Policing Financial Markets: An Analysis of Whistleblowing Short Sellers' Rhetoric

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ABSTRACT: How do market participants police companies listed on financial markets? We investigate, in this respect, the role of Whistleblowing Short Sellers (WSSs), i.e., short-selling organizations that target publicly listed firms that they perceive to be overvalued, in an increasingly popular form of "research reports" openly denouncing frauds, flawed business models, accounting irregularities, and wrongdoings. Our empirical analysis exploits 383 research reports targeting 171 unique firms and three first-hand interviews with WSSs. We focus on six WSSs that historically have issued informative research reports (-11.2% cumulative abnormal returns in the three days surrounding the first report's release date; close to 50% of targets delisted, suspended or bankrupted subsequently). Drawing on Aristotle's rhetoric, we examine how WSSs use narratives to convince other investors that target firms are overvalued. We decompose the documents produced by WSSs into stylized narratives related to credibility-based (ethos), emotions-based (pathos), and logic-based (logos) rhetorical strategies. To assess the impact of these strategies, we examine the extent to which the WSSs' rhetorical strategies resonate in 3,665 press articles covering target firms 30 days after the first WSS report. In 59% of covered cases, the press refers to logos-based rhetorical strategies focusing on demonstrating overvaluation. In 51.7% of covered cases, the press also refers to pathos-based rhetorical strategies focusing on making fun of or using irony against the target firm. Considering the importance of the press in shaping investors' opinions, our study points to WSSs playing a significant role in policing financial markets; their role is all the more pertinent given traditional gatekeepers' difficulties in monitoring fraudulent behavior in financial markets.

Keywords: whistleblowers; activist short sellers; persuasion; rhetoric; credibility.

JEL Classifications: G14; G23; G3; M4; P1.

Data Availability: Most of the data is available from public sources identified in the paper. The complete transcripts of interviews with WSSs, however, remain confidential.

I. INTRODUCTION

Recently, financial markets have seen the development of a new type of whistleblowers: short-selling entities that actively engage in "equity research" to expose alleged wrongdoing by listed companies through the dissemination of "research reports" on their own websites, on Twitter, or on popular finance forums. Through their work, these "Whistleblowing Short Sellers" (WSSs) seek to inform market participants of fraudulent schemes, flawed business models, and accounting irregularities at publicly listed target firms. Those organizations often take (usually openly) "short" positions on the stocks of target firms, which implies that WSSs benefit from declines in the stock price of target firms.

It is widely recognized that fraud, either in the context of organizational settings or financial markets, is a predominant socioeconomic problem that is considerably challenging to address (Cooper et al. 2013). A range of approaches have been considered in trying to make sense of the problem and different technologies have been implemented in striving to control for fraud in business and financial markets (Morales et al. 2014). Yet in spite of these significant efforts, fraud is generally viewed as an enduring problem, including in financial markets (e.g., International Organization of Securities Commissions (IOSCO) 2005). Drawing on Flyvbjerg's (2001) call for social sciences to engage more firmly in research that matters, one key question to address relates to the policing of listed companies' fraudulent and dubious behavior in financial markets. It is in a specific context that the emergence of WSSs as a new type of gatekeeper takes on socioeconomic significance, namely, as an innovative practice that developed in the private sector in order to detect and report on fraud cases taking place in listed companies.

WSSs have exposed a number of well-publicized accounting frauds. A well-known example is *Gotham City Research*, which alleged in 2014 that the Spanish firm *Let's Gowex* was perpetrating a massive accounting fraud. *Let's Gowex* filed for voluntary insolvency five days after the whistleblower published a detailed report accusing it of misleading investors. Another example is *Iceberg Research* that, in 2015, started releasing a series of research reports targeting the (then) largest Asian commodity trader: Noble Group. The target firm subsequently booked large impairments, was downgraded by credit rating agencies, restructured its debt, and faced a 65% decline in its stock price in 2015 alone – confirming the original concerns raised by *Iceberg*. Other well-known WSSs of this type comprise *Citron Research*, *Copperfield*

Research, *Glaucus Research*, and *Muddy Waters Research*.[1] In this paper, we focus on this group of six established WSSs that, in aggregate, have produced a large number of informative research reports since their creation.[2] Their reports are informative as we estimate a negative average market-adjusted stock returns of -11.2% in the three days surrounding the issuance of the first research report, which represents on average a reduction of $416 million of market value for the target. Cumulative abnormal returns two months (six months) after the first research report are persistently negative: -14.5% (-22.6%). In addition, in August 2018, 46.3% of target firms are classified as either dead, delisted, or suspended from stock exchanges confirming the significant problems identified by WSSs.

WSSs' websites, when they exist, usually include little information about these private organizations. Some reportedly employ a small team (sometimes, most likely one person) of analysts who possess technical expertise in financial analysis, credit analysis and finance as well as a capacity to analyze documents written in different languages (e.g., Mandarin). Some WSSs rely on a larger team to conduct due diligence and investigative work. Some favor secrecy (e.g., Gotham City or Copperfield).[3] Conversely, others are often active in the media to present their latest research reports. For example, Muddy Waters' director of research, Carson Block, regularly gives public interviews to business TV channels such as CNBC or Bloomberg.[4] Citron's Executive Editor, Andrew Left, also appears regularly in the media.[5]

We assume that WSSs' policing of financial markets develops the use of rhetorical strategies to increase the persuasiveness of allegations conveyed especially in their research reports. Persuasion is of significant importance in this setting. First, WSSs go against the consensus reached by other investors about the value of target firms. Investors tend to be skeptical toward extreme views that are far from the consensus. Second, WSSs have a clear conflict of interest: why should investors believe entities that benefit from a declining stock price of a target firm? Third, WSSs make allegations against legitimate firms that are audited, regulated by agencies such as the SEC, covered by the media, followed by analysts, managed by CEOs with credentials, and that employ hundreds or thousands of people. How could WSSs

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[1] For the sake of simplicity, as all of the WSS entities in our dataset include the word "Research" in their name, we remove this word when referring to them in the rest of this paper.
[2] Arnaud Vagner from *Iceberg* mentioned that the total number of active WSS organizations (i.e., which publish research reports regularly) was around 15, as of August 2018.
[3] Copperfield's reports end with the statement: "Due to the danger of retaliation, this report was written under a pseudonym" https://seekingalpha.com/instablog/890075-copperfield-research/152143-ebix-not-a-chinese-fraud-but-a-house-of-cards-nonetheless (Last accessed: April 17, 2019).
[4] http://www.muddywatersresearch.com/category/articles (Last accessed: April 17, 2019).
[5] https://citronresearch.com/ (Last accessed: April 17, 2019).

be correct against so many gatekeepers (Roychowdhury and Srinivasan 2019)? The experience and credibility of WSSs matter but are unlikely to be sufficient to convince other investors. Therefore, the rhetorical strategies employed by WSSs against targeted firms are important. Persuasion is more complex than the disclosure of mere facts and figures; subtle forms of persuasion may matter such as the use of arguments aiming to establish the credibility of WSSs and arguments aiming at appealing to investors' emotions. Our study analyzes the use of these subtle forms of rhetorical strategies and assess their impact (at least at influencing the press).

The persuasiveness of rhetorical claims is subject to the judgment of different audiences, among which the press (and ultimately investors), in what may be viewed as "trials of strength" (Latour 1987; Bourguignon and Chiapello 2005). The stakes involved are high; on the one hand, the WSSs' investigative efforts concerning the case and, on the other hand, the target firm's reputation of trustworthiness (Power 2004) which, when impacted, may influence share price (e.g., Raithel and Schwaiger 2015). Specifically, we analyze the rhetoric used by WSSs in the research reports they disseminate.[6] We identify the rhetorical strategies employed by WSSs to expose frauds[7] and convince other investors that target firms are overvalued. Through this analysis we seek to better understand the nature of rhetorical strategies while examining the persuasiveness of the rhetorical statements made by WSSs. In addition, we assess the impact of rhetorical strategies employed by WSSs by examining their resonance in the press, which is critical in shaping investors' opinion (Tetlock 2007; Drake et al. 2014; Dai et al. 2015).

We use the term Whistleblowing Short Seller to refer to these actors of financial markets instead of other terms used in the industry (i.e., "activist short sellers") or in the literature (i.e., "small arbitrageurs" (Ljungqvist and Qian 2016). These organizations are, to the best of our knowledge, fairly recent in the history of financial markets as current WSS entities appeared, except for a few exceptions (*Citron* was created in 2001), during or after the global financial crisis (see Ljungqvist and Qian 2016, 1982). We use the term *Whistleblowing* because these organizations represent "one or more individuals [who] inform the public or someone in authority about apparent dishonest, illegal, or inappropriate activities" (Mudrack and Mason 2013, 644). In line with Miceli et al. (2008, 4), this definition features a broad view of

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[6] In additional analyses we also examine the rhetorical strategies of firms responding to WSSs' accusations (see Section VI).

[7] In our interview, Arnaud Vagner from *Iceberg* explains: "No, we do not attack, we expose. Companies actually attack regular investors, who believe it is an honest company. We expose, we do not attack". In a way, the term exposure makes sense because WSSs, by and large, identify, signal and explain to other market participants the occurrence of fraud or wrongdoing. Not surprisingly, Michael Woodford, the whistleblower of Olympus, uses the term "exposure" in his book (Woodford 2012).. Consequently, we will use the term "exposure cases" in the rest of this paper.

wrongdoing. Another reason supporting the term *whistleblowing* is that these organizations themselves refer to it. For instance, Gotham City explains that "Gotham City llc has filed as a whistleblower with the Internal Revenue Service and the Securities and Exchange Commission"[8] and Iceberg states "You should assume that Iceberg has and/or will file as a whistleblower with regulators."[9]

We distinguish these actors from *traditional* whistleblowers who denounce corporate fraud and wrongdoing but do not engage in short selling or do not seek to influence investors. Stolowy et al. (2019) investigate the discourse produced by prominent traditional whistleblowers in well-publicized stories (e.g., Cynthia Cooper at WorldCom or Sherron Watkins at Enron).[10] In addition, whereas traditional whistleblowers face an incentive problem in most jurisdictions (some countries such as the US, Canada, or the UK being exceptions with possible rewards for whistleblowers),[11] WSSs are different because they address this incentive problem by short selling target firms, thus benefiting directly from the accuracy of their accusations.

Indeed, a specific feature of WSSs' behavior is the willingness to influence other investors while benefiting from their short position.[12] Although there are different ways to benefit from a declining stock price, the most straightforward form of short selling implies borrowing stocks in order to sell them immediately, in the hope of buying them back at a later date after a price decline, returning the stocks back to the lender, and thus pocketing a profit (net of a lending fee).

Short sellers typically analyze public information, conduct fundamental analysis and focus on the potential problems of firms such as overstated earnings, aggressive accounting methods, flawed business model, and/or obscure financial statements hiding poor operating performance (Engelberg et al. 2012; Pedersen 2015, 116). The practice of short selling is more challenging than buying stocks to benefit from dividends and price appreciation. Short selling has been highly debated.[13] Most short sellers, i.e., passive short sellers, do not disseminate their findings

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[8] Gotham City vs. Ebix Inc (EBIX) (February 21, 2013, Report #1).
[9] Iceberg vs Noble (March 5, 2015, Report #2).
[10] We note that traditional whistleblowers are not necessarily insiders (e.g., Harry Markopolos was not working for Madoff's organization). Therefore, WSSs do not necessarily differ from traditional whistleblowers by being outsiders.
[11] Source: https://knowledgehub.transparency.org/assets/uploads/helpdesk/Whistleblower-Reward-Programmes-2018.pdf (Last accessed: April 17, 2019).
[12] For instance, Glaucus explains that: "We are short APR [Asia Pacific Recycling] and therefore stand to realize significant gains in the event that the price of APR's stock declines." Glaucus vs. Asia Pacific Recycling (1337) (April 24, 2014, Report #1).
[13] Indeed, short selling is not always possible and is subject to a number of specific risks. First, some countries ban short selling whereas other countries ban short selling from some stocks during specific periods (e.g., financial

to other investors and quietly maintain their short position to avoid bringing attention to them and wait until other investors realize the firm's problems leading to a stock price decline (Reed 2013). Conversely, WSSs explicitly disclose that they have a short position in the target firm and present their findings to other investors.[14]

Many companies argue that short sellers make false allegations because they have an incentive to bring the stock price down and are often disliked by various market participants (Hope et al. 2017, 479). Yet, short selling is a mechanism that helps to reduce earnings management (Massa et al. 2015), uncover misconduct and, potentially, keep prices closer to fundamental values (Karpoff and Lou 2010). Empirical evidence suggests that public short campaigns by WSSs are informative rather than manipulative (Ljungqvist and Qian 2016; Zhao 2019). The objective of our paper is not to address directly the debate regarding the pros and cons of short selling. We are rather interested in identifying and understanding the rhetorical strategies used by WSSs to convince investors.

We use 383 research reports targeting 171 unique firms (175 unique campaigns as some WSSs targeted the same firm) disseminated by a group of six WSSs as well as three unique first-hand interviews with principals at three WSS entities. We employ Aristotle's rhetoric (350 B.C.E., 2004) to identify and understand how these actors attempt to persuade investors that target firms are overvalued. We find evidence that WSSs' rhetorical strategies rely on narratives that particularly seek to establish their credibility (ethos) by promoting their expertise, dynamism, trustworthiness and benevolence toward other investors. The narratives also aim to generate strong negative feelings (pathos) about target firms or target firms' management by invoking doubt, concern, disgust, anger and antipathy. WSSs' narratives also seek to engender other feelings such as amusement at the expense of target firms, or fear among investors. Importantly, WSSs rely on logical arguments (logos) to expose what they claim to be fundamental issues: flawed business models; fraud and other kinds of irregularities; misrepresentations and aggressive accounting practices; irrational pricing (overvaluation); and critical operating problems. One major impression ensuing from our analysis is that altogether,

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stocks during the 2008-09 financial crisis). Second, short selling also requires that a stock is available to borrow, which is not always the case (Ljungqvist and Qian 2016). Third, short sellers usually wish to maintain their short position for a period and face "recall risk", i.e., "the risk that the lender will not extend the stock loan and that it is difficult to find another share" (Pedersen 2015, 117). If a short seller is forced to close her position, she needs to buy back the stock to return it to the lender. If many short sellers do this at the same time, the stock price goes up in what is call a "short squeeze".

[14] The case of Iceberg vs. Noble Group is an exception to this. Iceberg states: "As of the publication date of this report, Iceberg does not hold any position, long or short, whether directly or indirectly, in the issuer's securities; and does not stand to profit in the event the issuer's securities depreciate in value" (Iceberg vs. Noble (March 5, 2015, Report #2)). Yet, the aim of the Iceberg report was to influence other investors consistent with other WSSs.

ethos-based, pathos-based and logos-based arguments, as found in a given WSS report, form a potentially persuasive platform to convince investors that the target firm is overvalued.

Next, we examine 3,665 press articles published in the 30 days following the first report issued by WSSs about a target. We find that the press covers WSSs' allegations for 85.1% of identified targets (i.e., for 149 of the 175 WSS exposure cases). We also examine how WSS research reports are used by the press to assess the resonance of rhetorical strategies employed by WSSs in this important media – which is recognized to influence investors' opinion (Tetlock 2007; Drake et al. 2014; Dai et al. 2015). Journalists are free to cover only factual elements about WSS targets and may not take up their rhetorical strategies. Yet, we find that not only logos-based arguments are disseminated by the press but also that pathos-based and ethos-based rhetorical strategies are often found in the articles. For instance, for 59.1% of target firms, at least one press article covering the case mentions logos-based rhetorical strategies about flawed business model (53% about overvaluation). In comparison, for 51.7% of target firms, at least one press article covering the case refers to pathos-based strategies concerning a feeling of amusement or irony at the expense of the target firm (21.5% pertaining to negative feelings against target firms' management). For 48.3% of target firms, at least one press article covering the case points to ethos-based strategies establishing the expertise of WSSs (24.2% about the benevolence of WSSs toward investors). While the press also frequently mentions residual challenges about WSS allegations (in 66.4% of cases), our overall conclusion is that WSS rhetorical strategies are influential as they are widely disseminated by the press.

Our study aims to contribute to the literature in several ways. First, our analysis provides evidence regarding the nature of the rhetorical base through which WSSs seek to convince other market participants that target firms are overvalued. The use of rhetorical analysis in this specific context allowed us to exploit the complex and rich narrative strategies employed by WSSs. The use of a quantitative textual analysis would not really be in line with the analysis of the range of complex and subtle WSS narratives.[15] Relatedly, we extend research examining how whistleblowers use discourse to enlist the support of stakeholders (Stolowy et al. 2019).

Second, we extend past accounting and management studies predicated on Aristotle's rhetoric (Higgins and Walker 2012; Floris et al. 2013; Brennan and Merkl-Davies 2014). This line of theorization is particularly well suited to our setting because being able to persuade other investors is of great importance for WSSs. With regard to this segment of literature, we

[15] Nevertheless, using specific dictionaries based on ethos, pathos and logos vocabulary, we perform a textual analysis to quantify the association between the extent of use of ethos, pathos and logos strategies and investors' reaction surrounding disclosure of WSSs' reports (see additional analyses in Section VI).

seek to make several contributions. While these articles are often based on one or a limited number of case studies, we examine a large number of cases from many sources. Whereas several of the articles use Aristotle's rhetorical framework in a context of "restoring legitimacy" or "repairing actions", our institutional background is different and involves an empirical setting where the art of persuasion is critical. In addition, this line of research does not measure through the analysis of the press the capacity of rhetorical arguments to persuade other stakeholders.

Third, by studying the resonance of rhetorical strategies in the press, we shed light on a meaningful phenomenon involving increasingly important actors that police fraudulent behavior in financial markets. Aristotle's rhetoric facilitates the understanding of why these actors tend to be influential as their arguments are disseminated by the press, therefore, we complement past studies that constrained their examination to the stock market impact surrounding the publication of WSS research reports (Chen 2016; Ljungqvist and Qian 2016).[16]

The remainder of the paper is organized as follows. In Section II, we develop the core concepts that underlie our theoretical underpinnings. Section III describes our research approach and methods. In Section IV, we investigate the rhetorical strategies used by WSSs to expose their targets. In Section V, we assess the extent to which WSS rhetorical strategies resonate in press articles. We conduct several additional analyses in Section VI. Finally, we discuss our findings and construct a model of WSSs' persuasiveness in Section VII.

II. THEORETICAL FRAMEWORK: RHETORIC

In his treatise on rhetoric (350 B.C.E., 2004), Aristotle defines rhetoric as "the faculty of observing in any given case the available means of persuasion" (Aristotle 350 B.C.E., 2004, 6, § 1355b). This theoretical framework is particularly useful because it covers a wide array of possible narrative strategies which fit particularly well our empirical setting. Aristotle explains that "the modes of persuasion furnished by the spoken word […] are [of] three kinds. The first kind depends on the personal character of the speaker [ethos]; the second on putting the audience into a certain frame of mind [pathos]; the third on the proof, or apparent proof,

[16] Ljungqvist and Qian (2016, 1987-1990) emphasize logical (logos-based) arguments in WSSs' research reports to make sense of their rhetorical strategies. They find that investors react to WSSs' reports. Yet, the arguments developed in research reports to convince investors that target firms are overvalued include not only logos-based arguments but also, and quite extensively as our analysis shows, pathos-based and ethos-based rhetorical strategies. Our study, therefore, contributes to the literature by decomposing the discourse of WSS. Although it is difficult to quantify the relative use of ethos, pathos and logos strategies, we show that WSSs rely extensively on these rhetorical strategies to convince investors – and these strategies seem to be collectively effective given the results of our event-study examination.

provided by the words of the speech itself [logos]" (Aristotle 350 B.C.E., 2004, 7, § 1356a). Rhetoric is sometimes associated with the idea of deceiving the audience. We note, however, that this pejorative view is inconsistent with Aristotle's rather neutral definition of rhetoric which can be used to demonstrate truth *or* apparent truth.

In the above translation, an English transliteration of the key terms, which have come to be used to identify the three modes of persuasion, i.e., the Greek concepts of "ethos", "pathos" and "logos", is added in square brackets (Duke 2009, 44). Aristotle goes on explaining the characteristics of each of these concepts that we summarize below:

- *Ethos* is the persuasive appeal of one's character. "Persuasion is achieved by the speaker's personal character when the speech is so spoken as to make us think him credible" (Aristotle 350 B.C.E., 2004, 7, § 1356a). Many authors have closely interrelated or even equate *ethos* with conveying credibility (see Enos 2010, 243; Carroll 2013).
- *Pathos* appeals to the audience's emotion. "Persuasion may come through the hearers, when the speech stirs their emotions" (Aristotle 350 B.C.E., 2004, 7, § 1356a). Emotional appeals can be powerful at convincing an audience and help in memorizing arguments (Rocklage et al. 2018).
- *Logos* is the appeal to logic. "Persuasion is effected through the speech itself when we have proved a truth or an apparent truth by means of the persuasive arguments suitable to the case in question" (Aristotle 350 B.C.E., 2004, 7, § 1356a). This rhetorical strategy is the foundation of WSSs' reports which aim to *demonstrate* that target firms perpetrate fraud, have a flawed business model, or commit accounting irregularities or wrongdoings.

Among the three "pillars" of rhetoric, *ethos* can be assimilated to a concept used in a number of academic studies, credibility, which can in our view play an important role in the persuasion of market participants. Therefore, we use the literature on credibility to flesh out the rhetorical strategies associated with the ethos pillar.

In a seminal book on communication and persuasion, Hovland et al. (1953, 20) explain that "when acceptance is sought by using arguments in support of the advocated view, the perceived expertness and trustworthiness of the communicator may determine the credence given them". The authors thus define two components of credibility: "1) the extent to which a communicator is perceived to be a source of valid assertions· (his 'expertness') and 2) the degree of confidence in the communicator's intent to communicate the assertions he considers most valid (his 'trustworthiness')" (Hovland et al. 1953, 21).

In a review of several decades of research on source credibility, Pornpitakpan (2004) recalls that other dimensions of source credibility have been proposed in the literature (see also

Rhee and Fiss 2014, 1739-1740). Among those studies, Giffin (1967, 104) explains that "experimental studies of ethos and factor-analytic studies of source credibility support the hypothesis that interpersonal trust is based upon a listener's perceptions of a speaker's expertness, reliability, intentions, activeness, personal attractiveness, and the majority opinion of the listener's associates" (Giffin 1967, 104). In this list of credibility attributes, we retain the first five dimensions (the first two being equivalent to those of Hovland et al. (1953)). Giffin (1967, 107) provides a description of the characteristics of the speaker:

"1. *Expertness* relevant to the topic under discussion; this expertise may be in the form of quantity of pertinent information, degree of ability or skill, or validity of judgment.

2. *Reliability* as an information source; this reliability may be perceived as dependability, predictability, or consistency.

3. *Intentions* toward the listener, perceived by him as favorable or unfavorable.

4. *Dynamism* of the speaker as perceived by the listener, that is, communication behavior which appears to be more active than passive.

5. *Personal attraction* of the speaker for the listener, a dimension difficult to measure, possibly operating without conscious perception by the listener and without his knowledge of its interaction with one or more of the four factors listed above".[17]

We present in Table OA1 a summary of the theoretical concepts based on Aristotle's rhetoric that we use in the empirical section (see Online Appendix OA1). Among the wide literature in management referring to the concept of "rhetoric", Aristotle's triangular framework has been used in a number of past studies (see Online Appendix OA2 for a summary).

Before implementing this theoretical framework to our empirical material, we must recall that the three pillars of rhetoric are distinct but often used together as part of the inseparable dimensions of a persuasive message (Aerts and Yan 2017, 407). A narrative can (and often does) rely on more than one pillar of rhetoric to persuade an audience.

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[17] From this brief presentation of the main theoretical concepts used in this research, it appears that several components of credibility can be named in different ways. For example, expertness is often referred to as "expertise" (Tuschke et al. 2014, 403). "Trustworthiness" is also called "reliability" (Giffin 1967, 107) and "veracity" (Tuschke et al. 2014, 403). For Erdogan et al. (2001, 40), trustworthiness refers to "the honesty, integrity, and believability of an endorser as perceived by the target audience". Tuschke et al. (2014, 403) add that source credibility is also a function of "benevolence", which can be assimilated to "intentions" (Giffin 1967, 107). "According to Schwartz's (1992) value structures, benevolence encompasses all those specific values having as their core objective the preservation and enhancement of the welfare of others" (Choi and Wang 2007, 348). Maurer et al. (2002, 440) relate "dynamism" to "boldness" and "energy".

III. RESEARCH APPROACH AND METHODS

Scope of Data Collected

Our main empirical material relates to the rhetorical strategies employed by a sample of WSSs, as conveyed in English through research reports, websites, and first- and second-hand interviews. We were aware of several prominent whistleblowing short-selling cases (such as Gotham City vs. Let's Gowex mentioned above) which we included in the scope of our analysis. We identified additional WSSs while browsing the Internet using search terms such as "whistleblower", "short seller", and "fraud". We intended to focus on a set of established WSSs that historically have produced a significant number of informative research reports.

As a result of this screening, our empirical inquiry concentrates on the following six WSSs: (1) Citron; (2) Copperfield; (3) Glaucus; (4) Gotham City; (5) Iceberg; and (6) Muddy Waters.[18] WSSs often chose names that are loaded with metaphorical meaning concerning their role in financial markets (e.g., Gotham City and justice, Glaucus and the notion of helping other investors or attacking larger preys) or the type of firms they investigate (e.g., Citron and bad firms, Copperfield and illusions, Iceberg or Muddy Waters and firms hiding reality). Table OA2 provides additional information regarding the meaning of each WSS's name (see Online Appendix OA3).

These six WSSs have produced a significant number of reports. We analyzed 383 reports on 171 unique target firms (see below). One common characteristic of these WSSs is that they have been fairly successful at identifying actual frauds. They are clearly different from "short and distort" short sellers that intentionally spread false rumors about target firms (Mitts 2019). All were created during or after the 2008-09 global financial crisis, except for Citron that was

[18] Our screening method is different from Ljungqvist and Qian (2016) who analyze short-sale campaigns by WSS (which they labelled "arbitrageurs") for the entire population of activist short sellers. We focus on a set of established WSSs with some publishing on Seeking Alpha (https://seekingalpha.com), some others with their own website, some who publish frequently, others who publish less. Since we wanted to identify narrative patterns in the rhetorical strategies, we thought a minimum number of reports per WSS was necessary. As shown in Table 1, Panel A, the minimum number of research reports per whistleblower in our dataset is 20. While working on the empirical material (essentially research reports), we identified a number of other WSSs: Pluto Research (http://plutoresearch.com), cited by Copperfield vs Carvana; Shadow Fall Capital & Research (https://www.shadowfall.com), cited by Muddy Waters vs IQE; J Capital Research (https://www.jcapitalresearch.com), cited by Muddy Waters vs NQ; Bonitas Research (https://www.bonitasresearch.com), founded in 2018 by Matthew Wiechert, founder of Glaucus; Blue Orca Capital (https://www.blueorcacapital.com/), founded in 2018 by Soren Aandahl, formerly the director of research and chief investment officer at Glaucus. We excluded these entities from our scope either because of the lack of reports on their website or because of the small number of reports available (e.g., one report for Pluto Research, two reports for Shadow Fall Capital & Research).

created in 2001. To be consistent, we examined reports from the year 2007 (i.e., when the financial crisis began) onwards.

