

# Law enforcement spillover effects in the financial sector

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## Abstract

Recipient firms but also comparable peer firms exhibit a sizeable negative capital market reaction to United Kingdom's regulatory enforcement actions. This result is invariant to the identification of peer firms as belonging to the same industry classification or as having comparable propensity scores to attract a sanction. Indiscriminate regulatory contagion, however, is ruled out. As per expectation, enforcement actions which pierce the 'corporate veil', that is, target an individual within a firm, are related to no significant firm-level market reactions. These findings, in the financial sector, indicate that sanctions are associated with a material spillover effect consistent with informed regulatory contagion.

## KEYWORDS

abnormal stock returns, enforcement actions, peer firm effects, regulatory risk

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## JEL CLASSIFICATION

G21, K42

## 1 | INTRODUCTION

We investigate the spillover effects of regulatory sanctions on financial firms. The global financial crisis was pivotally related to deficient banking oversight and the nonenforcement of legally binding requirements (Barth et al., 2013; Caprio et al., 2010). Since then, major regulatory reforms have been undertaken, which have resulted in increased regulation and supervision with fines running internationally to 400 billion USD, 2008–2020.<sup>1</sup> A growing body of research has analyzed the impact of regulatory sanctions,<sup>2</sup> such as on the market price (Armour et al., 2017; Flore et al., 2021; Nguyen et al., 2016), the bond and credit default swaps (Flore et al., 2021) and the financial safety and soundness (Delis et al., 2017) of penalized firms. We know less, however, about the effects of regulatory sanctions on peer firms, and whether the announcement of misconduct can introduce indiscriminate contagion. Alternatively, informed regulatory contagion can prevail. An announcement of misconduct can generate negative reputational contagion effects, in comparable firms, with respect to the likelihood of receiving a sanction or it can provide new information reducing the uncertainty associated with such settlements, and improving the competitive position of the peer firms. This is the first paper to investigate the spillover effect of financial regulatory sanctions on peer firms and hence the wider systemic impact of sanctions in the United Kingdom's financial system.

Financial sector misconduct has risen to a level that has the potential to create systemic risks, that is, the risk that banks may fail together, and undermine trust in financial institutions and the market (Mark Carney, former governor of the Bank of England; Financial Stability Board, 2018). The extent of an equity market spillover effect in the financial sector, due to the disclosure of misconduct, is of critical importance due to the central role of the financial sector in the transmission of shocks to the real economy (e.g., Cornett et al., 2011; Vinas, 2021). In a European Systemic Risk Board report in 2015, it is indicated: 'Confidence is fundamental to the stability of the banking sector and financial markets. Issues undermining it can thus have a systemic impact. A misconduct case in one bank can quickly undermine the confidence of the public in the entire banking sector, because it is difficult for outsiders to differentiate between banks which behave well and those which behave badly'. As a result of the possibility of systemic risk associated with the information content of sanctions, we investigate the extent of the stock market spillover effects due to regulatory sanctions in respect to misconduct. We aim to discern whether equity market spillover effects exist and whether they are well informed, that is, whether they pertain to comparable firms only or are indiscriminate and whether they can discern between individual-specific and financial institution level sanctions.

The study of spillover effects in the United Kingdom's financial system has merit over other countries. The UK regulators use a watertight communication system. As highlighted in Armour et al. (2017) and Flore et al. (2021), the UK regulators only make their investigation and decisions public once the misconduct has been established.<sup>3</sup> In contrast, a process of

<sup>1</sup>See <https://www.spglobal.com/marketintelligence/en/news-insights/trending/cg9b4mhc6revpg5jnhqgxa2> and author calculations which are available on request.

<sup>2</sup>Throughout the paper we have interchangeably used 'regulatory sanction' and 'enforcement action'.

<sup>3</sup>The UK regulators' announcements are generally unique events. They can pertain to the information content of three or four separate announcements (e.g., investigation, conclusion, penalty and civil actions announcements) in a typical US Securities and Exchange Commission case (Flore et al., 2021).

investigation conducted at the US Securities and Exchange Commission is typically in the public domain before a final settlement is announced. These contrasting schedules, in regard to the disclosure of information on enforcement actions, can introduce ambiguity about the aggregate capital market effect, with initial public announcements attracting a negative capital market effect (e.g., Nguyen et al., 2016) and subsequent final settlements and judgements typically associated with a positive capital market effect (e.g., Flore et al., 2021). The performance of our tests, in the United Kingdom's financial system, hence, counters this difficulty of offsetting signals. Unless disclosed covertly by the investigated party, the adopted approach, in this paper, permits the examination of a single regulatory announcement. It serves to capture the entirety of the capital market's information assimilation of the enforcement action announcement: the first announcement of legal proceedings and its conclusion. This allows us to elicit a complete capital market reaction without any confounding effects caused due to prior announcements.

Enforcement actions serve multiple purposes: strengthening the financial system, that is, penalizing and stopping misconduct in the sanctioned firm, enabling restitution for the injured party, for example, a customer who suffered a loss (Armour et al., 2017) and reducing the informational asymmetry about the behaviour that attracted the sanction (Caiazza et al., 2018), with a view to discouraging the misconduct more widely in the financial sector.<sup>4</sup> The informational component can pertain to systemic and/or idiosyncratic risks. While systemic risk relates to a common risk factor across firms, idiosyncratic risk is firm-specific and highlights a challenge for the individual firm. If the 'nature' of an enforcement action is firm-specific it would not cause an informational 'contagion effect'. A competitive effect may arise, however, for a peer firm due to the shift in stakeholders away from a penalized competitor (Lang & Stulz, 1992). Alternatively, an announcement could cause market participants to update their 'priors' about the risk assessment of the firms operating in the same business line, and a banking channel negative spillover effect can result.<sup>5</sup> Specifically, a new fine raised on a competing peer institution may raise the propensity of such a penalty for similar firms operating in the same jurisdiction (Gande & Lewis, 2009).

To investigate our research questions, we hand-collect data on 171 enforcements, over 2009–2019, on all the financial firms operating within the UK jurisdiction. We first filter out the enforcements on individuals. That leaves us with 130 firm-specific enforcements. Second, we carefully go through all the prior media and firm-level announcements pertaining to enforcements, to ensure that the measured capital market effect is due to the regulatory sanction announcement itself. This leaves us with 75 firm-specific enforcements. Finally, we screen for any firm-specific confounding event, which can render inference on our capital market reaction obsolete. This process of screening restrictions results in a final sample of 69 enforcement action events. Using this data set, we test our hypotheses regarding the spillover effect of enforcements on peer firms.

Our hand-collected data set of enforcement actions enable us to identify sets of peer firms, informed by variables known to determine the propensity to receive sanctions (e.g., Chernobai et al., 2011). To select peer firms, specifically, we match on year and different granularities of

<sup>4</sup>See, for example, Section 2.1.2 of the Financial Conduct Authority's Handbook.

<sup>5</sup>The Economist reports that when Danske bank was accused of money-laundering in 2018, its market value was halved in the subsequent two quarters and the accusation may also have led to negative stock market reactions for non-accused firms in its industry, for example, Swedbank, Nordea and Raiffeisen. See <https://www.economist.com/finance-and-economics/2019/03/07/more-banks-are-caught-up-in-money-laundering-scandals>.

Standard Industrial Classification (SIC) codes (Fabrizi et al., 2021; Guo & Jiang, 2013; Pereira et al., 2019), firm characteristics (Chernobai et al., 2011; Fiordelisi et al., 2013) and ultimately we use propensity score matching (PSM) (Rosenbaum & Rubin, 1983). This approach gives us several distinct sets of peer firms, extending from the entirety of the financial sector and enabling a test for indiscriminate contagion, through to those firms which are highly comparable to the sanctioned firms—they exhibit approximately the same propensity to receive a sanction but do not do so. The market reactions in the days around the sanction announcements, for peer and recipient firms, are estimated using winsorized cumulative abnormal returns (CARs), following Armour et al. (2017).

We provide a brief outline of our findings. Consistent with the view that regulatory enforcements lead to a negative market reaction (Armour et al., 2017; Beneish, 1999; Karpoff et al., 2008), we show a significant reduction in the market value of recipient firms at announcement dates. We then turn to examine the spillover effect of enforcements in the financial system using the four-digit SIC-based matching approach. We find economically significant negative CARs around the peer firms in the event window  $(-1, 1)$  to the tune of  $-0.48\%$ . The negative reaction is even more pronounced for firms matched using the PSM approach. The finding of a negative announcement CAR is shown not to mean revert ex-post the event. These findings of negative market reactions to enforcement announcements also stand up to a battery of robustness checks. Consistent with the findings of Armour et al. (2017), we provide evidence of a loss in market value eight times greater than the fine amount.

