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IES Working Paper: 10/2018



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Financial Impact of Regulatory Sanctions on French Listed Companies

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Abstract:

This paper assesses the information content of sanctions of listed companies pronounced by the French Financial Market Authority, through reactions from financial markets over the period 2004 to 2016. We answer whether, for a listed company, being named in a sanction report, as an offender, an acquitted, or a victim of others' financial misconduct conveys information to the market using an event-study methodology, complemented with cross-sectional regression analysis: do investors react to such news, and if so, at which stage of the procedure, to what extent, and why? We find that the markets do react accordingly to the information content of the sanctions. Guilty listed companies experience significant negative abnormal returns after both the sanction decision, and its publication (respectively -0.9% and -1.1% from the day preceding the event until 3 days after), though to a limited extent in absolute and relative terms. Some factors will contribute to stronger underperformances such as being investigated, longer procedures, being a smaller company possibly from financial or technological sectors, stronger media coverage of the sanctions, and better economic activity. The markets also incorporate the information content of the decision: no statistically significant abnormal reaction follows the publication of anonymized sanctions; market reactions vary depending on the regulatory breaches, being stronger for third party offenses; and, to some extent, the severity of the decision influences the magnitude of abnormal returns. Settlements do not convey information to the market, being a lighter and shorter procedure, associated with lower sanctions. Being sentenced non-guilty implies a mixed correction on the market, depending on the step of the procedure. Finally, companies named in a sanction report as victims of others' regulatory breaches also suffer negative abnormal returns after the sanction, suggesting double punishment.

Keywords: Sanction, Financial Markets, Event Study, Regulation, Fraud, Information and Market Efficiency, Listed Companies

JEL: G14, G18, K42, N24

1 Introduction

Regulating financial markets aims at increasing the information available to investors, and at ensuring the soundness of the financial system. By doing so, it reduces the asymmetric information in financial markets, as well as the adverse selection and the moral hazard for investors. Regulatory sanctions and financial penalties may increase the stability in stock markets, as detailed by Koster and Pelster (2017) regarding the banking sector. Such sanctions demonstrate that the regulatory authority does not tolerate regulatory breaches and that the set of rules has to be respected in order to ensure investors' confidence. Sanctions may also play a future deterrent and disciplinary effect by dissuading breaches and encouraging best practices in light of the risks of being caught and sanctioned. Finally, sanctions may discourage listed companies to engage in excessive risk-taking activities.

A wide range of regulatory interrogations derives from these initial observations. Is public enforcement of securities laws and sanctions efficient in deterring future financial market misconduct, or should regulators focus on other regulatory tools at their disposal (such as more transparency, or private enforcement) to encourage best practices? Going more into the details of the decisions, which form of sanction is more likely to encourage companies, managers, employees, and third parties to act more responsibly? A complementary question is who to sanction in terms of efficiency and future deterrence? If sanctions influence the reputation of market players, for how long does it last? What are the consequences, for a listed company, of being named in a sanction report, *i.e.* being a victim of others' financial misconduct?

The goal of this paper is to contribute to answering these questions by exploiting the information content of a unique dataset compiling all the regulatory sanctions and settlements made by the French Financial Market Authority (AMF), from its creation in 2004 until 2016. The scope was restricted to listed companies, the most frequently sanctioned legal entities over the period under review. Such regulatory procedures contribute significantly to the legal risks for the entities being prosecuted. What is particularly interesting about the French sanction procedure, like in the UK (Armour *et al.*, 2017), is that all the procedure until the Enforcement Committee (EC) hearing is, by law, confidential. Hence, no abnormal market reaction should be measured following the first two steps of the procedure. All the dates of the sanction procedures are, by construction, unique and available. To access the information at the stage of the EC hearing, investors either have to attend it physically, or to hope for the publication of articles in the press

mentioning a potential sanction of a given entity (which happens in 42% of our sample). Additionally, sanctions are not private information for the firms: they are revealed by the Regulator, hence exogenous and independent from the firm's agenda. Hence, there is no self-selection or optimization process made by the sanctioned companies: the AMF decides when it publishes its decision. That makes it particularly interesting to conduct a sequential event study on past decisions, to challenge whether this confidentiality is respected and whether such decisions convey valuable information to the market. Additionally, contrary to the USA, limited research was done on the sanctions of the French AMF. The past studies focused on one kind of regulatory breach (only accounting frauds, in Djama, 2008) or covered a limited number of sanctions (25 sanctions of listed companies, in Kirat and Rezaee, 2015). This gap can be accounted for by the limited open access to data. In fact, not only part of the sanctions were initially published anonymized (28% on average), but the EC decided *ex post* to anonymize the oldest sanctions reports (see de Batz, 2017a, and de Batz, 2017b). Consequently, the current rate of anonymization of sanctions is much higher (57% on average). Finally, the originality of the approach lies in the fact that it investigates to the largest possible extent how regulatory decisions are perceived by market players, depending on their content, on the characteristics of the offender, on the timing, on the media coverage, and on the legal framework, etc. It questions, over a long and up-to-date time span (2004 to 2016), potential abnormal reactions in stock returns following the four milestones of sanction procedures, from the start of the inquiry until the publication of the decision (*see Figure 1*). It is particularly interesting given the length of the procedures (2.7 years on average from the ignition until the sanction, followed by a two month lag before publication). Better understanding the stock market response along time and until recent sanctions is all the more relevant that the sanction powers of the AMF were broadened in 2016.

The granularity of the dataset enables to go beyond the "classical" impact of guilty decisions on listed companies. In fact, this research enriches the understanding of market reactions with four alternative scenarios: the company is sanctioned (*i.e.* found guilty and possibly anonymized in the final report) or not (*i.e.* acquitted), the company is sentenced guilty after a settlement procedure, and the company is mentioned in a sanction decision as the victim of others' financial misconduct. Additionally, this paper tests the robustness of the reaction to sanctions through several dimensions (not corrected for the sector, before or after the financial

crisis, depending on the seriousness of the regulatory breaches, including a large recidivist global financial institution). Assuming financial markets are informationally efficient (Fama *et al.*, 1969), all the available information, and in that case sanctions by a regulator and their characteristics, should be reflected immediately by the market (stock prices/returns of the listed companies). Investors should react proportionally to the degree of severity of the financial market misconduct, by modifying behaviors and investment strategies (Choi and Kahan, 2007). If a potential sanction stands for a credible threat to a market player, the mere existence of such sanctions could complement financial regulation by providing incentives to comply with the set of rules. Alternatively, a wide range of reasons could lead investors to fail to, or decide not to sell their stocks in response to regulatory breaches: unawareness, misunderstanding of the financial misconduct¹, not concerned about the wrong-doing, to avoid the hassle of selling and reinvesting the proceeds elsewhere, to circumvent tax consequences, to avoid an exit fee, or willingness to stay with a risk taking issuer (and potentially more profitable), etc.

All in all, this article aims at contributing to the existing literature on regulation and sanctions by detailing the timing and transmission schemes of such news into the French stock markets, depending on the content of the decision, on the media coverage, and on the characteristics of the listed companies. The results of this research will contribute to improving the understanding of financial market regulation in order to have more efficient and credible regulatory institutions, given the great challenges they are faced with, as stated by Carvajal and Elliott (2007): 1) the lack of independence from the government and political process; 2) the lack of legal authority; and 3) limited resources. It is a crucial parameter of the attractiveness and the strength of securities markets in terms of fund raising (La Porta *et al.*, 2006), of market capitalization (Beny, 2008), and of liquidity (Cumming *et al.*, 2011).

Following the rich literature on the impacts of sanctions, an event study methodology was used to test the reactions in equity returns to the “events” (*i.e.* the main steps of the sanction/settlement procedures), searching for abnormal returns. A market model augmented with sectoral index was employed to describe the returns. Additionally, the market value losses were estimated. The results were complemented by cross-sectional regressions, to question the determinants of the abnormal returns.

¹ For example, Drake *et al.* (2014) reckon that the high level of complexity of accrual mispricing of annual earnings announcement would be the reason why of the lack of influence of their press coverage. Accordingly, breaches to the Financial and Monetary Code could be less understandable for investors than market abuses such as price manipulation or insider trading, hence dampening their impact.

Our results indicate, on average, statistically significant abnormal reactions, even though, on a sanction-by-sanction basis, the statistical significance is difficult to detect because of the volatility in firms' stock returns. Guilty listed firms do incur abnormal financial losses after the sanction decision and its publication, though to a limited extent in absolute and relative terms. As expected, and reassuringly in terms of confidentiality of procedures, no reaction followed either the beginning of the procedure, or the statement of objection. The research further investigates the information content of the sanction decisions. In line with the efficient financial market hypothesis, the results conclude that markets discriminate depending on the verdict, and on the seriousness of the regulatory breaches. Complementarily, the cross-sectional analysis demonstrates statistically significant more negative reactions for sanctions featuring in particular: investigations, longer procedures, financial or technological firms, involvement of the top management, higher media coverage, and during better economic times. Additional event studies conclude with no reaction following anonymized sanction or settlement publication, coherently with their anonymous or less severe nature. Markets react in opposite directions for acquittal decisions, depending on the step of the procedure. Finally, and surprisingly, an event study demonstrated significant abnormal losses following the sanction decision for listed companies which were victims of others' financial misconduct, suggesting a double punishment.

Some lessons can be drawn from these results and their comparison with other jurisdictions, to reinforce the credibility of sanctions through some regulatory inflections including: possibly significantly higher cash fines, and more frequent disciplinary sanctions, as they are not taken into account by the markets over the period under review despite being the most straightforward features of the sanctions; sanctioning more individuals, and in particular top managers in order to encourage best practices; and increasing the transparency on sanctions, for the market to be able to fully and more rapidly assimilate the information.

The rest of this paper is structured as follows. Section 2 presents a literature review. Section 3 details the specificities of the AMF sanction procedure, and of the sanctions in the samples. The following section describes the methodologies of the event study and the cross-sectional regression. Section 5 reports the results for guilty decisions, complemented with robustness checks and with information content tests. Section 6 puts into perspective the results by analyzing the reactions for other types of decisions: acquittals, settlements, and sanctions naming listed companies as victims of others' wrongdoings. Section 7 concludes.

2 Literature review

According to Becker's economics of crime (1968), the credibility of sanctions in circumventing frauds depends on three parameters: 1) the expected profits from committing the fraud; 2) the probability of being caught (only part of the frauds are detected²); and 3) the subsequent costs (fines, disciplinary sanctions, jail, and reputational sanction). Hence, the regulatory sanction is only part of the sanction one can receive when being caught for a financial misconduct. Iacobucci (2014) demonstrated that reputational sanctions, hence the incentives to comply with regulation, depend on the expected legal penalties (*i.e.* the size of the expected financial penalties). Others estimated that the reputational penalty would by far exceed the legal penalty (Karpoff and Lot, 1993, Karpoff *et al.*, 2008a for the United States (USA), and Armour *et al.*, 2017 for the United Kingdom (UK)). To reach optimality, the expected total penalty for misconduct (explicit legal sanction plus reputational penalties) should equal this activity's total social cost. Otherwise, the perceived under-punishment of frauds might, in the end, encourage financial misconduct. The question is then whether financial misconduct pays, in the sense that expected profits from regulatory breach(es) may exceed the costs of a sanction (monetary (fines) and non-monetary (reputation) costs) times the probability of being caught. Beyond financial penalties, the impact of other regulatory tools at the disposal of regulatory authorities was also studied to search for more efficient market oversight. Berger and Davies (1998), Barth *et al.* (2004), and La Porta *et al.* (2006) advise Regulators to focus on other regulatory tools than sanctions to encourage best practices, such as disclosure and private enforcement. Aitken *et al.* (2015) concluded that more detailed exchange trading rules, and more surveillance over time and across markets, significantly reduce the number of suspected cases (of market manipulation, insider trading, and broker-agency conflict) but increase the profits per suspected case³. D'Antoni and Galbiati (2007) showed that, when the sanctioning policy conveys information about the harmfulness of the sanctioned behavior, the use of non-monetary sanctions can lead to optimal law enforcement, even when the monetary fine is not maximal.

Sanctions by one's regulatory authority are a major legal risk. Such penalties affect firms directly due to the length of the legal procedures, and to their financial consequences (both in terms of process and of financial fines). They also have indirect consequences. Sanctions stand

² Cumming and Johan (2013) estimated that, on average, 2 to 5% of listed companies in the USA are investigated per year by the SEC.

³ "A 1-standard-deviation improvement in trading rule specificity gives rise to a 23.43% reduction in the number of suspected insider trading cases and a 53.17% increase in profits per case."

for an additional signal of riskiness sent by regulatory authorities, regarding the extent to which the firm abides by its legal obligations. Consequently, insurance fees might be increased, as well as investments in communication, marketing, and IT to compensate for the demonstrated market failure. The firm's reputation might also be durably damaged, from the point of view of shareholders and stakeholders. As argued in Fiordelisi *et al.* (2014), reputation is a key asset for any company whose affairs are based on trust. Reputation can be damaged by a wide range of scandals (financial fraud, misleading advertising, product recalls, airplane accidents, environmental accidents, illicit allegations, etc.). Still, newspapers do not converge in their analysis of the consequences of financial sanctions (*see appendix Remark 1 for examples of news reactions to AMF sanctions*).

Several factors suggest that stock value should contract after the news of a sanction: the mere cost of the cash fine imposed by the regulatory authority, the second-round effects of a sanction, such as higher costs of funding and doing business (insurance, IT and process improvements, marketing, communication, etc.), and, more generally, the signal of higher riskiness of this entity (reputational cost). Consequently, a sanction may lead stockholders and shareholders to downgrade their forecasts on a sanctioned firm. Conversely, some opposing forces may play: some investors may fail to or decide not to react to the news, while risk-seeking investors could search for investments in firms more prone to play with the limits of the law, possibly synonym of higher returns.

The impact of regulatory sanctions on the behavior of financial investors was empirically studied by the literature from different angles, for numerous jurisdictions, either for given populations⁴, for specific information⁵, or depending on the media coverage⁶. The goal is, in the end, to contribute to reaching higher standards in terms of regulation and market efficiency. The country which was more under scrutiny is the USA⁷, given the easy data availability on financial fraud. The consecutive steps of their specific enforcement procedure were studied (Wells Notice issuance, Accounting and Auditing Enforcement (AAER), and SEC sanctions or class action filing), typically employing event studies methodologies. Transparency is higher through the

⁴ Such as listed companies (Karpoff and Lott, 1993, Kirat and Rezaee, 2015), or asset managers (Choi and Kahan, 2007).

⁵ Such as financial and accounting frauds (for France, Djama, 2008), the accounting disclosure (Karpoff *et al.*, 2008b), or insider trading news (Rogers *et al.*, 2016).

⁶ Miller (2006), Fang and Peress (2009), Fang *et al.* (2014) and Rogers *et al.* (2016).

⁷ Amid others, ordered chronologically: Feroz *et al.*, 1991, Karpoff and Lot, 1993, Alexander, 1999, Pritchard and Lewis, 2001, Karpoff *et al.*, 2008a, Tibbs *et al.*, 2011, and Haslem *et al.*, 2017.

enforcement procedure as the SEC communicates and publishes news on the ongoing procedures. These articles show that markets tend to react to the earlier stages. For example, Feroz *et al.* (1991) found significant negative returns after the news and the disclosure of an ongoing investigation, but no abnormal returns after the settlement itself. Similarly, Pritchard and Ferris (2001) concluded with strong negative abnormal returns after the revelation and the complaint filing but without reaction after the decision itself. Still, in an in-depth comparative study, Karpoff *et al.* (2014) stressed that the consecutive nature of the USA enforcement process significantly biases the estimates of abnormal returns. Similar event studies were conducted following the news of a financial frauds and regulatory sanctions for other jurisdictions (Europe, with France and the UK in particular, and Asia, with Japan and China in particular). They are scarcer, possibly due the data availability challenges. On average, whatever the country or region under review, these event studies conclude with negative, rapid (*i.e.* over the next few days following the sanction), and significant abnormal market reactions⁸ to such financial news from the regulator (*i.e.* sanctions). Lin and Rozeff (1995), for example, demonstrated that 85 to 88% of private information is incorporated into prices within one trading day. Still, the extent of the estimated cumulated average abnormal returns varies substantially, as well as the timing. Additionally, there can be some anticipation from the markets, possibly resulting from rumors or private information regarding the sanction.

Beyond the mere impact of sanctions on returns (put it differently abnormal returns estimated using an event study methodology), some studies aimed at isolating the reputational sanction imposed by the market (if any) from the financial sanction as pronounced by one's regulatory authority. To do so, Karpoff and Lott (1993), Murphy *et al.* (2009), and Armour *et al.* (2017) deducted the financial sanction (*i.e.* the fine) from the overall market reaction to estimate "reputational" sanction from the market. The latter is a measure of the loss of value of the firm according to its stakeholders following the news of the sanction for significant wrongdoings. They typically conclude that the reputational sanction exceeds, by far, the pure financial sanction set by the regulator. Armour *et al.* (2017) additionally observed that, in the UK, the reputational sanction is unrelated to the size of the financial penalties levied.

⁸ For shorter term reactions, average abnormal returns on the day of the event (AAR_0) contract by 3.85%, ranging from -0.6% to -14.9%. The magnitude and the range are similar with slightly larger event windows (-5.84% in $CAAR_{[0,+1]}$, from -0.5% to -20%; -6.27% in $CAAR_{[0,+2]}$, from -0.6% to -16.6%, and -6.48% in $CAAR_{[-1,+1]}$, from -1.1% to -25%). These averages are in line with the two past studies on France (-4.1% in AAR_0 , -5.8% in $CAAR_{[0,+1]}$) and exceed estimates on Europe and on the UK (-1.3% in AAR_0).