To give a sense of the ability of WSSs to produce informative reports about actual frauds, irregularities and overvalued targets we performed a number of analyses. Past research has examined the stock market impact surrounding the publication of research reports to assess their information content (Chen 2016; Ljungqvist and Qian 2016). To reinforce our point about the impact of WSSs' reports, we performed a similar analysis consisting in an event study surrounding the disclosure of research reports. We present the results of this study in Online Appendix OA4 (and in particular Tables OA3 and OA4). Consistent with past literature (Chen 2016; Ljungqvist and Qian 2016), we find a negative cumulative abnormal return of -11.2% (significant at less than 1%, two-sided) in the three days surrounding the publication of the WSS's research report. This effect is slightly stronger than the -7.5% documented in Ljungqvist and Qian (2016). These findings suggest that WSSs produce persuasive reports. In additional analyses, we find that 22.6% of target firms are classified as *Dead*, 20.3% as *Delisted*, and 3.4% as *Suspended* in Datastream, subsequently to the publication of the reports (see Online Appendix OA4 and Table OA5).

To examine the resonance of specific WSS rhetorical strategies in the press we also analyze press articles. As recalled by Stolowy et al. (2019, 33), "[t]raditional media play a key role in society (…) since the information it disseminates may influence public opinion and individual behavior (Cohen et al. 2017)". Our focus is on the written press because articles and news constitute a resonance platform to diffuse WSS arguments to investors. To obtain this empirical material, we searched the Factiva database using keywords of WSS names and target firm names (e.g., "Citron" and "Accelerate Diagnostics") in the 30 days following the publication of the first report on the target (in case of multiple reports). If the number of articles retrieved was greater than 100, we kept the first hundred articles. This approach is reasonable considering the phenomenon of saturation and the extent of overlap in many press articles. In total, our sample includes 175 pairs (campaigns) corresponding to 171 target firms (four firms are targeted by more than one WSS). Over the 175 WSS-target pairs, we were able to retrieve 3,665 articles for 149 pairs (i.e., 85.1% of WSS-target cases led to at least one press article while 26 cases or 14.9% had no press article). The high percentage of coverage in the press is a preliminary indication of how influential WSSs' research reports are.

Descriptive Statistics of Research Reports

Table 1 (Panels A, B, C, D) provide descriptive statistics on the research reports produced by our six WSSs. Table 1, Panel A, shows that the number of reports per WSS varies from 20 (Iceberg) to 210 (Citron). We identify a total of 383 research reports (see Panel A) related to 171 unique target firms (see Panel D). There are 175 short campaigns from the six WSSs because some WSSs target the same firm (see Panel B). There is a mean (median) of 2.7 (2.0) reports for each target firm with the total number of reports per target ranging between one and 19 (untabulated). Fourteen target firms generated at least ten reports or more (untabulated). Panel C indicates the number of reports per year with a minimum of 14 reports in 2018 (the year 2018 is incomplete as the data collection occurred during the summer of 2018) and a maximum of 54 in 2013.[19] Panel D shows that WSSs wrote research reports for firms located in 16 different countries. The USA and China are the two most represented countries with 102 and 35 target firms, respectively. Table OA6 presents the number of target firms per ICB (Industry Classification Benchmark) industry (see Online Appendix OA5), showing that WSSs target firms in a wide range of industries as no industry accounts for more than 3% of the dataset.

Insert Table 1 about here

Interviews

We contacted the six WSSs by e-mail or through a contact form on their website providing a brief summary of the research project. Three of them accepted an invitation to have a conversation with us. Three did not answer our attempts (twice for each) to contact them. For practical reasons, we conducted each interview by telephone (the three interviews were made by the same coauthor).

The interviews were carried out between August 2018 and February 2019. Although we developed an interview guide (see Online Appendix OA6), we used it more as an aide-memoire given that our methodological objective was to ensure the interview unfolded as a meaningful conversation between interviewer and interviewee (Empson 2018). That being said, we ensured, around the end of the interview, that the most important themes had been covered. The interviews were recorded with the approval of the participants. They respectively lasted

[19] Our assessment of research reports starts in 2007 because, with the exception of Citron, the WSSs have been active since the global financial crisis.

80, 60 and 70 minutes – and were subsequently transcribed. Two interviews were made in English and one in French. We translated into English the excerpts of the French interview that we incorporated in the paper. All three interviewees accepted their identity being revealed. The interview data were especially useful in providing context-based information on the general dynamics that underlie entities that engage in whistleblowing short selling, as well as the elaboration of research reports – including the selection of rhetorical strategies to convince audiences.

Target Firms' Responses

In the additional analyses (section VI), we analyze the rhetorical strategies of target firms. In Online Appendix OA7, we present the sources that we analyzed to investigate the response of target firms. Table OA7 summarizes the number of documents analyzed. We analyzed 303 written documents from the target organizations (56 conference call transcripts, 44 company statements, and 203 press articles).

Data Analysis

Because the empirical material is particularly rich and contextual (e.g., use of irony, humor, technical developments), we think that the research approach offering the best understanding of how WSSs attempt to persuade market participants that target firms are overvalued (and/or committing fraud or illegal activities) is to engage in a deep reading of narratives made in the research reports. Therefore, discourse analysis (Hardy 2001; for an illustration, see Stolowy et al. 2019) is our primary methodological choice.

Overall, we analyzed 383 WSS reports. First, we read and coded WSSs' research reports, using a coding scheme based on the three main rhetorical strategies developed in our theoretical framework (see Section II and Table OA1). We sought to identify the main trends and patterns in WSSs' narratives (first-order themes), as well as second-order themes. For the ethos rhetorical strategy, we were able to rely on existing second-order themes already detailed in the literature on credibility. For pathos and logos rhetorical strategies, we paid attention to how WSSs sought to persuade market participants using emotions (e.g., metaphors, exaggerations or other striking narrative patterns) or logical arguments (i.e., demonstrations of truth), respectively. This allowed us to identify first-order categories for pathos and logos strategies.

After the analysis WSSs' reports to identify first-order categories, we identified second-order themes that stressed common patterns identified in WSSs research reports. We developed an exhaustive coding template from aggregation of first-order categories and from our theoretical framework on rhetoric. In carrying out this analysis, we were aware that meanings can differ across individuals. To overcome this difficulty, we focused our coding on what appeared to us as consistent lines of thought. As a team of authors, we discussed themes emerging from our analysis of WSSs' discourse, to ensure they are indeed significant and sufficiently supported by the data.

Concerning the press articles constituting our second empirical material, we coded them to assess the resonance of WSSs' rhetorical strategies using a grid (see Section IV) based on the analysis of rhetorical strategies.

IV. RHETORICAL STRATEGIES: WHISTLEBLOWING SHORT SELLERS' EXPOSURE CASES

As explained above in Section II, we contend that, to persuade investors, the WSSs use rhetorical strategies that we can meaningfully analyze on the basis of Aristotle's (350 B.C.E., 2004) triangular model of ethos, pathos and logos.[20] Drawing from Dacin et al. (2010, 1402) and on the basis of our empirical material, we developed Figure 1 which presents the rhetorical strategies of WSSs that we identified. While the components (that we label "second-order themes") of ethos are adapted from the literature (see Section II above), we uncovered several components of pathos and logos through our analysis of the empirical material. The "first-order categories" relate to specific narrative concepts that we found in the texts we examined; each of these concepts relate to one of the broader "second-order themes".

Insert Figure 1 about here

Ethos (Credibility)

Many authors often equate *ethos* with conveying credibility (see Enos 2010, 243; Carroll 2013). One of our interviewees explains, without mentioning it explicitly, the importance of credibility[21]:

> "The typical report is written with the objective of showing the market the following: 'What you think is worth so much, but in reality, it is worth much less, because there is a fraud, because the company is hiding something, because the money goes directly into the managers' bank account'. The market will say, 'but who

[20] For the sake of brevity, we present in Online Appendix OA8 several relevant additional extracts illustrating WSSs' rhetorical strategies from the analyzed material.
[21] In interview transcripts, we replaced for the sake of readability some repetitive expressions, such as "you know" or "um", by "(…)". In all documents, underlined elements represent our emphases.

are you and why should we believe you? We can already rely on an auditor, some managers and a regulator, so why would we believe you?' It is therefore absolutely necessary to develop and present very solid and clear arguments, which will be difficult to rebut". (Arnaud Vagner, Iceberg, our interview).

Based on the conceptual framework summarized in Table OA1 (in Online Appendix OA1), we analyze the material presented in Section III along the following five components of ethos (credibility): (1) Expertise; (2) Trustworthiness; (3) Benevolence; (4) Dynamism; and (5) Personal attractiveness.

Expertise and Expertness

Expertise can be exercised in different ways. We found several facets of expertise in our empirical material. One interviewee refers several times to the importance of being able to make "due diligence":

> "I had a lot of expertise from my legal career as doing due diligence." (Soren Aandhal, formerly at Glaucus, now at Blue Orca Capital, our interview)

First and foremost, WSSs often showcase "classical" financial expertise, where the analyst develops a model from which she makes cash flow projections.

> Muddy Waters vs. American Tower Corporation (AMT) (July 17, 2013, Report #1): "Despite making highly illiquid investments, our models show that its investments usually underperform local government bonds".

The following quotation is illustrative of a classic demonstration associated with financial expertise, pointing to a significant gap between the analyst's projection and the corresponding formal figure.

> Glaucus vs. Blue Sky Alternative Investments (BLA) (March 28, 2018, Report #1): "We believe that Blue Sky is significantly overstating its fee earning AUM [Asset Under Management] by reporting the gross value of certain assets as AUM instead of the fair value of the capital invested. Based on our analysis, we estimate that Blue Sky's real fee earning AUM is at most $1.5 billion, 63% less than Blue Sky's reported figure".

This excerpt's writing style is characterized with the use of academic language, through terms such as "we believe", "based on our analysis", and "we estimate". More generally, we found that many WSSs' reports read well and are characterized with clarity, which may help to construct the perception of credibility in the eyes of the audience.

WSSs also display skills associated with accounting expertise. The following excerpt, for instance, suggests virtuosity in dealing with accounting data.

> Gotham City vs. Tile Shop (TTS) (November 14, 2013, Report #1): "We estimate the inventory overstatement by calculating what the inventories would be if it had grown at a rate in-line with sales and COGS [cost of goods sold] growth. We calculate the difference between the reported inventories and our estimate for actual inventories, and then add that difference to cost of sales. Profits decline, we arrive at $9 million in true earnings."

The range of expertise mobilized in research reports is not constrained to finance and accounting. In particular, WSSs show that they have a network of important contacts, allowing them to draw on various kinds of experts in relation to the nature of the data to be constituted in producing a compelling argument.

> Muddy Waters vs. NQ Mobile (NQ) (October 24, 2013, Report #1): "Phones are vulnerable to MITM attacks because NQ fails to adhere to basic security protocols. <u>Muddy Waters engaged top-flight security software engineers</u> to analyze this product".

Claiming expertise in WSSs' reports was also achieved through the mobilization of industry knowledge. In Copperfield vs. Energous (WATT) (January 28, 2017, Report #1), the report displays many technical figures from the US Patent and Trademark Office; it also includes an appendix with additional patent filings with technical figures.

One significant trend in research reports is the demonstration of very ambitious data collection efforts. The impression ensuing from these reports is that many resources were mobilized in constituting a convincing foundation for credibility. In other words, the claiming of expertise emphasizes the WSSs' ability to investigate cases from an in-depth perspective, in order to get to the bottom of things and reveal what is represented as undebatable truth.

> Citron vs. Fleetcor (FLT) (April 4, 2017, Report #1): "Based on Citron's extensive research (from numerous customer, competitor and former employee interviews, online review of customer and former employee complaints, gathering of customer invoices, lawsuits, FOIA [Freedom of Information Act] requests, and financial modeling) […]".

Data collection can include "field visits", therefore signaling that important energy was dedicated to the construction of a credible database.

> Muddy Waters vs. China Huishan Dairy (6863 HK) (December 16, 2016) (Report #1): "[O]ur investigators <u>visited 35 farms</u>, <u>five production facilities</u> (including one that was halted mid-construction), and <u>two announced production sites</u> that had no evidence of construction".

Through the above wording, field visits and investigative skills provide evidence that allows the WSSs to reach what is hoped to be a compelling conclusion. The next excerpt also links the claiming of expertise to know-how in constituting a convincing empirical demonstration.

> Muddy Waters vs. NQ Mobile (NQ) (November 6, 2013, Report #4): "<u>Most of these addresses do not even physically exist</u>. At the addresses that do actually exist, <u>YDT [company Yidatong] was nowhere to be found</u>. We exhausted every possibility of which we could think in order to try to find YDT, and we were utterly unsuccessful."

As such, WSSs' reports often project an image of ingenuity at constituting persuasive evidence through field-specific investigative skills. For instance, in Muddy Waters vs. Groupe Casino (CO FP) (March 8, 2016, Report #3), Muddy Waters relies on the analysis of conference call transcripts by a former CIA analyst and polygrapher. In their reports, WSSs also rely on the hypothetico-deductive language of statistical tests used in the world of research – demonstrating expertise in the development of statistical proofs.

> Muddy Waters vs. NQ Mobile (NQ) (October 24, 2013, Report #1): "NQ might criticize our survey sample as being too small to be significant; however, this sample size is large enough <u>to reject with 95% confidence a null hypothesis</u> of NQ's market share being far, far lower than NQ claims".

The claiming of expertise is also expressed through the power of hindsight, such as in the following quote where Citron points to a case where it had previously anticipated the bankruptcy of a company – which became reality just one week after President Obama had praised it publicly.

> Citron vs. 3D Systems (DDD) (January 24, 2014, Report #2): "In President Obama's 2012 State of the Union address, he praised an alternative energy company called Ener 1. (AMEX:HEV) The president did as much as promote the individual company. <u>Ener 1 filed for bankruptcy a week later</u>. (…) <u>It is too bad our president does not read Citron</u>. <u>If so, he would have seen our many reports on Ener 1 before he wasted his breath</u> and more importantly $100 million of taxpayers' money on the company."

Going beyond the showcasing of tangible and demonstrative evidence to sustain WSSs' claim to expertise, we found that their reports sometimes engage in strong forms of self-promotion – whose tone is close to vainness. In the excerpt below, vainness is in a way counterweighted by the feasibility to engage in a test of claim, in that it would not be too difficult for the skeptical to find counter-evidence if it existed.

> Citron vs. Medbox (MDBX) (February 18, 2014, Report #1): "When it comes to exposing fraud on the Pink Sheets and the OTCBB [Over the Counter Bulletin Board], <u>Citron has NEVER been wrong</u>. <u>Yes, we know NEVER is a bold statement … but it is what it is</u>."

Expertise also comes from common signals of experience which are used to build credibility. We found several reports of Citron where the WSS highlights the entity's number of years in activity.

> Citron vs. Alliance Data Systems Corp (ADS) (August 19, 2016, Report #1): "<u>This month Citron celebrates its 15th year of publication</u>".

In addition, WSSs' reports reflect the possession of translation expertise. Several WSSs demonstrate language proficiency by analyzing financial statements and working on written or audio material written/spoken in languages other than English (e.g., Japanese for Citron, Chinese for Glaucus and Gotham City, Spanish for Gotham City).

In sum, one significant impression that emerges from our analysis is that WSSs possess sufficient expertise (and are able to rely on others' expertise) for constituting what is represented, in research reports, as persuasive pieces of evidence and grounded conclusions. Specifically, we found that WSSs' claim to expertise is articulated in sophisticated ways. Ties are made to the domains of finance and accounting in ways that reflect a mastery of numbers. The writing style sometimes belong to academia (e.g., mastery of the language of statistics, being able to make nuances). In contrast, the writing style is occasionally characterized by vainness, as if the WSS is daringly asking the audiences to put her/his expertise claim to the test. Advanced investigative skills are often emphasized in order to present the reader with persuasive evidence, in order to destabilize the aura of legitimacy surrounding the target companies. Overall, trying to put ourselves in the role of investors (specifically, through an exercise of "disciplined imagination" – (Weick 1989)), it seems to us that the collection of elements claiming relevant expertise may indeed be viewed as credible by the audience. This implies that market participants may consider the WSSs' claim to expertise as credible, implying that these entities possess appropriate skills and knowledge to detect the occurrence of fraud and deceitfulness in financial markets.

Interestingly, all Citron's reports end with "Cautious Investing to All". This slogan may contribute to the spread of a general feeling of mistrust in the markets – as well as the feeling that it is possible to separate the wheat from the chaff by being "cautious" – which in a way sets the stage for the deployment of WSSs' expertise.

Trustworthiness, Veracity, Reliability

Trustworthiness nowadays is often considered as a major social referent, being often understood as a means to address problems of risk and uncertainty (Sztompka 1999). In our study, trustworthiness is considered as a key component of the rhetoric of credibility and our data indeed reflects claims of trustworthiness being frequently advanced as rhetorical devices. One interviewee indirectly points to the importance of establishing trustworthiness in the eyes of market participants, when he brings in the notion of respect.

> Q: "How do I try to be persuasive?" A: "I focus less on the packaging, the form, and more on the substance. (…) I want you, the reader, to basically feel like we have <u>shown you respect</u>. That we do not want to waste your time." (Daniel Yu, Gotham City, our interview)

Another interviewee points to the possibility of being "biased" and trustworthy at the same time.

> "Well, of course we are biased. But just because you have an inherent and underlying bias, it does not mean that someone is wrong. It also does not mean that you are not expressing [yourself] in good faith. (…) it is important to recognize all of the biases in the system. And that does not mean you stop reading. (…) I want people to look at our work with the same level of skepticism and critical thinking that they look at anything else, like the companies". (Soren Aandhal, formerly at Glaucus, our interview)

Our point is that aiming for "substance" may be a way of fostering trustworthiness in the eyes of investors. Accordingly, we found that WSSs strive to provide factual and trustworthy arguments to investors. First, as a general comment, we noticed that the vast majority of the research reports contained long lists of footnotes with web links and detailed supportive sources. Interestingly, one interviewee stresses the importance of reporting exactness and being factual – through what he designates as a fine art exercise.

> "The more I have been doing this, the more I appreciate the fine art of being very exact in what we say, and being very exact and clear on what is an opinion versus what is a fact." (Daniel Yu, Gotham City, our interview)

We found that the fine art of trustworthy reporting is articulated in a variety of ways, one of them being through WSSs' reliance on alleged experts and specialists to develop and provide reliable information:

> Gotham City vs. Ebix Inc (EBIX) (February 21, 2013, Report #1): "We consulted with professionals from the disciplines of forensic accounting, law, transfer pricing, background investigations, finance and software."

WSSs also refer to the academic literature to signal trustworthiness. For example, in Gotham City vs. Aurelius Equity Opportunities SE & Co KGaA (AR4) (March 28, 2017, Report #1), the report provides an excerpt from a well-known academic textbook, Damodaran (2006), a recognized expert in firm valuation. In Gotham City vs. Tile Shop (TTS) (November 14, 2013, Report #1), the report refers to the fraud triangle (Cressey 1953; Albrecht et al. 1982).

Trustworthiness can be associated with honesty and fairness. Some reports include statements that imply WSSs' honesty – for instance when acknowledging some qualities in the target firm's management.

> Muddy Waters vs. New Oriental Education and Technology (EDU) (July 18, 2012, Report #1): "We are not saying that Michael Yu is the most repugnant company chairman we have ever seen. He is far from it. We respect that he built a network of stores that has delivered a useful service to millions of customers, albeit while lying to attract the capital to do so. Investors need to understand that Chairman Yu has a very pragmatic attitude toward business".

WSSs sometimes even congratulate the target on some achievements made in the past – which may be viewed as a trait of sincerity.

> Citron vs. Intuitive Surgical (ISRG) (January 17, 2013, Report #2): "We also must note that, as well as the tremendous commercial success generated by Intuitive, we respect the company and management for introducing robotic surgery into the vernacular of the medical community."

We mentioned above the language proficiency of several WSSs. As such, the translation of several documents (e.g., from Chinese to English) may strengthen the veracity of WSSs' claims – in that translations are included in the research reports to provide investors with additional pieces of evidence.

Muddy Waters vs. NQ Mobile (NQ) (November 1, 2013, Report #3): "It is beneficial for US investors to read Chinese media coverage of our NQ reports."

Trustworthiness is also sustained through the provision of specific numbers and tables – which point to the fine art of exposing persuasive evidence.

Citron vs. Inogen (INGN) (May 24, 2018, Report #1): "For those who remember the Valeant saga, the permanent criticism was the lack of spending on R&D. The bears correctly suggested you couldn't run a viable pharmaceutical company without R&D. As crazy as this may look, the following chart documents the total R&D spend of Inogen (and no these numbers are not in 000s): [followed by Table with small amounts of R&D spending]."

In some cases, one WSS refers to the work of another WSS to highlight the consistency of their work and conclusions, thereby indirectly enlisting a form of investigative triangulation in the construction of credibility. In the following excerpt, the WSS refers to the support of another WSS, as an "ally".

Copperfield vs. Carvana (CVNA) (August 18, 2017, Report #1): "Less than two weeks ago, Pluto Research distributed an in-depth report, titled 'Carvana: Looking Under the Hood.' While Pluto's report received limited distribution or coverage, we believe it did an excellent job identifying some of the inconsistencies in Carnava's business model, strategic roadmap, and financial metrics."

As such, allies may take many forms: an article in a scientific journal; interest showed by the press regarding one WSS's previous report, or a report developed by a government agency. Trustworthiness implies the marking of allies' presence (Latour 1987).

Copperfield vs. Corvel (CRVL) (January 19, 2012, Report #1): "the allegations of fraud, criminal acts, kickbacks, unethical behavior, and self dealing have already been made by industry experts, consultants, former employees, accredited journalists, physicians, lawyers, and a former client's internal audit report."

The network of allies enrolled by WSSs in constituting trustworthy evidence also involves former employees of target firms – who bring to the table a range of experiences in the role of insider.

Copperfield vs. Ebix (EBIX) (May 5, 2012, Report #2): "One class action complaint includes testimony from a former senior Ebix employee who corroborates the dysfunction and weak internal controls alleged in the Peak lawsuit. This incriminating evidence may be integral to any investigation the SEC has launched."

WSSs can provide detailed computations to establish the trustworthiness of their claims.

Citron vs. Exact Science (EXAS) (May 15, 2017, Report #1): "This key metric is not disclosed by Exact; Citron has used the company's financials to back out this critical measurement. Here's our homework: [Followed by Excel table with graphs]".

A number of reports point to impressive data collection based on a high number of interviews – therefore signaling credibility and solid evidence about the target's backstage behavior.

> Citron vs. Fleetcor (FLT) (April 27, 2017, Report #2): "After interviewing over 25 former employees, Citron now knows that FleetCor has developed a deep learning algorithm to intentionally cheat its customers with 'junk' fees".

Further, some WSSs report subsequent events that corroborate earlier claims contained in their previous reports. Sztompka (1999) views the confirmation of one's previous position as a significant source of trust. Such confirmations may especially help to surround WSSs' claims with an aura of "veracity".

> Citron vs. Intuitive Surgical (ISRG) (October 3, 2013, Report #5): "In the ensuing nine months since the initial Citron reports, the company has received FDA [US Food and Drug Administration] warning letters, criticism from numerous medical associations, and confessed a large earnings miss."

Reference to frequent auditor changes or to qualified audit reports can also support the trustworthiness of the WSSs' claims.

> Copperfield vs. Ebix (EBIX) (March 24, 2011, Report #1): "EBIX has had four different auditors over the past seven years."

Finally, it is worth noting that WSSs are not afraid to suggest investors to double-check their assertions by asking for their own expert opinion, thereby signaling that the WSSs are comfortable with the reliability of their analyses and conclusions.

> Copperfield vs. Barrett Business Services (BBSI) (September 16, 2014, Report #1): "We encourage all shareholders (and sell side promoters) without insurance expertise to consult an insurance expert to independently verify our analysis and conclusions. [Bold, underlined in the original]"

In sum, through their research reports the WSSs articulate claims of trustworthiness that promote the seriousness of the pieces of evidence they collected, as well as the thoroughness of the investigative means they used in constituting evidence. Overall, we found that the reports are reflective of the "fine art" of displaying evidence – while promoting the breadth of the process by which the evidence was collected. Ultimately, our analysis brings to the fore the role of research reports in elaborating a significant demonstration, namely, that WSSs are able to track down fraudsters in financial markets and reveal their schemes through the displaying of "serious" evidence.

Intentions, Intention Toward the Receiver, Benevolence

To be credible, the policing of fraudulent behavior in financial markets implies a commitment toward the public interest – specifically in appearing as being genuinely motivated to voice truth against fraudulent and deceitful practices. Our interviews were especially useful in providing detail on the motivations that interviewees view as having played a central role in their commitment toward activist short selling. Accordingly, one interviewee links his role as truth producer (for the benefit of the public) to negative experiences he went through as investor:

> "Based on what I was taught as a child growing up in America, America was about truth, justice… And overnight my view of the world completely changed [because of the Freddie Mac collapse]. (…) My instincts were correct. They did lie. (…) Did they go to jail? No. Have their ill-gotten gains, from salaries, bonuses, have they been seized? No. (…) Yet government leaders and business leaders are supposed to represent role models for society. (…) If I were to go to a convenience store and just steal a loath of bread, kind of the proverbial Les Misérables Jean Valjean, a poor person (…), you are more likely to go to jail than all these [swear word]. Excuse my language. (…) But then I soon came to realize, look, I can either stew away and feel sorry for myself for the rest of my life. Or I can try to do something with my life and try to prevent such things from happening to other people. (…) Truth is our sword and shield. (…) I want to be a force that is conducive to the flourishing of humankind." (Daniel Yu, Gotham City, our interview)

That being said, WSSs recognize they walk a fine line since they often benefit from short positions on the companies they claim to be fraudulent. Without being prompted, the same interviewee justified the interested nature of active short selling by viewing it as a legal means to fund a socially useful activity that aims to uncover truth behind trustworthy corporate façades. In other words, activist short selling is considered as a profit seeking activity that allegedly often leads to public benefit.

> "So you are telling me that there are some individuals out there who are getting paid or who might get paid simply by telling the truth? Right? I mean, to me that was a revolutionary concept. Because I thought, look, instead of feeling sorry for myself [after having suffered from significant losses during the global financial crisis], maybe what I can apply is: Hey, if I can speak truth, right, to seemingly untouchable bad people, right, and if there was a way to make money of that, and if that was legal, ethical, you know, within the financial market mechanism, I found this was a great idea." (Daniel Yu, Gotham City, our interview)

Another interviewee stresses that the role of WSSs takes on particular significance as a result of structural weaknesses in the regulatory system that surrounds financial markets. These weaknesses are then claimed to have engendered a logical need for active short-selling entities.

> "What is often recognized (…) is that financial scandals are revealed through three types of actors: whistleblowers; journalists; and short sellers. Financial scandals are never revealed by auditors and regulators; we need to stop dreaming about their abilities." (Arnaud Vagner, Iceberg, our interview)

In the same vein, the third interviewee highlights the ability of WSSs to detect frauds:

> "Because it was a $500 million enterprise value company on the New York Stock Exchange which was a complete and utter fraud, and it wasn't any banks that exposed it, it wasn't any of these sophisticated investors, <u>it was two guys doing fundamental on-the-ground due diligence research</u> who no one knew at all who we were". (Soren Aandhal, formerly at Glaucus, our interview)

The second interviewee justifies his financial interest in seeing the stock price of his targets decrease – through the argument that one who exerts a socially useful activity should receive a fair compensation for their work.

> "It is obvious that when an active short seller publishes a report on a target firm, the short seller seeks to make money. This is how we earn our living. What needs to be stressed is that earning money is crucial given the significant costs we face in terms of legal harassment and lawsuits. In this context, <u>who else would do our work for free?</u> When an investigative journalist works on a case during six months, s/he receives wages. I am convinced that <u>the work active short-sellers do is useful – but we need to be compensated for it</u>. Lawyers' fees would be enough to bankrupt anyone. If one is aware of a better model to expose corporate fraud, then I would like to be provided with information and explanation in this respect." (Arnaud Vagner, Iceberg, our interview)

The third interviewee voices the impossibility of remaining silent in front of financial abuse because silence is nothing more than an act of immorality.