Apart from penalizing firms for their wrong-doings, regulators have also been penalizing individuals.<sup>6</sup> A question that remains unanswered is whether the capital market reacts to an individual committing fraud. We find that enforcement actions, which pierce the ‘corporate veil’, show no statistically significant market reaction, indicating that the market views the misconduct of individuals as isolated events. In line with the regulatory announcement in respect to culpability, the capital markets do not penalize the firm for failing to mitigate the misconduct within the firm. In addition, in line with informed regulatory contagion, we report that there are no nonsanctioned bank cross-effects.

Two closely related papers to our work are those of Fabrizio et al. (2021) and Flore et al. (2021). Both papers examine, in the financial sector, the capital market reactions to enforcement actions of the recipient and peer firms. Fabrizio et al. (2021) study the LIBOR (London Interbank Offer Rate) rigging scandal. They show that industry peer firms with similar opportunities and incentives to recipient firms, in respect to the manipulation of LIBOR, also exhibit negative stock market reactions pertaining to the scandal. At the same time, the Non-LIBOR comparable firms, show no reaction. This study, hence, shows that in relation to LIBOR rigging, there is no evidence of an industry-wide regulatory contagion effect. Our study, rather than focusing on one specific type of misconduct, adds to Fabrizio et al. (2021), by examining regulatory enforcements by the UK regulators on financial firms for more than one decade. We perform our tests across narrow and broad classifications of peer firms. We, in addition, test the capital market recipient and peer firm implications of sanctions levied specifically on individuals. Finally, Flore et al. (2021) study a select set of 25 banks and show a positive spillover effect to other banks facing pending lawsuits with the same plaintiff. Our paper, in contrast, uses a variety of definitions of financial industry peers to document the extent of regulatory

<sup>6</sup>See <https://www.fca.org.uk/news/press-releases/fca-takes-first-criminal-action-against-individual-acting-unlicensed-consumer>.

contagion in the financial sector. Peer firms, in our study, are identified by a commonality of characteristics, business lines and their overall likelihood to engage in misconduct. As a result of the complementary approaches we adopt for peer firm construction, and our focus on sanctioned individuals, we provide an insightful set of systematic tests of indiscriminate regulatory contagion.

Our paper contributes to the existing literature on sanctions and misconduct in a number of ways. We show that the markets exhibit informed spillover effects in respect to regulatory announcements in the financial sector. The spillovers can be associated only with firms which are comparable to the sanctioned firm and are, hence, not consistent with indiscriminate contagion. In addition, spillover effects do not manifest when a sanction relates solely to a specific individual. We conclude that bank-level sanctions, convey information in respect to systemic risk, but are associated with informed regulatory contagion, and do not, thus, contribute to capital market instability.

The regulatory policy implications of our findings are threefold. First, disclosure of sanctions is warranted as it is followed by informed regulatory contagion and not financial instability. Second, in line with the obligation to account for the anticipated consequences of the disclosure of a sanction, on the part of supervisory authority, peer firm corroborative spillover effects can be included. Finally, individual-level sanctions do not give rise to unintended capital market consequences for the host financial institution, peer firms and the wider financial sector. This latter finding serves to strengthen the case that supervisory authorities can deploy individual-level sanctions.

The remainder of the paper is organized as follows. In Section 2, we describe and motivate our hypotheses. Section 3 discusses the regulatory framework in the United Kingdom along with the data and sample selection procedure. Section 4 presents our empirical design and methodology. In Section 5, we discuss the results and regulatory policy implications, while Section 6 concludes.

## 2 | TESTABLE HYPOTHESES

In this section, we formulate our empirical hypotheses about the effects of regulatory enforcement actions on financial institutions.

### 2.1 | Effects of sanctions in the equity of recipient financial institutions

An initial announcement regarding an enforcement action can be expected to impart a significant and negative capital market reaction in recipient firm equity (Cummins et al., 2006; Nguyen et al., 2016).<sup>7</sup> Enforcement actions can adversely impact expected future cash flows. To elaborate, the market can incorporate information pertaining to any monetary loss associated with the enforcement action. This would include the size of the punitive loss itself and the cost to the financial institution to adjust its risk management system such that the misconduct is not

<sup>7</sup>Cumming and Dai (2010) show evidence of the impact of regulation on misconduct, in particular, the misreporting of earnings, in the hedge fund sector. This demonstrates the influence of regulation in respect to decisions made in the financial services sector, and the likelihood of material repercussions of an enforcement action.

repeated, as well as the cost of restitution for aggrieved parties. In addition, a negative capital market effect can follow due to the tarnishing of the financial institution's reputation with stakeholders.

Subsequent to the initial negative capital market reaction, a finalized settlement or judgement announcement can attract a positive capital market reaction (Flore et al., 2021; Köster & Pelster, 2017).<sup>8</sup> This is likely due to an assimilation of information in the capital market related to the closure of the case, on terms that are viewed as beneficial to the financial institution's shareholders. The announcement can, for instance, resolve related capital market uncertainty pertaining to the magnitude of the action's punitive nature. As a result, the finalized settlement or judgement announcement can be deemed good news in the market relative to what might have transpired.

Collectively, the above arguments suggest that regulatory enforcements, imposed on financial firms, can introduce costs and cause reputational damage and that a finalized settlement or judgement announcement can at least partially reverse the extent of the initial capital market reaction.

Our first major hypothesis, can thus be stated:

**Hypothesis 1 (H1).** *A regulatory sanction, imposed on a financial institution, can have a negative impact on its capital market valuation.*

We also test a sub-hypothesis, in relation to those sanctions which are highlighted in the media, for whatever reason, before an announcement by the regulatory authority. In these instances, we expect, due specifically to the resolution of uncertainty, a positive capital market reaction at the time of the final regulatory announcement.

### 2.1.1 | Effects of sanctions in the equity of peer financial institutions

It is reasonable to conjecture that there can be a market reaction, to a sanction, in the equity of peer financial institutions.<sup>9</sup> Flore et al. (2021), at the settlement of a lawsuit, for instance, investigate the impact of resolution announcements on the stock prices of comparable banks, that is, banks facing similar lawsuits. They document positive spillover effects to other banks facing pending lawsuits with the same plaintiff.<sup>10</sup> The informational content of the spill-over effect can, however, pertain to peer firms, in line with a wider definition of 'peer' firms than adopted in Flore et al. (2021).

As indicated in Jordan et al. (2000), enforcement actions against a bank can have an indiscriminate spillover effect in the entirety of the financial system, irrespective of the association of the other banks with the sanctioned institution. Alternatively, and supportive of policies of enhanced disclosure of regulatory sanctions, they indicate that the systemic nature

<sup>8</sup>A zero market reaction can follow as the market was already aware of the pending announcement and had already assimilated this information into prices.

<sup>9</sup>Chang et al. (2020) show, for instance, the propagation of information between industry peers in respect to recovery rates, in a sector, and the firm-level cost of debt during a bankruptcy wave.

<sup>10</sup>It's noteworthy also that Roman (2020) identifies a regulation-related financial constraint channel, which can account for a negative spillover effect from the financial institution receiving the enforcement action to its 'relationship' borrowing firms.

of the spillover effect can pertain solely to banks which are similarly situated, that is, 'the announcing bank's problems may be reflective of the conditions of other banks that operate in the same environment'. They find limited evidence that banks in the same region as the announcing bank, with similar exposures, can exhibit negative stock market effects.

Fabrizi et al. (2021), in relation to the LIBOR rigging scandal, show evidence, via a channel of 'reputational contagion', indicative of peer financial institution stock market effects. They define peer firms using nearest neighbour matching, with matching covariates: country, institution type (i.e., first two digits of the SIC code), bank size, cost-to-income ratio, derivatives exposure, and loans-to-assets ratio.<sup>11</sup> As a result, they extend the definition of a peer bank beyond geographical location, that is, beyond that categorisation used in Jordan et al. (2000), to include industry sector and balance sheet characteristics.<sup>12</sup>

Hence, we argue, that it is insightful to use firm balance sheet traits, sector of business and location as a measure of a firm's likelihood to attract an enforcement action, and we define our peer firms accordingly. Once one financial institution is subject to enforcement action, comparable firms can be deemed, by market participants, more susceptible to receiving such an enforcement action. New evidence of a regulatory focus, for instance, and a related enforcement action can, hence, focus capital market attention on this eventuality for peer firms.

