2016 was a bombshell. The release of the Panama Papers was the most systematic accounting of the complex web of offshore structures employed by elites of all stripes. Based on 2.6 terabytes of data granularly documenting how Panamanian law firm Mossack Fonseca set up shell and holding companies for both tax evasion and money laundering purposes, the leak was the epitome of an exogenous shock to the global financial system.

First given to journalist Bastian Obermayer of German newspaper Süddeutsche Zeitung by a whistleblower from the corporate services provider, Obermayer quickly realized the scale of the information would require unprecedented cross-border coordination. Spearheaded by the International Consortium of Investigative Journalists (ICIJ), members from over 100 news organizations spread across 80 different countries collaborated to marshal and standardize the data. More than a year later, media outlets began releasing stories based on the 214,000 offshore incorporations that constitute the leak.

The Panama Papers implicated a range of actors from heads of state like Silvio Berlusconi and Malcolm Turnbull, to transcendant sports talents like Lionel Messi and Tiger Woods. In total 12 heads of state and more than 120 other politicians were identified in the leaks with the legality of their transactions up for debate. We were given detailed looks into the accounts of transnational oligarchs like Dan Gertler and Vijay Mallya, and even critically renowned artists like Stanley Kubrick. There were immediate effects. The prime ministers of Iceland and Pakistan soon stepped down and arrest warrants were soon issued for the founders of the Panamanian firm.

The data has become an essential resource to help us understand the underbelly of the global economic system, generating studies on the size of tax evasion and the political and legal logics that drive offshoring. Those that look at the consequences of the leaks report substantial negative effects for the firms and jurisdictions directly implicated (O'Donovan, Wagner and Zeume, 2019). Although there were discussions of legislative changes that were necessary in tax havens and global financial hubs, there appear to have been few substantial shifts - but, as discussed in the previous section, we already had plenty of rules on the books. What we appear to have been lacking is standardized and effective due diligence - costly effort by firms. We seek to assess whether the Panama Papers engineered a shift in private actors complying and enforcing AML rules.

5 Data and Methods

5.1 Data: Lightcast Job Postings

In order to evaluate our hypotheses, we need data on the extent to which banks are investing internally in private governance over time. In particular, we want a measure of private governance behavior that: (1) is specific to compliance with AML/KYC regulations, (2) is available for and comparable across banks, and (3) has enough variation that we could plausibly detect changes within a relatively short timespan. Most extant measures of firms' private governance efforts—such as ESG ratings generated by consulting firms (Berliner and Prakash, 2015), adoption of internal policies (Bernhagen and Mitchell, 2010), or engagement with stakeholder complaints (Thrall, 2021)—fall short on at least one of these metrics. Measuring firms' true AML compliance is especially challenging given that the relevant problems are strongly shaped by attempts to evade detection.

Instead, we measure banks' private governance efforts through the lens of the labor market, tracking the number of job advertisements that they post seeking experts in AML and other related internal governance topics. The basic logic of this approach is that, while we cannot directly observe the allocation of tasks and resources within banks, we can infer changes in these allocations by observing changes in the types of workers that banks seek to hire. Job posting data is ideal for several reasons: it is available at a very high frequency, all banks engage in hiring employees to some extent, and posting metadata can be used to very precisely identify the duties that the job entails. Further, hiring employees to work on private governance is a meaningful signal of effort; labor costs are one of the largest expenses for many firms, even in relatively capital-intensive industries,[2] and we therefore feel confident that hiring drives represent real investment in private governance.

Our job posting data comes from Lightcast (formerly Burning Glass Technologies) and covers the near-universe of online job postings in the U.S. and the U.K. since 2010. The data, collected using a proprietary web-crawling algorithm,[3] contains the text of hundreds of millions of job postings as well as a large amount of posting-level metadata such as standardized firm names, job titles, requested skills and qualifications, and so on. Economists have used this data to study how job-level features such as wages (Schubert, Stansbury and Taska, 2022) and skill requirements (Hershbein and Kahn, 2018) change in response to factors such as monopsonistic labor markets and economic downturns; in sociology, Wilmers and Zhang (2022) use the data to identify jobs that are "prosocial" (e.g., related to corporate social responsibility) and show that the college wage premium is lower for these jobs. Most closely related to our application, Bana et al. (2022) and Wu (2020) use the Lightcast data to demonstrate how firms increase their hiring in compliance-related roles following shocks that might induce higher demand for compliance (new regulations and data breaches, specifically).

We interpret this measure as indicating costly effort in private governance of money

[2] Consulting firm Deloitte estimates that 50-60% of the average Fortune 500 firm's spending goes towards payroll.

[3] For more detail on Lightcast's data collection process, see this report.

laundering and related problems associated with offshore finance. As with other forms of private governance, this measure may reflect both genuine attempts to address the problem as well as instrumental attempts to avoid or preempt future costs. Although our later mechanism tests may shed some light on distinctions between these possibilities, the internal complexity of firms and their motivations means that for many studies of private governance, no clear empirical differentiation is possible.

5.2 Sample and Outcome Measure

Our population of interest is primarily banks that are large enough that they (1) may at least potentially have exposure to offshore financial centers, either through their customers or through their assets, and (2) may at least potentially hire their own AML compliance staff (rather than contracting it out, not having dedicated compliance staff, or having no compliance program at all). To do so, we begin by generating lists of the 200 largest banks operating in the U.S. according to the total assets they held in 2014.[4] We then manually match these entities as closely as possible to the standardized firm names contained in the Lightcast data, resulting in a final list of 105 banks.[5] A full list of banks in our sample can be found in Appendix Table 5.

Our goal is to measure the effect of the Panama Papers leak on banks' hiring in compliance-related positions. There are several ways to identify such positions in the Lightcast data: job postings can be filtered by keywords in the position title, posting text, or using Lightcast's own skill codes, which classify positions based on which (standardized) skills are required to do the job. For our primary analysis we wish to cast a relatively wide net, rather than using more targeted keyword searches of position titles or job posting text. Thus, our first measure of compliance-related hiring is the number of unique job postings issued by each bank in each month to which Lightcast has assigned a skill code for either "Regulatory Requirements" or "Environmental, Social, and Governance (ESG)."[6] At financial institutions, many positions in these categories are likely related to banks' compliance with offshore-related regulations; common position titles within these categories include "Third Party Risk Manager," "Anti-Money Laundering (AML) Investigator," and "Operational Risk Consultant."[7] In subsequent tests, we disaggregate these broad categories into more specific positions using keywords.