> "How could you stay silent (…) while other people continued to make investment decisions, who did not do your work, without your expertise, without your ability to conduct this kind of due diligence? For us (…) <u>it was more immoral to be quiet</u> than it was to speak up." (Soren Aandhal, formerly at Glaucus, our interview)

Given the extent of exhaustive justifications in our interviews regarding WSSs' prime motivations, it is not surprising to see that in their research reports, the WSSs strive to show that they have the interests of other investors at heart. Claiming to have positive attitudes toward investors is a rhetorical strategy that makes sense in this respect. Market participants may be more likely to believe someone who highlights that she is well intended.

> Citron vs. Intuitive Surgical (ISRG) (October 3, 2013, Report #5): "Citron is most proud of the work we published on Intuitive Surgical (NASDAQ:ISRG) starting last December. Not because the stock suffered a decline of over 30% amidst a record-setting bull market, but rather <u>because we helped raise to the forefront of public awareness the undisclosed dangers of robotic surgery and the subsequent dilemma</u>: what happens when medical best practices collide with unbridled thirst for profits".

In this excerpt, Citron frames malpractice in a way that connects it with a central social concern, regarding the extent to which the logic of the market fits the domain of professional services (Freidson 2001). WSSs are not only preoccupied by their own interest but they stress to care for all investors.

> Muddy Waters vs. Noble (2015, April 9) (NOBG) (report): "We are really short Noble's management. With a company as complex and opaque as Noble, <u>there is no way for investors to definitively answer the above questions</u>."

Further, WSSs defend investors and others against biased analysts that promote target firms. Therefore, not only are auditors and regulators viewed as being lenient and ineffective, but the role of financial analysts is considered as being significantly constrained in terms of what they can deliver. From a jurisdictional viewpoint (Abbott 1988), these role weaknesses provide a space for the intervention of active short sellers.

> Muddy Waters vs. Nidec (December 13, 2016) (6594 JP, Report #1): "Sell-side analysts heap praise on the company, and write about their expectations for future organic growth as though Nidec were a completely different company. At the same time, they remain oblivious to the incessantly missed predictions".

WSSs sometimes even offer to finance independent experts whose role would be to confirm their assertions, thereby signaling that the WSS is genuinely committed to the quest to make truth prevail.

> Muddy Waters vs. NQ Mobile (NQ) (June 4, 2014) (report #8): "Muddy Waters offered to pay for well-regarded investigative accounting firm Plante & Moran PLC to write an evaluation report of the investigation, which we would publish. The committee declined the offer".

Some statements of "benevolence" go in the direction of promoting the role of "avenger", serving abused investors by evil and dangerous target firms.

> Citron vs. Valeant Pharmaceuticals (VRX) (September 28, 2015, Report #1): "[W]e have never been shy to expose the greed of the Wall Street establishment. The story we share today has the farthest-reaching social implications of any that we have ever exposed."

Informing the public in due course to bring down a fraudulent scheme represents a form of benevolence – especially if investors, as claimed above, cannot rely significantly on the work of auditors and regulators in uncovering fraud. Accordingly, some statements justify the socio-economic role of WSSs as protectors of investors' interests.

> Gotham City vs. Ebix Inc (EBIX) (September 19, 2013, Report #4): "we were shocked by what we found. We felt compelled to share our findings with the public as soon as humanly possible."

Claims to expertise and benevolence sometimes intermingle, as in the excerpt below from Citron which highlights, first, the firm's ability to detect and interpret latent meaning in formal disclosures and, second, its devotion to help investors in identifying red flags in corporate annual reports.

> Citron vs. j2 Global (JCOM) (March 10, 2016, Report #1): "The best place to read is a company's 10-K filings, focusing especially on its risk disclosure section. Most risks disclosed in these sections are boilerplate text written by attorneys. Others identify the company's actual material weaknesses. And nobody tells you which are which. More importantly, no one tells you which of the risks are imminent and real. This is one of the perspectives that Citron provides."

In sum, our interviews bring to the fore financial motivation as a potential area of vulnerability for WSSs to establish their endeavor's credibility. Detailed justifications were provided in the interviews in this respect. In addition, the statements we analyzed project an imagery of benevolence surrounding the role of WSSs – who represent themselves as caring significantly about the well-being of investors in financial markets.

Activeness, Dynamism

Activism and dynamism are rather subjective personality traits of the speaker. Consequently, it is not obvious to identify such traits in written research reports. The following interview quotation reflects passion and energy in the participant's daily life as a WSS, which arguably influences his approach when writing research reports. Indeed,

> "Well, this [doing research on companies] is my passion. (…) Basically which is: determining whether something is true or not. (…) I mean, to me, I thought this is (…) my identity, this is my DNA. I was a man on a mission." (Daniel Yu, Gotham City, our interview)

The third interviewee explains how proactivity in posting research reports on the Web – combined with increasing traffic on the Internet – helped extensively in disseminating the findings:

> "The first one we posted it (…) on a couple of message boards. We said: "Here is our investment opinion, here is our research (…). But again, then no one knew who we were. There was no advertising, we had no media contacts. We did even not have investors. It was just kind of our idea, and it was our capital. (…). But what was amazing about that is that because of what has happened (...) because of the proliferation of platforms for people to share their investment ideas for the first time in market history over the last 10-15 years (...) what I think of it is a democratization of investment opinions." (Soren Aandhal, formerly at Glaucus, our interview)

We found some elements of the writing style which can be viewed as an indication of dynamism.

> Copperfield vs. Carvana (CVNA) (August 18, 2017, Report #1): "<u>Let's just get right to it</u>: We believe there are flashing red warnings signs that the bad actors involved with Carvana are 'at it again.'"

Titles of reports also promote a sense of dynamism through the adaptation of popular book and song titles that suggest resoluteness and the elaboration of striking conclusions.

> Copperfield vs. Solar City (SCTY) (June 17, 2013, Report #3): "Solar City (SCTY) - <u>The Emperor ('s Cousins) Have No Clothes</u>".
>
> Citron vs. Motorola Solutions (MSI) (August 22, 2017, Report #2): "Motorola Solutions – <u>Total Eclipse Of The Truth</u>".

For Citron, dynamism is conveyed through the use of red and highlighted colors, as well as many hyperlinks, bold characters, pictures, and screenshots. In particular, Citron uses red flags "  " and little lemons ""as bullet points. The other WSSs rely on similar presentation formats. Gotham City and Glaucus rely on red squares to stress important items. Many reports include a significant number of photos (oftentimes from settings in China) – for instance when pointing out that one (alleged) related supplier had no presence at several official business addresses (e.g., Gotham City vs. Tile Shop (TTS) – November 14, 2013, Report #1).

Some WSSs do not hesitate to use a direct, frank and sometimes colloquial, not to say vulgar style in their report, which may be viewed as a reflection of dynamism. These quotes are sometimes attributed to a specific individual in ways that suggest a strong personality (e.g., Andrew Left from Citron).

> Citron vs. j2 Global (JCOM) (March 10, 2016, Report #1): " 'Don't even bother opening your mouth unless you can publish a reliable estimate of how much of J2 Global's net revenue is directly attributable to its fax-to-email services.'-- Andrew Left, Editor, Citron"

Dynamism is also represented through combativeness, for example through criticisms against other actors, oftentimes financial analysts.

> Muddy Waters vs. Olam (SGX: O32) (November 27, 2012) (report #2): "Olam is a black box. After Enron collapsed, Bethany McLean asked 'Why were so many people willing to believe in something that so few actually understood?' The same question should be asked about the analysts who are bullish on Olam. Our analysis of various analysts' financial models makes clear that they have no idea how Olam's financial statements work, based on widely varying estimates for virtually every model input."

Another indication of dynamism is found in WSSs' tendencies to refer to social media. For example, in Gotham City vs. Endurance International Group (EIGI) (April 28, 2015, Report #1), the report includes excerpts of discussions on Twitter between clients and individuals at Endurance. This shows proficiency with modern social media. Some WSSs rely on quotes from the literature at the beginning of their reports to catch the attention of the reader, which can be assimilated to dynamism. For example, Glaucus begins all its reports with citations.[22]

In brief, the research reports we analyzed contain many features (often visual but also textual) that convey a sense of dynamism in searching for fraudsters in financial markets.

Personal Attractiveness, Personal Attraction

Personal attraction of the speaker is even more difficult to detect than dynamism in written reports. However, we found out several cues which could be assimilated to the setting up of personal attraction. One telling example is the name of several WSS entities being associated with super heroes, as a way to arouse the audience's interest (e.g., Gotham City) (see Online Appendix OA3). WSSs sometimes signal that their expertise can translate into tangible benefits, for instance in detecting thorny issues that others were not able to identify.

> Citron vs. Mallinckrodt (MNK) (June 5, 2017, Report #2): "Incredibly, the transcript for this damning conference call misspelled Acthar ['Aksar'] So the bots, website crawlers indexers, and the AI text analyzers hooked up to algo trading computers never picked it up. That is why you have Citron."

[22] E.g., "A lie can travel halfway around the world while the truth is putting on its shoes." (Mark Twain); "Things gained through unjust fraud are never secure." (Sophocles); "All that is required for evil to triumph is for good men to do nothing" (Edmund Burke).

In a number of reports the WSSs are represented as sharing personality traits that are quite common in the population, which might help to make them sympathetic.

Citron vs. Netflix (NFLX) (June 14, 2018, Report #1): "Let's be clear…Citron enjoys the content of Netflix just like many of our readers do as well. BUT…we are not willing to count out all of the minds and creative talent that exist in NY, LA, and Silicon Valley in their quest to compete with Netflix."

Like many superheroes, WSSs are often represented as being fearless.

Citron vs. Fleetcor (FLT) (April 4, 2017, Report #1): "To simplify and clarify for readers new to the FleetCor story, we have kept all our reference information current and concise. If FleetCor believes we are at all misrepresenting what is really happening under the hood, we have no problem defending our statements in a court of law".

In the same spirit, and consistent with our broader point regarding the policing of financial markets, WSSs present themselves as rescuers of "greedy financial markets".

Citron vs. Alliance Data Systems Corp (ADS) (August 19, 2016, Report #1): "It has become too profitable taking advantage of a bullish market environment to ever let the truth get in the way of a good story. And then comes Citron."

Voicing truth is a central principle in the WSSs' main storyline – which by definition implies that their quest to track down and uncover fraudsters is a noble one. Presenting oneself as being on the side of angels may indeed have rhetorical appeal in the eyes of the audiences.

Citron vs. Cyberdyne (7779) (August 16, 2016, Report #1): "Recently Japan Exchange Group CEO Akira Kiyota commented that activist short selling can be considered "ethically challenged." […] Telling the truth is never ethically challenged."

Yet the superheroes' quest to chase out fraudsters is sometimes represented as being challenging and convoluted. The following excerpt appeals to a sense of humility – which may help to create a favorable impression around WSSs and what they do.

Gotham City vs. Endurance International Group (EIGI) (April 29, 2015, Report #2): "Gotham City gets some things wrong, and some things right. We try our best. That's all we can do, particularly when companies like Endurance International Group provide either: limited disclosures or disclosures that seem 'transparent' and reliable yet are precisely irrelevant."

This sense of humility can also be found in the recognition of failure by WSSs themselves.

"We went to a couple of other markets, some unsuccessfully, (…) like Japan [which] was not really receptive to activist short selling." (Soren Aandhal, formerly at Glaucus, our interview)

Overall, the statements we analyzed represent WSSs as being inspired by a major and noble objective, which is to police fraud in financial market and report on truth – which, to some extent, might help to constitute an aura of credibility around WSSs' role and claims.

Glaucus vs. China Metal Recycling (CMED) (January 28, 2013) (Report #1): "Often our due diligence and analysis takes many weeks, sometimes many months, depending on the volume of publicly available information, the complexity of the financial statements, and the level of analysis and modeling required to get to the truth about a company's business. However, in some cases, conclusive evidence of fraud is so blatant that it requires little advanced level of financial or accounting acumen or sophisticated modeling to reveal the truth. We believe that China Metal Recycling ("CMR" or the "Company") is one such case".

Pathos (Emotions)

The discourse of WSSs often includes statements that relate to the emotional domain. Appeal to emotions can play a significant role in persuasion, through the creation of an emotional bond between the speaker and the audience (see, e.g., Rocklage et al. 2018). Appeal to emotions can therefore be an effective tool to disseminate ideas about target firms. We uncovered five categories (second-order themes) of emotional appeals.

Feelings of Similarity Between Targets and Other Fraud Cases

WSSs appeal to emotions when elaborating a form of analogical reasoning, bringing to the fore similarities between the target companies and other well-known fraud cases (e.g., Enron, Madoff, or Olympus). They also sometimes compare their targets to previous frauds that they themselves uncovered such as Valeant Pharmaceuticals (Citron, 2015), Let's Gowex (Gotham City, 2014), Noble Group (Iceberg, 2013), and Sino Forest (Muddy Waters, 2011). Analogies and comparisons capitalize on the impact that vivid images from the past could have on market participants' minds to alter their emotional state.

Glaucus vs. China Metal Recycling (CMED) (January 28, 2013) (Report #1): "Madoffian Return on Capital. The consistency of CMR's return on capital through the 2008 financial crisis bears more resemblance to Bernie Madoff's fabricated returns than the returns generated by a highly cyclical scrap metal business during a commodities crash".

In the above example, Glaucus creates a word based on the well-publicized fraud case of Bernie Madoff (see, e.g., Stolowy et al. 2014). WSSs sometimes bring to the fore detailed similarities between cases. For instance, Citron compares Valeant's and Enron's management statements when facing criticisms from investors.

Citron vs. Valeant Pharmaceuticals (VRX) (October 21, 2015, Report #3): "Look at the following similarities between statements by Valeant and those of Enron:

- Enron CEO Jeff Skilling, phone call with Fortune, 2/14/2001: 'It is unfair to us and unethical if you don't take the time to understand our business... we are doing it purely right... people who raise questions are people who have not gone through our business in detail...' vs.
- Valeant Chairman, CEO Michael Pearson, investor presentation, 5/28/2014: 'So again, it is unfortunate that Allergan has not taken the time to understand our business... There is a number of inaccuracies in the report that was put out yesterday... They are just factually incorrect...'

- Enron CEO Jeff Skilling, phone call with Fortune, 2/14/2001: '[Enron] is a very simple model... it is a logistics company, not a trading company.' vs.
- Valeant Chairman, CEO Michael Pearson, Sanford Bernstein conference, 5/28/2014: '[Valeant] is more like a professional services firm than a sort of traditional pharmaceutical company.'"

Figure OA1 in Online Appendix OA9 associates target firms with well-known frauds. In another example, Citron provides a noteworthy comparison between Valeant's and Enron's CEOs. The extent of similarity may engender the feeling that these firms share the same basic patterns, including the noteworthy coincidence that their respective CEOs both worked for a long period of time at McKinsey consulting firm:

> Citron vs. Valeant Pharmaceuticals (VRX) (October 21, 2015, Report #3): "This is just too much of an eerie coincidence
>
> Jeff Skilling Bio
>
> Experience running a business before joining Enron in 1990: 0 years. Job before joining Enron: Head of the Global Energy Practice and Head of North American Chemical Practice of McKinsey & Company, 11 year tenure at McKinsey.
>
> vs. Michael Pearson Bio
>
> Experience running a business before joining Valeant in 2008: 0 years. Job before joining Valeant: Head of the Global Pharmaceutical Practice and Head of mid-Atlantic region of McKinsey & Company, 23 year tenure at McKinsey."

Negative Feelings Against Target Firms

One central rhetorical strategy of WSSs consists in depicting in very negative terms the target firms they investigate to generate emotions in readers ranging from doubts and concerns about the financial health of target firms to feelings of complete disgust. Other statements aim to arouse a sentiment of shock or immorality about the activities carried out by target firms. These feelings may play a significant role in convincing market participants that target firms have, in fact, little or no value.

One strategy consists in listing as many problems as possible at the target firms. The following (intentionally) long example is illustrative of this approach:

> Copperfield vs. Chegg (CHGG) (November 14, 2016, Report #1): "Why of course you announce a business model pivot on the back of nebulous <u>non-GAAP metrics</u>, concoct a story about a low-cost customer acquisition channel that <u>ignores intense competition</u> from Amazon.com and other economic realities, <u>alter past financial metrics</u> lower to <u>overstate current period growth</u>, <u>create ebullient out-year financial targets</u> only to <u>surreptitiously adjust the target date and growth rates</u> when results are below plan, <u>reclassify your pro-forma revenue definition</u> multiple <u>[the enumeration then keeps on running for 129 words]</u>. And <u>that runon sentence is just the beginning</u>…"

The long-winded first sentence in the above excerpt may arouse the feeling of countless issues at the target firm. This feeling may be reinforced by the second sentence "And that runon sentence is just the beginning…", which implies that the enumeration of issues in the first sentence is not complete. Like a good television series, sometimes WSSs provide a teasing about additional concerns that will be revealed in future reports.

> Iceberg vs Noble (February 15, 2015) (Report #1): "<u>In the next report</u>, we will show that as poor as Agri's situation may look, the real accounting issues of Noble are actually with the Continuing Operations (Energy and Metals), in particular the most <u>Enron-esque</u> aspect of Noble's financials: the fair values. <u>We will address the illusion that Continuing operations are the healthy part</u> of Noble."

The expectation that a continuity of concerns are to be disclosed at later dates may stimulate the feeling of uneasiness regarding the financial situation of the target company. Another example combines both rhetorical strategies (long list of problems, which will be revealed only later in an upcoming report):

> Copperfield vs. Carvana (CVNA) (August 18, 2017, Report #1): "We will defer our analysis of Carvana's <u>circumspect business model</u> and <u>inferior competitive dynamics</u> – including its structural <u>sourcing disadvantage</u>, <u>asinine assumptions</u> that underpin its financial targets, <u>related-party relationships</u>, <u>inexplicable tax receivable agreement calculation</u> that <u>redirects $900 million from unaffiliated shareholders to insiders</u>, <u>extraordinary cash burn</u> …), <u>self-dealing</u> (…), and several other shenanigans – <u>to a later date</u>."

The combined effect of this kind of disclosure on market participants may be overwhelming: not only are there many important problems at the target firm but these problems are so important that they justify an entire report to be disclosed later.

Other narratives aim at engendering a feeling of doubt about the quality of the target firm by underlining where the latter operates.

> Muddy Waters vs. American Tower Corporation (AMT) (July 17, 2013): "The appraiser on a purportedly US$585.4 million transaction is located in the house to the left, next to the wall with <u>the bullet holes</u>. This neighborhood appears not to be a central business district" [The report shows a Google Maps street view pictures of a modest one-storey house with a dark brown garage door, dirty walls which have not be painted for a long time.].

Here, the reader is led to believe that a legitimate appraisal firm should logically not have a business place in such a neighborhood. The above statement may sustain the feeling that the target company may be lying about the real value of its assets or its economic performance. The claim that one wall contains bullet holes may translate into additional concerns about the safety of the area. The following example may engender a feeling of uneasiness through metaphorical language.

> Muddy Waters vs. OSI Systems (OSIS) (December 6, 2017) (report #1): "We are short OSI Systems, Inc. (OSIS.US) because we think it is <u>rotten to the core</u>."

This kind of extreme language suggests that the target company, contrary to its frontstage, is actually in a state of advanced decomposition and that deceitfulness prevails in the backstage. This can sustain a feeling of disgust regarding the target firm. Other metaphors are used to cast doubt on the ethics of target firms.

> Muddy Waters vs. American Tower Corporation (AMT) (July 17, 2013): "Is <u>unethical</u> (even illegal) behavior in AMT's <u>corporate DNA</u>?"

Associating unethical behavior to biological determinism is noteworthy as a rhetorical image, the chief message being that lack of ethics prevails in the backstage of the target company and any hope of seeing the situation improve is pointless. Some metaphors aim to generate complete disgust regarding target firms:

> Muddy Waters vs. Focus Media Holding (FMCN) (December 9, 2011, Report #3): "Is 'independent' verification in China <u>better than toilet paper</u>? No. Although independent <u>verification reports in China and toilet paper are often intended to hold the same substance</u>, our research indicates that investors are much better off sticking with 2-4 ply toilet paper in the bathroom. [With a footnote]: Toilet paper generally has fewer chemicals than paper printed with laser toner."

Whether factual or not, some WSSs do not hesitate to rely on conventional stereotypes regarding distant others in order to provide a sense of déjà-vu to their affirmations – for the latter to have a better chance of "resonating" with their readers' interpretive schemes. WSSs sometimes question their target's disclosures regarding its financial condition, in a quite explicit way, in order to engender doubt in the audience's mind.

> Gotham City vs. Let's Gowex (GOW) (July 1, 2014, Report #1): "Hotspots: <u>GOW says 100K, Analysts say 35K, We say 5K</u>."

After this statement, the reader is left wondering whether the business actually exists. The number of hotspots is reduced by a factor of 20! This could be deeply concerning for investors because the target firm officially sells advertising using hotspots. Other statements metaphorically aim to sustain doubt regarding the extent to which the target company understands the realities of its own business. In the following extract, the target appears to have a poor understanding of innovation in its business.

> Citron vs. Motorola Solutions (MSI) (August 22, 2017, Report #2): "Mythbusting the Relentless Misinformation Campaign from Motorola. FirstNet is the most important advance in first responder communication over the past 50 years. <u>Not only does Motorola lack a seat at the table, they do not seem to know where the table is</u>."

Some statements capitalize on the creation of a feeling of antipathy against the target firm and its activity, again through metaphorical framing. For instance, asset stripping cannot be a perpetual source of revenue – which indeed fits very well the lemon imagery.

Gotham City vs. Aurelius Equity Opportunities SE & Co KGaA (AR4) (April 5, 2017, Report #2): "If Aurelius largely derives its cash flow from asset stripping, how does its NAV [net asset value] make any sense? That is, how can you squeeze the juice out of a lemon, and value the lemon as if its juice were never squeezed out?"

Some statements seek to destabilize investors as target firms are claimed to be associated with blatantly wrong and unethical activities.

Copperfield vs. Tucows (TCX) (January 8, 2018, Report #1): "Tucows was added to the Russell 2000 Index last summer around the same time a German investment manager became the largest shareholder. We wonder how the German investor, whose founder publicly advocates Christian values, will react when they realize Tucows' has advocated economic relationships with websites supporting NeoNazism, Fascism, Bigotry, and the SEXUAL ABUSE of CHILDREN [in capital letters in the original report]"

How could a publicly listed organization have such low ethical standards and be associated with such activities? This kind of shocking statements may translate into a feeling of anger and revulsion against the target company. Other statements challenge the work of auditors and their credibility. For instance,

Gotham City vs. Let's Gowex (GOW) (July 1, 2014, Report #1): "laughable audit fees and Gowex's auditor."

The use of the word "laughable" is noteworthy, aiming to engender skepticism regarding a key question: If the auditor is paid so little how can she do a good job? One may even wonder whether the target firm had indeed been properly audited.

Appeal to emotions is not constrained to text. WSSs often rely on emotional images and graphical illustrations in trying to impact the mind. Figure OA2 in the Online Appendix OA9 points to instability in the target's business. The cards could collapse at any moment. This image provides a sharp illustration of the fragility of the financial health of the target company. In Figure OA3 (see Online Appendix OA9), the WSS directly associates target firms' activities with the transformation of feces into gold bars.

The overall impression we developed in analyzing this material is that WSSs often seek to bring readers in the emotional field, when promoting the persuasiveness of their affirmations regarding the lack of ethical behavior in the businesses they target. Further, the accumulation of numerous examples aimed at stimulating the reader's emotional uneasiness may be viewed as an indication that WSSs are able to play their role concerning the policing of corporate behavior in financial markets: WSSs are able to find significant cases of financial abuse and describe them in shocking ways.

Negative Feelings Against Executives of Target Firms

WSSs often describe the executives running the target firms as individuals with serious character issues. They are often depicted as greedy, unethical, liars, using deception, being aggressive, sometimes current criminals (or past offenders), and/or desperate to do anything to make money. This battery of qualifiers may help to create a feeling of hostility against the top management of target companies. Further, remember that WSSs position themselves as entities acting with the public interest in mind (see our development of benevolence above) thus creating a sharp contrast. The following example calls for emotion of anger against the unethical values of the target firm's management.

> Citron vs. Valeant Pharmaceuticals (VRX) (October 10, 2015, Report #2): "Raising a drug price 10-fold overnight is worse than Congress holding a secret meeting one night to raise their own salaries. (…) But that is just what Valeant just did with Glumetza (…). $60,000 a year? For a diabetes drug? Have you guys no decency at all?"

Price increases of this magnitude are framed as being unethical and improper business practices – thereby questioning the decency of the management. The following statement again challenges the morality of the same target firm.

> Citron vs. Valeant Pharmaceuticals (VRX) (October 10, 2015, Report #2): "Investors, Politicians, and Concerned Citizens must note that Valeant raised the prices on the two key heart drugs in question the very next day after they acquired them ... just to cover up for a bad quarter. Here's the proof -- all done without wasting taxpayer money on a hearing."

Other statements indicate that target firms' management lies and hides information to market participants.

> Muddy Waters vs. NQ Mobile (NQ) (October 29, 2013) (report #2): "Muddy Waters noted numerous lies and deceptions in NQ's responses to our October 24, 2013 report. This report lists the ten most egregious falsehoods we noted from the October 25th conference call, and Co-CEO Omar Khan's television interviews that same day with Fox Business News and Bloomberg".

We found that WSSs sometimes include modified images to illustrate and strengthen the point that target firms' managers lie to investors (e.g., Figure OA4 in the Online Appendix OA9). The visual effect may indeed be significant since this kind of image may facilitate memorization.

Specifically, Figure OA4 (in the Online Appendix OA9) represents a picture of the target firm's CEO with a longer nose – therefore associating the individual with Pinocchio's character. WSSs also represent target firms' management as dodging challenging questions raised in the original research reports.

> Muddy Waters vs. Olam (SGX: O32) (November 30 2012, Report #3): Olam's response to our November 27th report is remarkable in that, despite being 45 pages long, it fastidiously avoids addressing the vast majority of our points. The response is essentially a waste of toner, as much of it consists of canned presentation slides and consultant drivel."

Other statements indicate unethical and fraudulent attempts committed by management as illustrated in the following example that uses the semantic field of legal investigation:

> Muddy Waters vs. NQ Mobile (NQ) (June 4, 2014) (report #8): "NQ admitted widespread tampering with data reviewed during the investigation."

Target firm's management is sometimes represented as being overly aggressive, as illustrated below.

> Iceberg vs Noble (March 5, 2015) (Report #2): "It is clear that Noble's reactions show that the management is extremely nervous. Noble has a well-known history of trying to aggressively discredit people when the company dislikes them. We prefer to remain focused on the financial arguments."

In the following statement, Glaucus uses its past research to spot an executive that was already detected in the past at a different target firm – which signals that the WSS is endowed with a capacity to engage in longitudinal examination and detect people it represents as "repeat offenders".

> Glaucus vs. Real Nutriceutical (2010) (October 21, 2015) (Report #1):"We Meet Again, Mr. Poon. Real Nutri's CFO, Mr. Poon Yick Pang, served as the director of finance for China Medical Technologies ("CMED"), a US-listed company which Glaucus exposed as a massive fraud in 2011. After CMED collapsed following our report, Real Nutri tried to conceal Mr. Poon's connection to the disgraced firm. (…) In our opinion, Real Nutri (…) employs a disgraced CFO who would likely be behind bars in the United States."

Likewise, in the next excerpt, the target firm's management is associated with criminal activities through justice system analogies.

> Gotham City vs. Criteo (CRTO) (October 12, 2017, Report #3): "The coverup is worse than the crime: burying the body and removing fingerprints [Bold characters]".

In a way, Gotham City in the above excerpt is taking on the role of prosecutor, laying charges against an alleged deviant individual, using vocabulary from criminal law. The charges are not legal, though, but moral. Another significant difference is the setting, in that the trial is not taking place in a court of justice, but in the unregulated domain of public and investor opinion.