Finally, part of the literature tried to discriminate the reactions depending on the content of the decision or communication by the regulator: being suspected of financial regulatory breaches, or being acquitted. Some studies found negative impacts on returns of allegations of financial misconduct (*i.e.* for being investigated by one's regulator), demonstrating a reputational penalty to the mere suspicion of misconduct (Murphy *et al.*, 2009, Nelson *et al.*, 2009, Dyck *et al.*, 2010, and Tibbs *et al.*, 2011). Similarly, Pritchard and Ferris (2001) concluded with negative abnormal returns following the revelation of a potential fraud, and the complaint filing of lawsuit, whatever the outcome (whether or not the motion was denied or granted). Regarding the decision itself, they found that the market reacts positively (negatively) if the motion is denied (granted) but insignificantly, suggesting that this information is either costly to obtain or not material. Haslem *et al.* (2017) found that the filing for dismissals is only slightly less negative than it is for losses ($CAAR_{[-1,+1]}$ of -0.1%, comparing with -0.5% for guilty decisions).

3 The AMF, its sanctions, and the subsequent samples

3.1 Sanctioning powers of the AMF

As part of its mandate, the Enforcement Committee (EC) of the French Financial Market Authority (AMF⁹) sanctions market players which do not comply with the set of rules they are subjected to (the Monetary and Financial Code, and the AMF General Regulation), by committing regulatory breaches¹⁰. The goal of sanctions, from a regulatory point of view, is to strengthen the market place, by improving practices and setting examples. For a given regulatory breach(es), such administrative procedures could be conducted – until 2016 – by the AMF, in parallel, to criminal prosecutions. From 2004, when the AMF first sanctioned after its creation in 2003, to 2016, 308 decisions were made and published on the AMF website. They stood for 193 billion euros of cumulated fines¹¹. All sanction procedures follow the same four milestones (*see*

⁹ <http://www.amf-france.org/>

The AMF has granted the author access to regulatory data. Interviews were also conducted with a wide range of collaborators of the Authority, who need to be thanked for their time and cooperation.

¹⁰ Four main regulatory breaches are sanctioned by the AMF: **1) any breach of the Monetary and Financial Code and the AMF General Regulation** (*i.e.* a failure to comply with professional obligations by regulated professions) and three market abuses: **2) breaches of insider dealing regulations** (use and/or divulgence of insider information for investment decisions); **3) price manipulations** (deliberate misconduct to influence securities prices and fair price formation); and **4) breaches of public disclosure requirements** (failure to comply with financial reporting laws and regulations). See de Batz, 2017a, and de Batz, 2017b, for details on the legal framework and on the history of sanctions.

¹¹ 24 sanctions were made *per* year on average, to which add 6 settlements per year since 2012, when this new procedure was first concluded. When excluding the 9% acquittal decisions, 94% of the guilty sanctions included a

Figure 1). If an investigation (to identify market abuses), or a control (to check the compliance with one's professional obligations), (*step 1* being the formal ignition of the AMF internal procedure, with the approval of a control or an investigation) concludes that a significant regulatory breach(es) can be characterized, the Board of the AMF sends a statement of objection to the incriminated entity/person (*step 2*), asking for additional information. Given these elements, the Board may transfer the case to the AMF EC, initiating the "judicial part" of the procedure. The latter ends with a public hearing of the EC and possibly sanctions (cash fines¹², disciplinary sanctions¹³, and usually publication¹⁴). Once the sanction decision is finalized by the EC (*step 3*) and published by the AMF (*step 4*), the offender (firm and/or individual) and/or the AMF Chairman of the Board can appeal the decision towards four different jurisdictions: State Council, Court of Appeal of Paris, Court of Cassation, and *via* priority preliminary ruling on constitutionality.

Within this framework, the legal attributes of the AMF to sanction significantly evolved over the period under review. On four occasions, its sanction powers were reformed, broadened and reinforced (de Batz, 2017a, and de Batz, 2017b). Additionally, an alternative procedure to sanctions, the settlement proceeding, was introduced in 2010, and first applied in 2012. The latter implies simpler and shorter procedures, initially only for the less serious regulatory breaches (failure to meet with professional obligations), without guilt recognition from part of the offender or appeal possibility. The two latest complementary reforms were enforced in 2016¹⁵ and will

cash fine, for an average 688,320 euros. The fines are paid to the French Treasury in majority, or to the guarantee fund to which the professional belongs.

¹² There is neither binding rule nor clear guideline on how to value fines. Time consistency and the maximums set legally are the two key objective parameters to set a fine, to which add specificities of the respondent (gravity and duration of the financial misconduct(s), financial situation, magnitude of the obtained gains or advantages, losses by third parties, etc.). Maximum fines were increased three times over the period under review and can amount up to 100 million euros for market abuses committed by professionals, or 10 times any profit.

¹³ **1) Warning or blame**, depending on the seriousness of the wrongdoing(s); and **2) "ban on activity"**, covering temporary or permanent ban on providing some or all services, suspension or withdrawal of professional license, and temporary or permanent ban on conducting some or all businesses.

¹⁴ Most sanctions are published, in particular in recent years, except if such disclosure would seriously jeopardize the financial markets or cause disproportionate damage to the parties involved. The Enforcement Committee decides whether or not to publish its decision, where to publish it (mostly on the French Official Journal for Legal Notices (BALO) and on the website of the AMF) and whether or not to anonymize it (entirely or partially). Moreover, the sanctioned entity and/or person can be required to publish the decision, at its own expenses, in a given set of magazines.

¹⁵ *Law on market abuses of 21, June 2016 (Law n°2016-819)* and *Law on transparency, the fight against corruption and modernized business life, of 9, December 2016 (Law n° 2016-1691, IV Art. 42-46)*

Main changes: 1) The maximum fine remains 100 million euros but can stand for up to 15% of the annual turnover for a legal entity and has been increased up to 15 million euros or ten times any profit earned for an individual failing to meet his professional obligations. 2) The ban from activity can now exceed 10 years. 3) The powers of the

impact sanction and settlement procedures from 2017 onwards. They reformed the organization of legal proceedings for regulatory breaches and reinforced the sanction powers of the AMF. Therefore, such evolutions make it particularly interesting to assess the impact of sanctions on investors from the first sanction pronounced in 2004 until late 2016, before a new set of tougher rules starts to apply.

3.2 Datasets of the sanctions and settlements made by the AMF

A unique and exhaustive dataset was built covering the 308 publicly available sanction decisions published on the AMF website¹⁶ over the period 2004-2016. It was completed with a second dataset covering the 32 settlement decisions made from 2012 to 2016. Over the period under review, a wide range of variables (more than 40) were included (*see descriptive statistics in Table 3*). Most of these distinctive characteristics of the sanctions were drawn from the online sanction reports. They were completed with publicly available information, and with regulatory confidential information shared by the AMF. The latter covered in particular the names of the entities, when the sanction report was anonymized¹⁷ (either *ex ante* or *ex post*), and some missing dates of the procedure. Finally, two softwares were used: Thomson Reuters, to extract all market data (stock prices, market capitalization, SBF 250, and Euronext CAC sector indices, *see Table A.2*), and Factiva, to create some media coverage variables.

In the end, the datasets covers: 1) the characteristics of the sanction (or settlement) procedure (including the type of procedure at the origin with an investigation or a control, the

Enforcement Committee have also been broadened to public offerings of unlisted financial instruments (without prospectus) and to crowdfunding. 4) The scope of regulatory breaches eligible to settlement procedures has been widened to all market abuses (insider dealing, price manipulation and dissemination of false information), and no longer only the failures of regulated professions to meet professional obligations. 5) Finally, any decision published on the AMF website should remain online at least for five years (which was already the case), but any reference to personal data should be anonymized after five years (which was only partially the case).

¹⁶ See for sanctions: <http://www.amf-france.org/Sanctions-et-transactions/Decisions-de-la-commission/Chronologique/Liste-Chronologique.html?year=2017&docType=sanction>

The dataset was enriched with regulatory confidential data, thanks to the collaboration of the AMF, in particular regarding the anonymized decisions and missing dates in sanction reports or information dating back to before the AMF creation. Regarding recidivism, the ACPR, the French regulator of financial institutions, was contacted to share confidentially data on its sanctioned entities, unsuccessfully.

¹⁷ Sanction reports can be first (*ex ante*) published anonymized or not, depending on the EC decision. Additionally, reports can be anonymized *ex post*, following decisions of the Chairmen of the EC (de Batz, 2017a, and de Batz, 2017b).

sanctioned regulatory breaches¹⁸, the dates of four milestones of the procedure¹⁹), 2) the main features of the decision itself (such as acquittals, the cash fines, disciplinary sanctions, bans on activity, anonymization of the sanction²⁰, the chairman of the EC, the length of the sanction report, the characteristics of potential appeal procedures²¹, whether other listed companies were victims of the regulatory breaches being sanctioned), 3) the attributes of the respondents (such as the moral form, whether an individual (employee, manager, other) was sanctioned, involvement of the top management²², the survival of the firm after the sanction, recidivism before or after the AMF creation, listed on which stock market, market capitalization, business sector²³), 4) the media coverage of the sanctions (media exposure intensity before the sanction, the number of articles published between the decision and the publication and over the week following the publication, whether articles were published in top tier financial journals, *L'Agéfi* and *Les Échos*), and 5) some time and legal indicators (AMF chairmen of the board, financial regulations in force, GDP growth rate). A comprehensive correlation analysis was carried of the variables in the dataset²⁴. The main conclusions are in appendix (*Remark 2*).

3.3 Features of the sample of sanctions of guilty listed companies

The first aim of this paper is to provide robust empirical evidence on the stock market reactions to the four milestones of the AMF sanction procedures, involving the most serious regulatory breaches being detected. Conversely, less severe market failures remain confidential, and are dealt with directly bilaterally between the AMF and the regulated entity. The sample of 308 sanctions was restricted to listed companies, which were historically the most frequently

¹⁸ The AMF classification is used: insider trading, price manipulation, failure to meet with the information regulatory requirements vis-à-vis investors or the regulator, failure to meet with professional obligations, proceedings, and takeovers.

¹⁹ Complementary variables were built: the duration of the procedure from ignition to the sanction decision, in years, as in Karpoff et al. (2008b), and the lag between the decision and its publication, in months.

²⁰ Three dummies cover the anonymization: anonymized when first published, partial anonymization, and *ex post* anonymization, at the EC Chairmen's discretion.

²¹ Several variables characterize the appeals: whether the decision was appealed or not by the sanctioned entities, as in Karpoff et al. (2008b); whether the AMF appealed the decision of the EC; the number of courts appealed to; whether the decision was confirmed or not; and the duration of the appeal procedure.

²² From an investor's point of view, such implication could be a particularly worrying signal, demonstrating the improper management of the company and questioning the capacity of the management to deal with future challenges. In fact, Karpoff *et al.* (2008b) demonstrated how financial mis-presentation can negatively influence careers of top managers (as more than 90% of individuals responsible for fraud lose their jobs by the end of the SEC enforcement procedure), adding to financial and disciplinary sanctions.

²³ Following the Euronext classification of listed companies. The most frequent sectors, with dummy variables, are: financial sector, industry, consumer goods and services, and technology.

²⁴ Detailed results are available on demand.

sanctioned population, followed by asset management firms. They stand for 42% of the sanctions over the period under review. The initial sample covered 134 cases, in which 129 sanctions impacted 105 companies from 2004 to 2016. Some sanctions involved more than one listed company. Additionally, some companies were sanctioned several times, when taking into account branches of groups. These recidivist companies were sanctioned on average three times, ranging from two up to nine sanctions.

The sample was restricted to the firms being daily listed on the Paris stock markets²⁵, from the 120 trading days before ignition of the procedure, until 120 trading days after the publication of the sanction²⁶, spanning on average 3.4 years. To avoid introducing biases in the sample, the sanctions involving entities not listed over the whole period (*i.e.* daily data only partly available due to early delisting²⁷, late listing or temporary suspension), or quoted at a higher-than-daily frequency, were excluded from the scope (*see Table 1*). In fact, such companies could be already ailing, experiencing financial difficulties (announcing a delisting or a failure in the near future), less traded (hence less liquid, questioning the price formation mechanism around the events), or could undergo exceptional events justifying a temporary suspension (M&As for example). All these reasons are likely to interfere with the event and to impact (to the down- or up-side) the market responses to the news of a sanction. Additionally, four sanctions on a bank daily traded in Euronext Paris were excluded as the share of activities in France was negligible compared to the mother company. Their inclusion could have introduced a bias in size and in the

²⁵ Euronext is organized around three pillars:

- 1) The European Union regulated market for equity securities operates in five markets (including Paris). They are segmented by market capitalizations: compartment A (above 1 billion euros), compartment B (from 150 million to 1 billion euros), and compartment C (below 150 million euros).
- 2) Alternext targets small-and-mid-sized companies by offering a simplified access to capital markets with fewer requirements and less stringent ongoing obligations than on the EU-regulated market.
- 3) The free market provides the easiest access to capital markets through a direct quotation procedure for any company, whatever the size (from micro-cap to medium-sized international companies) searching to access capital markets (free from the Euronext's eligibility criteria and information disclosure requirements). This market targets primarily sophisticated or professional investors.

²⁶ Hence, entities which went into bankruptcy before the end of the sanction procedure or decided to delist were excluded from the sample (*see Table A.2 and Table A.3*). Delisting can be accounted for two main set of reasons: 1) managerial decision to delist (24%) due to the regulatory constraints and the legal and financial risks associated, preferring another way of financing (less regulatory constrained); and 2) mergers or acquisitions with/by another listed company (33%), leading to delisting.

Regarding data problems, some sanctions were excluded as they were not daily quoted, or their quotations were partly suspended over the period under review.

For the final sample, the length of stock prices surveyed (for the four steps) is on average 3.5 years.

²⁷ Karpoff et al. (2008a) also found for the USA that there is high delisting rate, which reduces massively the size of the sample. The study also stresses that the delisted companies tend to be associated the poorest stock performance over the whole enforcement period.

likelihood in reaction²⁸. Acquittal decisions (11 cases) were also removed from the initial sample. Their expected information content conveyed regarding the firm is not straightforward. On the one hand, markets could react negatively, as only the most serious regulatory breaches are brought to the EC, all the more that the reason of acquittal could be prescription limit or procedural irregularities (which do not acquit the entity). On the other hand, being acquitted could send a positive signal to the markets: the firm will not have to honor a financial fine. To avoid overlap and enable data clustering²⁹, two sanctions were excluded, as they targeted financial companies which were subject to two concomitant procedures. The features of the sanctions (cash fines and disciplinary sanctions) were subsequently merged, to assess the cumulated severity of the decisions made by the Regulator. Finally, five sanctions were rejected due to major confounding events, such as the outcome of a major law suit, the start of a safeguard procedure, or changes of name.

All in all, the final sample of guilty daily-listed companies covers less than half of the sanctions of the initial set of sanctioned listed companies mentioned (*see Table 1*): 52 sanctions³⁰ (*i.e.* on average 4 sanctions per year) against 40 listed companies (or 40% of all the sanctioned entities over the period under review). 6 of the latter are no longer listed, following M&As or bankruptcies. The fact that the sample covered exhaustively the listed companies sanctioned limits risks of potential biases which could have been introduced through the sample selection. Complementarily, parts of the sanctions initially excluded were included in complementary analyses (the 4 sanctions on the major international bank, and anonymized or acquittal decisions).

Table 2 compares the descriptive statistics of the sanction characteristics for all the listed companies with the sample of daily listed companies. 81% of the sanctions followed investigations. The most frequent regulatory breach for the sample³¹ is dissemination of false

²⁸ Given the size of the bank, and the markets on which it is traded, any action from the French AMF would unlikely provoke a significant abnormal reaction from global shareholders. Additionally, confounding events could lead to misinterpret the results.

²⁹ Hypothesis for clustering: returns are supposed to be independent across firms to be able to aggregate variances.

³⁰ By construction, the sample selection process should avoid the five problems affecting the validity of interpretation of empirical findings (Karpoff *et al.* (2012): 1) misidentification of event dates (stale initial revelation dates), 2) missing value-relevant information (scope limitations), 3) errors of omission, 4) duplicate (or follow-on) events for the same instance of misconduct, and 5) inclusion of events unrelated to misconduct (false positive). Additionally, it complies with the 3 properties that an ideal empirical analysis of reputational loss should possess according to Armour *et al.* (2017): (i) a clearly defined revelation of information relating to a firm's conduct; (ii) all information relevant to the firm's conduct should be released simultaneously (in the sanction report); (iii) the direct costs associated with the revelation of information (for example, in this case the size of publicly imposed fines) should be measurable when it is disclosed and distinguishable from the additional reputational loss.

³¹ For the sample, there were 1.5 regulatory breaches per sanction on average.

information (63%), followed by breaches to the Monetary and Financial Code and the AMF General Regulation (38%), insider trading (29%), and price manipulation to lesser extent (10%). The great majority of companies were big companies, as 56% of them were listed on the Compartment A and 17% on the Compartment B of Euronext. The average market capitalization (on the day preceding the sanction) amounted to 9.8 billion euros, ranging from 8 million up to 69 billion euros with a standard deviation of 15.5 billion euros. 48% of the decisions were appealed, with an 84% confirmation rate of the Enforcement Committee's decision.

Most of the divergences between the sample and the average of listed companies derive from the higher share of financial companies in the sample (38%, against 25% on average)³². In fact, these sanctions targeted top tier universal banks, with higher-than-average market capitalization (by 42%³³), and a lower likelihood of bankruptcy (the Central Bank being the lender of last resort). The gap in market capitalization is also accounted for by the fact that smaller companies are more frequently not daily quoted (hence excluded from the sample) or suffering from some financial difficulties. It can lead to quotation suspension or bankruptcy rapidly after the sanction, which adds to the reasons for being excluded from the sample. Additionally, financial firms turned out to be historically the companies mostly likely to reoffend (de Batz, 2017a, and de Batz, 2017b). Recidivism and size being parameters to set the amount of the cash fine, there is no surprise in having a higher-than-average cash fines in the sample (28% on average).