This line of reasoning leads to our second main hypothesis, which can be stated as follows:

**Hypothesis 2 (H2).** *A regulatory sanction, imposed on a financial institution, can have a negative impact on capital market valuations of comparable peer firms.*

Alternatively, Acharya and Yorulmazer (2008), consistent with Lang and Stulz (1992), indicate, in a theoretical framework, the possibility of a 'competition effect', which can account for a positive capital market reaction of peer banks to bad news in a bank, for example, news of poor bank performance. We argue that enforcement action announcements contain information of bad news for a bank. In the same vein, in line with Naumovska and Lavie (2021), due to competitive interactions, a benefit may accordingly arise for a peer firm due to the shift in stakeholders away from a penalized competitor. When market participants, not least block holder investors in the sanctioned firm, are made aware of the firm's financial wrongdoings, they may elect to exit its ownership structure and invest in peer financial institutions with associated stock market effects.

Finally, as an important corollary to this second main hypothesis test, we also extend the definition of a peer firm to include firms matched on the first digit and the first two-digit SIC codes, that is, firms from across the finance sector. In line with the potential for indiscriminate regulatory contagion (Jordan et al., 2000) and the concerns raised around the disclosure of

<sup>11</sup>This approach is unsurprising given that Chernobai et al. (2011) show that financial institution level characteristics (e.g., firm size, profitability, leverage, past performance, distress risk and liquidity) can account for the arrival rate of operational risk events, including regulatory enforcement actions. As a result, financial institutions with comparable balance sheet characteristics to an institution which attracts a sanction can be deemed, by the capital market, to have, accordingly, an increased exposure to or likelihood of being sanctioned.

<sup>12</sup>Select studies beyond the banking sector also define peer firms according to firm balance sheet traits, for purposes of estimating stock market spillover effects, including Gande and Lewis (2009) and Paruchuri and Misangyi (2015). Gande and Lewis (2009) show that shareholders partially anticipate class action lawsuits based on lawsuit filings against other firms in the same industry and capitalize part of these losses before a lawsuit filing date. Paruchuri and Misangyi (2015) show, in the same vein, that the announcement of a financial misconduct will result in a negative valuation of industry by-stander firms as compared to those bystander firms, not in the event of four-digit SIC code industry sector.

misconduct and systemic risk in the European Systemic Risk Board report in 2015, we test whether there is evidence of widespread and speculative spillover effects across the financial system, around the announcement of a sanction.

### 2.1.2 | Effects of sanctions on individuals, in equity of recipient and peer financial institutions

If an individual employee of a financial institution, and not the institution itself, is found to be guilty of misconduct, it is an open question as to whether stock market effects ensue.<sup>13</sup> On the one hand, it is expected that misconduct at the individual level, once identified and punished, can have no consequence for firm value. The perpetrator of the misconduct evidently, according to the regulatory announcement, acted independently to the financial institution, and the institution's value should, hence, be unaltered.

This line of reasoning leads to our third main hypothesis, which can be stated as follows.

**Hypothesis 3 (H3).** *A regulatory sanction, imposed on an individual in a financial institution, can be expected to generate no capital market reaction in the recipient or in peer firms' equity.*

On the other hand, Dimmock et al. (2018) establish a negative externality of misconduct such that culpable coworkers can increase a colleague's propensity to commit financial misconduct. As a result, disclosed misconduct, in relation to an individual employee of an institution can negatively impact the equity of that financial institution. Specifically, consistent with Dimmock et al. (2018), the capital market can assimilate the regulatory announcement by attributing a higher probability of misconduct, across employees more generally in the financial institution. As a result of this possibility, we test whether enforcement actions, at the individual level, can be associated with financial institution value implications.

## 3 | REGULATORY FRAMEWORK IN UNITED KINGDOM, DATA AND SAMPLE SELECTION PROCEDURE

### 3.1 | United Kingdom's regulatory structure

The United Kingdom's financial market is primarily regulated by the Financial Conduct Authority (FCA),<sup>14</sup> Prudential Regulatory Authority (PRA)<sup>15</sup> and Serious Fraud Office (SFO).<sup>16</sup> Since the crisis, the country's regulatory framework has undergone major changes. Before that, FSA was solely responsible for prudential supervision and financial conduct. However, its failure to protect

<sup>13</sup>Under the senior manager regime, the FCA can sanction individual senior executives on its register. The sanction can extend from a financial penalty to discontinuation of employment in the capacity of a senior executive. It can also pertain to a prison sentence, under Section 36 of the Financial Services (Banking Reform) Act. The senior manager regime aims to ensure that approved individuals are accountable for their actions, including the certification of other individuals who, if not suitable and honest, could cause significant harm in their roles.

<sup>14</sup><https://www.fca.org.uk/>.

<sup>15</sup><https://www.bankofengland.co.uk/prudential-regulation>.

<sup>16</sup><https://www.sfo.gov.uk/>.



the United Kingdom from the financial crisis led to its dissolution and United Kingdom moved to a 'twin peak' model of reform.<sup>17</sup> The FSA's ineffectiveness in navigating through the challenges posed to the banking sector resulted in its restructuring to the FCA (Ferran, 2014).<sup>18</sup> However, post the reform, the newly formed FCA, alongside the regulation of financial products, was solely responsible for addressing consumer protection in financial services and regulation of consumer credit. This clause increased the efficiency of the regulators.

### 3.2 | FCA's approach to regulation

The regulator begins its investigation by requiring firms to give regular submission of their business activities. The period in which the regulator collects all the information is called 'infraction period'. There is no public announcement at this point about the firms for which the information is being collected. Once the regulator has conducted its investigation, it gives time to the firms for an appropriate response. Post that it releases a 'final notice' containing a detailed summary on the nature of misconduct and the fine amount, if any. There is no public announcement during this entire process except when there might be a cross-border regulator involved. Therefore, a typical timeline of the FCA's enforcement is: investigation, conclusion and penalty announcement. The nature of announcements allows us to capture any 'spillover effect' effectively for peer firms.

### 3.3 | Data and sample selection procedure

The data for the analysis is hand-collected from the FCA, PRA and SFO websites by studying the 'Enforcement Actions' for the period between 2009 and 2019. It comprises of all the firms operating within the UK jurisdiction. The sample contains the date for the enforcement action, name of the firm, name of the individual (if applicable), fine amount, nature of misconduct, SIC classification, a complete description of the nature of the misconduct and the coercive action taken by the firm. These announcements are readily available to market participants via 'News', 'Press Releases' and 'Statements' on the FCA website. Alternatively, they are also available via 'Regulatory News Service (RNS)' of the London Stock Exchange. The FCA's regulatory announcements provide a detailed description of the sanction. It lists down the business line involved, nature of the misconduct and, most importantly, the categories it looked into. These announcements inform market participants on future areas of investigation. We attribute these aspects of the announcement to cause a spillover effect. The data comprises 696 enforcement actions on all the firms operating within the UK jurisdiction.<sup>19,20</sup> In case of a sanction on a private arm of a publicly listed institution, we attribute it to the listed entity. The final working sample is obtained by filtering the data using multiple criteria as described in Table 1A. To measure the capital market reaction around the enforcement action, we screen for publicly listed financial firms. We define 'financial firms' as firms with SIC codes

<sup>17</sup>The then Governor of Bank of England described it as follows: '... financial crisis has shown that combining prudential regulation with the oversight of consumer protection and market conduct did not work. Separating them—the so-called "twin peaks" model of financial regulation—is the right direction of reform.'

<sup>18</sup>The United Kingdom, before the crisis had followed a 'light touch approach' (<https://www.economist.com/britain/2012/12/01/light-touch-no-more>).

<sup>19</sup>Where the focus was to impose the lowest cost burden on the firms (IMF, 2011).

<sup>20</sup>95.5% of the enforcement actions were issued by the FCA, 3.08% by the SFO and 1.3% by the PRA.