Some statements may arouse a feeling of forgery as a result of top management being represented as lying about who they truly are or about their actual competencies. Again, evidence is provided in order to support a claim of deceptiveness.

> Gotham City vs. Aurelius Equity Opportunities SE & Co KGaA (AR4) (April 27, 2017, Report #3): "We believe that Dirk Markus holds no degrees from Harvard at all for the following reasons: Aurelius' Dirk Markus is not mentioned in Harvard's alumni directory; Student Clearinghouse was unable to verify any Harvard University degrees for a Dirk Markus."

Still taking on the role of prosecutor, the following statement questions the morality of the target firm's business model.

> Gotham City vs. Endurance International Group (EIGI) (August 3, 2015, Report #4): "Did your employees deliberately target customers within the internet underground community, despite knowing that these accounts would be used for malicious activities, in violation of your own terms of service? Were your employees instructed to do so?

In addition to the role of prosecutor, WSSs sometimes adopt that of educator when "lecturing" management on what needs to be undertaken in order to rectify what is represented as a failure of leadership.

> Muddy Waters vs. Olam (SGX: O32) (November 24, 2012) (report #1): "Your actions have been an abject failure of leadership." "Know this: You voluntarily came to the market, you subjected yourselves to its forces, and you must bear the consequences of your ineptitude." "We therefore suggest you find better uses of your time than focusing on criticism. For instance, you might want to work on plans to reign [sic] in your CapEx and de-leverage.".

WSSs sometimes use pictures found on the Internet to strengthen their appeal to emotions. Figure OA5 (in the Online Appendix OA9) shows a picture (allegedly obtained on a social media) as evidence regarding the claim that the target firm's top management lacks competencies. This very strange professional picture of Paul Karkas, the Compliance Manager at the target firm Tucows, naked in bed with someone else, both wearing catch masks, may lead one to question the abilities and seriousness of this executive and more generally the legitimacy of the target firm. The following statement exploits this eccentric picture:

> Copperfield vs. Tucows (TCX) (January 8, 2018, Report #1): "Tucows compliance team is responsible for complaint resolution. Paul Karkas is listed as the Compliance Manager at Tucows. There is little available on Mr. Karkas despite 17 years serving a seemingly prominent role at Tucows. He refers to himself as the "moral custodian of the internet" on his LinkedIn page. We do not believe a moral custodian would post social media pictures of people naked in bed wearing masks."

Still playing on the emotional field aiming to shock readers, Iceberg in the next excerpt points to collusion between the target firm, the auditor, and the Singaporean regulator.

> Iceberg vs Noble (April 6, 2018) (Report #16): "Unfortunately, Noble is listed in Singapore. Despite clear evidence of collusion between Noble and its auditor, the "regulators" have left this scandal spread and worsen. The SGX [Singapore Exchange] even defended Noble's auditor and attacked our credibility."

Note that the word regulators is included in quotes. Here, Iceberg takes on the role of avenger fighting against many enemies. Finally, in the following statement, management is again represented as engaging in inappropriate behavior, this time in removing evidence after Citron published an initial research report.

> Citron vs. Fleetcor (FLT) (April 27, 2017, Report #2): "Since the Citron Report published the egregious details of FleetCor's aggressive fee-charging strategy, FleetCor tried to remove all the "no fee" language from the Fuelman marketing material."

Here the target firm's management gives the impression of being so desperate that they are ready to destroy evidence related to Citron's accusation.

Overall, we found WSSs seeking to arouse market participants' negative emotions through representations that often associate their targets' top executives to monstrous individuals, capable of relying on almost any means to reach their despicable goals. The tone used by the WSSs is sometimes in line with that of a criminal law prosecutor, as if court language may help to arouse the readers' emotions. Our analysis brings to the fore WSSs' capacities to bring "charges", in the public arena "tribunal", against top executives with dubious morality. As argued by Sawyer et al. (2010), "share price falls (…) often elicit very successful whistleblowers. (…) The market is one of the best arbiters of legitimacy". Rhetorically speaking, the capacities of WSSs combine the display of evidence which is meant to be persuasive as well as the elaboration of negative representations to qualify the targeted party and its way of conducting business and presenting financial accounts.

Feelings of Amusement at the Expense of Target Firms

Bougen (1994, 321) points out that humor has emerged as a field of study attracting the attention of anthropologists, philosophers, psychologists, clinical psychologists and sociologists. He recalls that "humor has been described as a '...medium of communication by which acting units in the social system convey information during the ongoing process of interaction' (Martineau 1972, 114)". From this perspective, humor can be viewed as a channel for the exploration and articulation of assorted values, philosophies, beliefs and fears.

Humor can reinforce the perception that the target firm has limited value. Our analysis indicates that WSSs often use humor to frame their target's problems in a comical way. As explained by Staley (1997, 25-26) about short sellers: "As individuals, they are not very likely to own a Rolex watch or a Presidential springer spaniel or any other symbolic trapping of success; *they are likely to have a wry slightly twisted sense of humor* [emphasis added]." Humor in a statement can translate into a feeling of amusement. In particular, laugh may be a powerful enrolling mechanism, putting market participants in a good mood and see WSSs as likeable persons.

As maintained by Pacheco Jr and Meyer (2018, 307), "the widespread use of humor suggests that it does have some desirable persuasive effects. Research has shown that humor's capacity to promote objectivity, audience interest, and speaker credibility, which are its three major benefits in the realm of persuasion". Booth‐Butterfield and Booth‐Butterfield (1991, 206) explain that "humor is typically perceived as a positive communication attribute, one that generates support, approval and goal-attainment" (see also Gass and Seiter 2016). The following excerpt illustrates how Muddy Waters uses humor through a simple play on words:

> Muddy Waters vs. New Oriental Education and Technology (EDU) (July 18, 2012, Report #1): "Magna Cum Fraude [in reference to Magna Cum Laude]"

Humor is often used in graphical representations as in Figure OA6 (in Online Appendix OA9). In this Figure, Muddy Waters illustrates through a cartoon character the very low quality of NQ's security. Specifically, the representation points to skepticism regarding the qualifications of NQ's security experts and the lack of care they show regarding client data and encryption keys. Muddy Waters argues that NQ's offers very limited protection against hackers to its clients.

The following example is illustrative of humor being used to present evidence in a way that may mark investors' minds.

> Glaucus vs. China Lumena (0067) (March 25, 2014) (Report #1): "IS CHINA REALLY SO CONSTIPATED? Taken at face value, Lumena's reported sales of medicinal thenardite simply defy credibility. According to the 2010 Chinese Pharmacopoeia, medical thenardite is typically prescribed in a dose of 6-12 grams. The primary medicinal use for thenardite is to cure constipation, but it is also used as an anti-inflammatory agent". "we calculate the number of doses of medicinal thenardite that Lumena claims to sell in China per year, per person. The results are laughable."

WSSs sometimes use humor subtly as in Figure OA7 (in the Online Appendix OA9). Glaucus uses the words "The End" with a stylized font (from a tale book for children) at the end of its report on a company that uses animated series on the Brothers Grimm fairytale to sell its products to children. Humor is also used with irony as in the following example:

> Citron vs. 3D Systems (DDD) (February 14, 2013, Report #1): "[Y]ou can now get your custom Star Wars sex toys. It is just so ridiculous that we are discussing a $10 billion dollar company here."

In a research report, Citron argues that the target firm applies improper fees to its clients – capitalizing on a joke made by the target firm's employees.

> Citron vs. Fleetcor (FLT) (April 4, 2017, Report #1): "This report introduces readers to an assortment of fees that will appear on your bill if you are a customer of FleetCor. This pattern has become so blatant that many of its own employees sarcastically call their employer: 'Feecor'."

In short, our analysis indicates that WSSs strategically rely on humor in order to present some of their evidence and conclusions in ways that may be palatable to market participants. Humor is used as a means to facilitate persuasion not only regarding specific arguments but also with regard to WSSs' broader personality as agreeable individuals.

Feelings of Fear

Another emotion that WSSs seek to engender in their discourse is fear. Fear-based persuasion (Pacheco Jr and Meyer 2018) is to emphasize scariness in a message with the intent to motivate the audience to act against the threat, in our case selling stocks. The short sellers' reports often convey a feeling of danger surrounding the activities of target firms. The excerpts we reproduce below illustrate how reports seek to arouse the sentiment of fear. WSSs especially refer to a climate of dangerousness, untrustworthiness, mistrust, and so on, prevailing at the target. The rationale is that investors should not assume that markets are able to self-regulate "naturally". The intervention of experts taking on the role of "avengers" of financial rectitude is warranted.

> Citron vs. Cyberdyne (7779) (August 16, 2016, Report #1): "Building upon our 16 years' experience in publishing about dangerous investments, we try to add insight into stock markets that are otherwise clouded with promotion and misinformation."

Some WSSs claim that target firms are simply dangerous and therefore should be stopped.

> Gotham City vs. Criteo (CRTO) (October 12, 2017, Report #3): "The HSTS Super Cookie is particularly dangerous, as they allow any third party to track users."

In trying to stimulate the feeling of fear, WSSs sometimes represent dangers through images, for instance by using specific formatting symbols instead of normal bullet points:

> Citron vs. Mobileye's (MBLY) (September 9, 2015, Report #1): "Let Citron drop a few bombs on you:
>
> Shareholders of Mobileye have sold over $1.6 Billion in company stock since IPO. This is roughly equivalent to 14% of MBLY's market cap
>
> $1.6 Billion of insider cash-out is 13.7x the total R&D spend [sic] by Mobileye from 2011 to current."

These bullet points may sustain the feeling that the target firm is about to explode. The implicit message is that explosions are dangerous and can harm people located nearby, for instance shareholders of this specific company. Other types of formatting symbols are used such as red flags, which are traditionally used to signal dangers.

> Citron vs. Alliance Data Systems Corp (ADS) (August 19, 2016, Report #1): " ADS DOES NOT disclose FICO (originally Fair, Isaac and Company] scores of their borrowers. They are the only credit company in the S&P 500 that does not."

WSSs also rely on words implying extreme danger such as death, injuries, or blood as in this excerpt:

> Iceberg vs Noble (April 6, 2018) (Report #16): "We expect Q1 results and the next quarters (if Noble is still alive) to be a bloodbath."

Fear rhetoric may also be aimed at stakeholders other than investors, for instance the target firm's clients:

> Citron vs. Angie's List (ANGI) (May 1, 2013, Report #1): "Here is a jaw-dropping but real story from last month: Someone hired a plumber on Angie's List -- and the plumber was a sex offender. A week after going to the member's house, he requested the customer attend his parole hearing … as a character witness!"

Whether the process is in accordance with the law or not does not matter for Citron's point; the WSS capitalizes on a widespread stereotype toward offenders in that any person who went through prison presents a non-insignificant risk of recidivism. In the following example, clients are again shown as being threatened by the target firm's deceiving practices.

> Citron vs. Fleetcor (FLT) (April 4, 2017, Report #1): "we believe FleetCor is actually a predatory company by design, whose core strategy is to methodically rip off its customers, using business practices and fees that are designed to deceive."

This excerpt conveys an image of monstrosity, in that the target firm is shown as being inclined to abuse and defraud its own customers. In some cases, the target firm appears to be so dangerous that the regulator is urged to intervene and investors are explicitly advised not to invest in this firm.

> Iceberg vs Tibet Water (October 4, 2017) (Report #1): "Serious doubts over Tibet Water's accounting and the high probability of fraud make this company uninvestible. We call for HKEx [Hong Kong Stock Exchange] to take immediate disciplinary action".

Finally, emotional appeals often aim to sustain the feeling that the target firm is "unique", of course in a very negative way. Accordingly, WSSs frequently use superlatives to describe the target firm – which promote the claim that the target firm is the worse company they have ever examined. Through their policing of financial markets, WSSs are confronted to exceptionally terrible firms. The following excerpt illustrates the matter:

> Citron vs. Angie's List (ANGI) (May 1, 2013, Report #1): "Angie's List is the most ridiculous, stupid, misunderstood, negligent, nonsensical, outdated, irresponsible business model in the new web economy."

Propagating a climate of suspicion is a common rhetorical strategy to sustain a need for assurance, expertise, and socio-organizational change (Power 1997; Greenwood et al. 2002). We found WSSs promoting suspicion and even disgust vis-à-vis the behavior of target companies. The latter are sometimes represented in very negative terms in the hopes that arousing the feeling of fear may help to convince market participants of the persuasiveness of WSSs' claims.

In sum, our examination of pathos in research reports indicates that WSSs often appeal to emotions in promoting an emotional bond between speaker and audience. A range of emotional appeals are mobilized to arouse the audience's feeling of uneasiness, doubt and even outrage. Appeals are conveyed in various ways, through negative wording, deleterious metaphors, derogative images, and even humor. Clearly, the web of emotional appeals we unveiled constitutes a major representational undertaking, where alleged fraudsters are framed in a way which leaves almost no doubt regarding their guiltiness. Ultimately, we found that the use of pathos in research reports promotes an imagery of effectiveness surrounding the work of WSSs, in that their policing is represented as being powerful at uncovering shocking fraudulent schemes.

Logos (logic)

We mentioned earlier that WSSs' research reports provide much evidence ensuing from what is staged as deep investigative work on target firms. The goal is to impress the reader, convincing her that the means of investigation are serious and thorough. Every now and then, the reports stress that the work of industry experts, engineers, forensic accountants, private investigators, and former employees was used in producing evidence.

One interviewee associated the writing of persuasive reports to the art of selecting compelling arguments – each being supported through financial analysis and/or evidence. According to him, a sense of materiality often influences the selection process ("a $10 million overstatement as compared to total assets of $1 billion is not worth publishing"), as well as understandability of the issue and the likelihood of having found what may ultimately be a "sledgehammer argument". In short, this interviewee is well aware of the importance of persuasiveness in writing research reports. In his interview, he also developed linkages between report persuasiveness and the constitution of WSSs' reputation.

> "You need to be right [i.e., making predictions that turn out to be true] in your reports. If you are right once, twice, three times (…), after some time, the market will know it. You then come to be viewed as having the reputation of being careful people. From time to time, I obtain some tip to investigate a firm. I may conduct an investigation for a few weeks on it and then conclude, no, this is not solid enough." (Arnaud Vagner, Iceberg, our interview)

Drawing on our theoretical underpinnings, we maintain that the persuasiveness of the reports depends especially on the creation of logical linkages between evidence and the WSSs' conclusions. Our examination therefore deals with logos, and we found that WSSs' logical arguments can be classified into four categories.

Flawed Business Model

Many statements make a logical argument about a critical issue that jeopardizes the target firm's business model. If investors accept such conclusions they should logically reduce their estimation of the target firm's value. The following examples illustrate this kind of criticism.

Gotham City vs. MDC Partners (MDCA) (April 29, 2016, Report #1): "MDCA has spent $0 on research and development."

How can a firm that claims to leverage technology and data analytics invest so little on R&D and have a sustainable business model? In the extract below, Citron relies on a factual statement to ask a troubling question about the target firm's profitability.

Citron vs. Exact Science (EXAS) (May 15, 2017, Report #1): "When the nation's largest managed care provider refuses to reimburse for what it considers to be an inferior and not cost effective diagnostic method for colorectal cancer, how in the world can Exact ever grow into profitability?"

In the following excerpt, Citron raises doubt regarding the target's business model through the demonstration that similar products could be obtained at lower price on popular retail websites such as Amazon. Citron is careful to avoid the claim that it intentionally chose cheaper products by using what is presented as an objective list of products.

Citron vs. Wayfair (W) (August 31, 2015, Report #1): "Citron wanted to illustrate that the vast majority of goods that are less expensive on other sites (namely Amazon) so if any potential customers refer to a Google search -- Wayfair loses. In order to avoid the appearance of having "cherry picked" a few items, Citron went to "Favorite Wayfair Purchase" links selected by Wayfair's own management on their executive profile."

The next excerpt shows Gotham City seeking to explain logically why the target firm refuses to disclose some specific information to investors because this would reveal compromising information.

Gotham City vs. Criteo (CRTO) (September 21, 2017, Report #2): "The results surprised us. According to our analysis of websites using Criteo: [1] Over 50% of websites using Criteo are of suspect quality; [2] Criteo is NOT 'just as bad' as its peers: Criteo is twice as bad; [3] This explains why Criteo refuses to disclose to clients where ads are placed."

In the following excerpt, Citron compares the target firm with competitors. The argument is logical and powerful. How could this firm be so efficient in the R&D intensive pharmaceutical business as compared to its peers? Again, a logical conclusion derived from the evidential domain is brought to the fore.

Citron vs. Valeant Pharmaceuticals (VRX) (September 28, 2015, Report #1): "Valeant has recently started to defend its scant R&D by stating they are more focused on "output" rather than "input", meaning the results they achieve vs the money they invest. This is an insult to every other pharmaceutical company and to the system that supports Valeant. Do you really think that if you are efficient you can provide the same outputs and spend 90% less on research and development than companies like Johnson and Johnson, Pfizer, Merck or Eli Lilly?"

Fraud, Irregularities, Misrepresentation, and Aggressive Accounting

WSSs often make money by identifying fraudulent companies and shorting their stocks. Ultimately, the persuasiveness of their research reports depends on the development of claims logically linked to evidence. Important efforts are therefore devoted in reports to show evidence that logically points to fraud or suspicious activities within the target firms. For example,

> Glaucus vs. Gulf Resources (GFR) (April 26, 2011) (Report #1): "We visited each of GFRE's factories and each appeared far smaller than GFRE reported in its SEC filings".

To demonstrate misreporting, the following excerpt combines evidence with an (apparently) good understanding of accounting standards and practices.

> Copperfield vs. Points International (PCOM) (July 28, 2014, Report #1): "We believe PCOM reporting revenues on a gross basis is a violation of FASB ASC 605-45. Platform companies typically report revenue "net" of the total volume of goods or services sold through its system. Platform companies receive a transaction fee that is generally reported as revenue. PCOM actually includes aggregate transaction volume in its revenues, which we believe has led to an approximate 650% overstatement of revenues compared to net revenue accounting."

The next excerpt also highlights the development of a logical point ensuing from accounting-based evidence.

> Gotham City vs. AAC Technologies LTD (2018) (May 18, 2017, Report #2): "The above [difference between income and cash flows] may suggest aggressive accounting 101 for a highflying stock where the internal incentives for management are tied to the stock price and stock liquidity – rather than maximizing cash flows."

In the following case, logos is articulated through a corroboration strategy where a range of evidential sources are cited (i.e., employees, news reports, publicly available information).

> Muddy Waters vs. OSI Systems (December 6, 2017) (report #1): "Former employees' statements support our view that OSIS is rotting from the inside.": "There have been numerous news reports in Albania accusing OSIS of corruptly obtaining the concession".

Glaucus relies on the logic of peer analysis and the metaphor of the smell test to suggest fraud.

> Glaucus vs. China Lumena [which operates in chemicals] (0067) (March 25, 2014, Report #1): "Lucrative Commodity Business Too Good to be True. Lumena's reported EBIT [earnings before interest and tax] margin of 56% (average 2008-2012) defies credibility when we consider that other largescale public companies selling thenardite and PPS [polyphenylene sulfide] report EBIT margins of between 5% and 10%. Indeed, Lumena reports similar EBIT margins as Mastercard (NYSE: MA). This does not pass the smell test".

Another approach consists in putting in perspective the growth and profitability of target firms to demonstrate that something is wrong.

> Gotham City vs. Quindell PLC (QPP) (March 22, 2014, Report #1): "Quindell was nothing more than a country club until 2008/2009, yet QPP somehow began reporting Microsoft/Google-esque profit margins in 2010/2011."

A typical rhetorical strategy to demonstrate logically that there is a problem at a target firm is when the auditor resigns:

Glaucus vs. Universal Travel Group (UTA) (April 15, 2011) (Report #1): "Universal Travel Group Inc. Announces Resignation of its Auditors".

Another interesting appeal to logos is to point to an aura of skepticism surrounding a target firm by showing that the latter's management contradicts itself.

Iceberg vs Noble (April 13, 2016) (Report #11): "Noble has impaired a total of $2b, which was 35% of their equity when our first report was published. How can Noble still describe our arguments as "unfounded allegations" when the confirmation of these arguments can be found in their financial statements?"

Overvaluation

Sometimes the WSSs simply argue that the market value of target firms cannot be justified by their fundamentals – therefore suggesting that the stocks are overvalued. The following excerpt illustrates how a logical argument is tied to price-earnings evidence:

Gotham City vs. Ebix Inc (EBIX) (June 21, 2013, Report #3): "Ebix's valuation at 1x revenue is $5.45/share, valuation at 12x normalized earnings (at a 33% tax rate) is $9.79/share, and its tangible book value/share is negative. A simple average of these estimates gets you below $8.00/share.[23] Note that this incorporates some very generous assumptions, given the accounting irregularities, regulatory event risk, flat/declining organic growth, tax risk, and other risks identified in our prior reports."

WSSs sometimes rely on benchmarking to draw comparisons between the target and similar firms or competitors as suggested by the target firm itself, which allows the WSSs to claim for objectivity.

Glaucus vs. Blue Sky Alternative Investments (BLA) (March 28, 2018, Report #1): "Blue Sky's main broker, Morgans, claims that AUM [Asset Under Management] is the key driver of revenues and ultimately the share price of the Company. Blue Sky likes to compare itself to US-listed alternative asset managers; Apollo, KKR and Blackstone have an enterprise value which is on average 13% of their fee earning AUM. If we apply the same ratio to Blue Sky, and factor in a corporate governance discount, we estimate that the Company's shares are worth at most $2.66 per share[24]".

Critical Operating Problems

Another axis for the development of a logical argument is to unveil some compelling problem in the target firm's business. This may include low-quality products or allegations of false disclosure regarding the use of products or software sold by the target firm.

Muddy Waters vs. China Media Express (CCME) (February 3, 2011) (report 1): "We present a mini-documentary of the largest purported operator – Shanghai Ba Shi – specifically focusing on its intercity buses and drivers. The film shows that CCME's hardware is not installed on the buses, despite CCME's claim to have had hardware on these buses since at least mid-2008.".

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[23] The value of the share was $19.72 prior to this report on June 19, 2013.
[24] The value of the share was AUS$10.40 prior to this report on March 28, 2018.

Visual evidence is therefore tied to the allegation of forged disclosures. Other operating problems relate to important aspects of the business such as alleged difficulties in obtaining insurance.

> Citron vs. Grayscale Bitcoin Investment Trust (GBTC) (September 5, 2017, Report #1): "GBTC cannot even get insurance on their holdings, as per their last SEC filing, June 30, 2017. As stated in the last SEC filing: 'We have been advised that our Custodian did not renew its insurance coverage. If our Custodian fails to adequately insure the bitcoins in its custody, this may negatively impact our ability to operate and an investment in the shares.' "

Overall, our analysis of WSSs' rhetorical strategies shows that these entities are committed significantly to the establishment of an aura of persuasiveness around the claims they make in their research reports. The mastery of expertise (ethos) is mobilized especially through the displaying of significant evidence as well as through thorough explanations on how the evidence was constituted. Appeals to emotion (pathos) are made to characterize the profile of target companies and their top executives. A range of logical conclusions (logos) are sustained via the construction of persuasive links between evidence and interpretive points. Collectively, the reports we analyzed provide insight into the extent of undertaking carried out by WSSs in policing financial markets, which in a way provides a platform in trying to establish the broader credibility of the whistleblowing short selling function as an effective policing institution. In other words, the construction of persuasiveness on peculiar claims vis-à-vis target firms relates to the constitution of persuasiveness concerning the broader role of WSSs in financial markets. Being inspired by Westermann et al. (Forthcoming), we found the metaphor of the prosecutor as being particularly helpful in making sense of the role of the WSSs in policing markets. They often "talk" like court prosecutors although the trial is of a specific nature, located in a "tribunal" outside the courtroom. That is, the financial markets constitute at once the tribunal setting and the judging party.

V. AN ASSESSMENT OF THE RESONANCE OF RHETORICAL STRATEGIES IN THE PRESS

We read all the articles mentioning the target firms and WSS in the 30 days following the WSSs' first report (sample of 3,665 articles covering 149 or 85.1% of the 175 pairs (WSS/target), see Section III above) using a grid based on the categories identified in Figure 1 for each second-order theme (e.g., Ethos – Expertise, Ethos – Trustworthiness, Pathos – Feelings of fear). Specifically, we examined whether journalists took up WSSs' rhetorical strategies in their articles. Assuming that journalists benefit from editorial freedom it provides a measure of effectiveness of WSSs' rhetorical strategies.

Impact of Rhetorical Strategies: Identification of Second-Order Themes in the Press

For each pair of WSS – target firm, we examine whether we find narratives in the press articles reproducing the second-order themes of rhetorical strategies used by WSSs, as presented in Section IV. The press is important in shaping investors' opinions and the articles provided us with a means to assess the impact of WSSs' rhetorical strategies (analyzing the effects of the rhetorical strategies directly on investors is less straightforward). We created one dummy variable for each of the 14 second order-themes identified in Figure 1. We coded one (regarding the appropriate dummy variable) each time a press article refers to one of the second-order themes. Table 2 presents the statistical results ensuing from this coding process – which we aggregated at the second-order theme level. For instance, the results regarding Ethos – Expertise and expertness indicate 72 cases – which means that for each of these 72 cases, at least one article took up the "Expertise and expertness" theme.

Insert Table 2 about here

Table 2 must be read with caution because the dummy variables reflect the presence in the press articles of second-order themes used by the WSSs in their reports – and not the weight or intensity put on the second-order themes by journalists. Nonetheless, this analysis allows to draw interesting conclusions. First, if we put aside two Ethos-based strategies that are harder to detect,[25] all of the other second-order themes are often recognized (at least once) in the press covering the target firms after the WSSs' accusation. The minimum being 21 cases for Pathos – Similarity with other fraud cases and Pathos – Feelings of fear (14.1% of cases covered in the press) and the maximum being 88 cases for Logos – Flawed business model (59.1% of cases covered). This is a first indication of the influence of WSSs' rhetorical strategies. We provide in Online Appendix OA10 examples of coding for each of the 14 second-order themes.

Second, the strategy with the most resonance in the press is logos, which is used quite often by press articles covering the cases: 59.1% about the flawed business model, 51% about fraud and 53% about overvaluation (the average in the press across the four second-order logos themes is 47%). Given that logos relates to demonstrations of the WSSs' accusations, it is

[25] Indeed, one caveat of this analysis is that two second-order themes: (1) Ethos – Activeness and (2) Ethos – Personal attractiveness, which have been mentioned in Section IV, are difficult to identify in the research reports, and even more difficult to detect in press articles.

reasonable to believe that journalists deciding to write about a case discuss the main accusations and their demonstration. Interestingly, the second strategy with the most impact on the press is pathos (the average presence in the press across the five pathos second-order themes is 23.8%). In particular, Pathos – Feelings of amusement or use of irony is present in the press in 51.7% of covered target firms. Humor appears particularly effective in persuading the press and resonates well with this media channel. Ethos is the least present in the press articles (the average in the press across the five ethos second-order themes is only 19.1%). However, it needs to be recognized that it was challenging to identify two themes pertaining to ethos in the written documents: Ethos – Activism, dynamism and Ethos – Personnel Attractiveness. Nonetheless, the Ethos – Expertise and expertness is present in 48.3% of the press covering target firms and Ethos – Intentions, Benevolence in 24.2% of the press covering cases.

In sum, we find that the press articles are quite sensitive to the rhetorical strategies employed by WSSs as journalists do not hesitate to reproduce or quote many of the rhetorical arguments used by the WSSs. This is evidence that the rhetorical strategies of WSSs resonate to a significant extent in the press.