3.4 Features of the sample of the victim companies

In parallel, 85 listed companies were mentioned 105 times in 80 sanction decisions as victims of other market participants' regulatory breaches (*see Table 2*). 19% of the firms were victim several times, on average 2.3 times. 15% of these companies were both sanctioned by the AMF and victims of others' wrongdoings, 21% being financial companies.

Out of the initial sample of 105 sample, 40 cases were excluded: 13 due to data frequency problems (either not daily listed, suspended during the process, or newly listed through the procedure), 12 as they were delisted during the procedure, 11 as they merged with other companies before the sanction was pronounced (hence delisted), 2 as they were listed in another

³² The sectors most frequently sanctioned were financials (38%), consumer goods and services (15%), industrials (15%), and technology (13%).

³³ When excluding the 4 sanctions of the major international bank excluded from the sample.

stock market, and 2 last because they were twice victims of other companies' regulatory breaches, leading to two parallel sanction procedures. All in all, on 65 occasions, 53 daily listed companies were mentioned in 50 sanction reports as victims of others' regulatory breaches. These companies were, on average, victim 1.2 times of others' financial misconducts, overwhelmingly uncovered by investigations (95%). For the sample of sanctions, the sanctioned entities received much higher fines than the average (978,000 EUR for the sample). In 10% of the sanctions, the verdict was an acquittal. The most frequent regulatory breach for the sample is insider trading, for 40% of the sanctions, followed by breaches to the Monetary and Financial Code and the AMF General Regulation (29%), price manipulation (28%), and dissemination of false information (25%)³⁴. In line with the population under review, the weights of insider trading and price manipulation are much higher than the average of sanctions (respectively 28% and 9%).

The great majority of companies were big companies. 57% of them were listed on the Compartment A, and 19% on the Compartment B of Euronext. The average market capitalization (on the day preceding the sanction) amounted to 13.9 billion euros, ranging from 7 million up to 104.8 billion euros, with a standard deviation of 23 billion euros. The sectors most frequently victim were industrials (23%), financials and consumer goods and services (22% each), technology (12%), and utilities (11%).

4 Methodology

4.1 Event studies, to test reactions in equity returns following the 4 steps of sanction procedures

Following MacKinlay (1997), Campbell *et al.* (1997), and Kothari and Warner (2007)³⁵, event studies were conducted to challenge the information content of the four main steps of the AMF sanction procedure, from ignition to publication (*i.e.* "events"). The impact of the event is measured as the abnormal returns of the company being sanctioned. For every "event", the abnormality of daily returns will be tested over an event window, by comparing "actual" *ex-post* returns with "normal" returns. The latter are the expected returns without conditioning on the event occurring, estimated over an estimation window, preceding the event window. The abnormal returns consecutive to a given step of the procedure are taken as an unbiased estimate

³⁴ A sanction can cover several regulatory breaches (1.3 on average for the sample of sanctions). The remaining last two reasons being very rare: 5% for proceedings and 2% for takeovers.

³⁵ And a long history of event studies, see Dolley (1933), on the price impact of stock splits.

of the total financial consequence of the sanction (all expected uninsured future costs, including reputational losses). For a sanctioned firm i , over the period τ , the abnormal returns will be:

$$AR_{i,\tau} = R_{i,\tau} - E(R_{i,\tau}/X_\tau) \quad (1)$$

$AR_{i,\tau}$, $R_{i,\tau}$, and $E(R_{i,\tau}/X_\tau)$ respectively capture for the abnormal, the actual, and the normal returns on the security i over the period τ , given the conditioning information X_τ for the normal performance model.

A market model³⁶ augmented with a sectoral index³⁷ describes the behavior of asset returns. The rationale for using the augmented model is to separate, to the maximum possible extent, the impact of the “event” from any other unrelated movement in prices. Controlling for sectors contributes to take into account the long period under review, and the wide range of sectorial activities of the sanctioned firms. In fact, global and sector-specific cycles occurred during the period under review, the most important being the Global Financial Crisis, hitting most severely banks and financial institutions.

The objective is to sort out changes in value caused by overall market effects or by industry specific developments, from those subsequent to the “event”. The model assumes a jointly multivariate normal and temporally independent distribution of returns. For every security i of sector s , the augmented market model is in t :

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \gamma_i R_{s,t} + \varepsilon_{i,t} \quad (2)$$

$$\text{With } E(\varepsilon_{i,t}) = 0 \text{ and } \text{Var}(\varepsilon_{i,t}) = \sigma_\varepsilon^2$$

$R_{i,t}$, $R_{m,t}$ and $R_{s,t}$ are respectively the returns³⁸ in t on the security i , on the market portfolio, and on the sector s portfolio. $\varepsilon_{i,t}$ is the zero mean disturbance term. α_i , β_i , γ_i , and σ_ε^2 are the parameters of the model. Given the wide range of size of sanctioned companies, the broadest benchmark index for the French stock markets (SBF 250) will be used to proxy the market portfolio, and Euronext indices for the sector portfolios (*see composition in Table A.1*).

Under general conditions, abnormal returns parameters ($\hat{\alpha}_i$, $\hat{\beta}_i$ and $\hat{\gamma}_i$) are estimated for every sanction using the augmented market model with Ordinary Least Squares, as recommended by MacKinlay (1997). As in Campbell *et al.* (1997), the estimation window is set at [-120;-11]

³⁶ The market model assumes a stable linear relation between the market return and the security return.

³⁷ *I.e.* a multi-factor market model including industry indexes in addition to the market index, as in Sharpe (1970) or Sharpe *et al.* (1995). It reduces the variance of the abnormal returns. The results of the event study are in line when using a market model not adjusted for the sectors though lower (*see Table A.4*).

³⁸ Equity returns are defined as the daily log difference in value of the equity.

prior to the event in $t = 0$ (*i.e.* 110 trading days or 5 months). On every day t of the event window, the deviation in an individual stock's daily return³⁹ from what is expected based on specification (2) (*i.e.* the prediction error or “abnormal” returns) is taken as an unbiased estimate of the financial effects of the “event” on the stock i in t :

$$AR_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{m,t} - \hat{\gamma}_i R_{s,t} \quad (3)$$

$R_{i,t}$ is the actual returns on the security i in t , and $AR_{i,t}$ is the estimated abnormal returns for the firm i in t . $\hat{\alpha}_i$, $\hat{\beta}_i$ and $\hat{\gamma}_i$ are the estimates of α_i , β_i , and γ_i , from the estimation window. Abnormal returns over the event window capture the impact of the event on the value of the firm, under the assumption that the event is exogenous with respect to the given security.

Abnormal returns are calculated over the event window [-10;+120], including the event day ($t = 0$), in order to assess the price effect of the event and its persistence in time. Under the null hypothesis H_0 , the “event” (*i.e.* every step of the sanction procedure) has no impact on the distribution of returns for the sanctioned firms from 2004 to 2016 (mean or variance effect).

Individual t-statistics are calculated for each sanctioned firm's abnormal return, and for each event day. The abnormal return observations must be aggregated to draw overall inferences for the event of interest, through time and across individual firms. The cumulated average returns from day t_1 until t_2 ($CAR_{i,[t_1;t_2]}$) for the sanctioned company i are calculated, as in *specification* (4). To test across all events, $CAR_{i,[t_1;t_2]}$ for all sanctions are treated as a group. The p-value on the constant of the regression, using robust standard errors, gives the significance of the cumulative abnormal returns across all sanctions.

$$CAR_{i,[t_1;t_2]} = \sum_{t=t_1}^{t_2} AR_{i,t} \quad (4)$$

Finally, abnormal returns are cumulated and averaged through time and across the n sanctions to get the Cumulated Average Abnormal Returns ($CAAR_{[t_1;t_2]}$, over the period $[t_1; t_2]$ including the event), as in *specification* (5). All the sanctions are hence treated as a group, for which p-value on the constant of the regression for every period gives the significance of the CAR across all sanctions, with robust standard errors.

$$CAAR_{[t_1;t_2]} = \frac{1}{n} \sum_{i=1}^n CAR_{i,[t_1;t_2]}. \quad (5)$$

Complementarily, for every sanctioned firm i , the shareholder loss (or gain) $SL_{i,[t_1;t_2]}$ is estimated over the period $[t_1; t_2]$ by multiplying the market capitalization of the firm i on the day

³⁹ Including reinvested dividends.

preceding the beginning of the period $(t_1 - 1)$ MV_{i,t_1-1} (in euros) with the cumulated abnormal returns over the period $[t_1; t_2]$:

$$SL_{i,[t_1;t_2]} = CAR_{i,[t_1;t_2]} \times MV_{i,t_1-1} \quad (6)$$

Consequently, the average abnormal shareholder loss (or gain) due to the event ($SL_{[t_1;t_2]}$) over the period $[t_1; t_2]$ is calculated by averaging all the cumulated market value losses ($SL_{i,[t_1;t_2]}$) through the sample of n sanctioned firms (in euros):

$$SL_{[t_1;t_2]} = \frac{1}{n} \sum_{i=1}^n SL_{i,[t_1;t_2]} \quad (7)$$

Finally, the (net) reputational losses $RL_{i,[t_1;t_2]}$ for the sanctioned firm i can be proxied with the “residual approach”, as in Karpoff and Lott (1993), Karpoff *et al.* (2008a), and Armour *et al.* (2017). The idea is to deduct the amount of financial payments (fine and/or compensation) imposed by the regulator from the abnormal shareholder loss due to the event:

$$RL_{i,[t_1;t_2]} = SL_{i,[t_1;t_2]} - FP_i = CAR_{i,[t_1;t_2]} \times MV_{i,t_1-1} - FP_i \quad (8)$$

Where FP_i stands for the cash fines (and potentially compensations) imposed to the firm i by the regulator on the day of the sanction.

4.2 Cross-sectional regression, to test information content of the sanctions

Event studies are typically complemented by cross-sectional tests. The goal is to investigate the relationship between the magnitude of the abnormal returns estimated in the aftermath of the event (*i.e.* the cross-sectional differences in the loss incurred by shareholders) and the features of the event (*see Table 3*). It is particularly interesting given the multiple possible hypotheses on the causes for these abnormal returns: do higher fines, disciplinary sanctions, appeals, recidivism, higher media coverage, more liquid stocks, etc. lead to higher negative abnormal returns?

Hence, a cross-sectional regression for cumulated abnormal returns for every sanction i over the period $[t_1; t_2]$ ($CAR_{i,[t_1;t_2]}$) on m characteristics of the sanctions is estimated using the usual OLS, with White-corrected standard errors:

$$CAR_{i,[t_1;t_2]} = \delta_0 + \delta_1 x_{i,1} + \delta_2 x_{i,2} + \dots + \delta_m x_{i,m} + \mu_i, \text{ where } E(\mu_i) = 0 \quad (9)$$

Where $x_{i,j}$, for $j = 1, \dots, m$, are the m characteristics of the i^{th} observation, δ_j for $j = 0, \dots, m$, are the $m+1$ parameters of the model, and μ_i is the zero-mean disturbance term, that is

uncorrelated with the j 's. As advised by MacKinlay (1997), heteroskedasticity⁴⁰-consistent t-statistics will be derived using White-corrected standard errors.

5 Impact of sanctions on guilty companies

This section questions whether a guilty sanction decision provides information to the markets. Put it differently, it investigates the nature of the correlation between the observed change in returns of the sanctioned companies and the consecutive steps of the sanction procedure.

5.1 Impact on stock returns

As previously described, four event studies were conducted for the sample of 52 sanctioned companies, one for every step of the enforcement action: 1) beginning of procedure, when the investigation or the control started (*i.e.* an AMF internal procedure); 2) statement of objection, when the incriminated firm learns that it is being investigated (*i.e.* insider information); 3) sanction, with the EC hearing (*i.e.* the trial), and the subsequent sanction decision made by the EC; and 4) publication, when the sanction report is published on the AMF website. Since 2010, the EC hearings have been opened to the public, without naming the case(s) which will be under review, and top tier financial journalists typically attend them. Newspaper articles can be written over the average 50-trading-day lag between the decision itself and its publication (in 42% of the sample) and more frequently after (85%). Hence, returns could start to adjust even before the formal publication of the decision.

For every step of the procedure, the parameters of “normal” returns were estimated over the [-120;+11] estimation window with respect to the event in $t = 0$ (*see specification (2)*). “Abnormal” returns were calculated from these parameters over the event window [-10;+120]⁴¹ (*see specification (3)*). A set of abnormal returns by sanctioned firm for every step is presented in *Figure 3*. Stock returns being by nature volatile, statistical significance is difficult to detect without aggregating data. Hence, abnormal returns were aggregated across time and sanctions to draw some inferences on the abnormal reactions following every steps of the procedure (*see specifications (4) and (5)*). The cumulative abnormal returns for the publication for every sanction are reported on *Table 4*, for the period [-1;+1]. The event window spans from the day preceding the event, to investigate for anticipation following leakages, to one day after, as

⁴⁰ No assumption is made on identical finite variance of residuals. In fact, there is no reason to expect the residuals of *specification 9* to be homoskedastic.

⁴¹ Different lengths of estimation windows were tested and the results in terms of abnormal returns do not differ significantly (*see Table A.10*).

typically done in the literature, as the news can take some time to be priced in in inefficient markets.

Figure 2 (a), (b) and (c) and Table 5 report the average abnormal returns (AAR_t), and the cumulative abnormal returns ($CAAR_{[t_1;t_2]}$) for the sample ($n = 52$) for every consecutive steps of the sanction procedure. That way, we provide evidence of an adverse and genuine effect of some steps of the sanction procedure on returns of sanctioned listed companies over the period under review.

On the one hand, as expected, the last two steps of the procedure trigger statistically significant “abnormal” reactions in returns. Shareholders suffer a statistically significant abnormal loss in returns following the sanction decision, and its publication. The decision made by the Regulator regarding the guiltiness of a given listed company sends a negative message to the markets, which is priced in. On average, returns contract by a cumulated abnormal 0.9% over the period $[-1;+3]$ in event time (significant at the 10% level). Then, they lose 0.8% over the period $[-1;0]$ following the publication of the decision (significant at the 1% level) and 1.1% over the period $[-1;+3]$. It is interesting to note that there is some anticipation in the reaction, before the publication, which could result from some leakages of information to insiders, from newspaper articles, or some anticipation by the market. 62% of the guilty companies exhibit negative abnormal returns on the day of the publication of the sanction, ranging from -5.3% to +5.0% (1.5% standard deviation). Three days after the publication, 63% of the companies suffer cumulated losses, ranging from -12.1% to +7.8% (4.4% standard deviation). The contraction peak is reached 6 days after the publication, with a cumulated abnormal -1.3% in returns (significant at the 5% level). In the longer run, cumulated average abnormal returns following the EC hearing keep on increasing and remain negative though not significantly (-3.7% cumulated over 60 days following the sanction decision). This higher contraction echoes the lag between the hearing and the publication of the decision: 50 trading days on average in the sample. The cumulated contraction as off 60 days after the sanction would hence incorporate the compounded reactions to the sanction and to its publication, with an estimation window excluding the sanction decision and the publication.

On the other hand, shareholders do not react significantly to the early stages of the procedure: no significant abnormal reaction in returns follows either the ignition of the procedure, or the statement of objection. Firstly, the beginning of the procedure, marked by the

launch of an investigation or a control, does not trigger any significant abnormal movement in returns. This result is in line with expectations. It is reassuring in terms of respect of the confidentiality of the internal procedures by the AMF teams in charge of such procedures: leaks to market players could have caused a reaction in stock returns. Secondly, the statement of objection, when the company learns it is being investigated, does not either lead to any abnormal reaction in returns. It demonstrates the lack of insider trading within the company, after learning about a procedure that can end up with a sanction.

Given the limited (though exhaustive) number of observations, to ensure that the presence of outliers does not bias the results, two complementary robustness checks were conducted, which confirmed the results previously described⁴². On the one hand, a bootstrapped analysis of the robustness of standard errors was conducted 1,000 times, with a confidence interval of 95%. On the second hand, abnormal returns were winsorized before estimating the test statistics, as in Armour *et al.* (2017). All abnormal returns outliers to a 90th percentile were excluded from the data, meaning that all data below the 5th percentile are set to the 5th percentile, and data above the 95th percentile are set to the 95th percentile. The orders of magnitude of the cumulative average abnormal returns were confirmed, and turned out to be slightly more significant and more persistent in time with Winsorized abnormal returns.

All in all, in the short run, these consecutive event studies confirm the orientation of the reactions observed in past research and contribute to improving the quality of the assessment of the spillovers of sanctions in France. In fact, using an exhaustive sample of guilty companies, listed daily through the whole process of the sanction procedure, leads to a broader scope of analysis and a higher granularity. No abnormal reactions were measured through the early stages of the enforcement procedure, confirming the respect of confidentiality until the hearings by the Enforcement Committee. Subsequently, the results are coherent with the conclusions of early studies on the French sanctions⁴³, though to a lower extent: sanction decisions and their publications convey information and impact negatively returns of listed companies in the short

⁴² Detailed results are available on demand.

⁴³ Kirat and Rezaee (2015) concluded with -1.3% in AAR_0 on the day of the publication of the sanction and a $CAAR_{[0;1]}$ cumulated -3.2%, with a sample of 25 companies. Djama (2008) found no impact of the beginning of the procedure and a significant negative impact of the publication of the decision (-6.9% in AAR_0 , -8.3% in $CAAR_{[0;1]}$), for accounting fraud with a sample of 37 sanctions of 28 listed companies, from 1995 to 2005.

run (-0.9% and -1.1% in $CAAR_{[-1,+3]}$ respectively). As in previous literature⁴⁴, we found some anticipation in the outcome with the negative correction in prices. In $t = -1$ before the publication, abnormal returns turn significantly negative, possibly anticipating the outcome of the decisions. Additionally, contrary to the efficient market hypothesis, investors' reactions tend to be scaled in time: spillovers on the stock returns take some time to fully materialize. Some investors will react immediately after learning the news (either the sanction, or its publication). Others will need more time, possibly for a wide range of reasons (unaware initially, time to access information, herd behaviors, misunderstanding of the seriousness of breaches which led to the sanction, no straightforward investment alternative, to avoid fiscal consequences, fees associated with portfolio rebalancing, etc.).