We measure this variable monthly from August 2015 and December 2016—eight months

[4]Using Orbis data. We remove banks that, despite being large, are not part of the relevant population: these include central banks such as Federal Reserve Branches and purely domestic, government-supported entities such as the farm credit system banks.

[5]We suspect there are two main reasons that some firms do not appear in the Lightcast data. First, some smaller firms may not use online posting sites. Second, Lightcast sometimes aggregates subsidiaries together under the label of their parent firm. For example, while Ford Motor Credit Company is a large financial institution by total assets, it does not appear in the Lightcast data while its parent firm (Ford Motor Company) does.

[6]Full descriptions of these categories can be found in Appendix Table 6.

[7]A more detailed look at common positions within these skill categories can be found in Appendix Table 7.

Table 1: **Data structure: bank hiring.**

Bank	Month	Posting Type	Treated	Postings
⋮	⋮	⋮	⋮	⋮
JPMorgan Chase	2016-02	Compliance-related	No	101
JPMorgan Chase	2016-02	All other hiring	No	13,749
JPMorgan Chase	2016-03	Compliance-related	No	130
JPMorgan Chase	2016-03	All other hiring	No	16,484
JPMorgan Chase	2016-04	Compliance-related	Yes	146
JPMorgan Chase	2016-04	All other hiring	No	18,030
⋮	⋮	⋮	⋮	⋮
Bank of America	2015-08	Compliance-related	No	31
Bank of America	2015-08	All other hiring	No	15,356
⋮	⋮	⋮	⋮	⋮

pre- and post- the Panama Papers leak, which went public on April 03, 2016. As a counterfactual, we also record the number of job postings that each bank issued for all *other* types of positions; an increase in compliance-related hiring would not necessarily suggest an increased focus on private governance within a bank if it was paired with an equally large increase in hiring among other roles.[8] To validate our focus on the financial sector, we also conduct the same test among a sample of all nonfinancial S&P 500 firms for which Lightcast has job posting data.[9] Scholars have observed that nonfinancial firms are becoming increasingly financialized (Redeker, 2022), and thus there is some reason to believe that the Panama Papers leak may have impacted non-banks. Still, as the actors that face the greatest risk from exposure to the offshore world—and the greatest stakeholder pressure to mitigate this risk—we expect banks to invest more resources in private governance following the leak than other types of firms.

5.3 Estimation

Our treatment assignment follows a straightforward difference-in-differences logic: we want to compare hiring in compliance versus non-compliance positions, before and after the Panama Papers leak. Since all banks experience treatment at the same time, we use a standard event study difference-in-differences design:

$$y_{bct} = \sum_{k=-7}^{8} \delta_k d_{bc} + \alpha_{bc} + \gamma_t + \epsilon_{bct} \tag{1}$$

We report diff-in-diff estimates δ_k for both pre- and post-treatment months, following best

[8] As a robustness check, we also use a matched salary range set of job postings within each bank as an alternative comparison group.

[9] Of the 428 nonfinancial firms on the S&P 500 list as of 2023, Lightcast has job posting data for 417 (97%).

practices (Baker, Larcker and Wang, 2021) in omitting leads for both the earliest time period and the immediate pre-treatment time period. Models include bank-position type fixed effects α_{bc}—meaning that, for example, we include dummy variables for Bank of America (compliance-related) as well as Bank of America (all other hiring)—as well as year-month fixed effects γ_t, and estimates are reported with robust standard errors clustered on the bank. We take the natural logarithm of the dependent variable (plus one, to account for zeros) to facilitate interpretation. When disaggregating the main results, we estimate pooled versions of Model (1):

$$y_{bct} = \delta d_{bct} + \alpha_{bc} + \gamma_t + \epsilon_{bct} \tag{2}$$

6 Results

6.1 Main Results

Figure 1 presents the results for both samples. Looking first to our sample of banks in Panel (a), we see that the Panama Papers leak had a clear positive effect on compliance hiring in April 2016: compliance-related job postings rose by nearly 10 percentage points relative to other types of postings. The effect appears to persist for an additional month, at a smaller magnitude, though this estimate falls short of statistical significance ($p = 0.12$). This relatively large effect is made more credible by the lack of any significant differences or trends in the pre-treatment periods, instilling confidence that our comparison group (all non-compliance related hiring within the firm) satisfies the parallel trends assumption.

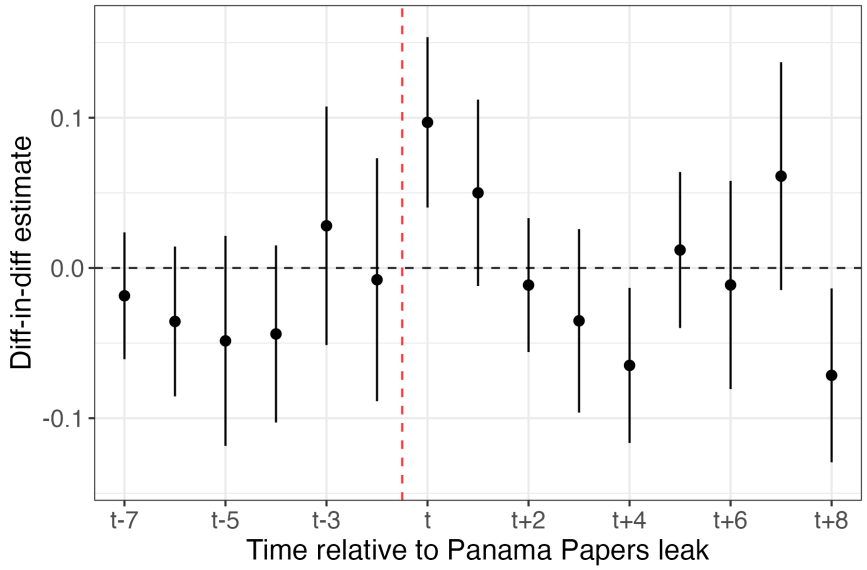
Looking next to our sample of nonfinancial firms in Panel (b), we find a positive treatment effect of 4 percentage points in the immediate post-Panama month. As expected, this effect is smaller in magnitude than the comparable effect for banks. Further, analysis of pre-treatment periods suggests that this effect may not be driven by the leak at all: there is a clear positive pre-trend from time $t-5$ to $t-2$, with a positive treatment effect at time $t-2$ of equal magnitude to that at time t. It is possible that nonfinancial firms were scaling up their compliance-related hiring at this time for a different reason, perhaps due to the upcoming 2016 U.S. elections. Further, we find that—in both aggregate and event study triple-differences analyses—the effect of the Panama Papers leak on compliance-related hiring is significantly larger in banks than it is in nonfinancial firms.[10]

In sum, we find a sizeable and credible effect of the Panama Papers leak on banks' compliance hiring; in contrast, we find a less sizeable and less credible effect of the leak on compliance hiring at nonfinancial firms. We therefore focus the remainder of our empirical analyses on our sample of banks.