Residual Challenges

Following Stolowy et al. (2019), we label "residual challenges" the extent of negative resonance we found in press articles about WSSs. Not only do journalists take up arguments made by WSSs but they also often challenge WSSs. These residual challenges are quite present as we found them for 99 cases (66.4% of covered cases). These residual challenges are expected given journalists' preoccupation to write with objectivity in order not to appear positively biased toward WSSs – the idea being to allow the reader to form her own independent opinion about a given case. For the sake of completeness it is important to highlight these residual challenges. We identified four types of residual challenges.

Target Firms' Responses

A first residual challenge is that articles sometimes include responses from target firms that contradict WSSs' rhetorical strategies. In additional analyses (Section VI) and in Online Appendix OA11, we analyze the rhetorical strategies from target firms.

Attacks From Analysts

A second type of residual challenge relates to financial analysts who cover target firms. The literature recognizes that for a number of reasons (e.g., access to management, career concerns), sell-side financial analysts tend to be positively biased toward the firms they cover (Hong and Kubik 2003; Lourie 2019). The quality of their work is often directly challenged by WSSs' reports. In a number of cases, press articles quote financial analysts who disagree with the WSSs. This is one example of this residual challenge:

> "First Analysis analyst Corey Greendale says Citron Research's short report on 2U is based on 'inaccurate assumptions and logic' ". (…) "Barrington analyst Alexander Paris (…) points out that short-selling blog Citron typically publishes its reports around holidays or during a company's earnings quiet period." (Citron vs 2U)

The Way the Journalists Present the WSSs

The third residual challenge of WSSs in the press relates to how journalists present them in their articles. It is not neutral and varies between articles. It can be positive and reinforce the credibility of WSSs, for example, by highlighting the expertise and the past success of WSSs. However, it can also be negative. For example, about the target firm Harbin, the journalist introduces Citron has being "run by short-seller Andrew Left from his home in Los Angeles". The word "home" does not convey an image of professionalism and gives the impression of amateurism to readers. Another extract illustrates a sort of animosity against the WSS by depicting it as an aggressive entity:

> "Glaucus has built up a reputation for destroying companies it attacks even though its track record is mixed. It can confidently predict that no matter what it says about a company, it will have an impact on the share price." (Glaucus vs. Blue Sky)

Acknowledgments of Failure by the WSS

A final type of residual challenge in the press is that, in the rare cases when the WSSs acknowledge that their report was incorrect or exaggerated, the journalists do not hesitate to highlight this acknowledgement:

> "Carson Block, the founder of Muddy Waters, acknowledged yesterday that he may misread the finance report of Spreadtrum Communications." (Muddy Waters vs. Spreadtrum)

VI. ADDITIONAL ANALYSES

Rhetorical Strategies of Target Firms

We also examined the rhetorical strategies used by target firms in trying to defend their own credibility vis-à-vis WSSs' allegations. From this perspective, we analyzed 303 written documents from the target organizations (56 conference call transcripts, 44 company statements, and 203 press articles) (see Table OA7 in Online Appendix OA7). In Online

Appendix OA11, we assess through rhetorical analysis the persuasiveness of target companies' responses. It appears that, in most cases, target firms do not respond to WSSs' allegations and choose to ignore their reports. Could this silence relate to the belief that responding to accusations may actually exacerbate their importance and increase the saliency of the report to other market participants, thereby leading to a stronger negative effect on the share price? Yet, a number of target firms do respond to WSSs' accusations and also rely on rhetorical strategies to defend their actions.[26]

In summary, our analysis of the target firms' rhetoric indicates that by and large, the firms' responses do not go in detail in order to oppose the WSSs' accusations through the displaying of substantive evidence and persuasive rationales. We were indeed surprised at how infrequently the targets engage in the domain of the substantive as opposed to the surface domain. Overall, the firms' responses do not offer much detail in trying to rebut WSSs' accusations. Responses usually remain on the surface domain rather than engaging with the substantive. Overall, the rhetorical ammunition displayed in WSSs' research reports are much more thorough, sophisticated, and in line with society's expectations for credibility than that found in targets' responses.

Investors' Reaction Surrounding the Disclosure of Target Firms' Responses

As mentioned above, past research (Chen 2016; Ljungqvist and Qian 2016) has studied the impact of research reports on stock prices (see Section III above and Online Appendix OA4). However, previous research does not investigate whether target firms' responses to WSSs' allegations influence investors. To assess the ability of target firms to influence stock prices, we conduct an event study surrounding the disclosures of responses. We present the results of this study in Online Appendix OA13. Overall, we find no significant evidence that target firms are able to convince investors.

Textual Analysis of WSSs' Rhetorical Strategies

From past research and our findings, we know that WSSs' reports have a strong negative impact on stock prices (see Online Appendix OA4). This paper also provides indirect evidence of the impact of WSSs' rhetorical strategies on investors through the resonance of rhetorical strategies in the press. However, we do not know if the rhetorical strategies can be directly

[26] In Online Appendix OA12, we provide relevant additional extracts of the material we analyzed about the targets' responses.

related to stock prices. It is particularly difficult to quantify each rhetorical strategy used in WSS research reports because these strategies use contextual and subtle narratives as well as images and figures of style. Nonetheless, we used textual analysis to create three dictionaries on the basis of our reading of research reports: one for each strategy. Two authors created separately three dictionaries specifically for this study and compared, discussed and reconciled differences of their dictionaries. The dictionaries include respectively 474 words for ethos strategy, 762 words for the pathos strategy, and 511 words for the logos strategy. The dictionaries are available from the authors upon request.

Next, using Python code, we computed the number of words reflecting each strategy based on our three dictionaries scaled by the total number of words in WSSs' reports. Empirical results based on regression analyses of cumulative abnormal returns surrounding disclosure of research reports on these word counts do not show statistically significant relationships for ethos and pathos rhetorical strategies and a statistically weak negative effect of logos rhetorical strategies (p-value < 10%, one-tailed). This lack of direct evidence between stock returns and our three proxies for rhetorical strategies is likely to result from the noise in our measures of the complex and subtle dimensions of the rhetorical strategies described in Section IV. This reinforces the relevance of the press analysis considering the difficulties in measuring complex narratives using standard textual analysis.

VII. DISCUSSION AND CONCLUSION

In this study we investigated the role of entities, which we named "Whistleblowing Short Sellers", in policing financial markets for fraudulent behavior. Our analytical gaze was focused on the process used by WSSs for gaining persuasiveness in the eyes of market participants. Our rhetorical analysis shows that WSSs' research reports are likely to be considered persuasive by market participants as they resonate in the press.

For a long time, research has stressed that the construction of organizational legitimacy and credibility depends especially on the fit between the organization's formal discourse and frontstage behavior, and society's core values and expectations (e.g., Meyer and Rowan 1977). One of the most common expectations is that of rationality (Abbott 1988), especially in terms of academic inquiry standards (Knorr Cetina 1999) and principles of legal argumentation (Feteris 1999). Accordingly, our analysis shows that WSSs' claims are promoted in what they call "research" reports. The latter comprise a range of references to the academic domain – particularly in terms of providing arguments grounded in field-based evidence as well as detailed explanations regarding the processes by which the evidence was constituted. Yet, academic rationality is not strictly incorporated in WSSs' discourse in a disembodied way, characterized with prudence in making overstatements. On the contrary, we found that WSSs' arguments frequently appeal to the domain of emotions, particularly in terms of criticizing, sometimes even demonizing, the behavior and personality of the targets. In addition, research reports oftentimes include legal rationality connotations, such as when the WSS adopts the argumentative style of a court prosecutor.

Drawing on our rhetorical analysis and interviews, we developed a model (see Figure 2) to synthesize, visually, what we believe is a meaningful theorized storyline (Golden-Biddle and Locke 2007) emerging from our study. We did not develop the model in order to produce generalizable findings; this would be a meaningless endeavor given the relatively small size of the WSSs' community. Instead, our ambition is to provide readers with a convenient representation of what we consider the thread of our argument. That being said, readers can rely on Figure 2 and the underlying text to make sense of the extent to which our findings are "transposable" to other settings where persuasion is important (Lincoln and Guba 1985).

Insert Figure 2 about here

The top of the model identifies some of the main reasons that played a role in the creation of WSSs – which are characterized by a two-pronged objective, to reveal corporate fraud while benefiting from a short position on the target. The model then focuses on the processes and consequences related to a specific case undertaken by a given WSS. The undertaking first involves investigative work, where persuasive pieces of evidence are sought after through a combination of financial analysis and field-based examination (e.g., observation of activity surrounding given plant, interview with former employee). Influencing conditions consist of the WSS's perceived reputation on financial markets (if reputation is only emerging, then the WSSs may prefer to concentrate on simpler issues), the WSS's perceived viewpoint on what is persuasive evidence, and the materiality of issues. Once investigation is concluded, the WSS engages in the development of the research report, where emphasis is put on the crafting of credible argumentation through the deployment of ethos, pathos, and logos means of persuasion.

The research report is then diffused to investors. The WSS's rhetorical strategies often resonate in the press and their effect is influenced by residual challenges and by the rhetorical strategies of the target firm. Market participants are reportedly skeptical of criticisms against established companies – although they show sensitivity to: a) arguments based on substantive evidence; and b) the reputation of the WSS as constituted through the accuracy of claims it made in the past. The investors' "verdict" takes the form of stock price variation. In this respect, our evidence suggests that the target firm's rhetoric is often weaker than that of the WSS, thereby ultimately translating into a stock price decrease. Finally, the WSS's reputation strengthens when market participants consider its allegations as being true, as evidenced through reduction in the target's stock price.

Our study therefore points to WSSs playing a significant and credible role in policing financial markets. We found evidence that their reports are endowed with the capacity to convince a fair number of market participants that fraudulent behavior took place in specific settings. Interpreted in a broader way, this evidence indicates that the WSS function is able to play an important role in financial markets, demonstrating that fraud can be identified and acted upon through the verdict of the market – i.e., reducing investors' earnings expectations and stock prices.

Our findings also point to the role of WSSs being all the more pertinent given traditional gatekeepers' difficulties in monitoring fraudulent behavior in financial markets. Numerous studies conclude about the inextricable difficulties in trying to address the corporate fraud problem through traditional means such as internal control, financial auditing, board overseeing, and regulators' enforcement mechanisms (Marcel and Cowen 2014; Soltani 2014; Courtois and Gendron 2017). Classic whistleblowing remains a risky endeavor in spite of some progress being made, in some jurisdictions, on the legal front (Stolowy et al. 2019). In this context, Whistleblowing Short Selling appears as an innovative practice with some potential in policing for fraud in financial markets in an effective way – although it needs to be recognized that the Whistleblowing Short-Selling institution is emergent and we need to be realist on the extent to which a handful of active short-sellers can play a determining role in reining in corporate behavior, generally speaking, in capital markets.

That being said, the institution of Whistleblowing Short Selling represents an interesting phenomenon, from a theoretical perspective. This policing institution emerged without any apparent significant support or help from regulatory or government organizations. Whistleblowing Short Selling can be viewed, therefore, as an innovation originating from the financial markets' agency. Douglas' (2002) – originally published in 1966) anthropological theorizing on purity and danger allows us to make sense, to some extent, of the meaningfulness of the Whistleblowing Short-Selling institution.

Douglas (2002) essentially maintains that human communities strive for purity and tend to be much concerned about the risk of seeing their environment impacted by some impure behavior or material. Communities establish purification systems to control for impurity.

Accordingly, a variety of institutions in communities – whether "modern" or "primitive" – aim to control for impurity and engage in cleansing rituals once cues of impurity are detected. From this perspective, our findings indicate that WSSs are engaged actively in chasing out impurities in financial markets – most notably corporate fraud. Importantly, WSSs bring their accusations to market participants who examine the claims made by WSSs based on their persuasiveness (and counter-claims submitted to them). Investors' revision of the value of target firms, in the form of a stock price reaction, constitutes a form of cleansing mechanism – as indicated through our quantitative analyses. The most important point to retain from this anthropological exercise is that Whistleblowing Short Selling can be productively viewed as a market-based innovation aimed at purifying financial markets from corporate fraud impurities. As mentioned by one of our interviewees, the role of active short sellers (WSSs) is to "clean up the market". Without any apparent direct involvement from outsiders, through the Whistleblowing Short-Selling function a certain form of "justice" is delivered in financial markets when allegations of fraudulent behavior impurities are brought into the light. This conclusive statement does not imply that regulation is unwarranted; our point is that it is interesting, theoretically speaking, to find out that a form of purifying mechanism is developed within financial markets to address the problem of fraud.

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TABLE 1

Descriptive Statistics

Panel A: Number of Reports per Whistleblowing Short Seller

Whistleblowing Short Seller	No.	Pct
Citron	210	54,8%
Copperfield	30	7,8%
Glaucus	37	9,7%
Gotham City	23	6,0%
Iceberg	20	5,2%
Muddy Waters	63	16,4%
Total	383	100,0%

Panel B: Number of Targets per Whistleblowing Short Seller

Whistleblowing Short Seller	No.	Pct
Citron	100	57,1%
Copperfield	17	9,7%
Glaucus	20	11,4%
Gotham City	10	5,7%
Iceberg	3	1,7%
Muddy Waters	25	14,3%
Total	175	100,0%

Panel C: Number of Reports per Year

Year	No.	Pct	Year	No.	Pct
2007	28	7.3%	2013	54	14.1%
2008	30	7.8%	2014	36	9.4%
2009	17	4.4%	2015	35	9.1%
2010	23	6.0%	2016	35	9.1%
2011	42	11.0%	2017	43	11.2%
2012	26	6.8%	2018	14	3.7%
			Total	383	100.0%

Panel D: Number of Unique Target Firm per Country

Country	No.	Pct	Country	No.	Pct
Australia	2	1.2%	Israel	1	0.6%
Bermuda	1	0.6%	Japan	3	1.8%
Canada	6	3.5%	Norway	1	0.6%
China	35	20.5%	Sweden	1	0.6%
Germany	4	2.3%	Singapore	3	1.8%
France	2	1.2%	Spain	1	0.6%
UK	2	1.2%	Taiwan	1	0.6%
Hong Kong	6	3.5%	USA	102	59.6%
			Total	171	100.0%

Table 1 presents descriptive statistics of the number of reports per WSS (Panel A), the number of targets per WSS (Panel B), the number of WSS reports per year (Panel C), and the number of unique targets per country (Panel D).

TABLE 2

Resonance of the Rhetorical Strategies in the Press

Panel A: General statistics

Cases analyzed (total number of pairs)	175
Cases covered in the press	149
Percentage of cases covered in the press	85.1%
Number of articles retrieved for the 149 cases covered	3,665

Panel B: Analysis

	(1) Number of cases	(2) Percentage of cases covered
Ethos - Expertise and expertness	72	48.3%
Ethos - Trustworthiness, veracity, reliability	28	18.8%
Ethos - Intentions, benevolence	36	24.2%
Ethos - Activeness, dynamism	4	2.7%
Ethos - Personnel Attractiveness	2	1.3%
(Average for Ethos)	*(28.4)*	*(19.1%)*
Pathos - Similarity with other fraud cases	21	14.1%
Pathos - Negative feelings against firms	26	17.4%
Pathos - Negative feelings against executives	32	21.5%
Pathos - Feelings of amusement - irony	77	51.7%
Pathos - Feelings of fear	21	14.1%
(Average for Pathos)	*(35.4)*	*(23.8%)*
Logos - Flawed business model	88	59.1%
Logos - Fraud, problems in accounting	76	51.0%
Logos - Overvaluation	79	53.0%
Logos - Operating problems	37	24.8%
(Average for Logos)	*(70)*	*(47.0%)*
Residual challenges identified in the press	99	66.4%

Table 2 presents the findings regarding the extent to which the WSS rhetorical strategies resonated in press articles in the 30 days following the publication of the first report targeting a firm (press articles were obtained from Factiva). For each case (WSS - target firm), in column (1), we counted the number of times at least one press article pertained to second-order themes as identified in Figure 1. Percentages in column (2) are computed by dividing the numbers in column (1) by the total number of cases covered by the press (149). We present in italics the average across second-order themes for each rhetorical strategy (values and percentages).

FIGURE 1

Data structure – WSSs' exposure cases (Part 1)

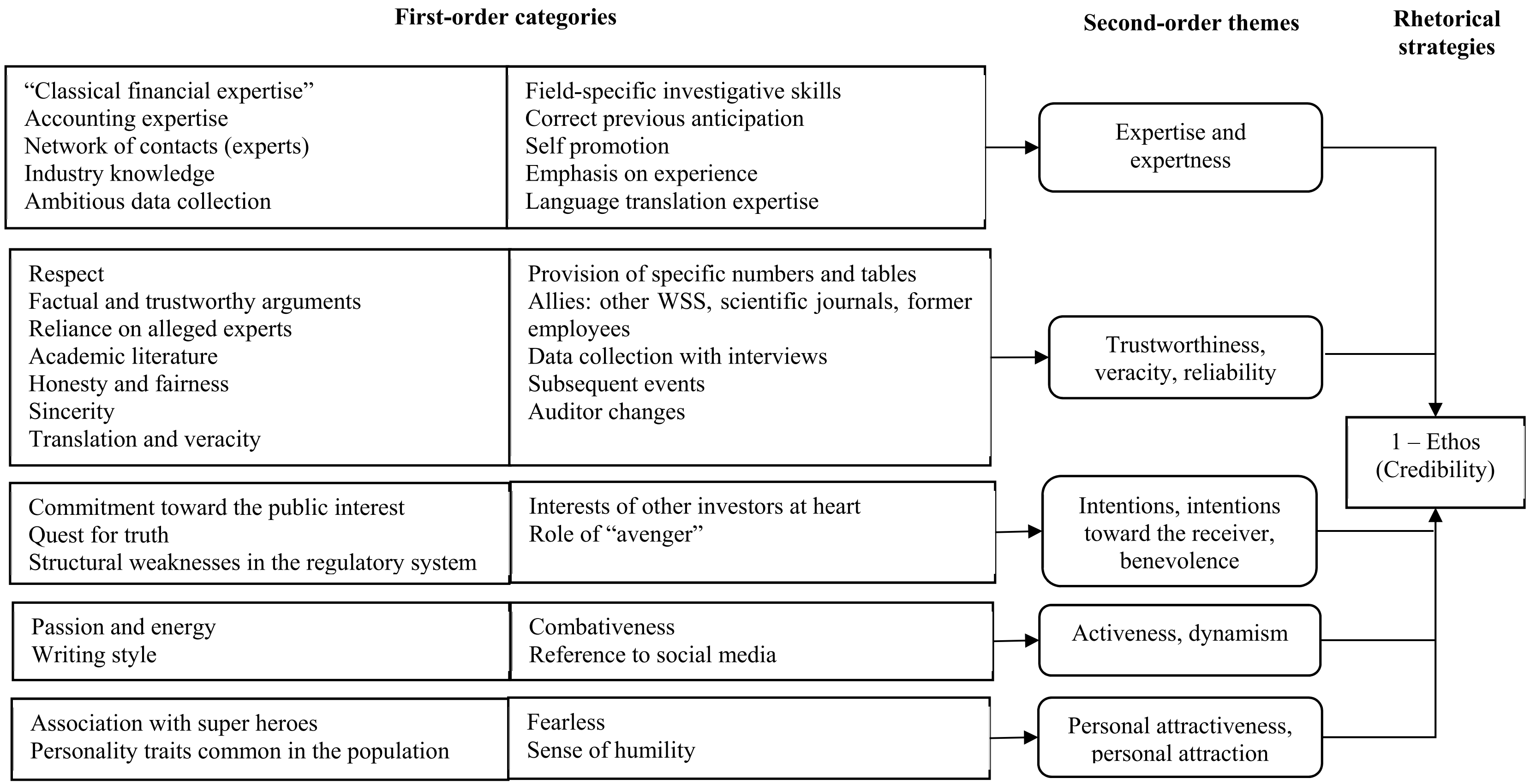


FIGURE 1
Data structure – WSSs' exposure cases (Part 2)

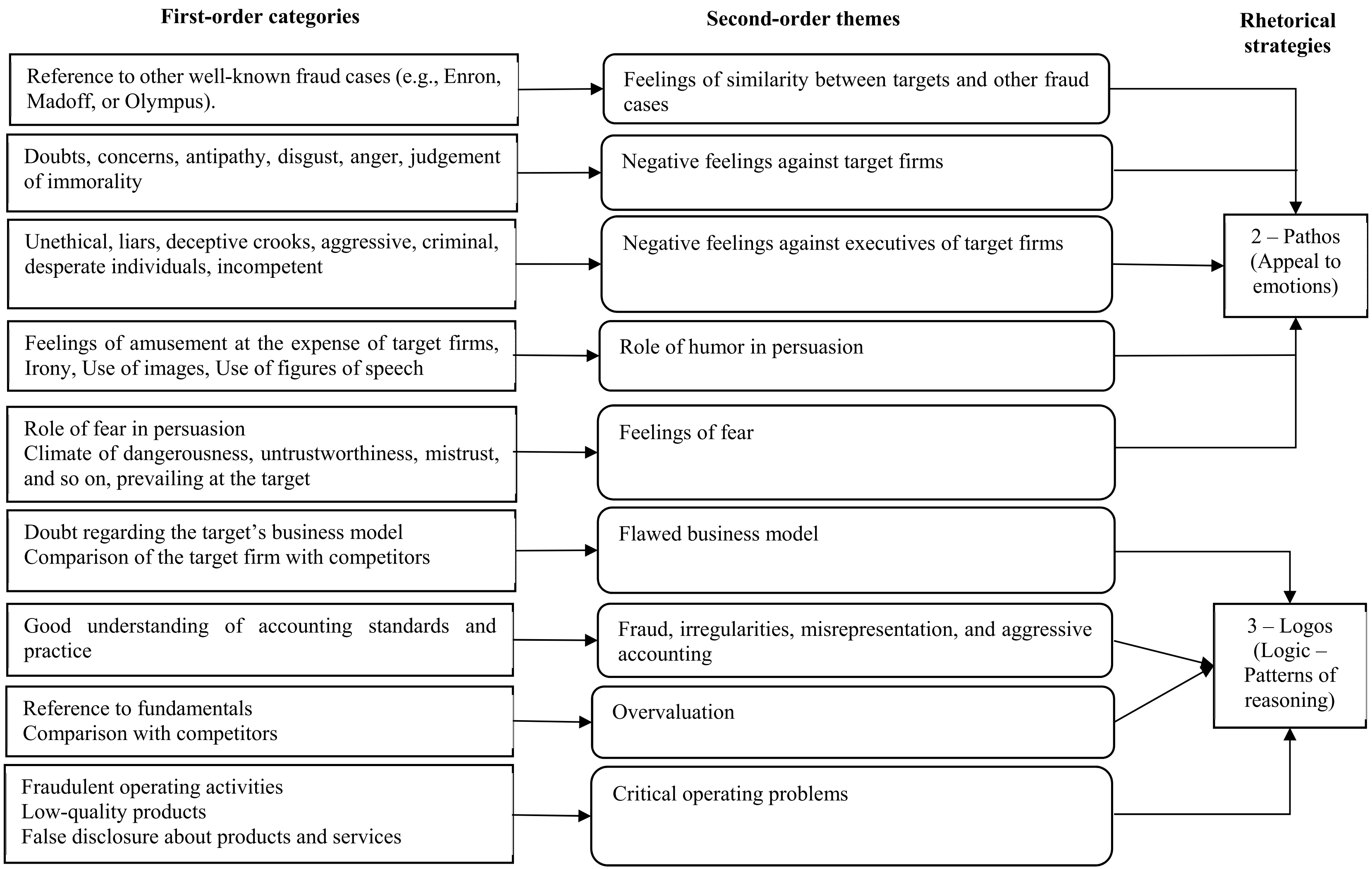
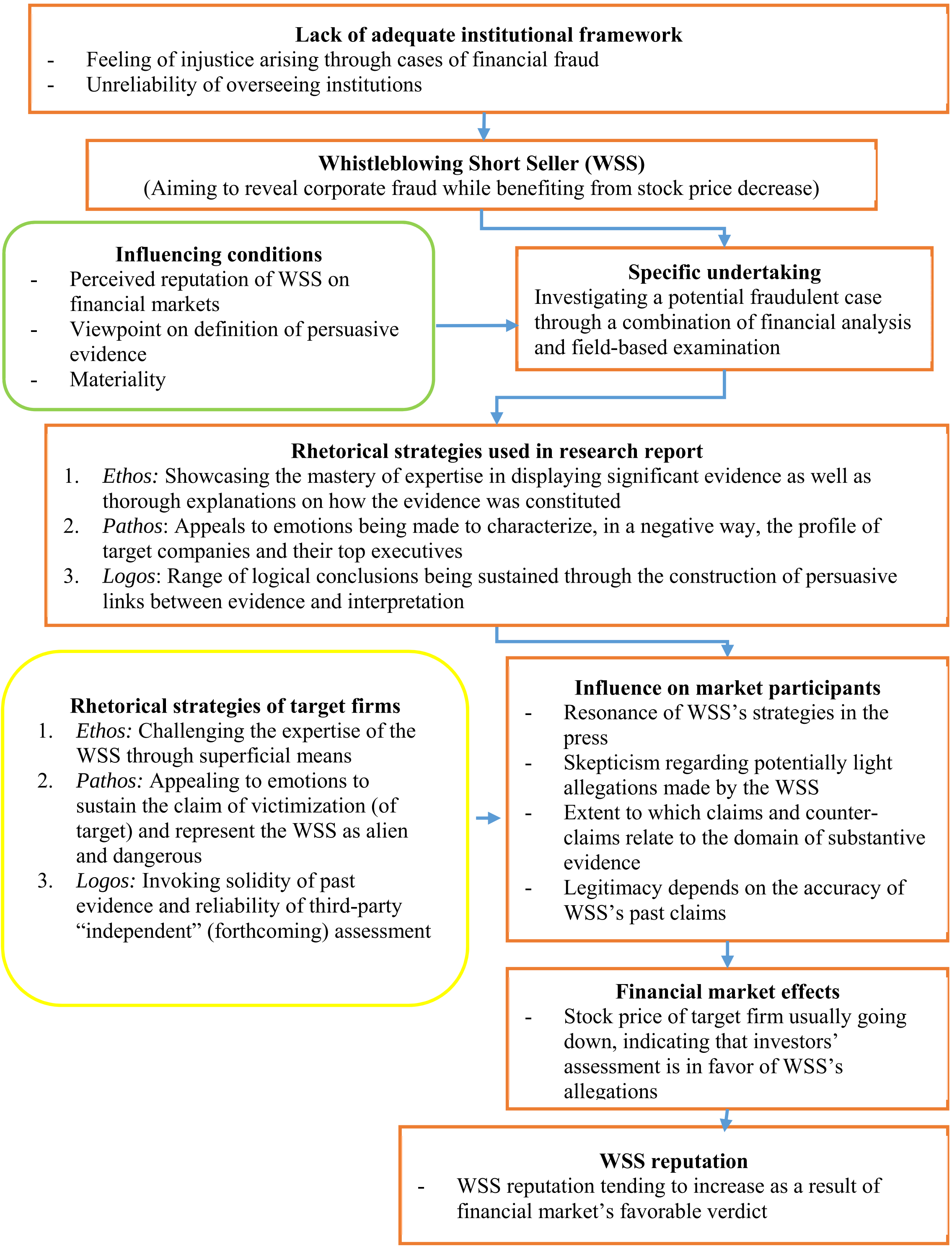


FIGURE 2

Persuasion model using rhetorical strategies



ONLINE APPENDIX

Policing Financial Markets: An Analysis of Whistleblowing Short Sellers' Rhetoric

OA1. Theoretical Framework on Rhetoric

Table OA1 presents a summary of the theoretical concepts based on Aristotle's rhetoric that we use in the empirical section of this paper.