In the longer run, past studies estimated an even larger range of impact from positive (+2.96% in one-year stock performance following a 1-standard deviation increase in the financial penalty for 20 country panel) to negative, ranging from -13% in on year up to -34.4% in the USA. Some studies concluded that fraud durably affects returns, up to three years after the news, when using, for example, lower frequency data (Leng et al., 2011, Dyck et al., 2013). Such estimates must be taken with a lot a caution as the further the estimate is from the event, the more likely confounding events will interfere with it. The impact of French sanctions on guilty daily-listed companies in longer run remains limited compared with international estimates. Our results demonstrate that, over the six months following the sanction (either decision or publication), $CAAR_t$ remain negative, even though they are not significantly different from zero, which could be explained by the high volatility in the long run. Finally, it is likely that the reaction following the sanction decision is partly confounded with the one following the publication⁴⁵. When taking into account the cumulated effect of the last two steps of the procedure, the magnitude of abnormal returns becomes more substantial: -3% to -4% cumulated losses 60 trading days after the sanction, estimated over an estimation window excluding any event related to the sanction, given the length of the procedures.

5.2 Impact on market values of sanctioned companies, following the sanction publication

⁴⁴ For example, ordered chronologically: Pritchard and Ferris, 2001, Djama, 2008, Dyck *et al.*, 2009, Griffin *et al.*, 2010, Haslem *et al.*, 2017, Armour *et al.*, 2017.

⁴⁵ As stated by Armour *et al.* (2017), multi-stage events make it difficult to ensure that the later stages really relate to the original announcement and not to further information that was released during subsequent stages or conversely that relevant information was not released between the reported stages.

We focus on the step which triggers the biggest and most significant reaction in the cumulative average abnormal returns: the publication of the decision. From *specifications (6) and (7)*, the impact on their market capitalization $SL_{[-1;+t]}$ is estimated from the cumulated average abnormal return $CAAR_{[-1;+t]}$, from the day preceding the event until t days after in event time. On average, in event time, sanctioned firms lost in equity $SL_{[-1;0]} = -45,200$ euros over the period $[-1;0]$, $SL_{[-1;+1]} = -74,600$ euros over the period $[-1;+1]$, and $SL_{[-1;+6]} = -32,000$ euros over the period $[-1;+6]$. There is a wide range of reactions, suggesting that not all frauds are equally important according to shareholders. For example, over the period $[-1;+1]$ in event time, losses $SL_{i;[-1;+1]}$ range from a contraction of 2.2 million euros (-6% loss in value) up to an increase of 871,000 euros (+2.7% in value), with a standard deviation of 363,000 euros.

Hence, on average, markets do integrate the information of the sanction sent by the regulator as a negative signal, but to a limited extent. The impact on the market capitalizations is small in absolute, as well as in relative terms. For example, average cash fines (860,000 euros on average for the sample) are 12 times higher than the maximum market correction. It is all the more striking that the regulatory fines are perceived as low compared to the legal authorized maximums (100 million threshold for any professional under the AMF supervision), in absolute (standing for 0.01% of the market capitalization on average), and in international terms. Consequently, following Karpoff *et al.* (2008a), Murphy *et al.* (2009) and Armour *et al.* (2017), estimating a “reputational” loss $RL_{i;[t_1;t_2]}$ (*specification (8)*) following the sanction by deducting the fines from the market impact would lead to a positive reputational impact on the market. Market efficiency, in that sense, is limited. Such results question the credibility of the sanction by the AMF.

5.3 Robustness checks

5.3.1 Split between before and after the crisis

Several arguments suggested testing the sub-sample of sanctions until (or following) the Great Financial Crisis. The latter was historical in terms of magnitude and of financial spillovers. Additionally, financial companies (banks in particular), which were at the origin of the crisis and suffered most throughout the crisis, are the most frequently sanctioned listed companies. The crisis also translated into a tightening of financial regulation and supervision; in particular regarding sanction powers at the European and French levels (de Batz, 2017b).

The event studies were re-estimated to test whether the financial crisis reinforced the market awareness and risk sensitiveness, with higher reactions afterwards. In the literature, two dates mark the start of the Great Financial Crisis: June 2007 (as in Armour *et al.*, 2017), with the beginning of the subprime crisis in the USA, or September 2008, with Lehman Brothers' bankruptcy (as in Kirat and Rezaee, 2015). The two dates were tested to search for a turning point in the market reactions, with respectively 14-38 and 19-33 sanctions for every sub-period.

The comparative results for the publication of the sanction reports up to and after the crisis are reproduced in *Table A.5*. They show that the information content of the publication seems to have increased since June 2007, the news been more taken into account by the market. Given the global financial turmoil, the information content of sanctions may have increased, being more taken into account in the early stages of the crisis. Conversely, Lehman Brothers' bankruptcy does not seem to have curbed the market perception of the severity of the sanction, despite the macro-financial evolutions.

5.3.2 Including 4 sanctions of a major international bank quoted in France

Four sanctions pronounced against an international bank were excluded from the sample to avoid biases. In fact, the share of trades on Euronext Paris was limited, given the global nature of its quotations. The market capitalization of the bank also exceeded by far the average of the sample (by 14 times). Being a major foreign bank listed on several markets, a French sanction would have unlikely led to a significant abnormal reaction in returns. Hence, the estimated impact of the sanction may be hidden or exacerbated by other international confounding events. All in all, including this set of sanctions in the "French" sample may have introduced bias when assessing the average impact of sanctions on market capitalizations (SL_t).

Still, the model was re-estimated including these sanctions (*i.e.* sample size of 56 sanctions) to test its robustness (*see Table A.6*). The results proved coherent following the publication, with negative though less significant abnormal returns: -0.9% in $CAAR_{[-1;0]}$, significant at the 5% level, and -1.0% in $CAAR_{[-1;+3]}$ significant at the 10% level. No statistically significant reaction follows the sanction decision itself.

5.4 Information content of the sanction decisions

5.4.1 Regulatory breaches and market players impacted

Offenses can be sorted into two main categories: whether they hit related (or second) parties or not (*i.e.* third parties). On the one hand, as described by Tibbs *et al.* (2011), examples of related-party offenses include fraud against investors (such as issuing false and/or misleading statements regarding a firm profitability), violations of employees' rights (such as improper disclosure of personal information), and fraud against customers (such as engaging in false advertising or falsifying test results). Third-party offenses, on the other hand, are defined as cases involving non-stakeholders or offenses where the damaged party does not engage in a sequential contracting relationship with the offending firm (legal and regulatory violations). Armour *et al.* (2017) also classified sanctions depending on the parties affected by the nature of regulatory breach: second parties (with a contracting relationship *i.e.* customers, investors, or suppliers) *versus* third parties (market participants, the public, etc.). Murphy *et al.* (2009) similarly split between related (customers, suppliers, providers of financial capital, etc.) and third-party offenses. These studies typically conclude that the reputational cost of wrongdoings against related parties to the offender is higher, in the USA (see Alexander, 1999; Karpoff *et al.*, 2008a, Murphy *et al.*, 2009, Tibbs *et al.*, 2011) as well as in the UK (see Armour *et al.*, 2017).

By employing the split proposed by the AMF for regulatory breaches (*see Table A.7*), the event studies give the following conclusions. Three financial misconducts lead to higher abnormal negative returns in the aftermath of the publication: insider trading, dissemination of false information (*vis-à-vis* either investors/stakeholders or the regulator), and not complying with one's professional obligations. It is in line with the studies previously mentioned in the sense that investors tend to react more when they are impacted by the financial misconduct (*i.e.* by being a related party).

5.4.2 Does the market take into account the “seriousness” of the verdict?

Two subsamples were defined to characterize the “seriousness” of the decision, capitalizing on the guidelines given by the AMF on how to set the sanction. The hypothesis being tested is that some characteristics of the verdict, or of the company, might convey additional relevant information to the market and influence markets towards stronger or lighter reactions.

The first subsample “3 factors” is defined as the 19 sanctions complying with two out of the three following conditions: a cash fine above the median, a disciplinary sanction (warning or blame), and recidivism (pre- and/or post-AMF creation). The second subsample “Average” is composed of the 19 sanctions which were assorted with cash fines above the average.

The results of the event studies (*see Table A.8*) support the following conclusions. On the one hand, the cash fine by itself (“Average”) does not condition on the magnitude of abnormal returns. That may be accounted for by the fact that on average cash fines are limited in amount (in absolute, or compared to the market capitalizations). On the other hand, some cumulated aspects of the decision (“3 factors”) may point to a more severe financial misconduct, leading to higher negative abnormal returns. That confirms the initial hypothesis that not only will the mere fact of being sanctioned be priced in abnormal returns, but the nature of the sanction will also negatively influence the results. Investors appear not to take into account exclusively the cash fine. In fact, $CAAR_{[-1;+1]}$ are twice as big as for the sample with the sub-sample including the three factors (-1.4%, significant at the 10% level). They are also persistent in time, 10 trading days after the publication (-2.6%), significant at the 10% level.

5.4.3 Impact of anonymizing the listed company in the sanction report

Out of the initial sample, 7 sanction reports (13% of total) anonymized the names of the listed company being sanctioned when being first published, spanning from 2008 to 2012. Only once the decision was echoed in the press, naming the firm being sanctioned. Abnormal market reactions would unlikely follow such news, as the information in 6 of the cases was not *a priori* public. The event studies were also conducted for this subsample (*see Table A.9*). In line with expectations, no significant abnormal returns were measured for anonymized companies, whatever the step of the procedure. It is reassuring regarding the respect of confidentiality through the process of sanction.

5.5 Complementary approach of the information content of sanctions: cross-sectional tests

In this section, we aim at explaining the determinants of the variations in market value incurred by each sanctioned firm in the aftermath of the publication of the sanction, using a multivariate analysis. How the effects on stock returns following the publication of the sanction are related to the firm, sanction, and environment characteristics? The goal is to infer some conclusions on the factors leading to market reactions (cumulative abnormal returns) for the most significant results, using cross-sectional regressions. For a cross-section of sanctions, cumulated abnormal returns are regressed against all the explanatory variables from the dataset (*see Table 3*), based on *specification (9)*. The detailed results are available on demand. The results for three reduced

models are presented, robust with the earliest cross-sectional test. Firstly, *model 1* was tested from the day preceding the publication until t days after, for every sanction i .

$$\begin{aligned}
CAR_i(-1; +t) = & \\
& \delta_0 + \delta_1 Investigation_i + \delta_2 Duration_Proc_i + \delta_3 Publi_Anonym_AMF_i + \\
& \delta_4 Appeal_Reject_Desist_i + \delta_5 Articles_Agefi_Echos_i + \delta_6 Survival_Sanction_i + \\
& \delta_7 Euronext_Cpt_A_i + \delta_8 Sect_Indus_i + \delta_9 Sect_Techno_i + \delta_{10} GDP_YoY_i + \\
& \delta_{11} Law_LME_2008_i + \mu_i \quad \text{and } E(\mu_i) = 0 \tag{10}
\end{aligned}$$

Where $CAR_i(-1; +t)$ is the cumulated abnormal returns for the sanction i from the day preceding the publication until the t^{th} day (with $t = 0$ and $+6$), and μ_i is the zero-mean disturbance term, uncorrelated with the explanatory variables⁴⁶. δ_j , from $j = 0, \dots, 11$, are the parameters of the model.

Two alternative models (*model 2* and *model 3* respectively) were also estimated for the cumulative abnormal returns from one day before the publication until the 6th day:

$$\begin{aligned}
CAR_i(-1; 6) = & \\
& \alpha_0 + \alpha_1 Investigation_i + \alpha_2 Duration_Proc_i + \alpha_3 Top_Mgt_Involved_i + \\
& \alpha_4 Nb_Articles_After_i + \alpha_5 Survival_Sanction_i + \alpha_6 Euronext_Cpt_A_i + \alpha_7 Sect_Indus_i + \\
& \alpha_8 Sect_Conso_G\&S_i + \alpha_9 GDP_YoY_i + \alpha_{10} Law_LME_2008_i + \varphi_i \text{ and } E(\varphi_i) = 0 \tag{11}
\end{aligned}$$

$$\begin{aligned}
CAR_i(-1; +6) = & \\
& \beta_0 + \beta_1 Investigation_i + \beta_2 Duration_Proc_i + \beta_3 Top_Mgt_Involved_i +
\end{aligned}$$

⁴⁶ For every sanction i , by alphabetical order, the explanatory variables are: *Appeal_Reject_Desist_i* for the rejection of the appeal or the withdrawal of the appeal; *Articles_Agefi_Echos_i* when articles are published following the publication of the sanction either in *L'Agéfi* or *Les Échos*, *Duration_Proc_i* for the duration of the procedure from the ignition of the procedure until the sanction decision, *Euronext_Cpt_A_i* for the companies listed on the Euronext Compartment A (*i.e.* the biggest firms), *GDP_YoY_i* for the real French GDP YoY growth rate when the sanction was published (synonym of the economic conditions), *Investigation_i* if the sanction derives from an investigation (not a control), *i.e.* the most serious regulatory breaches, *Law_LME_2008_i* for the sanctions published under the financial law LME, between 2008 and 2010, *Media_Intensity_Before_i*, for the ratio of articles mentioning the firm over the 20 days preceding the sanction to the number over the preceding year, *Nb_Articles_After_i*, for the number of articles mentioning the sanction published over the week following the publication, *Publi_Anonym_AMF_i* if the sanction was published anonymized by the AMF, *Sect_Conso_G\&S_i* if the sanctioned firm belongs to the Euronext consumer goods or services sectors, *Sect_Fin_i*, if the sanctioned firm belongs to the Euronext financial sector, *Sect_Indus_i* if the sanctioned firm belongs to the Euronext industrial sector, *Sect_Techno_i*, if the sanctioned firm belongs to the Euronext technological sector, *Survival_Sanction_i*, for the survival (*i.e.* being still listed today) of the company following the sanction, and *Top_Mgt_Involved_i* if the top management of the firm was involved in the regulatory breach(es).

$$\beta_4 \text{Media_Intensity_Before}_i + \beta_5 \text{Survival_Sanction}_i + \beta_6 \text{Euronext_Cpt_A}_i + \beta_7 \text{Sect_Fin}_i + \beta_8 \text{Law_LME_2008}_i + \chi_i \text{ and } E(\chi_i) = 0 \quad (12)$$

φ_i and χ_i are the zero-mean disturbance term, uncorrelated with the explanatory variables. α_j , and β_j , for $j = 0, \dots, 10$ and 8 respectively, are the regression coefficients.

The three models were estimated using OLS with White-corrected standard-errors. The results are displayed in *Table 6* and exhibit strongly robust results for every period tested. The fits of the models over the period [-1;+6] are particularly interesting given their robustness, and the fact that more time is given to market players to react to the news of the sanction. The following takeaways can be made regarding the information content of the sanctions and their interpretation by the markets.

Firstly, four aspects of the sanction will contribute to significantly higher abnormal negative returns: being investigated (*versus* controlled), longer procedure (from the investigation or control until the Enforcement Committee hearing), the top management's involvement in the regulatory breach(es), and if the media coverage is stronger. Negative abnormal returns appear higher in better economic conditions. The latter result may be related to the fact that, during an economic crisis, stronger forces than sanctions play and lead to global negative trends.

Regarding the sanctioned companies, bigger companies (listed in the Compartment A of Euronext) will tend to suffer lower losses, despite the fact of being more frequently sanctioned. In terms of sectors, as expected, *model 3* shows that sanctioned firms belonging to the financial sector will endure more negative abnormal returns. We previously noted that financial companies are the most frequently sanctioned companies, and more prone to recidivism. The three other sectors give diverging results: being a technological firm will also contribute to more negative abnormal returns, conversely to industrial⁴⁷ and consumer goods and services sectors.

Surprising, anonymization (when the sanction is first published by the AMF) leads to significantly higher abnormal negative returns, though only in the short run. Additionally, the fact that the decision is appeal for, which was expected to send a positive signal to the markets (claiming for one's innocence from the regulatory breach(es) it is being sanctioned for), sends mixed signal (positive in the very short run, before turning negative) and limitedly significant (at the 10% level). It could be accounted for by the historically low probability of success of appeals.

⁴⁷ In the case of the industrial sector, the estimations of *model 1* over the periods [-1;0] and [+1;+6] show that the negative contribution is due to some market anticipation, which is more than compensated in the subsequent period.

The latest regulatory tightening (in 2010, *versus* the previous financial law LME) do not appear to be correlated with more negative abnormal returns.

Finally, it is interesting to note that the three most straightforward features of the sanction decision (cash fine⁴⁸, warning, and blame) do not significantly influence market reactions. Nor do the regulatory breaches committed by the sanctioned company, and recidivism (either before or after the creation of the AMF), despite being one of the parameters taken into account by the Enforcement Committee to set the verdict. This can be partly accounted by the fact that the survival of the sanctioned company (*i.e.* still being listed) is significantly negatively correlated with abnormal returns. Finally, the Chairmen of the AMF do not appear to have influenced the information content of sanctions, as perceived by market players, which supports the independence of the EC regulatory actions.

5.6 Concluding remarks regarding guilty sanction decisions

Some conclusions can be drawn regarding the content of the sanctions, suggesting potential reforms aiming at improving the credibility and the efficiency of financial regulation: to sanction less but more severely (significantly higher fines, more disciplinary sanctions), to increase transparency from part of the regulator, and to focus more on individuals (top managers in particular).