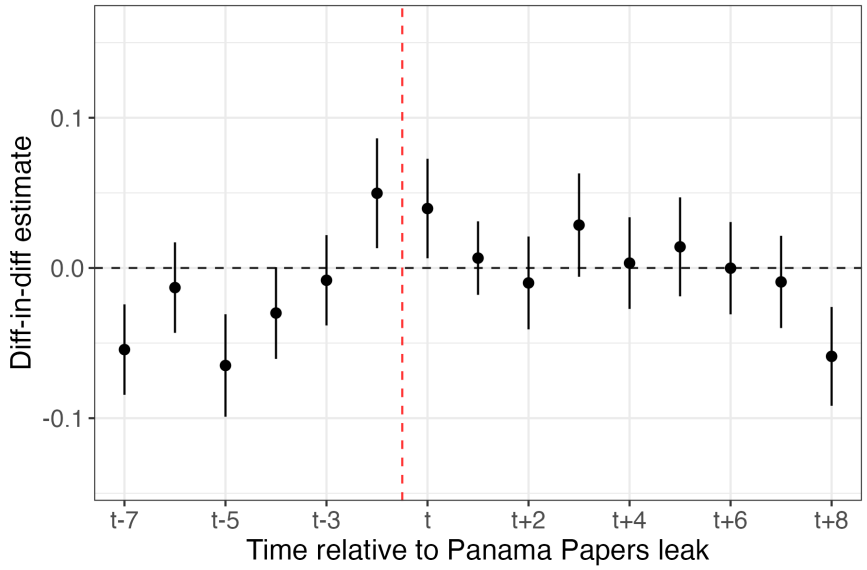
[10] See Appendix Table 8 and Appendix Figure 3.

Figure 1: **Compliance-related hiring increased relative to other hiring following the Panama Papers leak.** Presented coefficients are relative to a baseline of $t-1$.

(a) Sample: banks



(b) Sample: nonfinancial firms



6.2 Disaggregating the main results: for which types of compliance roles are banks hiring?

The results presented in Figure 1 demonstrated that, in the aggregate, banks increased their compliance hiring relative to their non-compliance hiring following the Panama Papers leak. Which types of compliance positions are driving this effect? To answer this question, we make use of the fact that Lightcast provides standardized job titles as part of their posting-

level metadata. First, we conducted background research on Linkedin and the Association of Certified Financial Crime Specialists' job board to identify keywords that often appear in the job titles of AML/KYC-related compliance positions. We then query all of Lightcast's standardized position titles to identify all job titles that contain the following terms:

1. BSA/Bank Secrecy Act: The BSA is a federal law passed in the 1970s that acts as the foundation of anti-money laundering rules in the United States. It enforces an expectation that banks will collect, and later provide, detailed information on any parties involved in transactions greater than $10,000.

2. KYC/know-your-customer: Another core-pillar of America's anti-money laundering regime, KYC rules were passed as part of the Patriot Act in 2001, strengthening the expectations for information collected on customers dealing with a bank.

3. AML/anti-money laundering: The broad term for the monitoring and assessing of potentially illicit transactions at a bank, AML hires are sometimes specialized in the above two regulations. But with the broader expansion of AML efforts we also see this expertise often required within conventional investment roles that service high-net worth individuals.

4. Due Diligence: Customer Due-Diligence is the process of collecting information on a party and then assessing the political and economic risk associated with a specific transaction. These functions again tend to support compliance with the BSA and KYC but jobs are often broader in nature and postings may not directly refer to such rules.

5. Fraud: Offshore entities are involved not just in hiding illicit wealth or tax avoidance, but are also central features of fraud as they can be used to siphon off revenue or hide the gains. There are a range of activities and regulations that could be impacted by such use of shell companies so we focus on the broader "Fraud" category.

After doing so, we replicate the data structure from the aggregate results for each of the five categories independently. For example, to examine the effect of the Panama Papers leak on banks' hiring in due diligence-related roles, we construct a dataset that contains one row for each bank's monthly postings for due diligence positions as well as one row for each bank's monthly postings for all non-compliance related positions.[11] Having done so, we estimate the model given above in Equation (2) for each category of compliance hiring.

Table 2 presents the results, alongside robust standard errors clustered on the bank. First, note that the coefficients are positive across all five categories of compliance-related positions. Further, for three of the five categories—Know Your Customer, Due Diligence, and Fraud—the effect is significant at least at the $p < 0.1$ level. These results can be interpreted similarly to those presented in Figure 1 above: for example, after the Panama Papers leak, banks increased their hiring of KYC-related roles by 13.9 percentage points relative to their hiring in non-compliance related positions. The fact that these estimates are highly

[11]Note that, as a result, other compliance-related roles are *not* part of the comparison group when testing the effect of the leak on a particular type of compliance hiring.

Table 2: **After the Panama Papers leak, banks increased their compliance-related hiring in multiple areas.** Comparison group is all other hiring within the bank.

	DV: logged job postings				
	(1)	(2)	(3)	(4)	(5)
Treated (AML)	0.037				
	(0.050)				
Treated (BSA)		0.087			
		(0.055)			
Treated (KYC)			0.139*		
			(0.054)		
Treated (Due Diligence)				0.111+	
				(0.057)	
Treated (Fraud)					0.094+
					(0.049)
Num.Obs.	3604	3604	3604	3604	3604
R2	0.981	0.983	0.986	0.984	0.982
Bank-position type FE	Y	Y	Y	Y	Y
Year-month FE	Y	Y	Y	Y	Y

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

similar in magnitude to the treatment effect found in Panel (a) of Figure 1 should inspire confidence that both analyses are picking up on the same phenomenon: a sizeable increase in banks' private governance-related hiring following the Panama Papers leak.

We take two steps to ensure the robustness of these results. First, we show in Appendix Table 9 that replicating these models in our sample of nonfinancial S&P 500 firms yields estimates that are close to zero and not statistically significant. This further demonstrates that our results are not driven by a secular increase in compliance-related hiring across sectors, and is instead specifically related to the Panama Papers leak and its fallout in the financial sector.