**TABLE 1A** Sample selection procedure

This table reports our sample selection procedure. U.K. regulatory authorities include Financial Service Authority, Financial Conduct Authority, Prudential Regulatory Authority and Serious Fraud Office. <sup>a</sup>Of the 196 enforcement actions affecting the publicly listed firms, 25 are nonfinancial firms. Firms with the Standard Industrial Classification (SIC) codes '6' and '7' are considered 'Financial Firms' in our sample. <sup>b</sup>Of the 171 enforcement actions affecting the financial firms, 41 affect the individuals within the firm. <sup>c</sup>One hundred and thirty enforcement actions comprise of both the 'pure announcements' as well as events with known prior information. <sup>d</sup>Seventy-five enforcement actions show no evidence of prior information revealed to the market, according to LexisNexis database and Google News. <sup>e</sup>Sixty-nine enforcement actions comprise the 'pure announcements' without confounding news. We exclude firms for which we have dividend, earnings and sale of assets announcements which coincide with the timing of an enforcement announcement. <sup>f</sup>One of the 69 announcements is issued by the Serious Fraud Office. The remainder is issued by the Financial Conduct Authority or its predecessor, the Financial Services Authority.

Data screening description	Frequency of enforcement actions
<i>Original data set:</i> Enforcement Actions by the UK regulators during 2009–2019.	696
<i>Restriction 1:</i> Enforcement Actions affecting publicly listed firms. <sup>a</sup>	196
<i>Restriction 2:</i> Enforcement Actions affecting publicly listed financial firms (including individuals within the firm). <sup>b</sup>	171
<i>Restriction 3:</i> Enforcement Actions affecting publicly listed financial firms (excluding individuals within the firm). <sup>c</sup>	130
<i>Restriction 4:</i> Enforcement Actions for financial firms without any prior information. <sup>d</sup>	75
<i>Restriction 5:</i> Final Enforcement Actions (pure announcements) for financial firms without confounding news about the company (unrelated to the regulatory notice). <sup>e,f</sup>	69

beginning with '6' and '7'.<sup>21</sup> The firm should be public at the time of the enforcement action. The firm is retained in the sample if it was acquired by another firm or de-listed later. We remove firms for which the misconduct was identified after its de-listing, even though the misconduct might have occurred when it was listed. To elicit the reaction due to the firms' wrongdoing, we remove sanctions on individuals within a firm. This leaves us with 130 enforcement actions. A major problem with the regulatory risk database is the 'look-ahead' bias caused due to ambiguity in the announcements. If the nature of the announcement is anything but 'final settlement', it will increase the uncertainty for the stakeholders.<sup>22</sup> Any subsequent price reaction would not reflect the true implication of the sanction but only compound the uncertainty (Karpoff et al., 2014).

To mitigate this uncertainty action, we follow the following procedure:

- Verify that the sanction is a final settlement and no subsequent room is left for further negotiation.

<sup>21</sup>All the firms with SIC codes from 6000 to 6999, 7370 and 7389 are classified as financial firms.

<sup>22</sup>Stakeholders relate to customers, counterparties, shareholders, investors, debtholders, market analysts, other relevant parties or regulators that can adversely affect a bank's ability to maintain existing, or establish new, business relationships and continued access to sources of funding.

- Ensure that enforcement penalties were issued without any prior leakage of information. This data is cross-checked with FACTIVA<sup>23</sup> and LexisNexis.
- Enforcements issued due to the conviction for the same/similar misconduct by the firm in a different jurisdiction are removed from the sample.
- Enforcements subsequent to a private investigation or public litigation are removed from the sample.

To avoid any survivorship bias in the sample we retain the enforcements on de-listed or merged firms. Post the screening using the above-described process, we obtain 75 events pertaining to financial firms for which the enforcement is distinct. These enforcements are distinct, but a select few of them have confounding announcements during the same period. Screening for this leaves us with a sample of 69 firm events. The final sample contains one sanction by the SFO and none by the PRA.

Table 1B provides additional information on the enforcement frequency and amount for 69 'pure signals', based on the SIC classifications. The maximum number of enforcements are in the categories, Commercial Banks (52.17%) and Investment Banks (17.39%). The average fine is highest in the Commercial Banks category (33 million USD), followed by Life Insurers (16.92 million USD). The overwhelming majority of sanctions are related to the banking sector (69.56%) whereas the rest are on insurance and advisory.

### 3.4 | A rationale for pooling our sanctions

To focus further on the reason each specific sanction is raised, that is, the specific category of misconduct that draws the sanction is problematic on two fronts. First, even while not distinguishing between types of misconduct, we have a small sample of 69 enforcement actions to examine. This constraint, in terms of the limited number of FCA enforcement actions, arises due to the exacting filter process deployed (as reported in Table 1A). Our aim is to study enforcement actions which pertain solely to previously unannounced misconduct by publicly traded financial services firms and where there are no confounding firm-level announcements, and where all information relating to investigation and conclusion is disclosed at once. If we further categorise these sanctions, across types of misconduct, this can give rise to a pronounced small sample challenge regarding statistical inference in each select category.

Abstracting from the challenge of statistical inference in small samples, a second difficulty is that it is not clear what categories of misconduct to adopt. Roman (2020) examines different categories of US enforcement actions based on severity, for example, Deposit Insurance Termination, Cease and Desist, and Prohibition from Banking as more severe sanctions and the other enforcement actions—Formal Agreement, Civil Monetary Penalty, and Call Report Penalty as less severe. Flore et al. (2021) conduct categorisation in that they focus on large US legal settlements as opposed to Cease and Desist orders, Formal Agreements and Civil Monetary Penalties. In the context of the categorisation of UK enforcement actions, the above severity categories would need to be transposed into the FCA's system of sanctions. While we do differentiate between individual- and bank-level enforcement actions, we otherwise do not differentiate across categories of enforcement actions. A severity-related categorisation of FCA enforcement actions would require considerable manual work, possibly alleviated

<sup>23</sup><https://www.dowjones.com/products/factiva/>.

TABLE 1B Descriptive statistics

This table reports the descriptive statistics concerning the 69 enforcement actions (EA) in accordance with Restriction 5 of Table 1A. Panel (a) reports the frequency and average fines associated with EAs across the Standard Industrial Classifications (SIC) for financial firms. Panel (b) reports the mean, the minimum and the maximum values of the financial penalties associated with the EAs, and these amounts are expressed as a percentage of the market capitalisation of the recipient firm.

<b>(a)</b>			
<b>SIC classifications</b>	<b>Frequency of enforcement actions</b>	<b>Average fine (million dollars)</b>	
Commercial banks	36	33.00	
Brokers and dealers	2	3.97	
Investment banks	12	7.27	
Investment advice	7	15.90	
Life insurers	8	16.92	
Property and casualty insurers	2	4.38	
Insurance agents	1	2.92	
Investment offices	1	0.03	
Sum	69	87.39	
<b>(b)</b>			
<b>Variable</b>	<b>Mean</b>	<b>Minimum</b>	<b>Maximum</b>
Fine amount (million dollars)	21.18	0.00	204.17
Fine amount (as % of market capitalization)	0.58	0.00	23

somewhat with textual analytics. We leave such a significant undertaking, to ascertain the severity of the studied FCA enforcement actions, to future research.

In our study as we pool both less and more severe sanctions (and as we winsorize our market reaction data), we expect that our statistical inferences can underestimate the capital market reactions to more severe misconduct announcements. This observation suggests that, if anything, our principal inferences are potentially biased downwards, which serves to further highlight the robustness of our principal findings.

## 4 | EMPIRICAL DESIGN

### 4.1 | Are enforcement actions exogenous?

The enforcement actions occur due to numerous possibilities. It can occur due to lack of internal controls, oversight by management, rogue trading or a deliberate attempt to engage in misconduct. When the regulator collects documents from the firm about its trading activities, it does not disclose this information to public nor does it assume the firm is at fault while it is looking into these documents. Post this, the regulator requires an explanation from the firm if something substantial

comes up. Finally, it releases a public document about its findings and sanction if any. On the basis of the above process, it is clear that regulator takes action for a misconduct occurred at time  $t$ . While the enforcement sanction comes at time  $t+k$  where  $k$  is several time steps ahead of  $t$ . This removes any chance of simultaneity, as the regulator only takes punitive action for the particular misconduct itself. At most, it can be argued that firms change their internal behaviour, but this would not have an effect on the firms' future misconduct.

However, one can argue that there is a possibility of self-selection problem as the firm might choose to engage in a misconduct. The literature on the incentives of the management to engage in misconduct is not clear, as various authors have presented conflicting evidence. Efendi et al. (2007) show that equity-based compensation for management results in higher misconduct, while Armstrong et al. (2010) find no such evidence. Under such circumstances of self-selection, Kai and Prabhala (2007) argue that the matching methodology is less plausible due to the concern of endogeneity. Because of unobserved firm traits, eliciting a causal inference from the counterfactual can be troublesome.