In fact, generally speaking, the event studies and the cross-sectional results demonstrated that, over the past history of sanctions, the more classical seriousness determinants of sanctions were hardly taken into significantly by the markets: the cash fines, disciplinary sanctions, kinds of regulatory breaches, or recidivism. Still, some complementary signs of seriousness are incorporated into prices by the markets, in particular being investigated (not controlled), longer procedures, or the involvement of the top management of the firm. It may be the consequence of the fact that fines set by the regulator and by the markets (*i.e.*; “reputational sanction”) are limited in absolute⁴⁹ and relative terms, in particular when compared with other jurisdictions. Indeed, in the USA, the use of financial fines is less common than in France (8% of the sample in Karpoff *et al.*, 2008a), but the amounts are much more significant (average of 107 million dollars, median of

⁴⁸ Related variables were also tested, as in Armour *et al.* (2017) such as the natural log of the cash fine or the ratio of the fine to the market capitalization the day before the sanction. The results were also insignificant.

⁴⁹ The regulatory fines exceed by far (factor of 12 on average) the market correction but they respectively both stand for a highly limited 0.01% and 0.001% of the market capitalization. Hence, there would be no reputational sanction by the market.

0.9 million dollars). That could plead for more severe sanctions in France, though Armour *et al.* (2017) concluded, regarding the UK, that the reputational sanction is unrelated to the size of the financial penalties levied. Such results question the credibility of the sanction procedures and verdicts *vis-à-vis* the market, compared to the USA where the SEC or class action financial penalties are, by far, more significant. It is all the more surprising that several studies⁵⁰ demonstrated that financial and accounting issues, which are investigated by the article, triggered the strongest stock market reactions, in the USA as well as in other jurisdictions. All in all, the results question the information content of the sanctions, the usefulness, efficiency, and credibility of cash fines, and, more generally, of the current regulatory framework and enforcement in France. Reputational losses subsequent to sanctions could enhance, like in other jurisdictions, the regulatory enforcement as a complementary device to regulatory sanctions, if they were large enough to stand for a credible threat, without endangering the firms' solvency. In case of overshooting and unpredictable reputational consequences, a regulator may be reluctant to disclose its sanctions, not to impair survival of firms. Alternatively, Aitken *et al.* (2015) concluded that more detailed exchange trading rules, and surveillance over time and across markets, significantly reduce the number of suspected cases (of market manipulation, insider trading and broker-agency conflict) but increase the profits per suspected case⁵¹. D'Antoni and Galbiati (2007) showed that, when the sanctioning policy conveys information about the harmfulness of the sanctioned behavior, the use of non-monetary sanctions can lead to optimal law enforcement, even when the monetary fine is not maximal. The limited market reaction to sanctions could also be related to the "person" being sanctioned: mostly companies, despite the frequent involvement of the top management in the regulatory breaches (which would send a negative signal according to the cross-sectional test results). This fact hence questions who to sanction, to gain in efficiency and credibility. Recent research suggests focusing more on top managers to gain in credibility and efficiency in deterring future crime (Jones, 2013; Kay, 2015; and Cullen, 2017). An improvement of the legislation could be to include (temporary) bans on activity for top management of listed companies (no ban on activity was used in our sample).

Complementary, additional takeaways derive from the event-study analyses. This research confirmed past studies (Nourayi, 1994, Alexander, 1999, Murphy *et al.*, 2009, Tibbs *et al.*, 2011,

⁵⁰ In the USA (Karpoff and Lot, 1993, Griffin *et al.*, 2000), but also in Japan and in China.

⁵¹ "A 1-standard-deviation improvement in trading rule specificity gives rise to a 23.43% reduction in the number of suspected insider trading cases and a 53.17% increase in profits per case."

and Armour *et al.*, 2017) in that financial wrongdoings linked to related parties (insiders or second parties) are likely to induce stronger abnormal market reactions, in particular insider trading, and breaches to information obligation, vis-à-vis investors and the regulator. It illustrates the key role played by trust in investment (as well as in commercial) relationships. Three remarks concern the transmission of the news of the sanction. On the one hand, anonymizing the sanction report, when publishing it, appears to protect the sanctioned entity from suffering abnormal returns. On the other hand, in line with past studies, the media coverage of the sanction after the publication will trigger stronger abnormal negative returns. Lastly, the sanctions seem to have gained in echo in the markets since the early stages of the Great Financial Crisis, implying higher abnormal returns, in line with Armour *et al.* (2017) for the UK, but contrary to Kirat and Rezaee (2015) for France. Lastly, the cross-sectional results point that one of the challenges for regulators stressed by Carvajal and Elliott (2007), the independence from governmental and political process, seems to overcome as the variables for the successive chairmen of the AMF (who are named by the government) through time do not impact significantly market reactions.

6 Information content of other types of decisions made by the Regulator

The previous section investigated the information content of sanctions of listed companies which proved guilty. The goal of this complementary section is to challenge similarly alternative scenarii: when the verdict was an acquittal (*i.e.* opposite information sent by the EC to the markets), for a lighter procedure (settlements, since 2012), and when listed companies were victims of others' financial misconduct.

6.1 Listed companies being acquitted by the AMF

Out of the initial sample of sanctions, 11 daily listed companies were excluded as their verdict was an acquittal. In fact, under the assumption that sanctions convey information to investors, the expected impact of such decisions was not straight forward. On the one hand, the market could react positively to the news as the company proved, in the end, innocent without fine, and as the regulator turned out wrong when deciding to pursue these procedures. On the other hand, as for guilty decisions, reactions could be negative as the company was still investigated for serious alleged regulatory breaches. In fact, only the most severe financial wrongdoings are brought to the EC, the others being dealt confidentially and bilaterally, between the AMF and the regulated

entity. Additionally, in some cases, the firms were acquitted thanks to procedural irregularities or prescription of the incriminated regulatory breaches, which do not exonerate them from the breach(es). All in all, the markets could still assess this company as riskier, and adjust forecasts and portfolios subsequently, impacting negatively returns.

Event studies for the four steps of the procedure were similarly conducted for this sample of decisions, using the augmented market model. As previously described, the results (*see Table 7*) demonstrate that the news of an acquittal decision conveys mixed information to investors: positive significant abnormal returns (+1.1% in AAR_0) on the day of the sanction, followed by a negative abnormal reaction, from the third day following the publication onwards, peaking with $CAAR_{[-1,+5]}$ of -3.7%, significant at the 10% level.

6.2 Settlements

Out of the 32 settlements concluded from 2012 to 2016, 5 concerned subsidiaries of daily listed companies. They targeted branches of three French financial groups. Event studies were similarly conducted on these decisions, to test the information content of this alternative, and shorter kind of sanction dedicated to less severe regulatory breaches (until late 2016). Under the rationality of investors and efficient market hypotheses, it can be expected that abnormal returns (if any) should be lower than for the sample of guilty sanctions.

The event studies do not show any abnormal returns following the four steps of the settlement procedure (*see Table 8*). For this limited scope of settlements, the markets do not incorporate the additional information sent by the Regulator with these settlement decisions on the quality of the firm's compliance with regulation. Hence, the absence of reaction to settlements questions the information content of such procedures, and their credibility *vis-à-vis* investors.

6.3 Equity returns reactions for listed companies victim of others' financial market misconduct

Listed companies were also frequently victims of others' wrong-doing. Our sample is comprised of 65 sanctions mentioning daily listed companies, which suffered from others' financial market misconduct. The victim firms may have already endured losses due to these past regulatory breaches (for example following insider trading or price manipulations on their stocks). The question is whether they will undergo additional losses (*i.e.* double punishment) for being

mentioned in the sanction procedures of their executioners, or conversely gain from such a decision regarding their executioner.

An identical event study methodology was used to test the reactions in returns of listed companies to the fact of being named in sanction reports as victims of others' wrongdoings. The last two steps of the sanction procedure⁵² (the sanction decision, and its publication) were tested, using an augmented market model, based on the activity sector of every victim.

The results show that returns of those victim companies abnormally contracted, on average, 7 to 20 days after the sanction decision, to a larger extent than for sanctioned companies (*see Table 9*). Returns abnormally lost a cumulated -3.2% 10 days after the sanction (significant at the 5% level). From specifications (6) and (7), the market capitalization of listed companies which were victims of others lost on average 576,000 euros 10 days after the sanction (with a standard deviation of 2.6 million euros, ranging from -18.8 up to +1.4 million euros).

Given the magnitude of such abnormal returns, a one-by-one search for confounding events was conducted for the sample of 65 victims. Two sources of possible confounding events were identified: either external (such as significant evolutions in the competitive environment, the spillovers of Brexit on financial companies, and a surge in geopolitical risks) or internal (*i.e.* good or bad news regarding the company itself such as profit/margin warnings, a condemnation of top managers, or M&As involving the company). All in all, for the sanction and the publication steps, 13 cases were preventively excluded. The event studies were conducted on this 52-sub-sample. The results⁵³ confirm a negative abnormal market reaction from the day of the sanction onwards, though they turned out lower and only significant on the 8th day (-2.0% in $CAAR_{[-1,+8]}$, significant at the 10% level). No abnormal returns were measured following the publication of the sanction.

6.4 Concluding remarks regarding alternative mentions of listed companies in regulatory decisions

⁵² There is no reason why a regulatory internal procedure would impact the returns of a given company which was presumably victim of others' misconduct. Additionally, the early stages of the procedure (in particular in cases of a quick reaction of the regulator) are the closest to the financial market misconduct itself, which could still impact the returns of the victim. The second step was also excluded as a statement of objection, sent to a company or an individual regarding past regulatory breaches on a given listed company, is unlikely to impact the latter.

⁵³ Detailed results are available on demand.

This section further investigated the information content of other types of decisions or mentions of listed companies in sanction reports. Firstly, past research conducted on the negative impacts of allegations of financial misconduct (*i.e.* the mere fact of being investigated) as well as acquittal decisions echo the results found on the acquittal verdicts. Indeed, being found, in the end, not guilty of the regulatory breaches they were being charged off leads to opposite reactions: the markets react positively to the sanction decision, before penalizing significantly such companies after the sanction publication. Secondly, and complementarily to the previous section, the content and the credibility of the AMF decisions are also questioned by the fact that this research did not find any abnormal reaction following settlements (admittedly with a small sample). This result is, to some extent, coherent with Haslem *et al.* (2017) who found market reactions to settlements being the least negative and negligible ($CAAR_{[-1;+1]}$ of -0.08%), whatever the outcome, with hardly any reaction following the decision. Finally, the results interrogate the outcomes of naming a listed company victim of others in the sanction reports. In fact, contrary to expectations, financial markets seem to react negatively to such information. This reaction takes more time to be incorporated into prices (1 to 2 weeks). Such inflection is counterintuitive as no particular abnormal reaction should follow such news. The company merely suffered from others' financial wrongdoing, and possibly its returns already abnormally performed during the violation period. That may plead for an anonymization of victims in the sanction reports, to protect them from any additional abnormal negative return in the aftermath of the sanction.

7 Conclusion

The goal of this paper was to analyze the reactions of investors and shareholders to the news of a sanction by searching for abnormal returns after the four milestones of the sanction procedure. Hence, it aimed at detecting at which stage of the proceeding a reaction, if any, could be measured, and to what extent. Additionally, it meant to understand how the features of the sanctions, and of the sanctioned entities could explain such reactions. To do so, an original dataset was built for the 52 guilty sanctions impacting 40 daily-listed companies from 2004 to 2016. It was completed with similar complementary datasets for acquittal decisions, settlements, and sanctions mentioning listed companies as victims of others' regulatory breaches.

For guilty decisions, the results first show that the confidentiality of the AMF internal procedures, in the early stages of the proceeding, is respected: no abnormal returns can be

detected. Additionally, investors react negatively to the news of a guilty sanction, and to its publication, though to a limited extent in absolute or relative terms. Some features of the sanction will influence the reaction: to the upside, investigations, longer procedures, the involvement of the top management, being a financial company, the media coverage, to some extent the seriousness of the decision (and not the mere cash fine), being sanctioned after the financial crisis and under the LME 2008, or committing regulatory breaches impacting related parties; and to the downside, being anonymized in a guilty decision and being a bigger firm. Conversely, settlements, lighter procedures introduced for least severe regulatory breaches, do not trigger abnormal reactions. Additionally, the results are mixed for acquittal decisions, depending of the step of the procedure. Finally, there seems to be hints to a double punishment by markets for being the victim of other's financial misconduct, after being named in a sanction report.

This work also stresses some directions to improve the credibility of sanctions through some regulatory inflections including: less frequent sanctions⁵⁴ assorted with higher cash fines, and completed with more frequent disciplinary sanctions; sanctioning more individuals, and in particular top managers; increasing the transparency on sanctions (*i.e.* more communication from the regulator), for the markets to be able to fully and more rapidly assimilate the information; and anonymizing the victims of other's regulatory breaches.

⁵⁴ The trend over the last two years was already towards fewer sanctions. In 2016 and 2017, the number of sanction decisions made by the AMF is historically low (15 per year, comparing with 23 on average per year over the 2004-2017 period).

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Acronyms

AMF	<i>Autorité des Marchés Financiers</i>
AAR	Average Abnormal Returns
AR	Abnormal Returns
CAR	Cumulative Abnormal Returns
CAAR	Cumulative Average Abnormal Returns
EC	AMF Enforcement Committee
M&As	Mergers and Acquisitions
SEC	USA Securities Exchange Commission
UK	United Kingdom
USA	United States of America

Table 1: 39% of the Sanctions of Listed Companies in the Scope of the Event Study

		52 in the sample	
129 sanctions of 105 companies = 134 sanctions + companies	74 daily listed companies over the event study window	63 guilty	5 confounding excluded
			6 excluded (duplicates and too big)
		11 acquittals	
		35 not listed over the whole period	20 bankrupted
	60 companies without daily listed prices		8 M&As
		25 data problems	7 withdrawals
			5 data unavailable over the whole period
			15 frequency problem (not daily)
			5 suspended quotation during part of the procedure*

Source: AMF, Author's Calculations (de Batz, 2017b) * One firm went into bankruptcy after the sanction.

Table 2: Characteristics of Sanctions of Listed companies versus the Samples

	Listed companies ^{***}	Sample listed companies	Sample victim listed companies
Number of sanctions	129	52	65
Sanctioned companies	105	40	53
<i>Of which bankrupted</i>	23 (19 before sanction)	2	0 ^{v*}
Investigations (as % of total)	88	81	95
Number of reg. breaches per sanction	1.5	1.4	1.3
Main activity sectors:			
Financials (as % of total)	25	38	22
Consumer goods or services (as % of total)	22	15	22
Industrials (as % of total)	22	15	23
Technology (as % of total)	13	13	12
Average cash fine [*] (as thousand euros)	693	882 ^{iv*}	978 ^{iv* & vi*}
Average duration of procedure (as years)	2.7	2.6	2.7
Average market capitalization (as billion euros) ^{**}	11.9 (6.9 ^{vii*})	9.8	13.9

Sources: AMF, Thomson Reuters, author's calculations. ^{*} Excluding acquittals, and counting only one time sanctions involving several listed companies ^{**} For companies still listed when being sanctioned guilty, on the day of the sanction decision ^{***} Listed companies cover all the sanctions of listed companies, including acquittals ^{iv*} Excluding the sanctions with only a disciplinary sanction (meaning a null cash fine) ^{v*} Some companies disappeared following mergers and acquisitions or changed corporate names ^{vi*} Excluding acquittals ^{vii*} Average market capitalization when excluding the 4 sanctions on the major international bank excluded from the sample.

Table 3: Sample Selection from the 52 Sanctions Pronounced by the AMF in the Scope

The 52 sanctions in the scope cover all the listed companies which were sanctioned (*i.e.* guilty) by the AMF from 2004 to 2016 and which were listed all through the sanction process. Some have delisted since the sanction. The dataset was built based mostly on publicly available data. Complementary data were extracted from softwares (Thomson Reuters and Factiva) or shared confidentially by the AMF (anonymized sanctioned companies, missing dates in particular).

Number of observations: 52	Mean	Std. dev.	Min	Max	Expected impact on stock value ²
Origin of the sanction:					
Investigation (not control)	0.81	0.40	0	1	+
Breaches of insider dealing regulations	0.29	0.46	0	1	+
Price manipulations	0.10	0.30	0	1	+
Breaches of public disclosure requirements	0.63	0.63	0	2	+
Breaches of the Monetary and Financial Code and the AMF General Regulation	0.38	0.50	0	1	-
Characteristics of the sanction decision:					
Cash sanction (as 000 EUR) ¹	860	1,354	0	8,000	+
Warning	0.25	0.44	0	1	+
Blame	0.04	0.19	0	1	+
Duration of procedure (start to sanction, as years)	2.65	1.01	1.14	5.98	+
Lag from sanction to publication (as months)	1.82	1.69	0.03	8.47	?
Actual state of online anonymization	0.65	0.48	0	1	
Partial anonymization	0.25	0.44	0	1	
First publication anonymized	0.35	0.48	0	1	
Top management involved in the breach(es)	0.46	0.50	0	1	+
Sanctioned individuals	0.69	0.47	0	1	?
Public company victim of breach(es)	0.25	0.50	0	1	?
Sanction report nb. of pages	11.73	5.95	3	34	?
Details of the appeals:					
Appeal	0.48	0.50	0	1	-
Nb of appeals	0.81	0.99	0	4	-
Rejection of the appeal	0.40	0.49	0	1	+
Appeal by AMF	0.04	0.19	0	1	+
Duration of appeals (from the sanction, as years)	0.99	1.40	0	7.17	+

Media coverage of the sanction procedure:					
Media coverage intensity before the sanction	0.06	0.05	0	0.38	+
Nb of articles published between the sanction and its publication	10.5	37.0	0	248	+
Number of articles published during the week following the sanction	13.8	23.0	0	114	+
Articles published in <i>L'Agéfi</i> or <i>Les Échos</i>	0.71	0.46	0	1	+
Recidivism:					
Recidivism pre-AMF	0.27	0.45	0	1	+
Recidivism post-AMF	0.29	0.46	0	1	+
Stock market characteristics:					
Market capitalization (on the sanction day, as 000 EUR)	9,812	15,511	8	69,393	?
Survival to sanction (still listed)	0.88	0.32	0	1	?
Euronext Compartment A	0.56	0.50	0	1	?
Euronext Compartment B	0.17	0.38	0	1	?
Euronext Compartment C	0.19	0.39	0	1	?
Financial sector	0.38	0.49	0	1	+
Industry sector	0.15	0.36	0	1	?
Consumer goods or services sector	0.15	0.36	0	1	?
Technological sector	0.13	0.34	0	1	?
Legal environment characteristics:					
Year of the sanction	2009	3.4	2004	2016	+
LME 2008	0.24	0.42	0	1	+
LRBF 2010	0.40	0.49	0	1	+
President J.P. Jouyet	0.35	0.48	0	1	+
President G. Rameix	0.23	0.43	0	1	+

Notes: ¹ Sanctions which only involved a disciplinary sanction were assigned a zero-euro cash fine, and sanctions involving several listed companies were accounted for twice. ² The expected impact means, *a priori* and intuitively based on the existing literature, whether the variable will lead to higher (+) or lower (-) negative abnormal returns.