Second, we address the potential concern that the proper comparison group for a bank's compliance-related hiring may not simply be *all* other types of hiring within the bank. We make this choice in our baseline analyses for two reasons. First, it is difficult to specify *a priori* what types of positions within a bank would serve as appropriate counterfactuals for compliance-related hiring without themselves being related to compliance; further, this is likely to vary across banks. Second, under the assumption that firms face some budget constraint such that hiring is zero sum (an additional hire in Position A reduces the pool of money available to hire for Position B), we may generally be interested in how banks prioritize compliance-related hiring relative to *all* other types of hiring that they could be doing instead.

Table 3: **After the Panama Papers leak, banks increased their compliance-related hiring in multiple areas.** Comparison group is all other hiring within the bank within a similar salary range.

	DV: logged job postings				
	(1)	(2)	(3)	(4)	(5)
Treated (AML)	0.059				
	(0.048)				
Treated (BSA)		0.099*			
		(0.047)			
Treated (KYC)			0.151**		
			(0.051)		
Treated (Due Diligence)				0.135*	
				(0.052)	
Treated (Fraud)					0.108*
					(0.042)
Num.Obs.	3604	3604	3604	3604	3604
R2	0.971	0.975	0.980	0.976	0.974
Bank-position type FE	Y	Y	Y	Y	Y
Year-month FE	Y	Y	Y	Y	Y

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Still, we take steps to demonstrate that our results hold even when the comparison group is refined. To do so, we make use of the fact that some job postings in the Lightcast data contain information on the salary range associated with the advertised position. We assume that firms' hiring practices for positions within a given salary range are likely to be more consistent, making positions with similar salaries to those of compliance specialists a particularly good comparison group for these roles.[12] While we would ideally create a salary-matched comparison group for each bank-year-month in the data, salary data is available for too small of a proportion of postings for this to be feasible. Instead, we first calculate the average annual salary across all compliance-related positions in the sample that *do* list a salary range; this comes out to approximately $58,000. We then identify all non-compliance related position titles with average salaries within $10,000 of this figure. Finally, we build our comparison group by counting the total number of job postings that each bank issued for these position titles in a given month.

Table 3 demonstrates the results of replicating the models from Table 2 with the new, salary-matched comparison group. Not only are results highly similar in magnitude to those of Table 2, if not slightly larger, but they are also more precisely estimated; using the refined

[12]For an extreme example of this logic, consider that firms' demand for janitorial staff is unlikely to serve as a good counterfactual for their demand for senior executives.

comparison group, four of the five compliance position categories see significant increases at the $p < .05$ level. The robustness of our results to an alternative comparison group should build confidence that the effects we identify are not simply artifacts of sample selection.

6.2.1 Outsourcing Compliance?

Between the results presented in Figure 1 and Tables 2 and 3, we find robust evidence that banks increased their hiring in compliance-related roles in the wake of the Panama Papers data leak. However, we may still be underestimating the amount of additional private governance that banks engaged in following the leaks; while banks have the option of hiring in-house compliance staff, they can also outsource compliance tasks by contracting them out to external compliance-focused firms. Unfortunately, we cannot directly observe these contracts, and thus we cannot estimate changes in compliance outsourcing at the bank level.

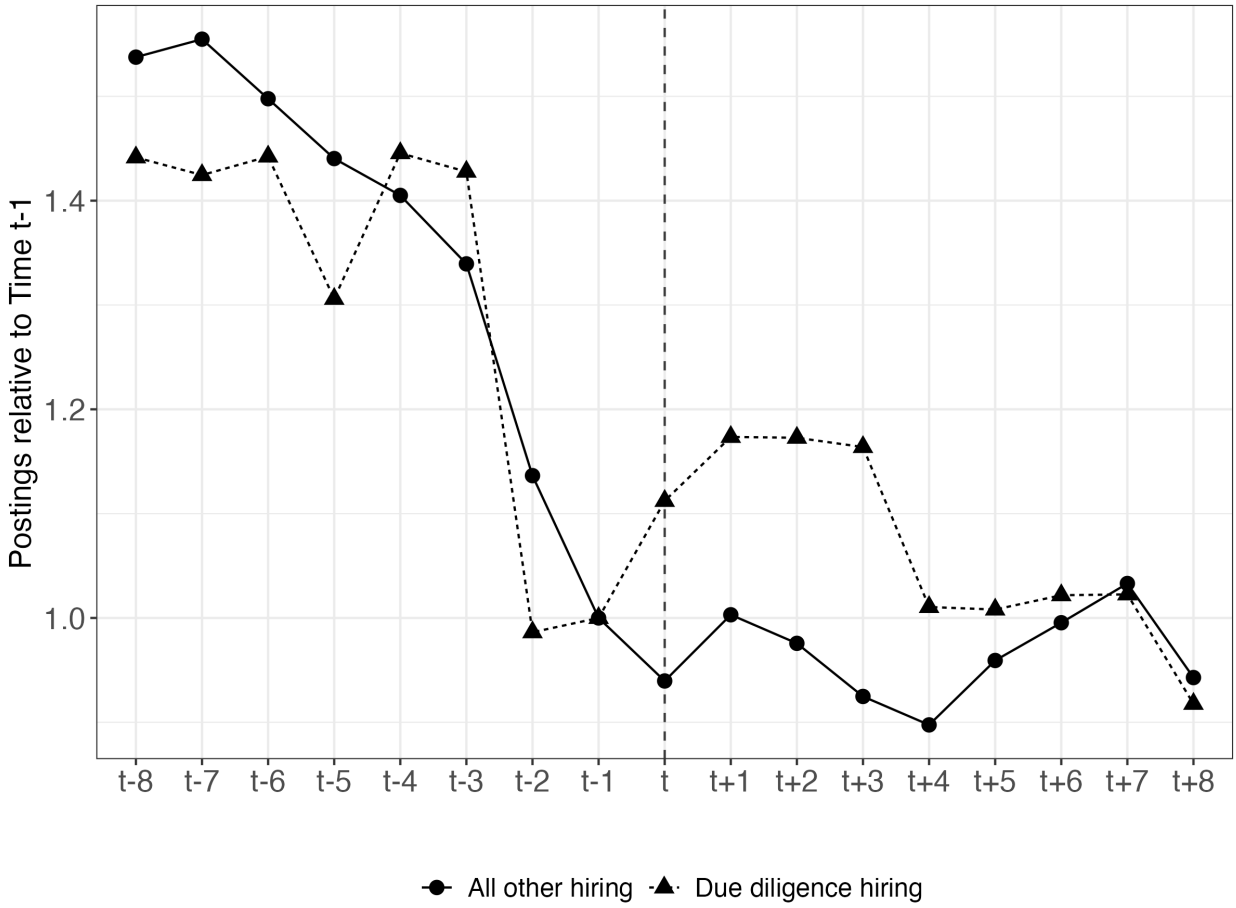
While we cannot directly measure compliance outsourcing, we can attempt to estimate the general extent to which it occurred by examining compliance-related job postings at the institutions with which banks are most likely to contract. To do so, we use the Lightcast data to measure changes in compliance-related hiring at the "Big Four" accounting firms (Deloitte, Ernst & Young, KPMG, and PricewaterhouseCoopers), in the same five categories measured above, following the leak.[13] These four firms collectively account for 74% of the global accounting market, and are by far the leading conductors of financial auditing.[14] Therefore, if we observe the Big Four firms increase their own AML/Compliance related hiring, we can infer that it was the result of increased demand from banks for compliance services. Large effects would suggest that our main results—based solely on in-house compliance hiring—significantly understate the extent to which banks invested in private governance in response to the transparency shock.