## 4.2 | Argument for exogeneity

The decision by management to engage in the misconduct is revealed once the investigation by the regulator is complete. This has two components, first, the regulator has to identify that the misconduct took place. Second, this identification is a random event. The management itself does not know if and when there would be an announcement pertaining to the misconduct. Therefore, the regulatory announcement is as much as an exogenous shock to the management as it is to shareholders. The argument for *Misconduct Provision* also does not hold in this case, as the provision for the sanction is accounted once the 'final notice' is out. In case of the UK regulators, this argument is seemingly more important as the notice is the final verdict for a particular misconduct. The virtual absence of class action lawsuits in the United Kingdom prevents the shareholders from anticipating misconduct (Armour et al., 2017). Hence, matching firms with similar propensities to receive sanctions using publicly available information, allows us to obtain a consistent estimate of the capital market effect. We hence, nuance the concerns raised by Kai and Prabhala (2007).

## 4.3 | Propensity score framework

We adopt a new counterfactual, which explicitly accounts for the estimated propensity of a firm to receive sanctions, based on information publicly available to the capital market. To do so, we match on the propensity score (Rosenbaum & Rubin, 1983; Rubin & Thomas, 1992),  $p$ , which is estimated as the conditional probability obtained from a logistic regression of a binary variable that takes the value of 1 if the firm has received a sanction and zero otherwise, on a set of covariates that explain the propensity of a firm to receive sanctions.<sup>24</sup>

$$p(event_k, t = 1) = f(X_k, t - 1). \quad (1)$$

<sup>24</sup>Our choice of variables is informed from a large body of literature that examines the propensity to pay dividends. Details on the variables used and the underlying literature are presented in Section 4.4.

The logistic regression is described as:

$$Pr(Y_{it} = 1|X) = \frac{e^{\alpha + \beta X_{it} + \delta + \gamma}}{1 + e^{\alpha + \beta X_{it} + \delta + \gamma}} \quad (2)$$

Here,  $i$  and  $t$  stand for firm and year, respectively. The set of matching covariates,  $X$ , are observed in the year  $t - 1$ .  $\delta$  stands for the year-fixed effects and  $\gamma$  for the four-digit SIC code. Once the propensity scores are estimated from the logistic model, we adopt nearest-neighbor matching, within each year, to identify comparable counterfactual firms, before the announcement of an enforcement sanction. Conditional on the assumption of information asymmetry between the regulators and firms' management and investors, and our ability to adequately capture investors' expectations using publicly available information, our counterfactual firms would have a comparable *ex-ante* likelihood (from the perspective of capital market participants) to receive a sanction. Investors would, therefore, be unable to distinguish between the recipient firm and the matched counterfactual firm before the self-selection to the event.

We interpret the difference in stock price changes between the recipient firms and their matched counterfactual firms as the capital market surprise component of the enforcement, which is determined by the investors' interpretation of the new information that has been revealed through the event, and their subsequent trading decisions.

#### 4.4 | Determinants of the propensity to receive regulatory sanction

Previous work on the determinants of reputational risk has provided evidence that a financial firm's risk level is influenced by: (1) Firm Size; (2) Profitability; (3) Leverage; (4) Past stock price performance; (5) Distress risk; (6) Liquidity; (7) Past enforcements.

Chernobai et al. (2011) and Fiordelisi et al. (2013) find that large firms have greater reputational losses and have higher arrival rates for operational losses. They argue that large firms have better tools to avoid misconduct but undertake complex operations. This complexity increases the chance of misconduct as it is a tedious task to monitor them. With financial firms dealing with complex derivative products and operating in different geographies, this risk can be more pronounced. Jin and Myers (2006) depict that management has a higher incentive for oversight when the earnings are high. We use return on equity (ROE) as our proxy for high earnings/profitability. For the financial sector, capital adequacy ratio can be used as a measure of leverage. It is defined as the ratio of a bank's available capital to risk-weighted assets. It is a measurement of the bank's ability to absorb losses without affecting its day-to-day operations. The past stock performance is used as a measure of volatility. It is measured as the standard deviation of the returns on a 1-year rolling basis. Higher volatility indicates the vulnerability of the institution. In line with the arguments by Chernobai et al. (2011) and Fama and French (1992), we include the market-to-book (MTB) ratio as a proxy for distress risk. Palazzo (2012) finds that firms with a higher need for external financing in the future tend to hoard cash. We proxy this using the measure 'Cash and Short term investments to Total Assets'. To account for the persistence over time in enforcement actions, we construct a lagged count for enforcements on a firm. Additionally, to determine the propensity score if we only use the firm-specific variables, the matches won't consider the business line the firm operates in. Following the approach in Helwege and Zhang (2015) and Gande and Lewis (2009), we control for four-digit SIC codes, which specifies the major business undertaking of the firm.

## 4.5 | Event study methodology and reputational loss

To study the capital market reaction a basic ‘Event Study Framework’ is carried out. We calculate the share price reaction around the announcement of misconduct (Fama et al., 1969). The market index is used as the benchmark, however, given that most of the firms are financial in nature a banking index can also be used as a proxy. The abnormal return (AR) is calculated as follows:

$$AR_{i,t} = R_{i,t} - \alpha_{i,t} - \beta R_{m,t}, \tag{3}$$

where  $R_{i,t}$  and  $R_{m,t}$  are the firms’ stock return and the market returns on day  $t$ , respectively. The coefficients  $\alpha_i$  and  $\beta_i$  are estimated using the least-squares regression of  $R_{i,t}$  on  $R_{m,t}$ . To estimate the coefficients, we use a 1-year calendar period  $-261$  to  $-2$  relative to the announcement day. The average abnormal return for each day  $t$  in the event window is computed as:

$$AR_t = \frac{\sum_i AR_{i,t}}{N}, \tag{4}$$

where  $N$  is the number of days over which abnormal return is calculated. CAR around the days  $(-1, 0, 1)$ , where ‘0’ being the event day is calculated as:

$$CAR(t_1, t_2) = \sum AR_t. \tag{5}$$

This window takes into account the possibility of leakage of information. We also measure the reputational cost using the methodology (residual approach) followed by Karpoff and Lott (1993). The reputational loss is calculated as follows:

$$Reputational\ Loss = R_{i,t} - \alpha_{i,t} - \beta R_{m,t} - \left( \frac{Fine_{i,t} + Compensation_{i,t}}{MarketCap_{i,t}} \right). \tag{6}$$

Regulatory announcements by regulators include the compensation details in the final notice. This compensation is the amount that the firm has to pay the stakeholders affected due to the misconduct. We only consider the amount announced in the ‘Final Notice’ if any. We ignore cases where there was an additional compensation for the same crime.

## 5 | RESULTS

In this section, we initially discuss our empirical findings. We show the market reaction to the ‘pure signal’ recipient firms. We next turn our attention to the peer firms, matched on the four-digit SIC code and PSM, as well as the wider industry sector matched on first- and two-digit SIC codes. We then show the effects of sanctions on individuals. Finally, we describe the regulatory policy implications of our empirical work.

**TABLE 2** Cumulative abnormal returns (CARs) around enforcement actions

This table reports CARs around the announcement of 69 enforcement actions, in accordance with Restriction 5 of Table 1A. The CARs are reported for the total sample in three event windows (0), (0, 1), (−1, 1), around day 0, the day of the enforcement action announcement. They are estimated using market model parameters. The *t* stats are reported for the CARs with the significance level of \*, \*\* and \*\*\* depicting 10%, 5% and 1%, respectively. The sample extends from 2009 to 2019.

Sample	Window size	Market reaction (%)	<i>t</i> Stats
2009–2019	(0)	−0.43	−1.82*
	(0,1)	−1.18	−3.45***
	(−1,1)	−1.58	−3.93***

## 5.1 | Abnormal market reaction

In Table 2, we report the results for the effect of the 69 ‘pure signal’ firm events, in accordance with Restriction 5 of Table 1A. For each event window (0, (0,1) and (−1, 1)), we report our CARs and associated test statistics. The CAR over the 3-day announcement period is −1.58% and statistically significant at a 1% level (*t* stat is −3.93).<sup>25</sup> Additionally, the reputational loss (−1, 1) is −1.01% (*t* stat is −2.85) and statistically significant at a 1% level. The ‘fine + compensation’ amounts to −0.57%. Therefore, the average firm reputational loss is 8 dollars, for every dollar of fine. These results are consistent with our hypothesis (*H1*) and are economically significant.

## 5.2 | Effect on peer firms

We first report our results for peer firms matched on the four-digit SIC classification. Second, we report effects on the firms based on PSM. Third, we report our results for peer firms matched on the first and first two-digit SIC classification.