Table 4: Cumulative Abnormal Returns Following the Publication of the Sanction Decisions

This table reports the cumulative abnormal returns (CAR_t) from the day preceding the event until the day following the event ($t = 0$ for the publication of the sanction decision) and their significance levels at 5% and 10%. The abnormal returns (AR_t) are computed given the augmented market model parameters, which are estimated with OLS with White-corrected standard errors over the period [-120;-11] *vis-à-vis* the event. The sample covers all the sanctions of daily listed companies over the 2004-2016 period (*i.e.* 52 sanctioned companies, sorted by date of publication).

Sanction	Sanction year	$t = -1$	$t = 0$	$t = +1$	Sanction	Sanction year	$t = -1$	$t = 0$	$t = +1$
SAN-1	2004	0.4%	-0.8%	-0.3%	SAN-27	2009	-2.7%	-3.2%	-5.3%
SAN-2	2004	-2.3%	-2.1%	5.4%	SAN-28	2010	-3.9%	-4.0%	-3.3%
SAN-3	2004	-0.2%	-0.4%	-0.2%	SAN-29	2010	-2.7%	-3.0%	-1.7%
SAN-4	2004	-0.5%	-0.3%	-0.6%	SAN-30	2010	-0.4%	-5.7%	-6.0%
SAN-5	2005	-0.1%	-1.9%	-1.9%	SAN-31	2010	0.8%	0.2%	-0.1%
SAN-6	2005	-1.9%	-3.9%	-0.1%	SAN-32	2010	-0.6%	4.5%	3.2%
SAN-7	2005	-0.3%	-1.3%	-1.2%	SAN-33	2011	-0.8%	-0.6%	-0.2%
SAN-8	2005	0.5%	2.3%	2.2%	SAN-34	2011	-1.1%	-0.8%	-0.9%
SAN-9	2005	1.4%	-0.1%	1.4%	SAN-35	2011	-2.1%	-3.4%	-5.3%
SAN-10	2005	-0.7%	0.3%	-0.7%	SAN-36	2011	0.3%	1.4%	1.3%
SAN-11	2005	-1.3%	-2.0%	-2.1%	SAN-37	2011	-0.3%	0.2%	-0.4%
SAN-12	2006	0.0%	0.9%	0.8%	SAN-38	2011	-0.2%	-0.3%	-1.5%
SAN-13	2007	0.5%	-0.1%	0.3%	SAN-39	2011	-0.7%	-0.1%	-0.5%
SAN-14	2007	-0.9%	-1.2%	-1.7%	SAN-40	2012	1.6%	0.4%	2.6%
SAN-15	2007	-0.2%	-1.8%	-2.9%	SAN-41	2012	0.5%	1.1%	1.3%
SAN-16	2006	1.1%	-0.2%	-0.7%	SAN-42	2012	-3.7%	-4.4%	-7.0%
SAN-17	2007	-1.1%	-3.1%	-5.3%	SAN-43	2013	-0.7%	0.0%	0.1%
SAN-18	2008	-2.6%	-3.0%	-0.3%	SAN-44	2013	1.6%	1.2%	0.2%
SAN-19	2008	0.1%	-0.9%	<i>-1.6%</i>	SAN-45	2014	2.2%	2.7%	1.9%
SAN-20	2008	-0.4%	-1.1%	<i>-4.3%</i>	SAN-46	2014	-0.2%	-3.1%	-3.9%
SAN-21	2008	1.5%	1.7%	3.1%	SAN-47	2014	-0.2%	1.5%	0.7%
SAN-22	2008	-0.2%	0.2%	0.5%	SAN-48	2015	-3.0%	-3.8%	0.7%
SAN-23	2009	0.2%	0.5%	1.3%	SAN-49	2015	0.5%	-1.8%	-1.6%
SAN-24	2009	-0.6%	-1.6%	1.1%	SAN-50	2016	-0.2%	-1.1%	-1.0%
SAN-25	2009	-0.5%	-1.8%	-3.9%	SAN-51	2016	-1.3%	2.0%	2.5%
SAN-26	2009	-0.9%	-1.6%	-2.0%	SAN-52	2016	0.1%	0.2%	2.2%

Source: AMF, Thomson Reuters, Author's Calculations

Notes: Statistically significant at the 5% level in bold, statistically significant at the 10% level in italic. In some cases, a sanction involved several listed companies.

Table 5: Cumulative Average Abnormal Returns Following the 52 Sanctions of the Guilty Listed Companies

This table reports the cumulative average abnormal returns ($CAAR_t$) up to a specified day t in event time for the four main steps of the sanction procedure. Event time is days relative to the step of the sanction procedure being analyzed and $t = 0$ is the event itself. Abnormal returns are computed given the market model parameters, which are estimated with OLS through the period $[-120;-11]$ in event time. The sample is composed of the 52 companies which were sanctioned guilty by the AMF from 2004 to 2016 and were daily quoted all through the sanction procedure.

t	Beginning of procedure (control or investigation)		Statement of objection		Enforcement Committee and sanction decision		Publication of the sanction decision	
	$CAAR_t$	t -stat	$CAAR_t$	t -stat	$CAAR_t$	t -stat	$CAAR_t$	t -stat
-1	0.4%	0.8	0.7%**	2.2	-0.4%	-1.2	-0.5%***	-2.7
0	1.4%	0.7	0.8%	1.5	-0.6%*	-1.7	-0.8%***	-3.0
1	2.0%	1.0	0.4%	0.5	-0.6%	-1.7	-0.7%*	-2.0
2	1.5%	0.7	-0.1%	-0.1	-0.9%*	-1.9	-0.9%*	-1.9
3	1.9%	0.9	0.4%	0.5	-0.9%*	-1.8	-1.1%*	-1.7
4	2.0%	1.0	0.0%	0.0	-0.8%	-1.3	-0.9%	-1.5
5	2.6%	1.3	0.0%	0.0	-0.8%	-1.2	-1.1%*	-1.8
6	3.3%	1.6	-0.2%	-0.2	-1.3%	-1.6	-1.3%**	-2.2
7	2.6%	1.2	-0.2%	-0.3	-1.3%	-1.5	-1.3%*	-1.8
8	1.0%	0.4	-0.3%	-0.4	-1.4%	-1.7	-0.9%	-1.2
9	1.2%	0.5	-0.4%	-0.4	-1.1%	-1.3	-0.8%	-0.9
10	0.8%	0.3	0.0%	0.0	-1.0%	-1.1	-1.5%	-1.6
20	3.9%	1.4	-0.7%	-0.4	-1.3%	-1.0	-0.8%	-0.6
40	7.4%	1.5	-1.8%	-0.7	-1.9%	-1.0	1.2%	0.6
60	9.1%*	1.7	-0.2%	-0.1	-3.7%	-1.4	0.2%	0.1
120	11.8%*	1.7	3.6%	0.6	-7.1%	-1.5	-6.6%	-1.5

Sources: AMF, Thomson Reuters, Authors' calculations

Note: *, ** and*** denote statistical significance at the 10%, 5%, and 1% level.

Table 6: Determinants of Cumulative Abnormal Returns Following the Publication of Sanction Decisions: Cross-Sectional Regressions

This table reports results from least squares regressions (using White-corrected standard errors) for specifications (10) (model 1), (11) (model 2), and (12) (model 3). The dependent variables are the Cumulative Abnormal Returns from one day before the publication of the sanction decision until t days following it: $CAR_{i,[-1;+t]}$, for $i = 1, \dots, 52$ and $t = 0$ and $+6$. Abnormal returns are computed using the augmented market model. The sample is composed of the 52 companies which were sanctioned guilty by the AMF from 2004 to 2016 and were daily quoted all through the whole sanction procedure.

	CAR [-1;0]				CAR [-1;+6]			
	Model 1		Model 1		Model 2		Model 3	
	Coef	RSE	Coef	RSE	Coef	RSE	Coef	RSE
Constant	4.869***	(1.290)	11.71***	(2.381)	12.29***	(2.188)	13.29***	(2.371)
Origin of the sanction:								
Investigation (not control)	-1.308*	(0.734)	-3.510**	(1.442)	-5.131***	(1.381)	-3.74***	(1.252)
Characteristics of the sanction decision:								
Duration procedure	-0.728***	(0.239)	-2.050***	(0.392)	-1.953***	(0.372)	-2.09***	(0.442)
Publi. anonymized by AMF	-1.447**	(0.632)	-1.024	(1.003)				
Top mngt involved					-2.064**	(0.927)	-2.446**	(0.986)
Appeals & Media:								
Reject of appeal or withdrawal	0.974*	(0.528)	-1.746*	(0.898)				
Media coverage intensity before sanction							-11.2***	(4.065)
Nb. articles week after pub.					-0.0459***	(0.0167)		
Article(s) in L'Agéfi or Les Echos	-1.248**	(0.598)	0.736	(0.922)				
Stock market characteristics:								
Survival to sanction	-0.0134	(0.631)	-5.623***	(1.195)	-5.300***	(0.781)	-5.84***	(1.248)
Euronext Compartment A	-0.203	(0.609)	3.896***	(0.905)	3.987***	(0.983)	5.457***	(0.977)
Industrial sector	-1.158*	(0.656)	3.240**	(1.297)	4.541***	(1.250)		
Technological sector	-2.600***	(0.545)	-0.938	(1.337)				
Cons. goods & serv. sector					5.794***	(1.291)		
Financial sector							-3.329**	(1.275)
Legal environment characteristics:								
Real YoY growth rate	-0.494***	(0.142)	-0.643***	(0.221)	-0.711***	(0.227)		
LME law (2008-2010)	-2.201***	(0.747)	-4.693***	(1.523)	-4.487***	(1.435)	-3.79***	(1.191)
N	52		52		52		52	
R2	0.4788		0.6949		0.7518		0.638	
Ramsey-test Prob > F	0.4153		0.3091		0.4368		0.4424	

Sources: AMF, Thomson Reuters, Authors' calculations

Notes: ¹ RSE: White-Robust Standard Errors; *, ** and *** denote statistical significance at the 10%, 5%, and 1% level.

Table 7: Cumulative Average Abnormal Returns for Acquittals of Listed Companies (11 decisions)

The sample excluded acquittal decisions, as the goal was to search for a reaction in returns following a negative news sent by the regulator. Still, companies could be penalized by the market for the mere fact of being investigated by its regulator. This table reports the cumulative average abnormal returns (CAAR_t) up to a specified day *t* in event time for the four main steps of the sanction procedure. Event time is days relative to the step of the sanction procedure being analyzed and *t* = 0 is the event itself. Abnormal returns are computed given the market model parameters, which are estimated with OLS through the period [-120;-11] in event time. The sample is composed of the 11 companies which were acquitted by the AMF Enforcement Committee from 2004 to 2016 and were daily quoted all through the sanction procedure.

<i>t</i>	Beginning of procedure		Statement of objection		Sanction decision		Publication of the sanction decision	
	CAAR _t	<i>t-stat</i>	CAAR _t	<i>t-stat</i>	CAAR _t	<i>t-stat</i>	CAAR _t	<i>t-stat</i>
0	0.6%	0.7	-0.6%	-1.4	1.1%*	2.2	-0.4%	-0.4
1	1.0%	0.9	0.1%	0.0	1.6%	1.4	-0.9%	-0.7
2	0.0%	0.0	2.0%	0.6	1.2%	1.1	-3.5%	-1.6
3	0.7%	0.5	1.6%	0.6	1.0%	0.6	-3.1%*	-2.2
4	2.3%	1.8	1.3%	0.4	0.9%	0.3	-2.9%*	-2.0
5	1.2%	0.9	0.6%	0.2	0.8%	0.5	-3.7%*	-2.0
6	0.6%	0.4	1.4%	0.4	2.5%	1.3	-3.5%*	-1.8
7	1.3%	0.7	-0.1%	0.0	3.2%	1.3	-2.8%	-1.4
8	1.2%	0.6	-0.5%	-0.1	1.7%	0.8	-3.3%*	-1.9
9	0.4%	0.3	-1.6%	-0.3	0.2%	0.1	-3.5%*	-1.9
10	-0.3%	-0.2	-1.1%	-0.2	0.6%	0.3	-3.4%*	-2.0
20	-3.4%	-1.0	-2.2%	-0.3	-0.9%	-0.2	-4.1%	-1.3
40	-6.3%	-1.0	-4.0%	-0.3	2.5%	0.5	-3.6%	-0.8
60	2.3%	0.3	-0.6%	0.0	-1.5%	-0.2	-7.4%	-1.3
120	1.2%	0.1	-14.7%	-1.1	-8.4%	-0.9	-11.8%	-1.2

Sources: AMF, Thomson Reuters, Authors' calculations

Note: *denotes statistical significance at the 10% level.

Table 8: Cumulative Average Abnormal Returns for Settlements of Listed Companies (5 Cases)

Out of the 32 settlements concluded over the period under review, 5 involved subsidiaries of listed companies. This table reports the cumulative average abnormal returns (CAAR_t) up to a specified day *t* in event time for the four main steps of the settlement procedure. Event time is days relative to the step of the sanction procedure being analyzed and *t* = 0 is the event itself. Abnormal returns are computed given the market model parameters, which are estimated with OLS through the period [-120;-11] in event time. The sample is composed of the 5 daily-listed listed companies which settled with the AMF Enforcement Committee from 2012 to 2016.

<i>t</i>	Beginning of procedure		Statement of objection		Sanction decision		Publication of the sanction decision	
	CAAR _t	<i>t</i> -stat	CAAR _t	<i>t</i> -stat	CAAR _t	<i>t</i> -stat	CAAR _t	<i>t</i> -stat
-1	0.1%	0.1	0.2%	0.2	0.2%	0.3	-1.3%	-1.0
0	0.2%	0.3	0.3%	0.8	1.9%	1.1	-0.7%	-0.6
1	0.2%	0.2	1.4%	1.0	1.4%	1.3	-1.8%	-2.0
2	-0.5%	-1.1	2.2%	1.5	2.1%	1.5	-2.0%	-1.2
3	-0.4%	-0.4	1.9%	1.4	2.1%	1.3	-2.0%	-1.3
4	-0.3%	-0.6	-0.3%	-0.3	1.8%	0.8	-3.5%	-1.9
5	0.5%	0.6	0.8%	0.8	1.3%	0.4	-3.0%	-1.2
6	1.1%	0.7	0.5%	0.2	4.6%	1.1	-2.9%	-1.1
7	1.7%	1.3	2.0%	0.7	5.1%	1.3	-3.0%	-1.2
8	0.3%	0.4	1.2%	0.4	4.8%	0.9	-3.7%	-1.3
9	-0.1%	-0.1	2.0%	0.6	4.6%	0.9	-3.1%	-0.8
10	-1.2%	-0.7	2.5%	0.9	4.2%	0.8	-2.8%	-0.7

Sources: AMF, Thomson Reuters, Authors' calculations

Table 9: Cumulative Average Abnormal Returns Following the Last Steps of the Sanctions for Companies Being Named as Victims (65 Cases)

This table reports the cumulative average abnormal returns (CAAR_t) up to a specified day *t* in event time for the two last steps of the sanction procedure. Event time is days relative to the step of the sanction procedure being analyzed and *t* = 0 is the event itself. Abnormal returns are computed given the market model parameters, which are estimated with OLS through the period [-120;-11] in event time. The sample is composed of the 65 daily listed companies which were victim of others' financial misconduct mentioned in sanction reports of the AMF from 2004 to 2016.

<i>t</i>	Sanction decision		Publication of the sanction decision	
	CAAR _t	<i>t</i> -stat	CAAR _t	<i>t</i> -stat
-1	0.1%	0.3	-0.5%	-1.6
0	-0.2%	-0.6	-0.1%	-0.2
1	-0.5%	-1.0	-0.2%	-0.3
2	-0.6%	-1.2	-0.2%	-0.3
3	-0.7%	-1.4	0.1%	0.2
4	-1.1%	-1.6	0.3%	0.4
5	-1.1%	-1.5	-0.4%	-0.4
6	-1.0%	-1.2	-0.5%	-0.5
7	-1.5%*	-1.8	-0.7%	-0.7
8	-2.8%**	-2.6	-1.3%	-1.4
9	-2.8%**	-2.6	-1.6%	-1.6
10	-3.2%**	-2.6	-1.0%	-0.9
20	-3.4%**	-2.0	1.0%	0.7
40	-2.5%	-1.0	1.3%	0.5

Sources: AMF, Thomson Reuters, Authors' calculations

Note: *, ** and*** denote statistical significance at the 10%, 5%, and 1% level.