The results, presented in Appendix Table 10, show that the Big Four firms increased their hiring in due diligence-related positions by 23 percentage points following the Panama Papers leak. Figure 2 visualizes the effect, showing that due diligence job postings increased relative to all other postings for several months following the leaks despite tracking them quite closely beforehand. Thus, while we cannot link accounting firms' compliance workers to individual banks, these results provide suggestive evidence that banks also engaged in compliance outsourcing following the Panama Papers leak. Further, given that this result is twice the magnitude of our estimate for internal hiring and seems to persist for several months, our baseline results should likely be considered a lower bound on the Panama Papers' effect on compliance hiring.

[13] We use the full text, rather than the title, of the posting to identify compliance-related roles. We do so because accounting firms likely have a different position titling system than banks, and we wanted to ensure that results were comparable to our baseline estimates.

[14] See Ana Gyorkos, "Accounting giants continue to dominate the market despite pandemic," *International Accounting Bulletin*, 4 May 2021.

Figure 2: **Relative to other hiring, due diligence job postings at Big Four accounting firms increased substantially following the Panama Papers leak.**



6.3 Evaluating Mechanisms of Firm Response to Information Shocks

Our primary results show a clear short-run effect of the Panama Papers transnational information shock on compliance-related hiring among financial firms, compared with other hiring over the same period. This effect is larger and more credible than among non-financial firms at the same time. And it is also likely an under-estimate, as similar hiring effects at major accounting firms likely reflect financial firms contracting-out many positions even as they also made hires in-house. Next, we turn back to our primary result among financial firms and seek to disaggregate the effects of information shocks across different types of firms, in order to shed light on the mechanisms through which transnational information shocks lead to changes in firm behavior.

Our first question is over the mechanism through which information actually operates: Direct implication, problem-solving, or issue salience. To assess these, we first interact treatment status with the information publicly disclosed in the leak: whether or not firms were directly implicated in the media coverage that immediately followed. To measure this, we searched the comprehensive news database Factiva, reading through every article published

in the month after the Panama Papers that referenced the leak and any of the banks in our sample.[15] This yielded 10 financial firms from our sample of 106 that were directly implicated for involvement in money laundering or facilitation of fraud or tax avoidance[16].

Column X in Table 3 shows the results of this interaction term. Surprisingly, the effect on compliance-related hiring is significantly and substantially *less* among directly-implicated firms than among other financial firms. This is not simply due to the fact that many implicated firms are foreign subsidiaries, as an interaction term with an indicator for foreign subsidiaries overall is not statistically significant (see Appendix Table 11. It may be that directly-implicated firms feared exacerbating negative reputational effects, or had to shift to a more public-relations focus, and so refrained from posting relevant job advertisements in the immediate aftermath of the leak. What is clear, however, is that the positive overall effect of the leaks on compliance-related hiring cannot be due to an effect of the information flowing through a channel of direct implication that most studies on the effects of information provision focus on.

Next, we interact treatment status with two different indicators of "latent" problem exposure rather than "public" problem exposure. If the effects of information operate through a problem-solving mechanism, then we would expect to see behavioral changes among firms that had greater exposure to AML-related governance problems even if they were not publicly implicated in the leaks. We assess this in two ways. First, we assess direct implication in later leaks: the 2017 "Paradise Papers" leak, 2021 "Pandora Papers," or 2020's "Luanda Leaks", and 2022's "Cyprus Confidential" . The public implications of wrongdoing on the part of financial institutions that these leaks enabled pertained predominantly to relationships that predated 2016, rather than taking place subsequent to the Panama Papers leak. We thus consider these potential evidence of latent problem exposure. We collect this data by repeating the news searches on Factiva for one month after each of the specific leaks. Second, we measure the logged total deposits of each financial firm. Our sample consists of the largest banks in the United States as measured by their assets, but this encompasses a range of business models. Some have lucrative investment activities while others garner substantial profits by serving as investment banks. Focusing on deposits, the money coming in to the bank and stored via checking, savings or money market accounts, allows us to focus on the inflows and activity that are most likely to be attempts at money laundering. Our expectation is that banks with greater deposits are then most at risk of harboring dirty money and will thereby be marginally more likely to increase their compliance hiring.

As the results in column 2 of Table 4 show, we see no significant interaction term between treatment status and later leak implications. However, we do see a positive and significant interaction term for total deposits, such that the positive treatment effect of the information shock is greater among firms with larger total deposits. One might be concerned that,

[15]The search period was April 3, 2016 to May 3, 2016. We used Factiva's built in company standardization tool to ensure matching of the names across our Lightcast data and the news searches. For articles published not in English we used Google Translate.

[16]More banks than this were directly implicated overall, but many of these do not have subsidiaries in the United States and so do not appear in our data

rather than indicating latent problem exposure, deposit size simply proxies for the greater reputational concerns of larger firms. However, when we instead interact treatment status with measures of logged total assets or employees, there is no significant interaction term (see Appendix Table 11. This suggests that is something specific to the size of total deposits, distinct from any other measure of firm size more broadly, that is the source of this finding. Latent problem exposure is the most plausible explanation for this pattern, as deposits, particularly those above the US reporting theshold of $10,000, are most likely to viewed as attempts to launder ill-gotten gains. Thus, this finding offers some evidence to suggest an internal learning channel through which information shaped firm behavior. The results are remarkably consistent. The estimated treatment effect for a bank with the mean level of deposits would be 0.22, and the estimated treatment effect for a bank with the median level of deposits would be 0.13. This supports our interpretation that the treatment had a positive effect on hiring for the average bank, but simply had larger effects for banks with greater deposits, and thereby greater problem exposure.