To corroborate our research hypothesis (*H2*) about the spillover effect of enforcements in comparable firms, we examine the capital market reaction on firms matched on four-digit SIC code. In Table 3, we report our results for the winsorized abnormal returns. The CAR (−1, 1) is −0.46% and statistically significant at 1% level (*t* stat is −3.29).<sup>26</sup> These findings are consistent with our hypothesis (*H2*) in that they show a significant contagion effect.

<sup>25</sup>As a measure of robustness, we first report results for recipient firm CARs, in accordance with Restriction 3 of Table 1A. Our result from Table IA1 in the Online Supporting Information Appendix indicates no significant capital market reaction for mixed set of enforcements. This result is consistent with our hypothesis on market reaction to pure announcements. Second, we report the results for the enforcements with prior information. Our CAR results from Table IA2 in the Online Supporting Information Appendix, indicate a positive and statistically significant reaction to the resolution of uncertainty. In addition, we report the CARs post winsorizing our abnormal returns at 90%, in accordance with Restrictions 4 and 5 from Table 1A. Our CAR results from Tables IA3 and IA4 in the Online Supporting Information Appendix, indicate that the statistical significance across our event windows improves post winsorization. This trend of stronger results from tighter truncation indicates that a few extreme observations do not drive the results.

<sup>26</sup>As a measure of robustness, we report results for peer firms CARs, in accordance with Restriction 3 of Table 1A. Our result from Table IA5 in the Online Supporting Information Appendix indicates no significant capital market reaction for peer firms matched on a mixed set of enforcements.



**TABLE 3** Cumulative abnormal returns (CARs) around enforcement actions (EAs) for peer firms matched on the four-digit Standard Industrial Classification (SIC) codes

This table reports CARs for 806 ‘peer’ firm events, after winsorizing them at 90%, around the 75 EAs, in accordance with Restriction 4 of Table 1A. Peer firms are selected, in the Compustat Banking Universe, to match the four-digit SIC codes of sanctioned firms. The CARs are reported for the total sample in three event windows (0), (0, 1), (−1, 1), around Day 0, the day of the ES announcement. They are estimated using market model parameters. The *t* statistics are reported for the CARs with the significance level of \*, \*\* and \*\*\* depicting 10%, 5% and 1%, respectively. The sample extends from 2009 to 2019.

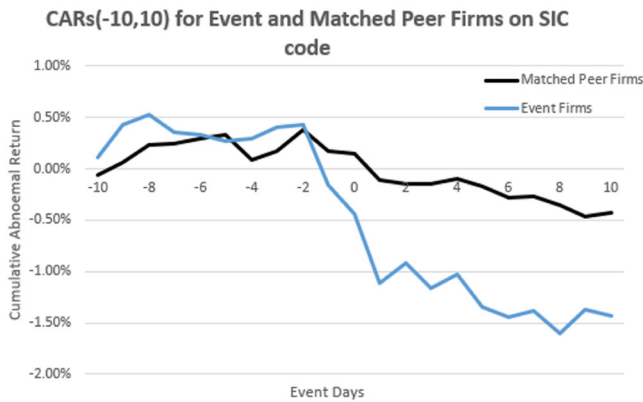
Sample	Window size	Market reaction (%)	<i>t</i> Stats
2009–2019	(0)	0.03	0.31
	(0,1)	−0.24	−2.27**
	(−1,1)	−0.46	−3.29***

We extend our sample window from (−1, 1) to (−10, 10) to examine the following. First, to test whether the enforcements were anticipated, as there is a possibility of information leak before the announcement. Second, to credibly establish the impact of enforcements on peer firms. From Figure 1, we observe that the market reaction to the announcements occurs around the event window (−1, 1). Furthermore, we observe that post the event, there is no reversal in the price action for both the recipient and matched peer firms. The reaction is more pronounced for recipient firms than that of peer firms. These findings highlight a significant spillover effect of regulatory enforcements in financial firms.

To examine the robustness of our findings, we test the CARs for the recipient and peer firms based on the sector-by-sector distribution of SIC. In Table 4, we report our findings across two SIC classifications<sup>27</sup> comprising 53 of 75 enforcement announcements. Looking at the (1, +1) event window, we find that both the ‘Commercial’ and ‘Investment’ banks for recipient and peer firms report statistically significant and negative CARs. Our results, across these two SIC classifications, are substantively similar to the results in Table 3. These findings also highlight that the market reaction is not concentrated in a particular SIC classification, both for the recipient and peer firms.

To obtain the peers based on the characteristics of recipient firms, we carry out a PSM. Appendix A2 provides information for the logistic regression used for PSM. A positive coefficient on the explanatory variables would indicate a higher propensity to receive sanction and vice versa. Thus for coefficients, the interpretation is that a 1 unit increase in *x* increases *y* by  $100 \times (e^{\beta x} - 1)\%$ . Our results indicate that the propensity to receive fine is positively related to firm size, equity volatility, capital adequacy ratio and past enforcements. It is negatively related to profitability (ROE) and market-to-book. The propensity to receive fine is positive and statistically significant for larger firms. Given that financial firms operate in different jurisdictions and business lines, it is no surprise that the market perceives them to have a higher propensity to receive sanctions. Of all the variables, equity volatility has the highest coefficient and is positively related to the sanction. Therefore, a 10% increase in volatility would increase the

<sup>27</sup>The two SIC classifications comprising 53 of 75 enforcement announcements are: Commercial banks and Investment banks.



**FIGURE 1** Cumulative abnormal returns (CARs) (−10, 10) for the pure enforcement action around the recipient firms and the matched peer firms. The figure shows CARs over 21 days, from −10 to +10, around the announcement of enforcement action for the recipient and matched peer firms based, on the four-digit Standard Industrial Classification (SIC) code. The sample of recipient firms is in accordance with Restriction 4 of Table 1A. CARs are based on market model parameters

**TABLE 4** Distribution of CARs around enforcement actions (EAs) for recipient and peer firms matched on four-digit Standard Industrial Classification (SIC) code for pure announcements

This table reports the sector-by-sector distribution of CARs for EAs by recipient and peer firms, in accordance with Restriction 4 of Table 1A. The sectors are selected according to the four-digit SIC codes, with a sector-level sample size of at least 10 enforcements. In total, 53 of the 75 Restriction-4 EAs are sampled. The CARs are reported for the event window (−1, 1), around Day 0, the day of the EA announcement. The *t* statistics are reported for the CARs with significance levels of \*, \*\* and \*\*\* depicting 10%, 5% and 1%, respectively.

Industry	SIC	Recipient firms (%)	<i>t</i> Stats	Matched peer firms (%)	<i>t</i> Stats
Commercial banks	6020	−1.10	−2.09**	−0.601	−2.07**
Investment banks	6211	−2.58	−2.32**	−0.86	−2.25*

propensity to receive sanctions by 11.66% ( $\exp(0.1 \times 1.103) - 1) \times 100$ ). Higher equity volatility is associated with higher risk. Furthermore, a surprising result is that well-capitalized financial firms, that is, firms with a higher Capital Tier 1 ratio would be perceived as risky from a regulatory point of view. This result can be explained via the Capital Requirement Directives (CRD),<sup>28</sup> which requires the financial firms (specifically banks) to hold 8% of their capital as tier 1. Given that these rules were implemented post the financial crisis, all firms in our data would have a higher capital adequacy ratio. We observe that the past enforcements are statistically significant and positively associated with the propensity to receive sanctions. The market-to-book ratio, ROE and cash to total asset ratios are not statistically significant. However, the sign on the coefficient is consistent with the prior literature in this field. The sign on our coefficients and statistical significance are robust to the inclusion of year and SIC fixed effects.

<sup>28</sup><https://www.fca.org.uk/firms/crd-iv>.

**TABLE 5** Cumulative abnormal returns (CARs) around enforcement actions for peer firms matched using propensity score matching (PSM)

This table reports CARs around 36 ‘peer’ firm events which were obtained by 1:1 PSM (with replacement), where sanctioned firms are sampled according to Restriction 5 of Table 1A. The CARs are reported for the total sample in three event windows (0), (0, 1), (−1, 1), around Day 0, the day of the enforcement action announcement. The *t* statistics are reported for the CARs with the significance level of \*, \*\* and \*\*\*, indicating the 10%, 5% and 1% levels, respectively.