Insert Table OA1 About Here

OA2. Brief Literature Review on the Use of Aristotle's Rhetoric in Management

Cheney et al. (2004) present a broad perspective on rhetoric in an organizational world. Suddaby and Greenwood (2005) describe the role of rhetoric in legitimating profound institutional change. Brown et al. (2012) analyze how a case for institutional change is made through rhetoric. Higgins and Walker (2012) study the social/environmental reports produced by three New Zealand companies during a wider discursive struggle over the "proper" role of business in society. Floris et al. (2013) examine the failed acquisition attempt by BHP Billiton of Rio Tinto. They show how appeals to the three rhetorical "proofs" in the acquisition discourse were embedded in non-linguistic modes such as imagery, location, and indicators. Brennan and Merkl-Davies (2014) examine how the writer, the audience, and the purpose of communication interact in the choice of rhetorical strategies used to persuade others of the validity and legitimacy of a claim during a public controversy. They base the analysis on a case study involving a conflict between Greenpeace and six organizations in the sportswear/fashion industry over wastewater discharge of hazardous chemicals.

OA3. Interpretation of Whistleblowing Short Sellers' Names

Table OA2 provides additional information regarding the meaning of each WSS's name.

Insert Table OA2 About Here

OA4. Event Study: Assessing the Effectiveness of WSSs' Research Reports

Past research shows that WSSs are able to convince a number of investors to sell their stocks in target firms (Chen 2016; Ljungqvist and Qian 2016). To assess the ability of WSSs to influence stock prices we conduct an event study surrounding the disclosures of research reports.

First, to obtain the financial profile of target firms, we match target firms with financial statements' information from Datastream using target firms' tickers in the year prior to the first WSSs' attacks. Table OA3 provides detailed information about the financial characteristics of target firms (the number of target firms matched in Datastream ranges between 128 and 160 depending of the variable of interest).

Insert Table OA3 About Here

We find that target firms have a mean (median) ROA of -8.1% (4.9%) and a mean (median) EBITDA [earnings before interest, taxes, depreciation and amortization] margin of -74.0% (18.4%). This indicates that the distribution of these two variables is negatively skewed, i.e., some target firms have very negative ROA and EBITDA margin. We note that these figures are sometimes based on false financial statements (e.g., Let's Gowex) so they must be interpreted carefully. The mean (median) market-to-book ratio of equity is large: 3.66 (2.72) which is consistent with the argument that these firms are overvalued. The mean (median) market value of equity is $3,702 million ($728 million) and is skewed to the right of the distribution.

In Table OA4, we examine investors' reaction to research reports published by WSSs. Table OA4, Panel A presents cumulative abnormal returns (CAR) over different time windows around disclosure of the first WSSs' research report on a given target. We observe positive and significant CAR before the publication of the reports, i.e., in the time window [-40; -1] we find CAR of +12.8% (significant at less than 1%, two-sided). This indicates buying pressure leading to a rising stock price one day before the publication of the WSS's report. In the subsequent three days, i.e., in the three days surrounding the publication of the WSS's research report, we find negative CAR of -11.2% (significant at less than 1%, two-sided) which indicates a strong impact of WSSs' research reports. An average of $416 million of market value disappears within three days (-$416 million = -11.2% × 3,701).

Insert Table OA4 About Here

Table OA4, Panel B, presents the same analysis for each of the six WSSs. Cumulative abnormal returns are negative for the six short sellers and range between -6.6% (Iceberg, significant at less than 10%, two-sided) and -27.3% (Gotham, significant at less than 1%, two-sided) over the three days surrounding the disclosure of the research report.

In Table OA4, Panel C, we conduct multivariate OLS analysis and examine all of the WSSs' reports (i.e., the first and subsequent research reports). We compare the effect of the first report (*First_Report*) to the subsequent reports and compare WSSs between them (*Citron* is the benchmark WSS; the effect of Citron's report is captured by the intercept).[1] We control for firm characteristics such as size (*SIZE*), performance (*ROA*), market-to-book (*MTB*) and leverage (*LEV*). We also include WSS, industry, country and year fixed effects and cluster standard errors by firm.

Panel C shows that the first report has the strongest impact on stock prices relative to subsequent reports. The incremental effect of the first report relative to subsequent reports ranges between -9.8% and -7.5% (significant at less than 1%, two-sided).

Table OA4, Panel D shows the longer-term impact of WSSs' research reports. We find that two months after the release of the first research report, CAR are significantly negative: -14.5% (significant at less than 1%, two-sided). Negative CARs persist three months and six months

[1] We use Citron as the benchmark because it is the oldest WSS.

after the publication of the first research report with CAR of -17.0% and -22.6%, respectively (significant at less than 1%, two-sided).

Table OA4, Panel E, provides a similar analysis for each WSS. Six months after the first report, CAR ranges between -38.2% (firms targeted by Gotham City, significant at less than 1%, two-sided) and -18.6% (firms targeted by Citron, significant at less than 1%, two-sided).

We noticed while collecting data on Datastream that many target firms were coded as Dead, Delisted or Suspended by the data provider.[2] Therefore, we examine the status of target firms in the summer of 2018, when we collected the data and carried out the analysis whose results are shown in Table OA5.

Insert Table OA5 About Here

Table OA5, Panel A, indicates that 22.8% of target firms are classified as *Dead* in Datastream, 19.9% as *Delisted* and 3.5% as *Suspended*. Overall, the total percentage of target firms that are in one of these three categories is 46.2%, which is extremely high and corroborates WSSs' allegations. Table OA5, Panel B, presents the percentage of firms classified as Dead, Delisted, or Suspended for each of the six WSSs. 45 percent of Muddy Waters' target firms are classified as Dead, Delisted, or Suspended by Datastream whereas the corresponding figure is 33% for Iceberg and Gotham City. Overall, we find evidence that WSSs' research reports are particularly efficient at convincing investors.

[2] In Datastream, a *dead* company is dissolved but has not yet completed distributing its assets. A *delisted* company means that a company's stocks are no longer listed on a stock exchange for one of the following reasons: the security no longer exists, the firm went bankrupt; the floating share of the security has dropped to a very low level; or the firm has failed to comply with the terms of its listing agreement. *Suspension* refers to the status of a listed security of a firm, whose trading privileges have been revoked by the Exchange.
See: https://bizlib247.wordpress.com/2012/08/09/company-status-in-datastream/

OA5. Number of Target Firms per Industry

Table OA6 presents the number of target firms per ICB (Industry Classification Benchmark) industry.

Insert Table OA6 About Here

OA6. Interview Guide

Can you tell me a little bit (1 minute) about your education and career background?

What is your own role or function in this organization?

How would you describe the mission of your organization?

What are the main kinds of activity or work carried out in your organization?

How did you pick up the name of the organization?

What steps or strategies did you seek to implement in order to establish the credibility of your organization?

- Was it difficult to establish credibility?
- Has the Internet been useful to establish credibility? How?
- Who are the main parties who have tended to be skeptical of your organization's credibility?
- Do you have any relationship with financial market regulators? If so, how would you characterize your relationship with them?

How would you characterize your relationship with the media?

- Do you communicate with journalists?
- What is their role in achieving your organization's objectives?

How do targeted companies typically react to the diffusion of your research reports?

- Any phone calls or e-mails?
- Threat of lawsuits?

From a broader perspective, what do you think are the main challenges faced by your organization?

Do you have any type of inter-relationship with other investment research organizations?

- What do you think are the competitive advantages of your organization as compared to the others?
- Do you follow what other investment research organizations publish? What retains your attention when reading one of their reports?

Can you tell me about the birth of your organization?

- Chronologically, beginning with how the idea of developing the current organization first emerged.
- Main challenges involved in launching the organization.

Can you provide me some basic information on how you usually select your targets?

- Do you specialize in some industries?
- Tips from people?
- Intuitions as sustained through reading of newspapers, magazines?
- Hints emerging from blogs and social media?

Can you tell me what considerations you have in mind when you write research reports to be disseminated in the media?

- Writing style
- Kind of evidence that is displayed and viewed as persuasive
- Channels through which research reports are diffused
- Any sense of the impact that diffusion of your reports have?

What do you think is a persuasive piece of evidence?

- What is a non-persuasive piece of evidence?
- What are the main investigation means that tend to produce persuasive evidence?

Could you tell me how a "typical case" develops within your organization?

- You may select a particular case, without providing me any name.
- How did you select this case?
- How did you carry out the research investigation?
- What were the main outcomes of the investigation?
- When did you consider that "enough" investigation had been done, and that it was time to write the report?
- What were the main issues you had in mind when writing the report?
- What mechanisms did you use in order to diffuse the report?
- Do you have a sense of the reaction the report had in the financial community?
- Why do you think stakeholders viewed this report as credible?

Thinking over differences between now and the day your organization was launched, what are the main changes your organization went through?

How do you make sense of your organization's effectiveness or performance?

- If you were to use a balanced scorecard, what would be the main items or variables to be included on your dashboard?

OA7. Responses of Target Firms

Table OA7 summarizes the number of documents that we analyzed in relation to target firms' responses. In total, we analyzed 303 documents. The first source of responses corresponds to statements issued by the targets, often shortly after the disclosure date of the WSSs' research report. Our main data source in this respect was the press database Factiva.[3] We found 44 company statements, thereby indicating that the majority of target firms did not reply, at least officially, through this channel. We also obtained data on target firms' responses through a second source: target firms' conference calls. For all target firms, we used the Thomson Reuters Eikon database to identify the conference calls after the report within a three-month timeframe (we found 56). Within this sample, we found 15 conference call transcripts including the name of the WSSs or other terms qualifying the WSSs without explicitly citing them (e.g., "short seller").

Finally, using again Factiva, we searched for press articles mentioning a response from target firms. We used the target name and the WSS name as keywords and retrieved 203 articles.

Insert Table OA7 About Here

[3] Factiva (Dow Jones Factiva) is a non-academic database of international news containing 33,000 worldwide full text publications including different types of sources: Newspapers (e.g., *The Wall Street Journal*, *The Financial Times*); Magazines (e.g., *Newsweek*); Newswires (e.g., *Reuters*, *Dow Jones*, *Associated Press*); and Podcasts (radio, TV) (see https://www.dowjones.com/products/factiva/ - retrieved April 17, 2019).

OA8. Relevant Additional Extracts of the Material Analyzed About the WSSs' Attacks.

Ethos

Expertise/Expertness

Muddy Waters vs. OSI Systems (OSIS) (December 6, 2017) (Report # 1): "It is likely that OSIS's accounts are misstated as a result. We believe the pricing of its Mexico turnkey contract does not stand up to scrutiny. (…) it accounted for more than 50% of OSIS's FY2017 EBITDA, despite being only 15% of revenue. Put another way, we estimate the Mexico contract's EBITDA margin is approximately 55%, which would mean the rest of OSIS has an EBITDA margin of a paltry 7.5%. This contract is up for renewal in 2018, and nonrenewal would seemingly have an enormous impact on OSIS's profits".

Citron vs. Transdigm (TDG) (January 20, 2017, Report #1): "Citron has sifted through the Haystack Gold database, the leading defense parts and logistics management system, reviewing historical prices of over 50,000 aircraft parts."

Copperfield vs. Tangoe (TNGO) (September 6, 2012, Report #1): "After doing a deep dive into Tangoe's financials, it is our belief that the company has significantly misrepresented its de novo growth rate, while demonstrating many of the telltale shenanigans and behavior that tends to be a harbinger for blow ups."

Gotham City vs. Endurance International Group (EIGI) (April 28, 2015, Report #1): "We dug deeper. Our due diligence spanned across several continents and included industry experts' input."

Citron vs. Netflix (NFLX) (June 14, 2018, Report #1): "On March 12, 2018 when NFLX was traded at $330, Citron suggested that the stock had gotten ahead of itself and you would soon be able to buy it under $300. The pundits got angry, but sure enough within 2 weeks the stock was trading as low as $285."

Citron vs. Intuitive Surgical (ISRG) (October 3, 2013, Report #5): "In its groundbreaking report January 17, 2013 […]).

Glaucus vs. Asia Pacific Recycling (1337) (April 24, 2014) (Report #1): "Asia Plastic Recycling Holding Limited ("APR" […]) is a Fujian-based manufacturer that claims to be the #1 producer of EVA1 foam products in China. We believe that APR has made numerous material misrepresentations to investors and the Taiwan Stock Exchange ("TWSE"), in both its 2011 IPO prospectus and in subsequent financial statements, regarding the scale and profitability of its business."

Muddy Waters vs. Asanko Gold (AKG) (May 31, 2017, Report #1): "There has been a failure in the west wall that management has described as "little" and "tiny".1 However, satellite and drone imagery shows the wall failure and impact on the ramp is likely quite serious".

Gotham City vs. Ebix Inc (EBIX) (February 21, 2013, Report #1): "Given the alarming accusations in the lawsuit, we soon decided to investigate for ourselves, and take a fresh look into the company. We read over 10,000 pages of documents from Sweden, Singapore, India, Australia, New Zealand, & the United States pertaining to the company."

Trustworthiness, Veracity, Reliability

Gotham City vs. Ebix Inc (EBIX) (February 21, 2013, Report #1): "Rather than relying on our judgment, however, we consulted a few accounting experts, who have been studying these issues for decades. We asked Dr. Edward Ketz, Professor of Accounting at Penn State University, and author of *Hidden Financial Risk* and *Accounting Ethics*."

Muddy Waters vs. Orient Paper (ONP) (June 28, 2010) (report #1): "We initially approached ONP as a possible Strong Buy. However, certain red flags quickly emerged that made us suspect that there was some level of graft occurring at ONP. We accept that even many "well managed" companies in the China context often have some level of internal corruption, so we were willing to accept a thesis that there is a strong underlying business with some investor money being skimmed. Once we commenced our in depth review of SEC filings though (we have read literally every SEC filing – including all exhibits – multiple times), we saw strong indications that the company was largely a fraud."

Citron vs. Wayfair (W) (August 31, 2015, Report #1): "Citron admired the work of the Friendly Bear published last week on Seeking Alpha explaining why Wayfair's current business is in the doghouse: [followed by hyperlink]."

Citron vs. Motorola Solutions (MSI) (August 22, 2017, Report #2): "Andrew Spinola of Wells Fargo, in his lengthy reports, states one line that eclipses all of the nonsense we read from others who cover the stock. He states: [Follows a statement supporting Citron's view]".

Citron vs. Intuitive Surgical (ISRG) (March 26, 2013, Report #4): "From today's New York Times [weblink] to last week Bloomberg story [weblink], Taylor vs Intuitive has begun to focus major press coverage on the real issues of robotic surgery since Citron alerted the Street to it just last month. Today's

Boston Globe [weblink], focuses on the Massachusetts Board of Registration in Medicine's advisory letter [weblink] which cautions about inadequate credentialing of robotic surgeons."

Copperfield vs. Chegg (CHGG) (November 14, 2016, Report #1): "The SEC appears to share our confusion based on its correspondence with CHGG management asking for an explanation for certain revenue segment reporting."

Copperfield vs. Ebix (EBIX) (May 5, 2012, Report #2): "Earlier this month, Bloomberg News reported that the SEC is currently conducting an investigation into Ebix in a story titled "Ebix Accounting Practices Said to Be Probed by SEC."[4] According to Bloomberg, the SEC investigation has been ongoing for the past year and is "focused on revenue recognition, internal controls and the accuracy of the company's public statements to shareholders."

Gotham City vs. Criteo (CRTO) (September 15, 2017, Report #1): Technical analysis "MMI [Method Media Intelligence] made some very serious & specific claims about Criteo, including: 1. Criteo operates with no transparency as to where clicks they charge clients are generated 2. Criteo charged a client at least 61% more than what was truly reported 3. Criteo reports 42% higher clicks than MMI's tracking code that is on the same page as theirs 4. Criteo claims attribution credit to their ads for transactions that were falsely triggered by a bot. 5. Criteo displays ads on websites that do not fit a PG13 or 'Disney Safe' standard as they claim."

Gotham City vs. Ebix Inc (EBIX) (February 21, 2013, Report #1): "Ex-employee have questioned the reliability and accuracy of Ebix's receivables: […] 'Constant errors' in 'billing and administrative processes' left Ebix's employees 'unable to properly produce invoices to customers in a timely manner.'"

Gotham City vs. MDC Partners (MDCA) (April 29, 2016, Report #1): "MDCA's former auditor KPMG expressed 'an adverse opinion on the effective operation of, internal control over financial reporting'. MDCA soon after hired BDO."

Gotham City vs. Quindell PLC (QPP) (March 22, 2014, Report #1): "3 auditors in 3 years, since 2011."

Gotham City vs. AAC Technologies LTD (2018) (June 7, 2017, Report #3): "Note that in the case of Quindell, a UK listed company we researched, Gotham City's main thesis […] seems to have been correct over time. Quindell is currently being investigated by the UK Serious Fraud Office."

Copperfield vs. Carvana (CVNA) (August 18, 2017, Report #1): "You see, we may be the first entity to publicly "cry foul," regarding Carvana's shipping fulfillment shenanigans, but the United States

Securities and Exchange Commission previously highlighted this exact issue in a comment letter to Carvana. In correspondence with Carvana, which was formally disclosed on 5/25/17, the SEC requested the Company disclose its outbound shipping costs if considered "significant":"

Ally to the Whistleblowing Short Seller

Citron vs. Mallinckrodt (MNK) (November 16, 2016, Report #1): "So Acthar is the most expensive drug per treatment in the Medicare system. And just two months ago we read in Neurology Today Journal: There is no evidence that ACTHar gel... is in any way superior to methylprednisolone for MS relapses — indirect comparisons suggest that it may be associated with more adverse events and its current Average Wholesale Price of $40,840.80 for a 5 ml/40 unit bottle makes routine use of this product for MS relapses difficult to justify.

Gotham City vs. Criteo (CRTO) (September 21, 2017, Report #2): "MMI is not alone in exposing Criteo: Harvard Business School Professor and ad fraud specialist, Ben Edelman, has been warning about Criteo since 2015".

Intentions, Intention Toward the Receiver, Benevolence

Interest of investors

Gotham City vs. Let's Gowex (GOW) (July 1, 2014, Report #1): "Were Gotham City or someone else not have come along, the Gowex charade could have continued for few more years, costing investors several more billions of dollars."

Muddy Waters vs. Olam (SGX: O32) (November 27, 2012) (report #2): "We always feel sympathy for investors who have misplaced their trust in unworthy managements. This is certainly the case of our feeling toward Olam's investors."

Citron vs. Valeant Pharmaceuticals (VRX) (September 28, 2015, Report #1): "This article is not for you hedge fund managers who believe that this quarter's performance is more important than human decency or long-term viability; this article is for the millions of Americans who together can be strong enough to mandate change. Wall Street will understand in time."

Muddy Waters vs. Asanko Gold (AKG) (May 31, 2017): "To date, we believe the only reason investors stuck with AKG is because of the seemingly stellar reputations of Chairman Collin Steyn and CEO

Peter Breese. Analysis of the LionOre and Mantra transactions suggests management sold assets to undisciplined buyers during a bull market, and that the aftermaths were punishing to the buyers."

Muddy Waters vs. NQ Mobile (NQ) (December 19, 2013) (report #6): "The history of independent committee investigations into allegations of fraud against China issuers is a shameful one, and has cost investors billions of dollars in losses".

Copperfield vs. MagicJack (CALL) (August 1, 2013, Report #1): "This brazen stock manipulation has been exacerbated by a series of ploys to attract and pump retail investors."

Copperfield vs. Avid Technology (AVID) (June 14, 2015, Report #1): "Wall Street loves turnaround stories. Unfortunately, for every seemingly broken business that miraculously recovers, there are many more failed turnarounds that result in significant investor losses."

Glaucus vs. Asia Pacific Recycling (1337) (April 24, 2014) (Report #1): "Investors should not be fooled."

Citron vs. Shopify (SHOP) (October 4, 2017, Report #1): "We are forwarding all of our information (hundreds of pages) to the FTC and we expect Shopify to face the same scrutiny as the many companies of the past who sell dreams to unsuspecting customers."

Gotham City vs. Endurance International Group (EIGI) (April 28, 2015, Report #1): "Once we learned that CEO Hari Ravichandran has been spending an unusual amount of time promoting the stock rather than running the business in recent months – 15+ investor meetings in recent months – we decided to share our findings with the public."

Gotham City vs. Criteo (CRTO) (October 12, 2017, Report #3): Title of the report: "Why We believe Criteo's Undisclosed Practices are Illegal and Harmful to Advertisers".

Gotham City vs. Criteo (CRTO) (September 21, 2017, Report #2): "Criteo's clients' are not getting what they paid for (because they are not reaching humans)."

Activeness, Dynamism

Copperfield vs. Soda Stream (SODA) (July 24, 2014, Report #4): "We'll keep this short and to the point. We think business at SODA is bad. It is worth contemplating how bad business must be if Bloomberg is remotely close suggesting SODA would consider a $40 take out."

Copperfield vs. Barrett Business Services (BBSI) (September 16, 2014, Report #1): "Barrett Business Services (BBSI): A Tick-Tick-Ticking Time Bomb [Title of the report]"

Copperfield vs. Barrett Business Services (BBSI) (February 4, 2015, Report #4): "BBSI – Garbage In, Garbage Out [Title of report]"

Citron vs. Transdigm (TDG) (January 20, 2017, Report #1): "President Trump, Have a Look at This! […] NOTE: Boeing and Lockheed gross margins are 13.6 % and 10.91% respectively. TransDigm boasts gross margins of 54.5% selling airplane parts to our government."

Personal Attractiveness, Personal Attraction

Copperfield vs. Barrett Business Services (BBSI) (February 4, 2015, Report #4): "While our arithmetic is fallible like everybody else with a spreadsheet, we at a minimum try to understand the garbage going in and coming out. This basic desire to understand how a guided number is built makes us a bit different than the two sell-side buddies of BBSI management."

Pathos (emotions)

Feeling of Similarities Between Targets and Other Fraud Cases

Analogies and comparisons

Muddy Waters vs. Focus Media Holding (FMCN) (November 21, 2011) (report 1): "This is similar to China MediaExpress Holdings, Inc. (OTC: CCME), which we reported is a fraud on February 3, 2011."

"Like Olympus, FMCN is significantly and deliberately overpaying for acquisitions".

Muddy Waters vs. SinoForest (TRE) (June 2, 2011) (report #1): "As Bernard Madoff reminds us, when an established institution commits fraud, the fraud can become stratospheric in size. Sino-Forest Corp. ("TRE") is such an established institutional fraud, becoming massive due to its early start, luck, and deft navigation. At nearly seven billion dollars in enterprise value, it will now end".

Muddy Waters vs. Groupe Casino (CO FP) (January 13, 2016) (report 2): This response reminds us of the reaction from Noble Group (NOBL SP) to our April 2015 short thesis, calling it "inaccurate, unreliable, and misleading". When we shorted Noble it was rated BBB- (like Casino)".

Muddy Waters vs. NQ Mobile (NQ) (April 13, 2014) (report #7): "We saw these same shenanigans in our investigation of Sino-Forest, which was subsequently confirmed during the company's bankruptcy proceedings".

Muddy Waters vs. Olam (SGX: O32) (November 27, 2012) (report #2): "We believe it is instructive to view Olam through the lens of failed US trader Enron Corp. There are a number of material similarities in the way their businesses developed, and their action."

Gotham City vs. Aurelius Equity Opportunities SE & Co KGaA (AR4) (April 5, 2017, Report #2): "Isn't CEO Dirk Markus a former McKinsey consultant and Harvard MBA? McKinsey (where coincidentally Enron and Valeant Pharmaceutical's management originated from) and Harvard are some of the most prestigious and elite institutions in the world. Shouldn't Dirk Markus and other members of the board be intelligent enough to avoid 'editorial mistakes', especially when it comes to audited financial statements?".

Gotham City vs. MDC Partners (MDCA) (April 29, 2016, Report #1): "The Valeant Pharmaceuticals of Ad Agencies' [in Bold]"

Gotham City vs. Tile Shop (TTS) (November 14, 2013, Report #1): "As Crazy Eddie's, Symbol Technologies, and other famous inventory accounting frauds remind us: if margins seem too good to be true (and too smooth to be true), they probably are. We believe that the chickens are about to come home to roost for Tile Shop and CEO Bob Rucker. We recommend you sell shares immediately."

Gotham City vs. Tile Shop (TTS) (November 14, 2013, Report #1): "We are confident that Tile Shop's gross margins are too good to be true, just as Bernie Madoff and Allen Stanford's extremely high and smooth investment returns were proven to be too good to be true."

Insert Figure OA1 About Here

Here the whistleblower presents the logos of the target company next to two well-known frauds (Enron and Valeant Pharmaceuticals).

Feeling of Doubts, Concerns, Antipathy, Disgust, Anger, Judgement Of Immorality Against Target Firms

Copperfield vs. Chegg (CHGG) (November 14, 2016, Report #1): "Why of course you announce a business model pivot on the back of nebulous non-GAAP metrics, concoct a story about a low-cost customer acquisition channel that ignores intense competition from Amazon.com and other economic realities, alter past financial metrics lower to overstate current period growth, create ebullient out-year financial targets only to surreptitiously adjust the target date and growth rates when results are below plan, reclassify your pro-forma revenue definition multiple times - while including physical goods-related revenue in your newly classified digital revenue category (attracting SEC correspondence in the process), further inflate revenue growth rates by recording one-time inventory transfers as profitless revenue, boast about your strong 80% [monthly] customer retention rate - which translates into something closer to 93% annual churn when the fine print is read, claim to grow subscribers 40% despite your own subscriber figure from the prior year's press release suggesting growth of 15%, inflate EBITDA by increasing capitalized expenses 340% year-over-year (as a % of revenue), make 10 acquisitions that obfuscate organic growth (and subsequently write-off multiple deals), and exclude "non-recurring" items from adjusted financial results for ten consecutive quarters to magically transform deep operating losses and cash burn into marginally positive adjusted EBITDA. And that runon sentence is just the beginning…"

Gotham City vs. Aurelius Equity Opportunities SE & Co KGaA (AR4) (March 28, 2017, Report #1): "SEP Holding 7 Ltd – Location seems more like a scene from 'The Hobbit' than home of a strategic investor [followed by pictures and satellite images of a small village (only one main street) in the middle of the countryside. We notice a lot of trees and no business]."

Muddy Waters vs. Focus Media Holding (FMCN) (December 9, 2011) (report 3): "Is "Independent" Verification in China Better than Toilet Paper? No. Although independent verification reports in China and toilet paper are often intended to hold the same substance, our research indicates that investors are much better off sticking with 2-4 ply toilet paper in the bathroom. With a footnote: Toilet paper generally has fewer chemicals than paper printed with laser toner."

Disgust

Gotham City vs. Aurelius Equity Opportunities SE & Co KGaA (AR4) (March 28, 2017, Report #1): "Aurelius' Unaudited Net Asset Value: Garbage In, Garbage Out?"

The following statements are examples about doubts or concerns about the existence or legitimacy of the performance or operation of the target firm.

Gotham City vs. Aurelius Equity Opportunities SE & Co KGaA (AR4) (March 28, 2017, Report #1): "Are 43% - 100%+ of Aurelius's reported earnings suspect?"

Gotham City vs. MDC Partners (MDCA) (April 29, 2016, Report #1): "We start by first exposing MDCA's reported organic growth rate as a farce."

Gotham City vs. Endurance International Group (EIGI) (April 28, 2015, Report #1): "Endurance Does not Deny Hosting Terrorist Websites."

Doubts about performance

Gotham City vs. MDC Partners (MDCA) (April 29, 2016, Report #1): "At least 42%-53% of reported profits are suspect."

Copperfield vs. Tucows (TCX) (January 8, 2018, Report #1): "Three structurally broken biz segments, including Domains segment that enables Neo-Nazis, Pedophiles, and Fascists."

Copperfield vs. Tucows (TCX) (January 8, 2018, Report #1): "The business fundamentals are almost as scary as the "morality" considerations are repugnant."

Muddy Waters vs. Noble (2015, April 9) (NOBG) (report): "Q Verify. Summary: On the basis of select commentary by Noble Group management and the associated deceptive behavior identified below, we have concluded it is highly likely that one or more of the allegations made in the Iceberg report are true. The area of greatest concern appears to be Noble's write-down of Yancoal, and the accounting assumptions on which the write-down is based."