Finally, information might also shape firm behavior through a broader channel of issue salience. If this is the case, then we should see even firms with neither revealed nor latent problem exposure also changing their behavior. And indeed, this is suggested by the previously discussed findings. Firms that were not directly implicated in the leaks increased their hiring even more than those that were implicated. And the results of the interaction between treatment status and logged total deposits suggest that, although effects were largest among the firms with highest latent problem exposure, even firms with relatively small total deposit sizes still increased their compliance-related hiring: The conditional treatment effect becomes negative only for only one of the 82 firms for which we have deposit data. Although this is more indirect evidence, it thus suggests that transnational information shocks can also have effects by more broadly raising the salience of the relevant issue, even for firms with little exposure to the actual governance challenge.

In addition to evaluating the potential mechanisms through which information operates, we also aim to assess whether the effects of transnational information shocks depend on firm-specific exposure to stakeholders able to impose material or reputational sanctions. Here we leverage different measures of exposure to stakeholders that the literature on private governance suggest are important in shaping firms' governance efforts: shareholders, regulators, and civil society audiences. We measure exposure to shareholder pressure with an indicator for publicly-traded firms. We measure exposure to regulatory pressure with an indicator of past U.S. enforcement actions (taking place prior to April 2016) using data from the Corporate Prosecutions Registry (Garrett and Ashley, N.d.). And we measure exposure to civil society pressure with an indicator of membership in the United Nations Global Compact or the United Nations Principles for Responsible Investment, which past work have suggested serve as signals to civil society stakeholders (Berliner and Prakash, 2012; Thrall, 2021).

The results in columns 4-6 in Table 4 show no significant interaction terms with either of these three measures. That is, there is no difference in financial firms' hiring responses to the Panama Papers whether they are more or less individually exposed to these key stakeholders who might impose material or reputational sanctions. This suggests that the effects of

Table 4: **Mechanism tests**. Banks with greater customer deposits increased compliance-related hiring more sharply post-Panama; banks that were directly implicated in the leak did not increase compliance-related hiring.

	DV: logged job postings					
	(1)	(2)	(3)	(4)	(5)	(6)
Treated	0.164**	0.136*	-1.754***	0.090	0.146**	0.162**
	(0.052)	(0.053)	(0.511)	(0.067)	(0.054)	(0.059)
Treated × Direct Implication	-0.291*					
	(0.116)					
Treated × Implicated (future)		0.000				
		(0.132)				
Treated × Total deposits (log)			0.077***			
			(0.022)			
Treated × Public				0.085		
				(0.092)		
Treated × Past enforcement					-0.056	
					(0.120)	
Treated × UN affiliation						-0.097
						(0.097)
Num.Obs.	3570	3570	2788	3570	3570	3570
R2	0.976	0.976	0.976	0.976	0.976	0.976
Bank-position type FE	Y	Y	Y	Y	Y	Y
Year-month FE	Y	Y	Y	Y	Y	Y

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

transnational information shocks do not operate due to specific firms' expectations of their own individual exposure to potential stakeholder punishment or reward, but rather operate through more diffuse industry-wide pressures.

Overall, we see no evidence for a standard account by which information revelation leads directly-implicated firms to change their behavior in expectation of firm-specific stakeholder pressure. Instead, the combination of results is most consistent with either *problem-solving* or *issue salience* information effects, operating primarily through considerations of industry-wide pressures.

To the extent that the patterns characterizing financial firm behavior following the Panama Papers leak can generalize to other global settings, these results suggest that transnational information shocks can have diffuse and indirect effects on firms' private governance efforts, raise the salience of new governance issues within the firm as well as among the public, and induce problem-solving efforts even among firms who are not directly implicated in public information.

7 Discussion and Conclusion

It pays to break the law. Politicians and fund managers frequently trade on insider information, multinational corporations are regularly caught disregarding labour laws, and tax avoidance is rampant across the commercial spectrum. How can we stop such abuses by the rich and powerful? The general hope is that government will be able to root out these endeavors, but enforcement in a range of arenas is often lacking. Transnational civil society has centered on information provision - revealing the wrongdoings that are cynically assumed but rarely exposed - to document the crimes of particularly egregious actors, often with a hope of broader regulatory change as issue salience emerges.

In this manuscript, we seek to assess whether the Panama Papers lived up to these aims. At a surface-level, its impact appears to be minimal: few substantive legislative changes were passed in response to the massive data leak. One of the ironies of the money-laundering regime is that it already constitutes a robust legal framework, so transnational civil society's major goals have long been accomplished. Yet the regime has experienced a host of transnational information shocks because robust compliance and adequate enforcement are lacking. When politicians siphon off public funds, drug dealers build lucrative cartels, or oligarchs evade their taxes, multinational banks are often tasked with laundering the ill-gotten gains. Even when not acting as partners to crime, banks can become unwitting enablers of illegal commerce as both licit and illicit kingpins take great pains, via the offshore world, to obfuscate the origins of their wealth. Our wager is that by looking at the public, rather than the private governance response, the importance of the Panama Papers has been under appreciated.

We theorize a range of effects transnational information flows may have on the behavior of banks. It may only affect those implicated in the shock as much of the prior work on leaks and activism assume. The shock may have the strongest effects on those that *could* become embroiled in similar problems as a function of their business model, or the shock could even have industry-wide effects due to issue salience.

To assess the theory, we use data on all the online job postings by the 106 biggest financial institutions in the United States. The key takeaway is that financial institutions on the whole substantially increased their efforts to tackle money-laundering, or at least their appearance of as such: due-diligence and compliance hiring immediately increased following the Panama Papers. Transnational information shocks work.

By contrast, the fundamental model of rational learning - those who are caught in a scandal should update and attempt to fix their behavior - is not borne out by the data. Banks directly implicated in the Panama Papers were *less* likely to try to to hire more compliance and due-diligence staff. On the whole, those that were most exposed to potentially harboring dirty money - institutions with the highest deposits - were most likely to tackle the problem, indicating that a model of internal learning took hold. Moreover, given that firms implicated in the leaks and even those that would come under future scrutiny were no more likely to increase their attempts at compliance, the effects of the leak appear to

operate through industry-wide effects. Considering those directly implicated in the leak did not increase hiring, and stakeholder pressure had no significant effect, the findings suggest that genuine attempts to solve problems (internal learning) were likely a result of doing what was deemed as the most logical industry-wide response.