Sample	Window size	Market reaction (%)	<i>t</i> Stats
2009–2019	(0)	−0.69	−2.93***
	(0,1)	−0.88	−2.94***
	(−1,1)	−1.03	−2.81***

We match our propensity score for all the ‘pure signals’. We obtain 36 matches as peer firm events.<sup>29</sup> Our findings in Table 5 indicate that the peer firms have a CAR (−1, 1) of −1.03% and are statistically significant at 1% (*t* stat is −2.81). We also find that CAR around the announcements of recipient firms for which we obtained a counterfactual is −1.37% and statistically significant (*t* stat is −3.1).<sup>30</sup> This reaction to enforcements prove that the firms having similar propensities to receive enforcements, suffer a more profound negative capital reaction than the firms matched on the four-digit SIC. This suggests that, investors penalize firms sharing similar characteristics with recipient firms. Investors update their priors on the risk assessment of peer firms, based on sanctions on recipient firms.

To corroborate our findings on the informed spillover effect of regulatory enforcements, we construct two sets of peer firms, the first is matched on the first-digit SIC codes and the second is matched on the first two-digit SIC codes. Table 6, Panel (a) reports the CAR associated with the pure regulatory announcement for peer firms matched on the first digit-SIC code. The result for the event window (−1, 1) is 0.02% (*t* stat is 0.47). The CARs for all the other event windows are insignificant. Table 6, Panel (b) reports the CAR associated with the second set of peer firms, that is, matched on the first two-digit SIC code. The result for the event window (−1, 1) is −0.02% (*t* stat is −0.26). The CARs for the other event windows are insignificant.

Our framework posits that contagion is informed by the commonality of characteristics. Consequently, rather than an indiscriminate contagion, we find evidence for an informed spillover. Tables 4–6 present results for peer firms, matched under various specifications, from the widest possible definition to the firm-specific characteristics. Our results establish the above-stated hypothesis (*H2*) on the effect of regulatory sanctions on peer firms.

<sup>29</sup>Two possible reasons we obtain a smaller set of peer events are: First, the confounding news at the matched peer firm, would have rendered our estimation of capital market reaction obsolete. Second, peer firms are obtained by 1:1 PSM (with replacement) within the same four-digit SIC and year. However, our sample size is consistent with the sample size used by Armour et al. (2017).

<sup>30</sup>As a measure of robustness, we report CARs for the matched 36 recipient and peer firm events, post winsorizing our abnormal returns at 90%, in Table IA6 from the online Supporting Information Appendix. We find that the statistical significance across our event window for both the recipient and peer firm improves post winsorization. This trend of stronger results from tighter truncation indicates that a few extreme observations do not drive the results.

**TABLE 6** Cumulative abnormal returns (CARs) around enforcement actions for peer firms matched on the first-digit and two-digit Standard Industrial Classification (SIC) codes

This table reports the CARs for 'peer' firm events, around the 75 enforcement actions, in accordance with Restriction 4 of Table 1A. Peer firms are selected, in the Compustat Banking Universe, to match the first-digit and two-digit SIC codes of sanctioned firms. The CARs are reported for the total sample in three event windows (0), (0, 1), (−1, 1), around Day 0, the day of the enforcement action announcement. They are estimated using market model parameters. Panel (a) reports these CARs for 11,277 matched peer firm events on the first-digit SIC code. Panel (b) reports these CARs for 2356 matched peer firm events on the two-digit SIC code. The *t* statistics are reported for the CARs with the significance level of \*, \*\* and \*\*\* depicting 10%, 5% and 1%, respectively. The sample extends from 2009 to 2019.

Sample	Window size	Market reaction (%)	<i>t</i> Stats
(a)			
2009–2019	(0)	0.039	1.20
	(0,1)	0.031	0.73
	(−1,1)	0.020	0.47
(b)			
2009–2019	(0)	0.06	1.03
	(0,1)	−0.12	−1.01
	(−1,1)	−0.02	−0.26

### 5.3 | Enforcements which pierce the corporate veil

To understand the implication of sanctions that pierce the corporate veil, we report its CAR in Table 7, Panel (a). The result for the event window (−1, 1) is 0.6% (*t* stat is 1.35). The CARs for all the event windows are insignificant. Our results highlight the markets' ability to discern between the sanctions on a firm and individuals within a firm. As a falsification test, we report the CARs on peer firms in Table 7, Panel (b), identified on the four-digit SIC code. As expected, they do not show any statistically significant CARs, due to sanctions on individuals. Our results are consistent with our hypothesis (*H3*).

Overall, these results suggest that law enforcement announcements are associated with an informed spillover effect.

### 5.4 | Regulatory policy implications

In this subsection, we highlight three regulatory policy implications. First, public disclosure of bank-level sanctions is recommended as (i) a negative capital market reaction, at the culprit institution, is associated with the announcement and (ii) financial instability is not expected to ensue after such events. Second, supervisory authority accounting for the consequences of sanction disclosure should recognise corroborative cross-bank

**TABLE 7** Cumulative abnormal returns (CARs) around enforcement actions (EAs) on individuals within the recipient firms and its peers

This table reports CARs for recipient and peer firms around the announcement of EAs, which are related to individuals within the recipient firms, that is, enforcements which pierce the corporate veil. In total, 41 EAs relate specifically to individuals, as per the difference between restricted samples 4 and 5 (41 = 171 – 130). The CARs are reported for the total sample in three event windows (0), (0, 1), (–1, 1), around Day 0, the day of the EA announcement. They are obtained using market model parameters. Panel (a) reports these CARs for the 41 recipient firms. Panel (b) reports these CARs for 436 peer firm events. The *t* statistics are reported for the CARs with the significance level of \*, \*\* and \*\*\*, indicating the 10%, 5% and 1% levels, respectively.

Sample	Window size	Market reaction (%)	<i>t</i> Stats
(a)			
2009–2019	(0)	0.00	0.016
	(0,1)	0.1	0.256
	(–1,1)	0.6	1.359
(b)			
2009–2019	(0)	0.06	0.38
	(0,1)	0.07	0.34
	(–1,1)	0.01	0.06

spillover effects.<sup>31</sup> Finally, the consequences of individual-level sanctions are not expected to include bank- and peer institution-level spill-over effects, nor do they pertain to indiscriminate regulatory contagion. This evidence strengthens the case for individual-level sanctions on part of the supervisory authority, a significant regulatory policy implication in its own right.

### 5.4.1 | Disclosure of sanctions is warranted as it is followed by informed regulatory contagion

National supervisory authorities can be reluctant to disclose enforcement actions relating to misconduct in financial services.<sup>32</sup> This is, reportedly, due to the possible upshot of financial instability, that is, indiscriminate regulatory contagion.<sup>33</sup> Substantial externalities may result, from the disclosed misconduct, which, indeed, have ‘the potential to significantly harm consumers, undermine trust in

<sup>31</sup>Before a decision to disclose a sanction, a supervisory authority is required to take in to account the impact of the enforcement action on both sanctioned banks and in the wider banking system. The Financial Conduct Authority’s Handbook, in sections 2.1.2, 6.1.2 and 6.2.2, for instance, reports this obligation. It describes the aim of enforcement action disclosure as more than the deterrence of the culprit bank, in respect to recidivism, but also to include the deterrence of ‘future noncompliance by others’.

<sup>32</sup>Many European National Central Banks have decided not to disclose enforcement actions, preferring to maintain confidentiality in the supervisory process. While the inception of the Single Supervisory Mechanism, in November 2014, has sought to harmonize enforcement action disclosure obligations across Europe, national reporting nonetheless remains heterogeneous (Götz & Tröger, 2017).

<sup>33</sup>Disclosure of misconduct in banking is a critically sensitive matter due to the central role of the financial sector in the transmission of shocks to the real economy (Cornett et al., 2011; Vinas, 2021).

financial institutions and markets and create systemic risks' (Financial Stability Board, 2018). A principal regulatory policy implication of our work is that our findings favour the public disclosure of sanctions, as our findings rule out indiscriminate regulatory contagion. Thus, concerns regarding detrimental effects (Götz & Tröger, 2017), for example, systemic risk, of far-reaching transparency obligations around sanctions, at least in light of our work, are unwarranted.

#### 5.4.2 | In accounting for the consequences of the disclosure of a sanction, peer firm spill-over effects can be included

Disclosure of an enforcement action, that is, the announcement of a sanction in the public domain, can provide an example to other banks that bad behaviour will be penalized, and in this way, disclosure can preclude misconduct and underpin financial stability. Peer banks can be dissuaded from the moral hazard of excessive risktaking, most specifically in the priority regulatory areas of the national supervisory authority.<sup>34</sup> A second regulatory policy implication of our work is, hence, that expecting corroborative cross-bank spill-over effects due to a sanction is reasonable, and should be counted among the effects of a disclosed sanction. Moreover, the disclosure of enforcement actions is justified as it is associated with informed regulatory contagion and not with indiscriminate regulatory contagion.