Association with wrong or illegal activities

Gotham City vs. Endurance International Group (EIGI) (April 28, 2015, Report #1): "Endurance has had terrorism-related problem going back to 2008. It hosted a website that taught its members how to outfit a suicide bomber, included Al-Qaeda propaganda videos, and offered Taliban video showing the beheading of three spies: [followed by excerpts from document]"

Negative Feelings Towards Executives of Target Firms: Unethical, Liars, Deceptive Crooks, Aggressive, Criminal, Desperate Individuals

Muddy Waters vs. Olam (SGX: O32) (November 27, 2012) (report #2): "We believe that Olam's fatal flaw, and one of its best kept secrets, is that its CapEx projects seem to be a fiscal black hole. Olam's insistence that investors accept a "gestation period" for its investments seems akin to what a degenerate gambler might say to his friends and family in order to get more money to gamble."

Muddy Waters vs. NQ Mobile (NQ) (October 24, 2013) (report 1): "In August, 2013, NQ blatantly lied to investors about the nature of its relationship to YDT. NQ was responding to a limited circulation research report that raised a number of questions about the Company, including its relationship with YDT."

Glaucus vs. Asia Pacific Recycling (1337) (April 27, 2014) (Report # 2): "In an effort to distract the market, the Company has falsely accused us of acting mischievously and recklessly without due regard for the accuracy of our statements. The Company has also falsely accused us of seeking to cause panic and impose maximum damage on the price of the Company's stock. We reject all of these libelous accusations".

Iceberg vs Noble (May 31, 2016) (Report # 12): "Mr Alireza's reaction to criticism was particularly aggressive and many investors immediately understood that something was wrong with this company. For the journalists who were asking critical questions, Noble had one answer: a letter from its lawyers".

Gotham City vs. Criteo (CRTO) (October 12, 2017, Report #3): "Criteo has (proverbially speaking) removed the dead body AND covered their tracks/wiped fingerprints."

Gotham City vs. Aurelius Equity Opportunities SE & Co KGaA (AR4) (April 27, 2017, Report #3): "(…) Dirk Markus is not mentioned among those listed as honorary degree holder."

Gotham City vs. Ebix Inc (EBIX) (June 21, 2013, Report #3): "A criminal endictment would be unsurprising – Many Americans go to jail for allegations far less serious than the ones that Ebix, Robin Raina, and related parties face."

Gotham City vs. Ebix Inc (EBIX) (June 21, 2013, Report #3): "A CEO who lies about his charity's finances cannot be trusted, period – Robin Raina foundation's tax filings are inaccurate."

Copperfield vs. Barrett Business Services (BBSI) (September 16, 2014, Report #2): "Demonstrating management's condescending treatment of the investment community, they provided an 'adjusted EPS' figure that excludes the all-important reserve charge."

Glaucus vs. CT Environmental Group (1363) (November 3, 2016) (Report #1): "In our opinion, this is clear and irrefutable evidence that the Company has lied to the investing public about the volume of water treated at its facilities and as a result, its reported revenues and profitability."

The WSS argues that the management has lied.

Citron vs. Shopify (SHOP) (October 4, 2017, Report #1): "Worse, indulging in misconduct that that Herbalife could never dream of, Shopify goes so far as to offer a sample resignation letter to your boss on its corporate website. They're advising their own prospective customers to quit their day jobs? Who is Shopify's legal counsel?!? [followed by screenshot of a resignation letter template]."

Muddy Waters vs. Noble (2015, April 9) (NOBG) (report): "Q Verify. Summary: On the basis of select commentary by Noble Group management and the associated deceptive behavior identified below, we have concluded it is highly likely that one or more of the allegations made in the Iceberg report are true.

The area of greatest concern appears to be Noble's write-down of Yancoal, and the accounting assumptions on which the write-down is based."

Immoral / illegal business

Gotham City vs. Blucora (Infospace) (BCOR) (February 2, 2014, Report #1): "Child pornography [in red underlined, front page of the report]".

Top management is incompetent.

Citron vs. Wayfair (W) (June 16, 2017, Report #2): "'Amazon Who?' Whenever an online retailer's CEO says on a conference call he is "not concerned about Amazon" — and dismisses them saying they sell "batteries and books" … it is time to be concerned about your CEO."

Copperfield vs. Chegg (CHGG) (November 14, 2016, Report #1): "The carefully constructed, disingenuous bull thesis, is that CHGG is in the midst of a transition from a low margin textbook rental business into a high growth, high margin digital educational services company. This report extensively details why we believe CHGG has fabricated pro-forma financial results, misrepresented its unit economics, and repeatedly provided misleading metrics that are subsequently altered."

We have the feeling that the management attempts to manipulate investors.

The target firm's management appears arrogant in the following statement. The management claims to be superior to firms such as Google, Amazon or Facebook.

Gotham City vs. Criteo (CRTO) (September 15, 2017, Report #1): "On the one hand, we have MMI's 34 page report, which claims that Criteo is materially defrauding its clients. On the other hand, Criteo portrays itself as better than Google, Facebook, Amazon, Alibaba: [followed by strategy matrix from Criteo in Commerce Marketing]"

Gotham City vs. Quindell PLC (QPP) (March 22, 2014, Report #1): "Robert Terry's credibility is questionable. Terry actively promoted QPP's stock on Twitter; other executives in the United States have been fired for lesser offenses."

Feeling of Amusement at The Expense of The Target Firm

Citron vs. Mallinckrodt (MNK) (November 16, 2016, Report #1): "Let's not forget that Acthar continues to represent a massively disproportionate chunk of Mallinckrodt's bottom line, a number that Trudeau always is happy to dance around, rather than disclose the true concentration risk it took on when it levered up massively to acquire this never-proven drug."

Glaucus vs. Prince Frog International (1259) (October 16, 2013) (Report # 1): “Prince Frog’s brand is built around an animated series based on the Brothers Grimm fairy tale of the princess and the frog”. “In May 2013, a Chinese blogger publicly questioned the veracity of Prince Frog’s reported sales and concluded that Prince Frog was not, contrary to the Company’s claims in its IPO Prospectus, the #2 brand in children’s lotions and body wash behind Johnson & Johnson.” “The controversy intrigued us, so we decided to investigate the blogger’s thesis and evaluate the Company’s response. We found a frog masquerading as a prince”.

Citron vs. Monster Beverage (MNST) (January 29, 2016, Report #1): “The bear case thesis on Monster has been around for years. It used to focus on the headwinds of the energy drink business and the health risks of the product. All the while the price of MNST has continued to defy gravity-- as if the stock drank four cans of its own product.”

Muddy Waters vs. American Tower Corporation (AMT) (July 17, 2013): “Investors seeking to own a REIT that is going to rapidly grow its AFFO and dividend for as far as the eye can see should not own AMT”.

Citron vs. 3D Systems (DDD) (January 24, 2014, Report #2): “Stop the Presses- This could be a game changer!! We did find one industry that is being transformed by 3D printing with possibly the most practical application for a consumer product we have seen to date – the sex toy industry. Look what you can make with your 3D printer! A Justin Bieber vibrator. Goodbye China!!”

Citron vs. Shopify (SHOP) (October 4, 2017, Report #1): “Best Case Scenario for Shopify Stockholders What If Citron is wrong on our assessment of Shopify and the future of this world is millions of people selling fidget spinners and we all become our own flea market??”

Feeling of Fear

Gotham City vs. Criteo (CRTO) (September 15, 2017, Report #1): “Is Criteo Malware? And Why Does Criteo Refuse to Reveal to its Clients Where Their Ads are Placed?” Title of the report

Gotham City vs. AAC Technologies LTD (2018) (June 7, 2017, Report #3): “Is this a smoking gun? [Title Section]”.

Copperfield vs. Solar City (SCTY) (June 17, 2013, Report #3): “The bottom line is investors have been hypnotically drawn to SolarCity, like moths to a flame, dangerously ignoring the house of cards on which the story appears to be built. As one industry publication wrote, "Given SolarCity's previously reported-upon GAAP, Treasury, Internal Revenue, Franchise Tax Board and other state taxing authority issues, at best aggressive treatment and at worst fraud concerning stepping up the tax basis of their installed systems to claim ITC"[ii] this may be a story for investors to simply avoid."

Gotham City vs. Criteo (CRTO) (September 15, 2017, Report #1): "Clients will leave or demand reimbursements from Criteo, due to <u>safety & revenue misattribution concerns</u>."

Citron vs. Grayscale Bitcoin Investment Trust (GBTC) (September 5, 2017, Report #1): "<u>If something is so dangerous that it is uninsurable</u>, do you want to own it? Worse, do you want own a fund that owns it, while paying a price 70% higher than what the underlying asset is actually worth? [capital letters, bold and extra-large font]"

Here this implies that if it cannot be insured then it must be very dangerous.

Feeling of Uniqueness: Exaggeration, Superlative (e.g., "the worst we have ever seen")

Exceptionally terrible firms

Muddy Waters vs. Groupe Casino (CO FP) (December 16, 2015) (report 1): "Groupe Casino (CO FP) is <u>one of the most overvalued</u> and misunderstood companies <u>we have ever come across</u>".

Gotham City vs. Quindell PLC (QPP) (March 22, 2014, Report #1): "What particularly amazes us is that <u>the deeper we dig into Quindell, the more we find</u>. It seems as if <u>there exists an infinite & growing supplies of Quindell red flags</u>."

Citron vs. Wayfair (W) (August 31, 2015, Report #1): "Wayfair <u>makes Citron feel like apologizing to every company we have written about in the past 5 years</u>. Compared to Wayfair, (NYSE:W) you all have viable business models."

Gotham City vs. Let's Gowex (GOW) (July 1, 2014, Report #1): "When we say '<u>exceptional'</u> [about the business model of Gowex] we mean not only far superior versus its peers<u>, but far above nearly all other businesses in history</u>."

Citron vs. Wayfair (W) (August 31, 2015, Report #1): ""Will someone please come <u>to my office and sit on my hands</u> to keep me from covering my short at $30 ... and then come <u>back and bash my knuckles so I don't cover at $20!</u>" -- Andrew Left, Editor, Citron [Yellow box]"

Citron vs. Angie's List (ANGI) (May 1, 2013, Report #1): "New economies give rise to disruptive businesses that are commonly overvalued by the market due to their potential; <u>rarely do they give us a 15-year-old business model that couldn't make it past a first year business school presentation.</u>"

Citron vs. Chemours (CC) (June 2, 2016, Report #1): "After 15 years of publishing, Citron can confidently state that Chemours (NYSE:CC) is the most morally and financially bankrupt company that we have ever witnessed."

Copperfield vs. Chegg (CHGG) (November 15, 2016, Report #2): "We believe our report identified a plethora of financial shenanigans, manipulated business metrics that have been repeatedly altered to fit its narrative, and multiple financial inconsistencies/violations of SEC reporting requirements. Above all else, we believe Chegg has a structurally broken business model that destroys cash as evidenced by metrics that fail to reconcile with this new asset-lite, high margin story."

Logos (logic)

Flawed Business Model

Gotham City vs. Criteo (CRTO) (September 21, 2017, Report #2): "Criteo and its clients' incentives seem misaligned: clients only want human clicks, whereas Criteo does not care, so long as clients are in the dark. So how bad is Criteo exactly?"

Gotham City vs. Criteo (CRTO) (September 21, 2017, Report #2): "Gotham City is not making a mere theoretical claim: several large advertisers recently reduced digital ad spending by 40%-90% or more without negatively impacting sales. For example: [Tables with examples from P&G, Unilever, etc.]"

Gotham City vs. Endurance International Group (EIGI) (April 28, 2015, Report #1): "Endurance spends 60% to 80% less per customer on infrastructure, than Godaddy does: [Followed by table]."

Gotham City vs. Aurelius Equity Opportunities SE & Co KGaA (AR4) (March 28, 2017, Report #1): "Aurelius refers to itself as a 'good home for companies' even though its subsidiaries bankrupt at a ~60% rate after they are sold."

Gotham City vs. Let's Gowex (GOW) (July 1, 2014, Report #1): "Boingo has more hotspots, more airport hotspots (which advertisers pay up for), much better formats and higher prices, and much more traffic. Yet, Gowex generates 3.3x Boingo's ad revenue?"

Gotham City vs. Blucora (Infospace) (BCOR) (February 2, 2014, Report #1): "80+% of webcrawler's visitors originate from outside the US, yet only ~1% of BCOR revenues are international."

Citron vs. Shopify (SHOP) (March 28, 2018, Report #2): "The warning signs have been there, but as the scope of Facebook's severe privacy problem gets exposed, Facebook has no choice but to drastically revamp how it sells its data – data about you and your personal behaviors. Rocked to the core of its business model, Facebook has no choice but to take away Shopify's punchbowl."

Iceberg vs Noble (March 5, 2015) (Report # 3): "Since 2009, Noble's operations have lost more than one billion in cash. Since Mr. Alireza was appointed CEO, Noble's operations have lost $447m in cash. In our second report, we explained that Noble will struggle to deliver high ROE, and will be unable to hide its true operating performance. We think Noble cannot stretch its working capital much more (e.g. repos). These predictions were correct."

Citron vs. Fleetcor (FLT) (April 27, 2017, Report #2): "No two customers are billed exactly alike, yet all customers are fitted into a profile / classification based on how many fees can be extracted without complaints. FleetCor classifies "Red", "Yellow" and "Green" customers based on its internal algorithmic analysis of how vulnerable the customers are to this type of gouging without detecting it or complaining."

Citron vs. Mallinckrodt (MNK) (November 16, 2016, Report #1): "Medicare/Medicaid is spending $640 million a year on a drug with no real clinical data"

Citron vs. Motorola (MSI) (February 7, 2017, Report #1): "While Motorola's has many operating divisions, the bulk of its profits come from selling overpriced handsets into its single source contracts in the United States….taking advantage of both tax payers and the first responder community. In fact, handset sales in the U.S. carry an 83.6% gross margin (see below), while device sales in Europe are at 9% [Bold characters]"

Citron vs. Motorola (MSI) (February 7, 2017, Report #1): "After a "discount" Chandler paid $5,200 apiece for this radio: [followed by picture of a radio]. Compare this to the MTP-6550 radio sold to first responders in the U.K [$975 for another similar looking radio]"

Fraud, Irregularities, Misrepresentation, and Aggressive Accounting

Citron vs. Valeant Pharmaceuticals (VRX) (October 21, 2015, Report #3): "Why would Valeant, a major big cap pharma, a darling of the hedge fund crowd, a suitor of Allergan and an aggressive acquirer of pharmas like Salix, Bausch & Lomb, etc., etc., be secretly maneuvering to buy a little known pharmacy with a concealed ownership structure? And then consolidate its financials? Why was this entity NEVER disclosed in any prior company disclosure?"

Copperfield vs. OCZ (OCZ) (Avril 20, 2011, Report #1): "OCZ is being sued for Negligent Misrepresentation and Deceptive Advertising Practices. OCZ failed to disclose any of the details behind the lawsuit filed against them in U.S. District Court less than three weeks ago."

Copperfield vs. Points International (PCOM) (July 28, 2014, Report #1): "It is our opinion PCOM's business model has been meticulously designed to permit the company to "gross-up" its revenue, resulting in financial reports that appear to the investing public many times larger than its actual economic size. As we discuss later, PCOM's accounting and disclosure previously came under the SEC's microscope. According to FASB ASC 605-45, we believe PCOM should be forced to restate its revenues, potentially cutting previously reported numbers by up to 80%."

Copperfield vs. Points International (PCOM) (July 28, 2014, Report #1): "In 2013, PCOM surreptitiously altered its EBITDA calculation, excluding certain investment spending from the company's reported EBITDA. We believe these operating expenses are recurring in nature, which management confirmed on a recent earnings call. As such, PCOM is directly violating SEC Regulation G."

Copperfield vs. Solar City (SCTY) (June 17, 2013, Report #3): "When it was trying to complete its IPO, SolarCity used a 10-year renewal assumption of 80% of the year 20 contract value (for years 21-30). However, after its IPO, SolarCity appears to have changed the fine print of this assumption to 90% renewal which has materially inflated NPV. Further, in its pre-IPO presentation, SolarCity claimed 1/3 of the NPV ($5,000) per customer came from renewal. However, in its Q1'13 presentation, 46% of the NPV is associated with renewals, suggesting their underlying NPV assumptions have been materially altered."

Copperfield vs. Solar City (SCTY) (June 17, 2013, Report #3): "SolarCity's CFO was the CFO at Calpine from March 2002 through November 2005. Calpine filed for bankruptcy weeks after he resigned, and only weeks after his finance team made "a simple error" that overstated another non-GAAP measure, EBITDA, to analysts and investors by a ho-hum $136.8 million, or 26%."

Copperfield vs. Tucows (TCX) (January 8, 2018, Report #1): "During this period of nondisclosure, seven different insiders, including the Co-Chairmen of the Board and BOTH CFOs, sold more than $21 million of stock."

Iceberg vs Noble (April 13, 2016) (Report # 11): "The 13% stake in Yancoal is still valued 28 times its market value on Noble's balance sheet. It was 48 times the market value when we published our first report. Despite the significant and prolonged decline in the fair value of the interest, the auditor still does not apply any serious impairment test. How does Noble justify the valuation of an asset that accounts for 7% of its equity at 28 times its market price?"

Citron vs. Hailiang Education (HLG) (March 9, 2018, Report #1): "Haillang Education has had 3 CFO's in less than 2 years [Bold, underlined]"

Peer analysis

Gotham City vs. Endurance International Group (EIGI) (May 5, 2015, Report #3): "Godaddy, the industry leader, has a rather simple, easy to understand definition of 'subscribers': Godaddy's ARPU/ARPS [Average Revenue Per User/Subscriber] is simple and easy to understand. GDDY uses 63 words, 4 lines to define 'total customers' whereas EIGI uses 233 words and 12 lines to define it."

Glaucus vs. National Beverage (FIZZ) (September 28, 2016) (Report # 1): "The Company sells regional brands at a ~40% ASP discount to its larger peers (e.g. Coca-Cola ("KO"), Pepsi ("PEP") and Dr. Pepper Snapple ("DPS")), and as a result, reports anemic gross margins ~40% lower than its larger rivals. Inexplicably, despite its smaller size and market share, FIZZ reports comparatively incredible operating leverage. FIZZ supposedly spends only 21% of revenues on SG&A compared to ~37-39% for KO, PEP and DPS. Even more suspiciously, FIZZ's revenue grew 36% (by $188 million) from 2006-2016, yet reported shipping and marketing costs have supposedly remained flat. How does a small, regional beverage manufacturer which sells discounted brands report such low operating expenses relative to its peers? In our opinion, the answer is simple: either FIZZ has revolutionized the beverage business or it is falsifying its reported financial performance. We believe it's the latter."

Glaucus vs. Blue Sky Alternative Investments (BLA) (April 5, 2018) (Report # 2): "Other publicly listed asset managers understand this and do not hide behind some fabricated duty of secrecy. Apollo and KKR, which as publicly listed asset managers have similar fiduciary obligations as Blue Sky, provide a transparent breakdown of both gross AUM and fee earning AUM (including performance metrics and fees) not only across asset classes but at the individual fund level. They also disclose unrealized and realized valuations and IRRs at the fund level. KKR and Apollo claim no such duty of secrecy. Neither can Blue Sky, which has pitched itself as a Brisbane-based wanna-be KRR to the financial markets."

Glaucus vs. China Metal Recycling (CMED) (January 28, 2013) (Report # 1): "Fictitious Financials. Many of the Company's key financial and operational metrics deviate so significantly from other scrap metal recyclers that its reported performance defies credibility".

Gotham City vs. AAC Technologies LTD (2018) (May 11, 2017, Report #1): "Some of the undisclosed related entities supply the same products as AAC does, are based in the same locations as AAC is, & hire employees under the AAC's name."

Gotham City vs. AAC Technologies LTD (2018) (May 18, 2017, Report #2): "SuQian QiXiang describes itself as a division of AAC, yet AAC has never disclosed SuQian QiXiang in AAC's annual reports."

Gotham City vs. AAC Technologies LTD (2018) (May 18, 2017, Report #2): "If AAC's margins are as high and smooth as reported, why haven't Apple, Samsung, or other handset makers entered the space and/or vertically integrated to enjoy the cost savings for themselves?"

Gotham City vs. AAC Technologies LTD (2018) (May 18, 2017, Report #2): "If AAC has invested heavily in automation, why has cumulative employee count growth exceeded cumulative revenue growth since 2013. [in bold characters]"

Gotham City vs. Aurelius Equity Opportunities SE & Co KGaA (AR4) (March 28, 2017, Report #1): "In 2009-2010, Aurelius changed its auditor from Deloitte to Susat & Partner (Later to merge with third-tier firm Warth & Klein)."

Gotham City vs. Endurance International Group (EIGI) (April 28, 2015, Report #1): "[About an alleged related party transaction] Endurance/Glowtouch Employees Refer to Endurance/Glowtech Interchangeably [Followed by LinkedIn picture]."

Gotham City vs. Let's Gowex (GOW) (July 1, 2014, Report #1): "GOW's audit fees s €40,000, which makes sense if Gowex's actual revenues are only 5%-10% of reported revenues"

Gotham City vs. Let's Gowex (GOW) (July 1, 2014, Report #1): "90% of Telecom revenue originated from undisclosed related parties, tied to GOW CFO & an early investor. We have evidence Gowex's largest customer was really itself."

Gotham City vs. Let's Gowex (GOW) (July 1, 2014, Report #1): "Gowex told some investors that New York City was paying them €7.5 million. GOW told us €2 million. The real number is <€200,000, according to New York City."

Gotham City vs. Let's Gowex (GOW) (July 1, 2014, Report #1): "The head of investor relations is the CEO's wife. She signed off on GOW's annual report."

Gotham City vs. Let's Gowex (GOW) (July 1, 2014, Report #1): "Despite all this, Gowex's revenue per employee exceeds Google's, Facebook's, and Microsoft's, and its market value exceeds the sum of Boingo, iPass & Towerstream's market values."

Gotham City vs. Let's Gowex (GOW) (July 1, 2014, Report #1): "We visited M&A Auditores, S.L. office, which was more of an apartment, within an apartment complex (in an area that did not seem like an affluent area). The auditor's 'office' was an 8x10 room. There were very old looking laptops. We obtained the auditor's business card [followed by a picture of an old, battered cheap looking business card]. He did not have a business email address (which is strange), so he wrote his gmail account on the back of his business card."

Gotham City vs. Quindell PLC (QPP) (March 22, 2014, Report #1): "In short, Quindell appears to have made an undisclosed payment to CEO Rob Terry in the amount of £251,000 for a shell company that Quindell had sold to the same Rob Terry 2.5 years prior for £1. Despite all this, the transaction was not disclosed as a related party transaction."

Gotham City vs. Tile Shop (TTS) (November 14, 2013, Report #1): "We also found that Fumitake Nishi, who is the CEO's brother-in-law and a TTS employee, seems to send invoices from China, directed to none other than the man himself (sent to Tile Shop addresses). These set of facts would explain why Tile Shop's gross margins seem too good to be true and why recent DSI numbers seem unrealistically high."

Iceberg vs Noble (April 13, 2016) (Report # 11): "In August, PwC "reviewed" Noble's fair values. Noble's chairman, Richard Elman, commented: "I am delighted that we have received a strong validation of our processes and controls and shareholders can now be assured, as we have always known, that our balance sheet fairly reflects the value of our long term contracts." Noble's CEO, Mr Alireza, added "Does anyone in this room really believe that PwC are going to put their reputation on the line to rubber stamp the situation for a few hundred thousand dollars?" Six months later, Noble recognised a $1.1b impairment of the very same contracts that PwC had reviewed. How does Noble explain this? Was it a PR smoke screen?"

Gotham City vs. Blucora (Infospace) (BCOR) (February 2, 2014, Report #1): "A web security expert describes infospace as a 'fraudulent web search engine'."

Muddy Waters vs. OSI Systems (December 6, 2017, Report #1): "In October 2015, we announced we were short Telia Company (TELIA SS) because we believed the corruption issues in its business were significantly larger than had been disclosed, and that it would likely settle at $1 billion or more. Just three months ago (September 2017), Telia agreed to settle with the DOJ and assisting regulators for $966 million."

Overvaluation

Logical arguments about overvaluation

Citron vs. Netflix (NFLX) (June 14, 2018, Report #1): "Despite being the only FANG stock to generate negative cash flow, NFLX is now the most expensive stock on every valuation metric including EV/Sales. On 2019 EV/Sales, NFLX trades @ 8-9x vs. FB @ 7x vs. GOOGL @ 5x vs. AMZN @ 2-3x."

Citron vs. Netflix (NFLX) (June 14, 2018, Report #1): "Netflix continues to be the most expensive FANG despite being the only one that does not either generate major cash flow (FB) or have an impenetrable moat (GOOG, AMZN)."

Citron vs. Ambarella (AMBA) (June 19, 2015, Report #1): "Since their IPO, their revenue has doubled -- up 100% from $121 million in 2012 to $248 for the last twelve months. Meanwhile their enterprise value has gone up 6000% as the stock has gone from $6 to $126."

Citron vs. Grayscale Bitcoin Investment Trust (GBTC) (September 5, 2017, Report #1): "While GBTC is trading between 70-90% above the NAV of its holdings, GLD is at .0028%! Yes, you are reading that correctly."

Critical Operating Problems

Gotham City vs. Criteo (CRTO) (October 12, 2017, Report #3): "We believe Criteo's consent policy is in violation of the GDPR Regulation in Europe (May 2018)"

Iceberg vs Noble (July 21, 2015) (Report # 5): "At the time of writing, two of the five companies in the STI reserve list have a market cap larger than Noble's and four companies have a market cap larger than Olam/SIA Engineering. Noble is at risk of being dropped from the STI, which would have a negative impact on its share price."

Citron vs. j2 Global (JCOM) (March 10, 2016, Report #1): "At the core of this strategy, they rely specifically on a root U.S. patent 6208638, which they have taken to the courts numerous times to protect. Nowhere in its SEC filings, nor in the analysts' ridiculous models, is the truth reflected that this key patent, the protective moat which protects over 40% of j2's gross revenues, and likely well over 75% of its net income, expires as protection against any and all competition in just 13 months."

Citron vs. Intuitive Surgical (ISRG) (October 3, 2013, Report #5): "We observe a huge increase in the number of MAUDE [Manufacturer and user Facility Device Experience] reports as 2013 begins – 2,008 filings – a rate of over 400 a month, during the first five months of 2013 alone. This rate is more than five times higher than any prior period since the da Vinci was introduced. [Followed by graph]"

Citron vs. Angie's List (ANGI) (May 1, 2013, Report #1): "Isn't it amazing that a company that is in the business of monetizing online reputations from real people has such a horrible online reputation? Angie's List has one of the worst online reputations of any company we have ever seen."

OA9. Additional Figures About the WSSs' Attacks.

Online appendix OA9 presents additional figures about the WSSs' attacks.

Insert Figures OA2 to OA7 about here

OA10: Examples of Resonance of Rhetorical Strategies in the Press

We provide below extracts from press articles that show the impact of WSSs' rhetorical strategies in the press. We use the 14 second-order themes identified in Figure 1 to examine press articles.

Ethos

Expertise and Expertness

Glaucus vs. China Lumena, Correct previous anticipation: "Nearly all of the 11 other companies Glaucus has shorted are trading below where they were before the short-seller's reports were published -- some are under investigation and two delisted." ("Short-seller's track record bad news for Chinese recycler", Aries Poon, Dow Jones Institutional News, April 24, 2014, online).

Citron vs. Ambarella, Industry expertise. The journalist corroborates the industry expertise of the WSS: "Ambarella's rivals include Huawei's HiSilicon, Dahua Technology, Novatek, Axis Communications and Sony (NYSE:SNE), to name a few, Citron said". ("Ambarella stock plummets on short-seller's report", Patrick Seitz, Investor's Business Daily, June 22, 2015, online).