Beyond, correcting an important fallacy of public discourse, the manuscript has implications for both policy and academic debates. The findings indicate that the salience of the shock is arguably more important than its content. The results then imply that civil society may need to alter its strategy to achieve the behavioral changes that they seek. There appear to marginal effects to the information shocks, which need to be considered given the serious danger than many journalists put themselves in when working with leaked data.

More academically, the paper is a call for scholars to more systematically assess the spillover effects of information shocks. Understanding the consequences of information provision - be it to citizens, government officials, or private firms - on political behavior has become a core debate across political science subfields. In dialogue with transnational civil society's efforts, scholars have centered on this tactic as a means to alleviating corrupt or exploitative practices and have devised effective and important research methods to analyze its effects. Our findings indicate that this literature ought to expand the range of actors, and the political boundaries of analysis. The strongest consequences may not be for those who get caught, but instead by those who seek to maintain their reputations. The banks implicated in the Panama Papers did not increase their compliance hiring - they did not try to salvage themselves. Instead, when firms learn from transnational information shocks, the consequences for the industry trump firm specific fears..

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A Additional Descriptives

Table 5: **Full list of banks: U.S. sample**

Ally Financial	First Citizens Bancshares	Pacific Western Bank
American Express	First Citizens Bank And Trust Company	People's United Bank
American National Bank	First Hawaiian Bank	Popular Bank
Ameriprise Financial	First Horizon	Prosperity Bank
Ameritrade Holding Corporation	First Horizon Bank	Raymond James
Annaly Capital Management	First Niagara Financial Group	Regions Financial
Associated Bank	First Republic Bank	Reyes Holdings
BBVA	FirstMerit	Royal Bank of Canada
BNP Paribas	Freddie Mac	SVB Financial Group
BNY Mellon	Frost Bank	Santander Bank
BOK Financial	GM Financial Group	Scottrade
Banco Popular North America	Goldman Sachs	Sg Americas Securities
Bank Of The West Wealth Management	Guaranty Bank And Trust Company	Signature Bank
Bank of America	HSBC Bank	Silicon Valley Bank
BankUnited	Hancock Whitney Bank	State Street Corporation
Barclays	Huntington Bancshares	Suntrust Robinson Humphrey
BlackRock	Hyundai Capital America	Synchrony
Bmo Financial Corp	Industrial And Commercial Bank Of China	Synchrony Bank
Bmo Harris Bank	Ing U.S. Financial Services	Synovus
Bokf	Interactive Brokers Group	TD Bank
CIT Group	JPMorgan Chase	TIAA
CME Group	Jefferies Group	The Blackstone Group
Capital One	KeyBank	The Charles Schwab Corp.
Citigroup	M&T Bank	Truist Financial
Citizens Bank	MUFG Bank	UBS
City National Bank Of Florida	Merrill Lynch	US Bank
Comerica	Mizuho Securities Co.	USAA
Commerce Bank	Morgan Stanley	Umpqua Bank
Credit Suisse	Natwest Markets	Valley National Bancorp
Daiwa Capital Markets America	Navient	Valley National Bank - OK
Deutsche Bank	Navy Federal Credit Union	Visa
Discover Financial Services	New York Community Bancorp	Webster Bank
E-Trade	Nomura Securities	Wells Fargo
East West Bank	Northern Trust	Wintrust Financial Corp.
Fifth Third Bank	PNC	

Table 6: **Lightcast skill codes and full descriptions.**

Skill name (ID)	Description
Regulatory Requirements (KS128HF6HV6ZFR1RR2GC)	"Regulatory requirements refer to the laws, rules, and guidelines set by government agencies and other regulatory bodies to ensure that products, services, and practices meet certain safety, quality, and ethical standards. Compliance with these regulations is critical for businesses in various industries to avoid penalties, legal liabilities, and reputational damage. Regulatory requirements management is a specialized skill that involves understanding and adhering to these regulations, monitoring changes and updates, and implementing measures to ensure compliance. This may involve working closely with regulatory agencies, conducting audits and assessments, developing and implementing policies and procedures, and training staff on regulatory compliance."
ESG (BGS4180F925FBF0CEAE5)	"Environmental Social And Governance (ESG) is a skill that involves understanding and implementing sustainable and responsible business practices. It requires the ability to assess and manage an organization's operations in light of environmental, social, and governance factors. This skill is used to ensure that a company's activities are ethically sound, environmentally friendly, and socially responsible, thereby enhancing its reputation and long-term sustainability."

Descriptions quoted directly from Lightcast's website; see here and here.

Table 7: **Top position titles in treated category, by sample.**

Sample: Banks			Sample: Nonfinancial S&P 500		
Position Title	n_{int}	n_{ext}	Position Title	n_{int}	n_{ext}
Compliance Managers	70	21	Env. Health and Safety Managers	140	30
Compliance Officers	146	17	Quality Engineers	229	27
Operational Risk Managers	70	13	Env. Health and Safety Specialists	79	24
Business Analysts	38	12	Quality Assurance Managers	81	24
Compliance Analysts	38	11	Regulatory Affairs Managers	166	19
Credit Risk Managers	23	10	Environmental Specialists	40	15
Model Risk Managers	55	10	Packaging Engineers	49	15
Risk Assessment Managers	27	10	Quality Managers	83	15
Liquidity Analysts	67	9	Regulatory Affairs Specialists	180	15
Risk Management Managers	32	9	Directors of Regulatory Affairs	95	14
Operational Risk Analysts	69	8	Environmental Engineers	63	14
Third Party Risk Managers	51	8	Clinical Research Associates	95	13
Assistant Vice Presidents	53	7	Manufacturing Engineers	102	13
Compliance Directors	14	7	Manufacturing Managers	39	13
Compliance Specialists	55	7	Operations Managers	48	13
Compliance Testing Managers	14	7	Supplier Quality Engineers	85	13
Control Officers	97	7	Engineering Managers	28	12
IT Governance Analysts	18	7	Financial Analysts	36	12
IT Risk Managers	16	7	Principal Engineers	71	12
Operational Risk Directors	17	7	Quality Assurance Engineers	54	12

This table provides an idea of the type of roles that fall into Lightcast's "Regulatory Affairs" and "ESG" skill categories for each of our two samples. For both samples, this table provides the top 20 positions according to the *extensive* margin (n_{ext}), the number of firms in the sample issued at least one posting for this position within our time period. We also list the total number of postings issued for each position title across all firms (n_{int}).

B Additional Analyses

Table 8: **In the aggregate, the Panama Papers leak increased compliance-related hiring at banks but did not do so at nonfinancial firms.** The "Treated" variable is equal to 1 for compliance-related positions beginning in April 2016.