#### 5.4.3 | Disclosed sanctions on individuals can be expected not to have capital market consequences for the host and peer banks

Supervisory authorities, such as the FCA, have commenced issuing and disclosing enforcement actions against individuals within financial institutions. Whether such announcements can initiate indiscriminate contagion due to, for example, a concern of the likelihood of misconduct propagating with individual employees across banks (e.g., Dimmock et al., 2018), is an open question. A regulatory policy implication of our work is that these individual level enforcement actions are neither associated with a capital market reaction at the host firm level nor at the peer firm level, nor more widely in the financial system. An absence of spillover effects in the firm-, peer firm or industry level, in respect to individual sanctions, further supports the regulatory policy of national supervisory authorities to use this instrument to counter misconduct. Our empirical findings suggest that the capital market would appear to acknowledge the judgement of culpability, by the national supervisory authority, and, as a result, not penalize financial institutions for the misconduct.

## 6 | CONCLUSION

We conduct the first empirical assessment of the effects of regulatory sanctions on industry peer financial firms in the United Kingdom. Theory yields inconclusive predictions: The externalities arising due to regulatory sanctions in financial firms can induce both 'competitive' as well as 'contagion' effects in peer firms, or no effects if the sanction pertains solely to an

<sup>34</sup>Several major supervisory authorities have chosen to disclose their supervisory sanctions, for example, publications in the US Office of the Comptroller of the Currency and, as outlined in this paper, at the United Kingdom's FCA (Caiazza et al., 2018).

idiosyncratic risk for the sanctioned firm. Further, there can be financial instability introduced due to the disclosure of misconduct. We assess these open questions by utilizing the United Kingdom's regulatory sanction framework, where regulatory authorities release information on financial misconduct, on a single occasion, once it has been established.

We document significant negative capital market reactions for recipient financial firms to the announcement of enforcements. By considering the commonality in characteristics between the recipient and peer firms, we then perform tests of the opposing views on the contagion or competitive character of a spillover effect in peer firms, and whether indiscriminate regulatory contagion ensues in the capital market. We find evidence of persistent and significant negative spillover effects in peer firms, consistent with a regulatory contagion effect. Our evidence is consistent with an informed spillover effect, rather than indiscriminate contagion. For instance, we find no evidence of a spillover effect using broad definitions of peer firm classifications, that is, firms matched on the first digit and first two-digit SIC codes. In addition, we find that spillover effects do not manifest when sanctions are individual-specific.

We conclude that bank-level sanctions are associated with informed regulatory contagion, an enhanced level of transparency in the financial system, and do not, thus, contribute to capital market instability. Our findings are particularly relevant for regulatory authorities, as the impact of regulatory sanctions extends beyond the penalized firms. It does so, however, in a way that enhances the transparency of the market and, thus, supports the disclosure of adverse information on financial firms via publicly announced sanctions.

To extend our analyses, it can be of interest to disaggregate the sanctions across sanction severities (Flore et al., 2021; Roman, 2020) to better understand if our principal findings hold in the contexts of more and less severe sanctions. Further, it can be of interest to examine changes in the governance of financial institutions, around sanctions, with a view to establishing if sanctions can substantively impact the scope for misconduct in these organisations. We leave this study for future research.

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## DATA AVAILABILITY STATEMENT

The data that support the findings of this study were derived from the following resources available in the public domain.

1. <https://www.fca.org.uk/news>.
2. <https://webarchive.nationalarchives.gov.uk/ukgwa/%2A/http://www.fsa.gov.uk/>.
3. <https://www.sfo.gov.uk/>.
4. <https://www.bankofengland.co.uk/prudential-regulation>.

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## SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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**APPENDIX A**

Table A1

Table A2

**TABLE A1** Distribution of event and peer firms by four digit Standard Industrial Classification (SIC) code

This table reports in Panel (a), the distribution of all enforcement actions by event and peer firms. The frequency of the event firms by SIC code and the matched peer firms on the four-digit SIC code is reported. The peer firms are obtained from the Compustat Banking Universe. Panel (b) reports the distribution of pure enforcement actions by event and peer firms. The frequency of the event firms by SIC code and the matched peer firms on the four-digit SIC code is reported. The peer firms are obtained from the Compustat Banking Universe.

	Industry	Event firms	Matched peer firms
(a)			
Commercial banks	6020	68	697
Personal finance companies	6141	3	18
Business finance companies	6153	1	1
Brokers and dealers	6200	4	90
Investment banks	6211	22	360
Investment advice	6282	14	271
Insurance carriers	6300	1	3
Life insurers	6311	10	66
Property and casualty insurers	6331	2	9
Title insurance firms	6361	1	3
Insurance agents	6411	1	4
Investment offices	6722	1	10
Data processing (financial)	7370	1	5
Business services (financial)	7389	1	14
Total		130	1551
(b)			
Commercial banks	6020	41	407
Personal finance companies	6141	0	0
Business finance companies	6153	0	0
Brokers and dealers	6200	2	27
Investment banks	6211	12	171
Investment advice	6282	8	129
Insurance carriers	6300	0	0
Life insurers	6311	8	49

TABLE A1 (Continued)

	Industry	Event firms	Matched peer firms
Property and casualty insurers	6331	2	9
Title insurance firms	6361	0	0
Insurance agents	6411	1	4
Investment offices	6722	1	10
Data processing (financial)	7370	0	0
Business services (financial)	7389	0	0
Total		75	806

**TABLE A2** Logistic regression to determine the propensity of receiving an enforcement action by the regulator

This table reports results of logit regressions to determine the propensity of receiving a propensity sanction by the regulator. The logistic regression is described as:  $Pr(Y_{ijt} = 1|X) = e^{\alpha + \beta X_{ijt} + \delta + \gamma} / (1 + e^{\alpha + \beta X_{ijt} + \delta + \gamma})$ . Here,  $i$ ,  $j$  and  $t$  stand for firm, month and year, respectively. The set of matching covariates,  $X$ , are observed in the year  $t - 1$ .  $\delta$  stands for the year-fixed effects and  $\gamma$  for the four-digit Standard Industrial Classification (SIC) code. The dependent variable, Treatment is a dummy variable that equals one if the firm has received an enforcement action by the regulator and zero otherwise. We obtain our independent variables that can characterise the determinants of receiving a sanction based on the study by Chernobai et al. (2011). 'Log(Market Cap)' is the natural logarithm of the total number of outstanding shares multiplied by the share price. 'Cash & Short term to TA' is the measure of liquidity in the institution where TA is defined as Total Assets. 'ROE' stands for 'Return on Equity'. 'Capital Adequacy Ratio' is the ratio of bank's available capital to the risk weighted assets. 'RetSD' stands for the standard deviation on returns. 'Market to Book' is the ratio of market value of equity to the book value of equity. The first model does not account for the Year and SIC fixed effects. The second model only accounts for the Year fixed effects, whereas the third model accounts for both Year and SIC fixed effects. The data set spans from 2007 to 2019.  $T$  stat is reported in parentheses below the coefficients. \*\*\*, \*\* and \* represent statistical significance at the 1%, 5% and 10% levels, respectively.

	<i>Dependent variable</i>		
	<b>Treatment</b>		
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
Log(MarketCap)	0.284*** (9.827)	0.304*** (10.210)	0.249*** (7.050)
Cash&Short term to TA	-0.039 (-0.063)	0.249 (0.405)	-0.034 (-0.049)
ROE	-0.001 (-0.018)	-0.001 (-0.022)	-0.001 (-0.013)
Capital Adequacy Ratio	0.046*** (3.905)	0.051*** (4.028)	0.036*** (2.593)
RetSD	1.307*** (3.769)	0.986** (2.271)	1.103** (2.532)
Market to Book	-0.001 (-0.261)	-0.001 (-0.292)	-0.001 (-0.244)
Enforcement_Action <sub>t-1</sub>	0.766*** (4.072)	0.721*** (3.727)	0.618*** (3.234)
Constant	-5.955*** (-19.193)	-6.134*** (-12.778)	-5.284*** (-9.054)
Pseudo R <sup>2</sup>	0.291	0.304	0.321
Fixed effects?	None	Year	Year and Sic
Observations	3910	3910	3910