Table 10: Cumulative Average Abnormal Returns Following the Last Steps of the Sanctions for Companies Being Named as Victims, excluding confounding events (52 Cases)

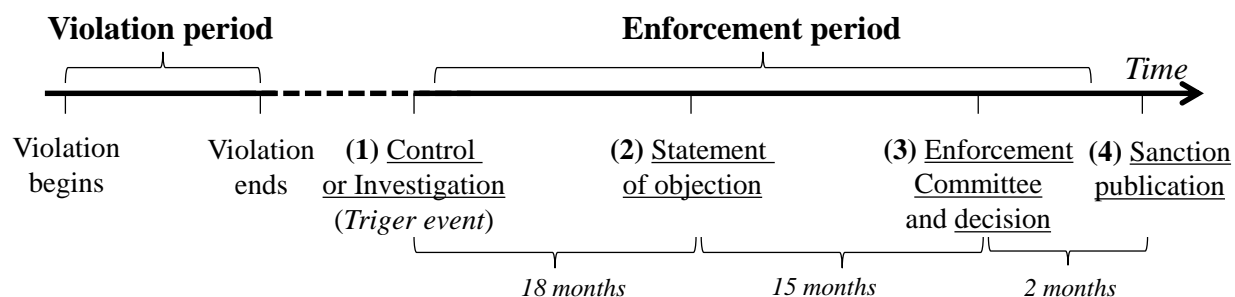
This table reports the cumulative average abnormal returns (CAAR_t) up to a specified day t in event time for the two last steps of the sanction procedure. Event time is days relative to the step of the sanction procedure being analyzed and $t = 0$ is the event itself. Abnormal returns are computed given the market model parameters, which are estimated with OLS through the period [-120;-11] in event time. The sample is composed of the 52 daily listed companies which were victim of others' financial misconduct mentioned in sanction reports of the AMF from 2004 to 2016.

<i>t</i>	Sanction decision		Publication of the sanction decision	
	CAAR _t	<i>t-stat</i>	CAAR _t	<i>t-stat</i>
-1	0.1%	0.444	-0.5%	-1.267
0	-0.1%	-0.287	0.0%	0.0232
1	-0.2%	-0.426	0.0%	-0.0502
2	-0.6%	-0.84	0.1%	0.176
3	-0.4%	-0.585	0.8%	0.896
4	-0.7%	-0.939	1.1%	1.062
5	-0.5%	-0.625	0.7%	0.742
6	-0.5%	-0.513	0.6%	0.615
7	-0.9%	-0.92	0.3%	0.367
8	-2.0*	-1.714	-0.5%	-0.505
9	-1.8%	-1.592	-0.7%	-0.688
10	-2.1%	-1.637	-0.1%	-0.088
20	-1.7%	-0.943	1.9%	1.228
40	-1.2%	-0.399	1.9%	0.673

Sources: AMF, Thomson Reuters, Authors' calculations

Note: *denotes statistical significance at the 10% level.

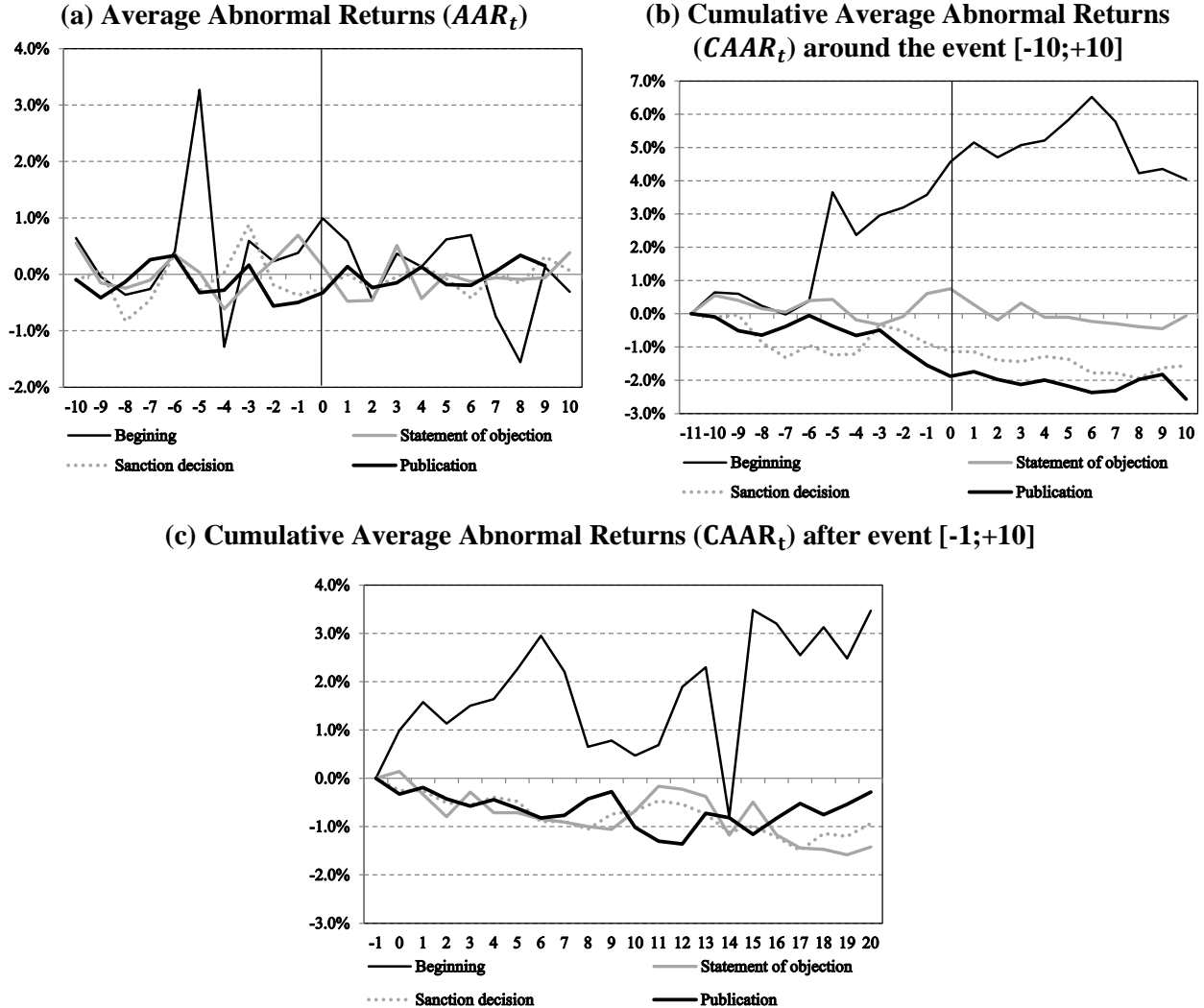
Figure 1: Timeline of an AMF Enforcement Action



Sources: AMF, Author

Figure 2: Average Abnormal Returns and Cumulative Average Abnormal Returns for the Different Milestones of the Sanction Procedures

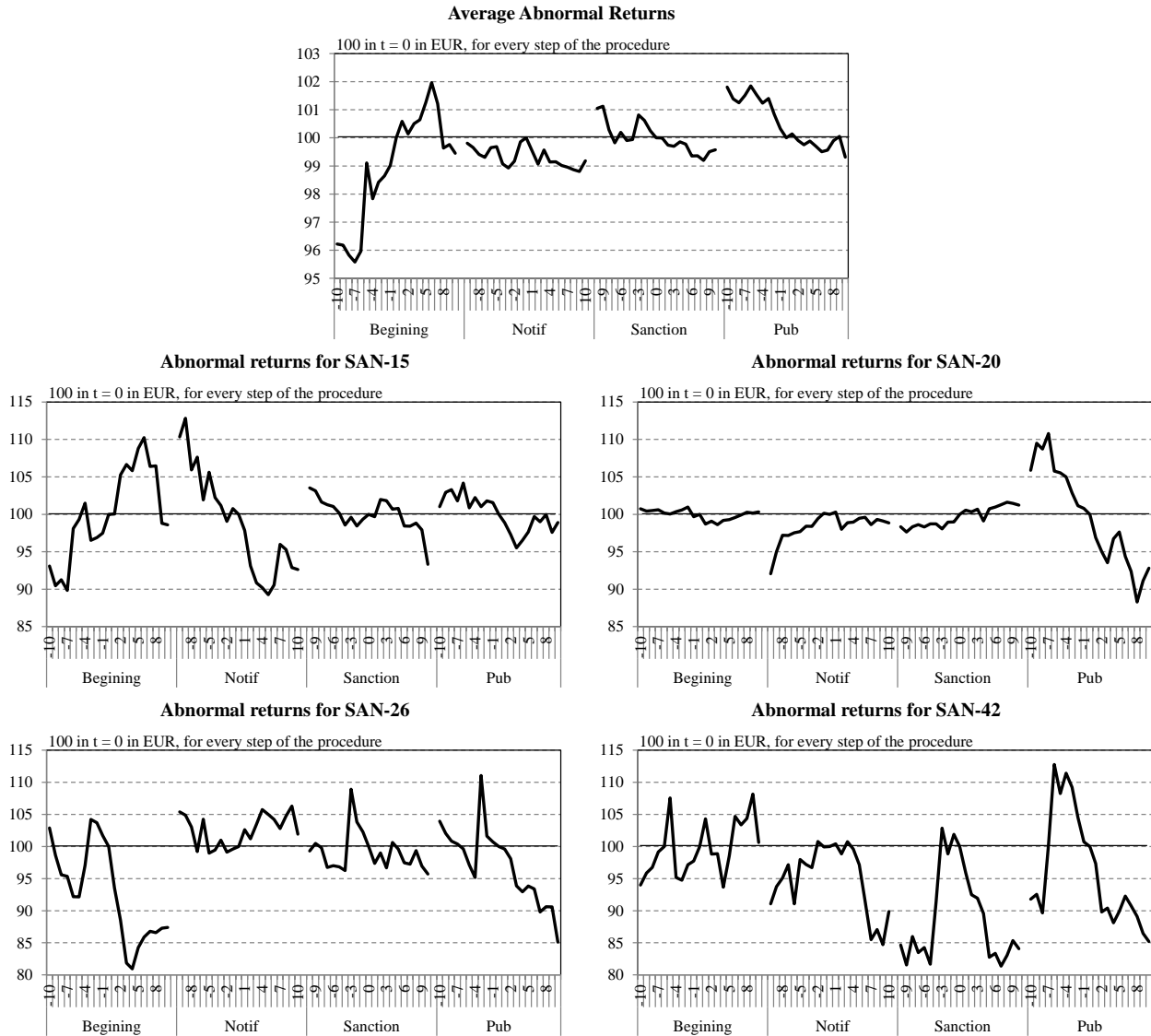
Abnormal returns are computed given the market model parameters estimated with OLS with White-corrected standard errors, through the period [-120;-11] in event time. Event time is days relative to the step of the step of the sanction procedure under review. The sample is composed of 52 sanctions of daily-listed companies over the period 2004-2016. Average abnormal returns AAR_t are calculated using the following specification ($AAR_t = \frac{1}{n} \sum_{i=1}^n AR_{i,t}$) and $CAAR_{[t_1;t_2]}$ using specification (5).



Sources: AMF, Thomson Reuters, Authors' calculations

Figure 3: Average Abnormal Returns and Abnormal Returns for Some Sanction Procedures

Abnormal returns are computed given the market model parameters estimated with OLS with White-corrected standard errors, through the period [-120;-11] in event time. Event time is days relative to the step of the step of the sanction procedure under review. The sample is composed of 52 sanctions of daily-listed companies over the period 2004-2016.



Sources: AMF, Thomson Reuters, Authors' calculations

Appendix

Table A.1: Composition of Euronext Sectors

The sectors are classified by declining frequency order for the sample of 52 sanctions.

CAC main sector	CAC sub-sectors (level 3)					
Financials (38%)	Banks	Nonlife Insurance	Real Estate	General Financial		
Industrials (15%)	Aerospace & Defense	Electronic & Electrical Equipment	Industrial Engineering	Industrial Transportation	Support Services	Automobiles & Parts
Technology (13%)	Software & Computer Services	Technology Hardware & Equipment				
Consumer goods (8%)	Beverages	Food Producers	Household Goods	Leisure Goods	Personal Goods	
Consumer services (8%)	General Retailers	Media	Travel & Leisure			
Health care (6%)	Health Care Equipment & Services	Pharmaceuticals & Biotechnology	Foods & Drug Retailers			
Basic materials (6%)	Construction & Materials					
Telecommunications (2%)	Fixed Line Telecommunications					
Utilities (2%)	Gas, Water & Multi-utilities					
Oil & gas (2%)	Oil & Gas Producers					

Source: Euronext

Table A.2: Future of Sanctioned Companies, Sanction by Sanction

		75 still listed (o.w. 6 acquittals)	
	90 survivals to sanction (still listed)	15 non-longer listed (o.w. 2 acquittals)	7 before the sanction 8 after the sanction
129 sanctions of 105 companies = 134 sanctions + companies		24 bankruptcies	20 before the sanction 4 after the sanction
	44 disappeared companies		7 before the sanction 13 after the sanction
		20 M&As	

Source: AMF, Author's Calculations, in December 2017 Note: Recidivist companies were included for every sanction.

Table A.3: Future of Sanctioned Companies, by Companies

		51 still listed (<i>o.w.</i> 5 acquittals)	
		64 survivals to sanction	13 non-longer listed
105 companies (sanctioned 134 times, in 129 sanctions)			6 before the sanction
			7 after the sanction
	41 disappeared companies	23 bankruptcies	19 before the sanction
			4 after the sanction
	18 M&As	8 before the sanction	
		10 after the sanction	

Source: AMF, Author's Calculations, in December 2017 Note: Recidivist companies were counted one time.

Table A.4: Cumulative Average Abnormal Returns for Sanctions of Listed Companies using a Market Model Not Adjusted for Sectors (52 sanctions)

Given the wide range of sectors covered by the listed companies sanctioned by the AMF, and the major financial crisis happening in the middle of the period under review (financial companies being the most frequently sanctioned), the market model was adjusted for the sectors, using the Euronext classification. It enables to reduce the variance of abnormal returns, without changing the signs of the estimates.

<i>t</i>	Beginning of procedure		Statement of objection		Sanction decision		Publication of the sanction decision	
	CAAR _{<i>t</i>}	<i>t-stat</i>	CAAR _{<i>t</i>}	<i>t-stat</i>	CAAR _{<i>t</i>}	<i>t-stat</i>	CAAR _{<i>t</i>}	<i>t-stat</i>
-1	0.1%	0.3	0.7%**	2.2	-0.4%	-1.2	0.0%	-0.1
0	1.0%	0.5	0.8%	1.5	-0.6%*	-1.7	-0.5%*	-1.7
1	1.5%	0.8	0.4%	0.5	-0.6%	-1.7	-0.4%	-1.1
2	1.2%	0.6	-0.1%	-0.1	-8.8%*	0.5	-0.8%	-1.6

Sources: AMF, Thomson Reuters, Authors' calculations

Note: *, and ** denote statistical significance at the 10%, and 5%, level.

Table A.5: Comparison of Cumulative Average Abnormal Returns Following the Publication of Sanctions Before and After the Great Financial Crisis

As financial companies were the most frequently sanctioned companies (38% of the sample) and given the systemic consequences of the Great Financial Crisis and the subsequent strengthening of financial regulation (in particular reinforced sanction power of the AMF), the impact following the publication of the sanction decision was re-estimated for sub-samples of sanctions depending on the dates: before and after the outburst of the subprime crisis in the USA (up to June 2007, after July 2007), and before and after Lehman Brothers' bankruptcy (up to August 2008, after September 2008).

Sample			Sub-sample before June 2007		Sub-sample after July 2007		Sub-sample before Aug. 2008		Sub-sample after September 2008	
<i>t</i>	CAAR _{<i>t</i>}	<i>t</i> -stat	CAAR _{<i>t</i>}	<i>t</i> -stat	CAAR _{<i>t</i>}	<i>t</i> -stat	CAAR _{<i>t</i>}	<i>t</i> -stat	CAAR _{<i>t</i>}	<i>t</i> -stat
-1	-0.5%***	-2.7	-0.4%	-1.4	-0.5%**	-2.3	-0.4%	-1.7	-0.5%**	-2.2
0	-0.8%***	-3.0	-0.7%*	-1.8	-0.9%**	-2.4	-1.0%***	-3.0	-0.7%*	-1.8
1	-0.7%*	-2.0	0.1%	0.2	-1.0%**	-2.2	-0.5%	-1.0	-0.8%	-1.7
2	-0.9%*	-1.9	0.3%	0.9	-1.4%**	-2.2	-0.5%	-0.9	-1.2%*	-1.7
3	-1.1%*	-1.7	0.8%	1.3	-1.8%**	-2.2	-0.6%	-0.7	-1.3%	-1.6
4	-0.9%	-1.5	0.6%	1.0	-1.5%*	-1.8	-0.2%	-0.2	-1.4%	-1.6
5	-1.1%*	-1.8	1.7%*	2.0	-2.2%***	-2.9	0.3%	0.4	-2.0%**	-2.4
6	-1.3%**	-2.2	1.1%	0.9	-2.2%***	-3.3	-0.5%	-0.4	-1.8%**	-2.5
7	-1.3%*	-1.8	1.2%	1.2	-2.2%**	-2.7	-0.5%	-0.5	-1.7%*	-1.9
8	-0.9%	-1.2	1.4%	1.3	-1.8%*	-1.9	-0.1%	-0.1	-1.4%	-1.4
9	-0.8%	-0.9	1.2%	1.0	-1.5%	-1.5	0.0%	0.0	-1.2%	-1.1
10	-1.5%	-1.6	1.2%	1.0	-2.5%**	-2.2	-0.5%	-0.3	-2.1%*	-1.8
Sample size		52	14		38		19		33	

Sources: AMF, Thomson Reuters, Authors' calculations

Note: *, ** and *** denote statistical significance at the 10%, 5%, and 1% level

Table A.6: Cumulative Average Abnormal Returns for the Sanctions of Listed Companies Including the 4 Sanctions of the subsidiary of a Major International Bank (56 Cases)

Four sanctions of a major international bank were excluded from the sample given the size of the market capitalization of the company and its global nature. The latter could have biased the calculations of the loss or gains in capital following the event (the publication of the sanction). The event studies were re-estimated including these sanctions to test the robustness of the model.