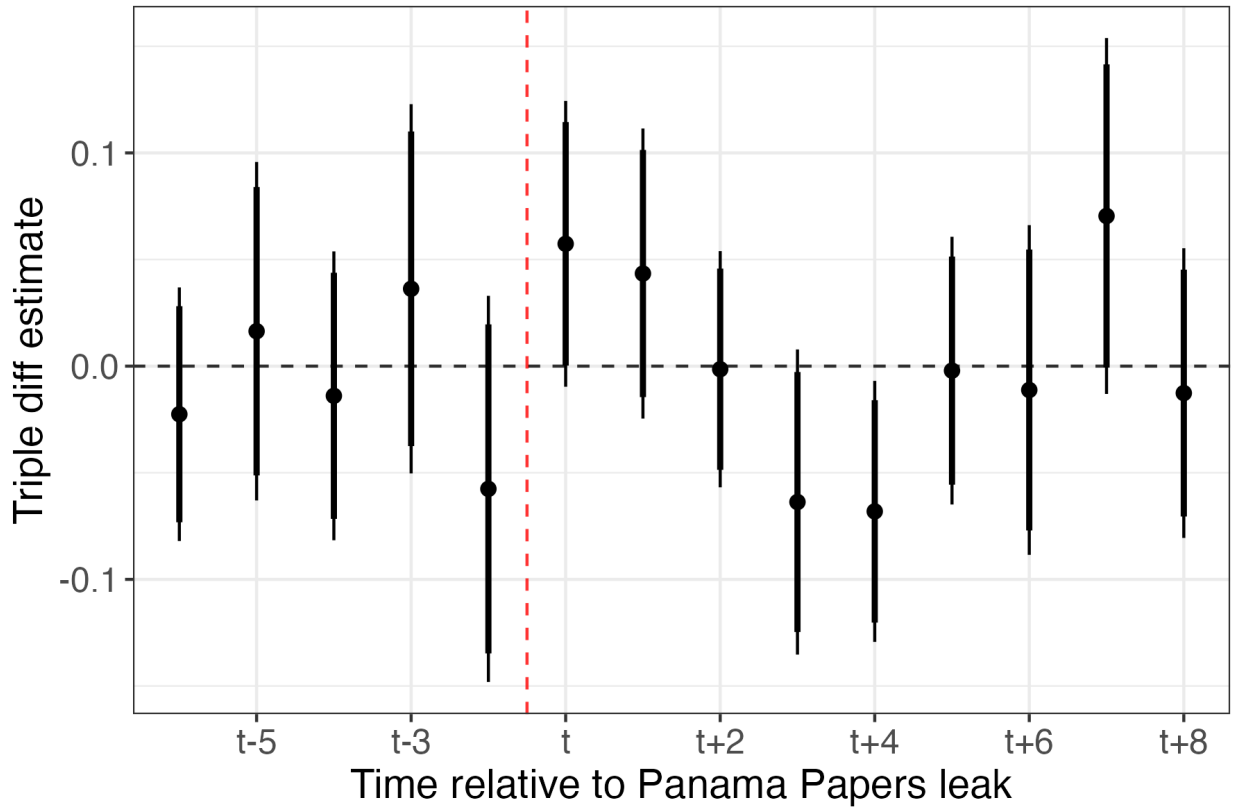
	(1)
Treated	-0.003
	(0.035)
Bank	0.096
	(0.215)
Treated × Bank	0.381***
	(0.107)
Num.Obs.	17714
R2	0.865
Bank-position type FE	Y
Year-month FE	Y

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Results obtained by estimating the following model:

$$y_{bcts} = \delta d_{bct} + \omega[d_{bct} \times \mathbb{I}(s = \text{bank})] + \alpha_{bc} + \gamma_t + \epsilon_{bcts} \tag{3}$$

Figure 3: **Following the Panama Papers leak, compliance-related hiring increased by a significantly greater amount relative to all other hiring at banks versus nonfinancial firms.** Note: coefficient for $t-7$ estimated but not presented for plot scaling purposes.



Estimates obtained from the following model:

$$y_{bcts} = \sum_{k=-7}^{8} \delta_k d_{bc} \mathbb{I}(s = \text{bank}) + \alpha_{bc} + \gamma_t + \epsilon_{bcts} \tag{4}$$

Plotted coefficients represent the differences between the diff-in-diff estimates from the sample of banks and the sample of nonfinancial firms. Thick bars represent 90% confidence intervals, thin bars represent 95% confidence intervals.

Table 9: **After the Panama Papers leak, non-financial S&P 500 firms did not increase their compliance-related hiring financial compliance positions.** Comparison group is all other hiring within the firm.

	DV: logged job postings				
	(1)	(2)	(3)	(4)	(5)
Treated (AML)	0.009				
	(0.029)				
Treated (BSA)		0.009			
		(0.028)			
Treated (KYC)			0.025		
			(0.029)		
Treated (Due Diligence)				0.026	
				(0.028)	
Treated (Fraud)					0.000
					(0.029)
Num.Obs.	14144	14144	14144	14144	14144
R2	0.988	0.988	0.988	0.988	0.986
Bank-position type FE	Y	Y	Y	Y	Y
Year-month FE	Y	Y	Y	Y	Y

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 10: **The Big Four accounting firms increased their hiring in Due Diligence roles following the Panama Papers leak**.

	DV: log job postings					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Post X All Compliance-related	0.101**					
	(0.035)					
Post X AML		-0.093				
		(0.071)				
Post X BSA			-0.115			
			(0.107)			
Post X Due Diligence				0.227***		
				(0.029)		
Post X Fraud					-0.135*	
					(0.072)	
Post X KYC						-0.298
						(0.190)
Bank FE:	Y	Y	Y	Y	Y	Y
Year-month FE:	Y	Y	Y	Y	Y	Y
Num.Obs.	136	136	136	136	136	136
R2	0.922	0.963	0.964	0.963	0.880	0.961

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 11: **Additional mechanism tests.**

	DV: logged job postings		
	(1)	(2)	(3)
Treated	0.156**	-1.193	-0.096
	(0.056)	(0.840)	(0.288)
Treated × foreign	-0.105		
	(0.092)		
Treated × total assets		0.053	
		(0.034)	
Treated × employees			0.028
			(0.034)
Num.Obs.	3570	3570	3128
R2	0.976	0.976	0.975
Bank-position type FE	Y	Y	Y
Year-month FE	Y	Y	Y

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001