<i>t</i>	Beginning of procedure		Statement of objection		Sanction decision		Publication of the sanction decision	
	CAAR _{<i>t</i>}	<i>t-stat</i>	CAAR _{<i>t</i>}	<i>t-stat</i>	CAAR _{<i>t</i>}	<i>t-stat</i>	CAAR _{<i>t</i>}	<i>t-stat</i>
-1	0.4%	1.0	0.6%**	2.2	-0.3%	-0.9	-0.6%**	-2.3
0	-0.3%	-0.4	0.7%	1.4	-0.5%	-1.4	-0.9%**	-2.6
1	0.2%	0.3	0.3%	0.4	-0.5%	-1.5	-0.7%**	-2.0
2	-0.2%	-0.2	-0.2%	-0.2	-0.7%	-1.6	-0.9%*	-2.0
3	0.1%	0.1	0.3%	0.4	-0.8%	-1.7	-1.0%*	-1.7
4	0.2%	0.2	-0.1%	-0.1	-0.7%	-1.2	-0.9%	-1.4
5	0.9%	0.9	0.0%	0.0	-0.7%	-1.1	-1.0%	-1.6
6	1.5%	1.4	-0.2%	-0.2	-1.1%	-1.4	-1.1%*	-1.8
7	0.8%	0.7	-0.2%	-0.2	-1.1%	-1.3	-1.1%	-1.7
8	-0.6%	-0.4	-0.3%	-0.4	-1.2%	-1.5	-0.7%	-1.0
9	-0.6%	-0.3	-0.4%	-0.5	-0.9%	-1.1	-0.7%	-0.8
10	-0.9%	-0.5	-0.4%	-0.1	-0.8%	-0.9	-1.4%	-1.6

Sources: AMF, Thomson Reuters, Authors' calculations

Note: *, and ** denote statistical significance at the 10%, and 5% level

Table A.7: Cumulative Average Abnormal Returns by regulatory breaches, following the publication

This table summarizes the results of the event study following the publication of the sanction reports, split by the four main regulatory breaches, as defined by the AMF. On average, every sanction of the sample involves 1.4 breaches.

<i>t</i>	Sample		Insider trading		Information		Professional obligations		Price manipulation	
	CAAR _{<i>t</i>}	<i>t-stat</i>	CAAR _{<i>t</i>}	<i>t-stat</i>	CAAR _{<i>t</i>}	<i>t-stat</i>	CAAR _{<i>t</i>}	<i>t-stat</i>	CAAR _{<i>t</i>}	<i>t-stat</i>
-1	-0.5%***	-2.7	-0.8%**	-2.4	-0.6%***	-2.6	-0.4%	-1.2	0.1%	0.1
0	-0.8%***	-3.0	-1.0%**	-2.6	-1.1%***	-2.9	-0.8%*	-1.8	-0.5%	-0.5
1	-0.7%*	-2.0	-1.0%	-1.6	-0.6%	-1.2	-1.0%*	-1.9	-0.1%	-0.1
2	-0.9%*	-1.5	-1.7%	-1.4	-1.2%*	-1.8	-0.8%	-1.2	-0.7%	-0.7
3	-1.1%*	-1.8	-2.0%	-1.6	-1.3%	-1.4	-1.2%	-1.5	-1.3%	-0.8
4	-0.9%	-2.2	-1.2%	-0.8	-1.1%	-1.2	-0.8%	-1.2	1.1%	1.3
5	-1.1%*	-1.8	-2.4%	-1.6	-1.7%*	-1.9	-0.8%	-1.1	-1.9%	-1.2
6	-1.3%**	-1.2	-2.8%*	-2.0	-2.3%***	-2.9	-0.9%	-0.9	-4.0%	-2.1
7	-1.3%*	-0.9	-3.2%*	-2.1	-1.7%*	-1.8	-2.0%*	-1.9	-6.0%*	-2.3
8	-0.9%	-1.6	-3.6%**	-2.3	-1.4%	-1.3	-1.7%	-1.4	-6.1%	-1.9
9	-0.8%	-0.6	-4.1%**	-2.3	-1.4%	-1.1	-0.9%	-0.8	-4.8%	-1.7
10	-1.5%	0.6	-4.6%*	-2.1	-2.3%	-1.7	-2.2%	-1.6	-7.0%	-1.6
Sample size	52		15		29		20		5	

Sources: AMF, Thomson Reuters, Authors' calculations

Note: *, **, and*** denote statistical significance at the 10%, 5%, and 1% level.

Table A.8: Cumulative Average Abnormal Returns following the Publication for the Subsamples of Seriousness of the Sanction Decision (19 Sanctions each)

Two sub-samples were defined to characterize the “seriousness” of the sanction decision. The first one (“3 factors”) is defined as sanctions which comply with at least two of the three following conditions: cash fine above the median of the sample; disciplinary sanction; and recidivism before and/or after 2004. The second one (“Average”) only covers the sanctions which cash fines exceed the average. The model was re-estimated for those two sub samples in order to challenge the extent to which the assumption that markets would take into account the content of the sanction decision.

<i>t</i>	Sample		3 factors		Average	
	CAAR _{<i>t</i>}	<i>t</i> -stat	CAAR _{<i>t</i>}	<i>t</i> -stat	CAAR _{<i>t</i>}	<i>t</i> -stat
-1	-0.5%***	-2.7	-0.9%*	-1.8	-0.4%*	-1.9
0	-0.8%***	-3.0	-1.1%*	-1.8	-0.5%*	-1.9
1	-0.7%*	-2.0	-1.4%*	-1.9	-0.3%	-1.1
2	-0.9%*	-1.9	-1.5%	-1.4	-0.1%	-0.1
3	-1.1%*	-1.7	-1.7%	-1.6	-0.6%	-1.2
4	-0.9%	-1.5	-1.8%	-1.6	0.0%	0.1
5	-1.1%*	-1.8	-1.6%	-1.4	0.0%	0.0
6	-1.3%**	-2.2	-1.1%	-0.9	0.2%	0.3
7	-1.3%*	-1.8	-1.6%	-1.3	0.2%	0.3
8	-0.9%	-1.2	-1.3%	-0.9	0.4%	0.5
9	-0.8%	-0.9	-1.7%	-1.2	-0.1%	-0.1
10	-1.5%	-1.6	-2.6%*	-1.8	0.1%	0.2
Sample size	52		19		19	

Sources: AMF, Thomson Reuters, Authors' calculations

Note: *, ** and *** denote statistical significance at the 10%, 5%, and 1% level.

Table A.9: Cumulative Average Abnormal Returns following the Publication of the Sanction Decision for Companies Anonymized or Not in the Decisions (8 and 49 Cases)

Out of the 52 sample of decisions, 8 sanctions impacted listed companies which names were anonymized when the decision was first published. The model was re-estimated for the two sub-samples depending on whether or not the name of the company appeared.

<i>t</i>	Sample		Sub-sample anonymized		Subsample not anonymized	
	CAAR _{<i>t</i>}	<i>t</i> -stat	CAAR _{<i>t</i>}	<i>t</i> -stat	CAAR _{<i>t</i>}	<i>t</i> -stat
-1	-0.5%***	-2.7	-0.8%	-1.3	-0.5%**	-2.4
0	-0.8%***	-3.0	-1.3%	-1.0	-0.8%***	-2.9
1	-0.7%*	-2.0	-1.6%	-1.1	-0.5%	-1.6
2	-0.9%*	-1.9	-2.6%	-1.4	-0.7%	-1.4
3	-1.1%*	-1.7	-2.8%	-0.9	-0.8%	-1.5
4	-0.9%	-1.5	-3.1%	-1.1	-0.6%	-1.0
5	-1.1%*	-1.8	-4.2%	-1.7	-0.6%	-1.1
6	-1.3%**	-2.2	-3.2%	-1.8	-1.0%	-1.6
7	-1.3%*	-1.8	-0.8%	-0.4	-1.3%*	-1.8
8	-0.9%	-1.2	-0.6%	-0.4	-1.0%	-1.2
9	-0.8%	-0.9	-0.2%	-0.1	-0.9%	-1.0
10	-1.5%	-1.6	0.2%	0.1	-1.8%*	-1.8
Sample size	52		7		45	

Sources: AMF, Thomson Reuters, Authors' calculations

Note: *, ** and *** denote statistical significance at the 10%, 5%, and 1% level.

Table A.10: Cumulative Average Abnormal Returns following the Publication of the Sanction Decisions of Guilty Listed Companies, Depending on the Length of the Estimation Window (52 Sanctions)

The “normal” returns were re-estimated over two different estimation windows, shorter and further to the event (in $t = 0$): 100 days with an estimation window [-120;-21]; and 90 days with an estimation window [-120;-31]. The goal is to test the robustness of the central scenario, which follows the most frequent hypothesis in the literature: a 110-day estimation window over the period [-120;-11] in event time.

	Sample (110 days)		100 days		90 days	
	CAAR _t	<i>t-stat</i>	CAAR _t	<i>t-stat</i>	CAAR _t	<i>t-stat</i>
-1	-0.5%***	-2.7	-0.5%**	-2.6	-0.5%**	-2.7
0	-0.8%***	-3.0	-0.8%***	-2.9	-0.8%***	-2.9
1	-0.7%*	-2.0	-0.7%*	-2.0	-0.7%**	-2.1
2	-0.9%*	-1.9	-0.9%**	-2.0	-1.0%**	-2.1
3	-1.1%*	-1.7	-1.1%*	-1.8	-1.1%*	-1.8
4	-0.9%	-1.5	-1.0%	-1.6	-1.0%	-1.6
5	-1.1%*	-1.8	-1.2%*	-1.9	-1.3%*	-2.0
6	-1.3%**	-2.2	-1.4%**	-2.3	-1.5%**	-2.4
7	-1.3%*	-1.8	-1.3%*	-2.0	-1.5%**	-2.1
8	-0.9%	-1.2	-1.0%	-1.4	-1.1%	-1.5
9	-0.8%	-0.9	-0.9%	-1.1	-1.0%	-1.2
10	-1.5%	-1.6	-1.6%*	-1.8	-1.7%*	-1.8

Sources: AMF, Thomson Reuters, Authors' calculations

Note: *, ** and*** denote statistical significance at the 10%, 5%, and 1% level.

Remark 1. News extracts: Perceived impacts of sanctions, *via* press articles

A review of the articles commenting sanctions demonstrates that there is no consensus of the impact of sanctions on stock prices. Journalists and analysts forecast no reaction or a negative one depending on the cases. Below, two examples of articles illustrate such uncertainty. The first concludes with no reaction whereas the second one details the view of an analyst which downgraded its outlook to negative.

Altran techn. : Bryan Garnier minimise l'impact des sanctions de l'AMF (June, 1 2007)

“Brian Garnier reckons that the 1.5 million euros sanction [...] will not impact Altran Technology stock price”.

Bryan Garnier ne pense pas que l'amende de 1.5 Million d'euros annoncée jeudi par la commission des sanctions de l'AMF à l'encontre d'Altran Technologies aura d'impact significatif sur l'action. Le broker rappelle que cette amende renvoie à faits anciens et que tous les dirigeants impliqués dans les scandales ont quitté le groupe. En outre, l'éventualité d'une sanction était provisionnée dans les comptes de la société. Le courtier maintient néanmoins sa recommandation à "vendre" sur Altran, avec un objectif de cours de 6.4 euros. Bryan Garnier motive son opinion par la prime de 18%, non justifiée selon le courtier, avec laquelle se négocie la valeur par rapport à ses comparables.

Source: <https://www.tradingsat.com/altran-techn-FR0000034639/actualites/altran-techn-bryan-garnier-minimise-l-impact-des-sanctions-de-l-amf-390295.html>

Les sanctions de l'AMF pèsent sur notre opinion de Petercam (April, 24 2015)

“The AMF sanctions against Petercam and two of its employees lead us to downgrade our opinion on the company to “negative”.”

Les sanctions prononcées par l'AMF à l'encontre de Petercam et de deux de ses employés nous conduisent à abaisser notre appréciation de la société à « Négative ».

En avril 2015, l'Autorité des Marchés Financiers (AMF) a prononcé une sanction pécuniaire à l'encontre de Petercam pour manipulation de cours, concernant des transactions effectuées sur l'un de ses fonds (Petercam Equities Agrivalue) le dernier jour de bourse de 2011. L'AMF a également sanctionné à titre personnel le trader et

le gérant de portefeuille qui étaient à l'origine de ses opérations. Nous estimons que Petercam a depuis lors mis en œuvre des mesures appropriées pour que ce type d'agissement ne puisse plus se reproduire. [...] En revanche, nous sommes déçus que Petercam n'ait pas pris de mesures à l'encontre du gérant concerné, afin de restaurer la confiance des investisseurs. [...] La plupart des gérants sont investis à titre personnel dans les fonds qu'ils gèrent, une bonne façon d'aligner leurs intérêts sur ceux des investisseurs. La communication avec les investisseurs est de bonne qualité et les frais sont en ligne avec les pratiques de l'industrie. Néanmoins, la récente sanction de l'AMF milite pour la prudence et nous conduit à abaisser notre appréciation à « Négative ».

Source: <http://www.morningstar.fr/fr/news/137057/les-sanctions-de-lamf-p%C3%A8sent-sur-notre-opinion-de-petercam.aspx>

Remark 2: Collinearity analysis for the set of 43 variables

Firstly, there is a strong significant correlation (above 0.7) for sets of variables which are, by construction, linked: appeal, time, and anonymization⁵⁵. Additionally, recidivisms (before and after 2004) are strongly correlated, illustrating a strong tendency to retrieve of firms once being sanctioned. Finally, being a financial institution is positively and strongly correlated with recidivisms. Their explanatory power will be tested.

Additionally, moderate correlation (0.5 to 0.7) brings the following information. As for strong correlation, logical relationships were observed for the following variables: in between stock markets, and between stock markets and market capitalization (by construction and definition); having a person and a top manager involved (positively); being first published anonymized and the current state of anonymization (positively); depending on the regulatory breaches (negatively between failures to meet with professional obligations and information); appeals (positively between their duration and rejection decision); and the Chairmen and the financial laws. Three evolutions along time are demonstrated by correlations: a reduced lag between the sanction decision and its publication; a stronger resort to anonymization under a Chairman; and as increase in the length of sanction reports. Being listed on the Compartment A is positively correlated with receiving a warning. It echoes a similar correlation with belonging to the financial sector. The latter is also moderately correlated with regulatory breaches (positively to failures to meet with professional obligations, negatively to information) and with the involvement of top managers (negatively). Recidivisms are similarly correlated with regulatory breaches (before and after AMF negatively for information, after positively for failures to meet with professional obligations) and positively with warnings. Finally, the media coverage over the week following the publication appears to be stronger for bigger firms (by market capitalizations), for higher cash fines, when articles were issued before the publication of the decision, and for consumer goods and services firms.

Finally, the following observations can be made regarding weak correlations, though significant at 5% level.

Firstly, some correlations **result from the legal framework of sanctions**. Regarding the decisions, cash fines are positively correlated with the size of the entity, and warnings with recidivism. Anonymization is positively correlated with the involvement of individuals and/or top managers in the breach(es). Despite the positive correlation of first publication anonymization along time, a move towards for more transparency is notable with the negative correlation between current online anonymization rates and time. This tendency is also visible with a reduction of the lag between the sanction and its publication, despite the lengthening of sanction procedures. The sample confirms that the less severe regulatory breaches (failures to meet with regulatory obligations) are detected by controls, while market abuses are positively correlated with investigation. Conversely, despite the regulatory successive increases in the maximum authorized cash fines, cash fines are not significantly (though positively correlated) with time.

⁵⁵ The three following families of variables are strongly correlated: 1) appeal, number of appeals, conclusion of the appeal, and duration of the appeals; 2) years and financial laws (LRBF 2010); 3) anonymization when first published with partial anonymization.

Regarding the **sanctioned regulatory breaches**, the following correlations are demonstrated. Insider trading involves individuals after investigations, sanctions with longer reports, more partially anonymized sanction reports, and more appealed for (unsuccessfully). Price manipulation impacts smaller companies and negatively correlated with the current rate of anonymization. Breaches to information are positively correlated with top management involvement and the industrial sector, and negatively with warnings, the financial sector, recidivisms, and market capitalization. Finally, failures to meet with financial obligations hits more frequently bigger, financial and/or recidivist companies. They are correlated positively with warnings and negatively with the top management involvement.

The **length of the sanction reports**, which can signal the seriousness and complexity of the case, is positively correlated with the cash fines (which are – as well as with the last president of the AMF – positively correlated with the procedure duration) as well as with the length of procedures, the frequency of appeal by the AMF, and with the subsequent media coverage over the week following the decision publication.

Sanctions involving **individuals and top managers** are positively correlated with dissemination of false information (negatively with failures to meet with professional obligations), with the length of the sanction reports, and with all the aspects of appeals (appeals, number of appeals, length of appeals and rejection rate). Conversely, they are negatively correlated with warnings, the size of the firms, their recidivism, and the media coverage of the decision.

The **media coverage** will increase with the size of the sanctioned entity, its survival to the sanction, the length of the sanction reports, and along time, while the involvement of individuals and/or top managers and the current rate of anonymization will have the opposite correlation.

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