Trustworthiness, Veracity, Reliability

Muddy Waters vs. Ströer. The article shows that the WSS contributes frequently in reputed journals and has solid knowledge of business in China: "[Carson Block] has published guest articles in the Wall Street Journal, the Financial Times and the New York Times on issues relating to good corporate governance and market transparency. Before setting up Muddy Waters, he worked as an entrepreneur in China and as a lawyer in the Shanghai office of U.S. firm Jones Day." ("Worth a punt; investor pounces on advertising company Ströer", Peter Köhler; Robert Landgraf, Handelsblatt Global Edition, April 22, 2016, online).

Intentions, Intentions Toward the Receiver, Benevolence

Copperfield vs. OCZ Technology. The WSS is committed toward the public interest: "Copperfield stated. '(…) As such, we have sent our findings to the Securities and Exchange Commission asking for clarification on the multiple sets of numbers we have uncovered.' " ("Ocz Technology (OCZ) rebounds as analyst defends the free-falling stock", StreetInsider.com, April 20, 2011, online)

Gotham City vs. Let's Gowex. The WSS is defending investors' interest: "In its latest dossier, Gotham defended its tactics: 'Were Gotham City Research or someone else not to have come along, <u>the Gowex charade could have continued for few more years, costing investors [more]</u>,' it said." ("Bear raider Gotham targets Spanish wifi provider Gowex", Henry Mance, Financial Times, July 1, 2014, online).

Iceberg Research vs. Tibet Water. The WSS warns investors and asks for actions from market regulators: "The report <u>urged investors not to invest</u> in this company and <u>called for HKEx to take immediate disciplinary action</u>, asking HKEX not to delay action like it did on Hanergy TFP (…) and Huishan Dairy." ("Short Seller Iceberg doubts about Tibet Water figure frauds; Urges not to invest", AAStocks Financial News, October 4, 2017, online).

Activeness, Dynamism

Muddy Waters vs. Ströer. The WSS has passion and energy to share his views on TV: "Carson Block <u>regularly appears on U.S. television</u> as an economics commentator." ("Worth a Punt; Investor Pounces on Advertising Company Ströer", Peter Köhler; Robert Landgraf, Handelsblatt Global Edition, April 22, 2016, online)

Muddy Waters vs. Olam International. This shows combativeness: "Our research into Olam has been exhaustive, and we plan to resolutely stand by it regardless of any attempts you might make to discredit it or us" ("Olam hits back after Carson Block comments", Euroweek, November 23, 2012, online).

Personal Attractiveness, Personal Attraction

Gotham City vs AAC Technologies, Association with super heroes: "Named after the city where the comic superhero Batman fights crime, Gotham City Research was founded by New York-based Daniel Yu." ("Dark night for AAC as Gotham casts doubts on its profitability", Ben Ng, EJ Insight, May 22, 2017, online)

Muddy Waters vs. Olam International. The WSS obtains support from the journalist in this opinion article, "Rather than scorn Mr. Block, investors should <u>applaud his courage</u> – and encourage other commentators who are willing to probe the issues often left untouched by the Street's perennially bullish analysts." ("Investors pay when corporate critics are silenced", Sean Silcoff, The Globe and Mail, November 2012, p. B2).

Pathos

Feelings of Similarity Between targets and Other Fraud Cases

Citron vs. Valent. The article mentions other well-known fraud cases: "In its report, entitled 'Valeant: Could this be the Pharmaceutical Enron?'" ("Valeant plunges after Citron claims to have 'smoking gun' ", Theflyonthewall.com, October 21, 2015, online).

Glaucus vs. China Medical Technologies. Reference to other well-known fraud cases: " 'We believe that CMED has defrauded investors and that it is the next Longtop Financial (LFT) or Universal Travel Group (UTA),' the report said." ("China Medical (CMED) hit on negative report", StreetInsider.com, December 6, 2011, online)

Negative Feelings Against Target Firms

Citron vs. Shopify. The article refers to the feeling of disgust: "Citron called Shopify "a business dirtier than $HLF [Herbalife]' ", "Battleground: Baird still a buyer after Citron criticizes Shopify", Theflyonthewall.com, October 4, 2017, online).

Muddy Waters vs. Noble, The article repeats the WSS's argument that the business of the target firm is immorale: "Noble seems to exist solely to borrow and burn cash." (Noble Group dips as short seller Muddy Waters chimes in – Barron's blog", Shuli Ren, Dow Jones Institutional News, April 9, 2015, online).

Muddy Waters vs. Focus Media. The article repeats allegations of WSSs' about potentially unethical or illegal activities: "Focus has unjustifiably written down at least 21 of its acquisitions to zero, and then given them away for nothing, possibly for 'nefarious' reasons, Muddy Waters alleges". (China's Focus Media tumbles after firm accuses company of improprieties", Theflyonthewall.com, November 21, 2011, online)

Gotham City Research vs. Endurance International Group. The article summarizes the WSSs' allegations about illegal activities of the target firm: "Specifically, the report highlights, among other things: (1) related party transactions between the Company and entities tied to the Company's CEO Hari Ravichandran; (2) accounting irregularities relating to the Company's international business; and (3) evidence that the Company hosts terrorist-related websites along with malware/spam-related accounts."

("Endurance (…) Shareholder Alert --Andrews & Springer LLC is investigating Endurance International Group Holdings, Inc. for potential securities fraud", BusinessWire, April 28, 2015, online).

Citron vs. Fleecor. The article discusses unethical activities and repeat the WSS's metaphors: "In the report, Citron states: "FleetCor is actually a <u>predatory company by design</u>, whose core strategy is to <u>methodically rip off its customers</u>, using business practices and fees that are <u>designed to deceive</u>." '"Citron Research says FleetCor 'predatory by design,' sets $100 price target", Theflyonthewall.com, April 4, 2017, online).

Citron vs. Fleecor. The press article use the WSS's argument regarding the target firm's unethical management: "<u>Amazing</u> that Ron Clark has become one of the <u>highest paid CEO's in the United States</u> by devising a <u>business model that rips off small businesses, charities, and government agencies</u> as a core business strategy" ("Citron goes short on FleetCor", Elizabeth Balboa, Benzinga.com, April 4, 2017, online).

Negative feelings Against Executives of Target Firms

Copperfield vs. OCZ Technology. The press article mention that executives of the target firms are potentially former criminals: "Furthermore, OCZ (…) withheld information about <u>its CEO's criminal record</u>" ("OCZ Technology sinks after being accused of fraud", Theflyonthewall.com , April 20, 2011, online)

Glaucus vs. Blue Sky, The article explains that executives of the target firms are unethical individuals: "'This creates a feedback loop by which management can <u>enrich themselves simply by pushing for the mark-up in value of unrealized investments</u>,' the Glaucus report said." (Blue Sky rejects Glaucus short thesis as flawed", Vesna Poljak and Jonathan Shapiro, The Australian Financial Review, March 29, 2018, p. 49).

Role of Humor in Persuasion

Citron vs. Cyberdyne. The press article uses the same comparison of the target firms' R&D to R&D spent by a maker of noodles: "Pouring on the scorn, <u>Citron also mocks the company's investment in research and development</u>. Cyberdyne invested $31 million between 2012 and 2015, with Citron noting that <u>Nissin Foods - a maker of instant noodles (…) spends six times as much on R&D as Cyberdyne does per year</u>." ("Cyberdyne down 10% as short seller Citron says stock can fall 85% -- Barron's Blog", Robert Guy, Dow Jones Institutional News, August 15, 2016, online).

Gotham City vs. AAC Technologies, Use of irony by comparing the target firm to a top performing company (i.e., Google). Here, the journalist also repeats the format of the argument by keeping the capitalized word ‘AND’: “Short-seller Gotham City Research LLC on Thursday issued a report titled – ‘Why are reported profit margins higher AND smoother than Apple’s?’- questioning AAC Technologies’ use of dubious accounting to overstate and smoothen profits since 2014.” (“AAC Technologies’ stock plunges as much as 13.5% after short-seller’s negative report”, Dow Jones Institutional News, May 10, online).

“Muddy Waters vs. Duoyuan Global Water. The press article repeats the figures of speech “Muddy Waters said it caught DGW red handed forging its PRC audit report.” (“Muddy Waters LLC rates Duoyuan Global Water (DGW) ‘strong sell’, StreetInsider.com, April 4, 2011, online).

Glaucus vs. Tech Pro. The press article uses humor: “Well, here’s Glaucus in their own words; (…) For all the gory details, you can find the report here.” (“Glaucus takes aim at Tech Pro, says it’s worth nothing – Barron’s blog”, Robert Guy, Dow Jones Institutional News, July 27, 2016, online).

Citron vs. Exact Sciences. The article repeats the joke used by the WSS about the target firms’ core product: “Citron goes on to say that ‘Poop in a box will probably be a medical dinosaur in 4 years and the value of Exact’s only asset will be 0’.” “EXACT (…) alert: J&W investigates Exact Sciences; encourages investors to contact the Firm”, Dow Jones Institutional News, May 15, 2017, online).

Feelings of Fear

Citron vs. American Superconductor. The press describes the target firm’s product as coming from insane people conveying the idea of a climate of dangerousness: “Citron Research issues another negative piece on American Superconductor (…), calling the recent announcement of a $450 million contract to provide core electrical components for Sinovel’s wind turbines “lunacy”.’ ”. (“Citron Research issues follow-up negative report on American Superconductor”), StreetInsider.com, June 11, 2008, online).

Copperfield vs. Barrett Business Services. The press article conveys the feeling that the target firm will hurt investors soon: “Copperfield Research, a group of anonymous researchers and short-sellers, calls the company ‘a tick-tick-ticking time bomb’ ”. (Barrett Business Services Inc: Shares tank on report”, Reuters News, September 16, 2014, online).

Glaucus vs. Fullshare. The press repeats the argument that target firm’s executives cannot be trusted: “It believes that insiders have used the smokescreen of a rising stock price to secretly transfer some of the company's most valuable assets to the chairman and his family". (Glaucus says Fullshare Holdings (…) manipulated, ET Net News, April 24, 2017).

Logos

Flawed Business Model

Citron vs. 3D Systems. The article criticizes the target firm's product and technology. "It said 3D Systems has made no significant advances in 3D printing technology in the past five years and that it has recently rehashed consumer products with little change." ("Influential short-seller warns of bubble in 3D printers", Reuters News, February 14, 2013, online).

Citron vs. 2U. The article repeats arguments suggesting a flawed business model of the target firm 'Citron said 2U gets about 85 pct of revenue from only 4 clients in tiny market with dozens of competitors and assumes all financial risk, the inherent flaw of company' business model". ("2U Inc: Goldman raises to 'buy' – Streetinsider", Reuters News, October 16, 2015, online).

Copperfield vs. Ebix. The article uses the same criticisms against the target firms' business model "Its business model is predicated on two principals: tax arbitrage and dramatic cost cuts (headcount reductions and offshoring), neither of which is sustainable." (Ebix (EBIX) plummets after serious questions raised", StreetInsider.com, March 24, 2011, online).

Fraud, Irregularities, Misrepresentation, and Aggressive Accounting

Glaucus vs. Blue Sky. Aggressive accounting "Glaucus said it believes Blue Sky is 'significantly overstating' its fee earning assets under management". (Trading Day: live markets coverage; A2 Milk slumps on Nestle hit; plus analysis and opinion", David Rogers, The Australian, March 27, 2018, online).

Gotham City vs. Tile Shop. The press presents similar arguments of income-increasing earnings management "On November 14, 2013, Gotham City Research issued a report stating that Tile Shop's largest supplier (…), which accounts for 20% to 30% of Tile Shop's cost of goods sold, has been selling its product to Tile Shop at cost. As a result, Tile Shop has artificially inflated profits by over 200%".

Overvaluation

Citron vs. Alliance Data sytems. The journalist repeats argument supporting overvaluation: "Citron Research said the target on ADS is 50 pct near-term downside. '<u>Because it's more than half a bank, not a tech firm, the valuation models of Alliance are miles from reality</u>,' Citron said". ("U.S. stocks on the move", Reuters News, August 19, 2016, online).

Iceberg vs. Tutor Perini. The journalist repeats the price target of the WSS: "Iceberg Research (…) said shares in construction company Tutor Perini Corp <u>could tumble as much as 55 percent to $13 a share</u>." ("Iceberg Research says Tutor Perini stock could fall 55 percent", Reuters News, November 16, 2016).

Muddy Waters vs. American Tower. The journalist expresses the view of the WSS: "Mr. Block chose American Tower because <u>he is concerned it is overvalued</u>". (Muddy Waters is betting against Amer Tower", Juliet Chung, Dow Jones News Service, July 17, 2013, online).

Critical Operating Problems

Citron vs. Intuitive Surgical. The article mentions arguments suggesting evidence of low-quality products: "Intuitive Surgical (…) slid 6% in wicked volume after short-seller Citron Research <u>highlighted negative patient outcomes in certain applications of the company's robotic surgical equipment</u>." ("Stocks, volume cool off after prior session's gains", Donald H. Gold, Investor's Business Daily, December 19, 2012).

Glaucus vs. China Medical. The article repeats allegations of fraudulent operating activities: "(…) after a report from Glaucus Research Group alleged it of engaging in <u>improper business practices</u>". ("ADR report: shares slightly higher on European rescue reports", Matt Jarzemsky, Dow Jones News Service, December 6, 2011, online). "In a report on its website, research firm Glaucus Research Group alleged that China Medical's CEO '<u>orchestrated an acquisition to embezzle roughly $20-$23 million from the public company</u>'." ("China Medical shares plunge on fraud allegations", Reuters News, December 6, 2011, online).

OA11. Rhetorical Strategies of Target Firms

One of our interviewees referred to the “waves of adversity” that WSSs’ reports tend to generate. According to him, adversity manifests itself in threats of lawsuits (or actual lawsuits), physical threats, as well as being spied and being subject to computer hacking. In addition, markets tend to be skeptical of allegations of fraud toward established companies. As a result, WSSs reportedly need to make sure their research reports deal with the substantive.

> “Financial market participants are generally skeptical of any non-positive claim. What does that mean? The thing is, you need to look at things so thoroughly that it is beyond reproach and criticism. Because you are going to get criticized anyway. So (…) there is need for thoroughness, depth, and the reason is that the markets are inherently skeptical of adverse information.” (Daniel Yu, Gotham City, our interview)

In the other interview, we were provided with a synopsis of how targets tend to respond to WSSs’ allegations, and how market participants ultimately make sense of the interplay between allegations and counter-allegations.

> “Market participants will examine a number of things, including your reputation. Has the active short seller ever published a weak report? Market participants will also examine the target’s response. Yet companies involved in fraud always issue the same kind of response. Their statements are very general; they do not go into detail. They claim the allegations are false and they rely on many adjectives to do that but they never answer to allegations in a substantive way. Market participants know this. When hedge funds see this kind of superficial response, including a legal threat at the end of the response, they conclude that the listed company is just unable to address appropriately a public challenge. This implies that the short seller is right and then we see the stock value decreasing on markets..” (Arnaud Vagner, Iceberg, our interview)

In this appendix, we assess through rhetorical analysis the persuasiveness of target companies’ responses. In a way, our analysis casts some light on some important aspects of the above synopsis. Table OA4 presents the set of responses from target firms obtained from various sources (i.e., company statements, conference calls, press articles). In most cases, target firms do not respond to WSSs' allegations and choose to ignore their reports. Could this silence relate to the belief that responding to accusations may actually exacerbate their importance and increase the saliency of the report to other market participants, thereby leading to a stronger negative effect on the share price? Yet, a number of target firms do respond to WSSs' accusations and also rely on rhetorical strategies to defend their actions.[4]

In the same line as Figure 1 and drawing from Dacin et al. (2010, 1402) and on the basis of our empirical material, we developed Figure OA8 which presents the rhetorical strategies of target firms that we identified.

Insert Figure OA8 about here

Ethos (credibility)

Targets typically react to WSSs' allegations by challenging their credibility. In this subsection, we apply our theoretical framework based on credibility to target firms' responses.

Expertise/Expertness

In their reply, target companies primarily seek to rebut WSSs' allegations – instead of attempting to promote their own expertise foundations. Counter-allegations over matters of expertise take several forms. Some companies issue very long answers through formal statements. For example, Olam (November 29, 2012) replies point by point to Muddy Waters in a 45 page-long report entitled, "Olam dismisses Muddy Waters report findings". Noble Group also provides detailed technical answers to Iceberg in various statements and China Lumena provides in a statement (April 3, 2014) a technical point-by-point response to Glaucus. That being said, most target firms do not develop long and detailed replies.

[4] For the sake of brevity, we present in Online Appendix OA12 several relevant additional extracts of the material that we analyzed about the targets' responses to WSSs' accusations.

Several target firms question the extent to which their WSS is knowledgeable of their business model.

> Focus media holdings vs. Muddy Waters (November 22, 2011, Press article): "the report reflects a lack of understanding of the Company's business".

Orient Paper and St. Jude Medical, in reply to Muddy Waters, made a similar counter-claim, as well as SinoForest in reply to Muddy Waters and China Minzhong Food in reply to Glaucus. Some targets highlight specific mistakes supposedly made by the WSSs.

> Aurelius vs. Gotham City (April 2, 2017, Statement): "In its analysis, Gotham makes many fundamental intellectual mistakes: it compares apples with oranges, it confuses timelines, and it uses incomplete research".

Another discrediting tactic consists in recalling that many elements of the WSSs' argumentation are already common knowledge through past disclosure in the target firm's financial reports.

> China Medical Technologies vs. Glaucus (January 1, 2012, Press article): "The Company maintains that the allegations set forth in the Glaucus report (…) concern matters which have long been disclosed in the Company's annual reports and press releases, misrepresent the information they present (…) and fail to take into account business and commercial considerations relevant to the matters discussed in the Report".

Finally, we note that a few target firms provide a form of "weak reply" as they simply repeat what the target previously stated, for instance regarding earnings targets.

> Chemours vs. Citron (June 2, 2016, Press article): "Company reaffirms its 2016 outlook of adjusted EBITDA above 2015 performance".

Trustworthiness, Veracity, Reliability

In their responses, targets privilege to cast doubt on their WSSs' allegations instead of establishing their own trustworthiness. Accordingly, we found that targets often rely on derogatory wording to qualify and dismiss the content of WSSs' reports – such as "allegations", "inaccuracies", "speculations", "misleading speculations", "highly defamatory", "factually incorrect", "errors", "libelous", "scurrilous remarks", "malicious interpretations of events", "wrongly critical", "fabrications", "unsubstantiated claims", "farfetched", "tendentious", "groundless", "analysis fundamentally flawed", "not rooted in reality", "without merit", and "sloppy research".[5] Here is an example of a typical response from a target firm:

> China Huishan Dairy vs. Muddy Waters (December 16, 2017, Statement): "The Muddy Waters Report has made allegations which are <u>groundless and contains various misrepresentations</u>, <u>malicious and false allegations</u> and obvious <u>factual errors</u> of the Group which the Company wishes to clarify as set out below".

Beyond the terminology, some targets attempt to "restore the truth" by creating a website solely dedicated to the reply.

> National Beverage vs. Glaucus (September 29, 2016, Statement): "to be <u>as transparent as possible</u>, we have <u>created a website for this purpose</u>."

Finally, target firms call on independent/external/expert third parties to comfort their position and question the reliability of WSSs' claims.

> MDC Partners vs. Gotham City (May 23, 2016, Conference Call): "And frankly we issued $900 million of senior notes <u>underwritten by JPMorgan and Wells Fargo</u>. As you can imagine, they did substantial due diligence on these issues with their counsel and were comfortable in taking us to market".

Intentions, Intention Toward the Receiver, Benevolence

Many target firms strive to cast doubt on the benevolence and intentions of their WSS. They often mention that the research reports are intended to negatively impact stock prices for the benefit of the WSSs who, sometimes in their own words, should be assumed to have "a short position in all stocks" (e.g., Casino Group vs. Muddy Waters, December 21, 2015, Press article). Another illustration of this rhetorical strategy challenging the benevolence of Muddy Waters is provided below, where the target maintains that the WSSs' intent is to engender unfounded panic in order to benefit from a stock price decrease:

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[5] Ironically, the company (Sino-Forest) that used, in 2011, the phrase "sloppy research", against Muddy Waters, filed for bankruptcy protection in 2012. In 2017, the Ontario Securities Commission released a decision concluding that the company engaged in deceitful and dishonest conduct.

Olam vs. Muddy Waters (November 29, 2012, Statement): "We believe that the report's assertions are motivated to distract and create panic amongst our continuing shareholders, bond holders and creditors, to enable Carson Block and his associates to benefit from their short positions in Olam securities – a strategy of shouting fire in a crowded room".

In the following example, the target firm points out that Gotham City directly benefits from declining stock prices – associating the WSSs' behavior to speculation whose impact will affect negatively all existing stockholders.

Aurelius vs. Gotham City (April 2, 2017, Statement): "Gotham therefore had a vested interest in damaging the reputation of Aurelius in order to depress its share price and make significant speculative gains to the detriment of all shareholders".

Targets do not hesitate to invoke a potential conflict of interest.

Ströer vs. Muddy Waters (April 21, 2016, Statement): "The fact that Muddy Waters Capital already highlights at page 2 of their report that the funds that Muddy Waters Capital advice, are short in Ströer, shows clearly a conflict of interest".

Some target firms bring factual elements in trying to win the rhetorical battle opposing them to WSSs. In the following excerpt, the target points to one of its former employees being allegedly related to Iceberg – in order to question the genuine motivations of the WSSs.

Noble vs. Iceberg (February 27, 2015, Press article): "Noble Group believes a "disgruntled" ex-employee is behind the unknown research group that has accused the commodities trader of aggressive accounting and compared it to Enron".

Most frequently, though, the arguments provided by target firms do not significantly engage with the substantive domain, such as when targets maintain to have their interests aligned with those of stockholders.

Endurance vs. Gotham City (April 28, 2015, Statement): "Endurance senior executives still own a significant stake in the company and are deeply invested in its future success."

Activeness, Dynamism

Target firms' managers can show some dynamism when responding to allegations.

American Tower vs. Muddy Waters (July 18, 2013, Press article): "Mr. Taiclet [CEO] vigorously disputed Muddy Waters' allegations in the interview".

A few targets respond through the social networks, which sometimes point to some form of dynamism through the use of aggressive language.

Criteo vs. Gotham City (September 21, 2017, Twitter)[6]: "Well, you did not update your screenshot? Do you give credit to a short-sighted stock market raider?"

Irony is sometimes being expressed through some indication of dynamism.

MDC Partners vs. Gotham City (May 23, 2016, Conference call): "I surely would have loved to engage in discussion with the authors of that report or anyone else who has questions or concerns about our business."

Pathos (emotions)

Target companies also engage with the emotional domain in trying to persuade market participants. Again, the objective is to convince market participants to disregard the allegations from WSSs and reassure investors that the firm performs well and is well managed.

Feeling of High Quality Using Generic Terms

In response to WSSs' claims, target firms can use generic positive terms to stress the solidity of their business and financial disclosures. Such statements contrast with the very negative emotional appeals that the WSSs tend to make. For instance,

Motorola vs. Citron (February 7, 2017, Factiva) "We are proud of our longstanding relationships at the federal, state and local levels in the U.S. and with governments around the world. Our government contracts are the result of robust competitive bidding processes."

Executives employ positive adjectives to describe their firm's activities (e.g., "longstanding", "robust", "strong", "world-class", "market-leading") and defend their leadership. How could a firm have market-leading products and not be highly valued?

[6] Original tweet in French, responding to a journalist: "Mince tu n'as pas mis ton screenshot à jour? Tu donnes du crédit à un raider boursier à la petite semaine?" This tweet was identified in the WSS's report.

Accordingly, in the above excerpt, the firm claims that it deals and has good relationships with many international clients around the world. This conveys the idea that the firm must be doing well since it is (allegedly) highly trusted by so many important clients.

Feeling That the Target Company is the Victim of Unfair Accusations

In other statements, the target firm seeks to arouse the feeling that it is the victim of deceptive shenanigans striving to manipulate market participants. The idea is to promote the feeling of unfair accusations being made against the target firm. The following statements illustrate this emotion-based rhetorical strategy:

> Quindell vs. Gotham City (April 23, 2014, Press article) "The <u>allegation</u> that Quindell would qualify for a de-listing if the shares were trading in US markets' is <u>completely untrue and outrageous</u>."
>
> Olam vs. Muddy Waters (November 29, 2012, Press release) "<u>This time the mud won't stick</u>."

In the second example, using a play on words about the name of Muddy Waters, the target firm seeks to render the target firm dirty in the eyes of market participants – yet the target resolutely maintains that the WSSs will not succeed because the firm is fundamentally clean. Attempts to tarnish the firm's reputation just cannot succeed in altering the fundamentals of such a pure organization.

In other arguments, the target firms just counter-claim that the WSSs' arguments are simply incorrect and deceptive:

> Orient Paper vs. Muddy Waters (June 29, 2010 and July 17, 2010, Press releases) "Muddy Waters, a firm which <u>we consider to have demonstrated shoddy work processes and malicious intent</u>."

Feeling that the Target Company and Market Participants are in the Same "Team"

Some statements argue that investors (and other stakeholders) are on the same side as the target firm's management in facing accusations from the WSSs. The strategy is to isolate the short seller against other stakeholders by arousing the feeling that the target firm and its investors have been involved hand in hand, in a symbiotic relationship, for a very long time.

Appeal is therefore made toward the development of unity against what is depicted as an evil outsider. In the process, the target's management is represented as being committed to the defense of investors and other stakeholders against the alien WSSs.

> Noble Group vs. Iceberg (February 16, 2015, Press statement and Conference call): "Iceberg's attacks are <u>not only attacks on Noble but also an attack on every single one of our stakeholders</u> who have put their faith in us over the months, years, and in some cases decades. <u>I'm sure these allegations have caused stress for you and your organizations</u> and for that I would like to express my sincere regret."

In the above statement, the target firm also attempts to show empathy toward investors by deploring the stress current investors have endured as a result of the WSSs' unfounded allegations. This can be viewed, again, as an attempt to develop a sense of unity between top executives and historical stockholders in the former's quest to win the rhetorical battle against the WSSs.

Logos (logic)

Target firms rely on a number of logical arguments to support their case according to which the company is doing well and investors should remain confident about the ability of management to lead the firm's destiny. Logos is used in an attempt to alleviate investors' concerns and restore trust.

Statements About the "Track Record"

One logical argument is developed around the idea that a firm that showed strong performance in the past must be good and will be good in the future (and, therefore, it deserves to have an appropriate stock price), as if the intent is to capitalize on the appeal of the proverb, the past is often said to be an indication of what the future holds. The idea is that a firm's track record is sufficient to alleviate investors' concerns. In other words, past performance should be considered as a strong signal of current quality and future prospects.

J2 Global vs. Citron (March 11, 2016, Factiva) "We believe J2's historic performance speaks for itself and we have tremendous confidence in our businesses and their prospects."

Using Third Parties to Justify That There is no Problem

The target firm often stresses that it is verified and audited by credible high-quality third parties that validated their accounts. Using established third parties to deny accusations is a stylized rhetorical strategy based on logos. These third parties can be financial auditors or some independent committee. If reputed external parties say there is no problem then how can the WSSs be correct?

Asanko vs. Muddy Waters (May 31, 2017, Press Release) "The study was prepared by internationally recognized independent Qualified Persons as required under Canadian securities laws."

A variation of this strategy is to state that the firm takes the accusations very seriously and is in the process of establishing a "special" and/or "independent" committee to investigate the matter. The logic is that the target's management is confident that there is nothing wrong since this kind of committee typically has significant powers to investigate and report.

SinoForest vs. Muddy Waters (June 3, 2011 and June 14, 2011, Press release, Conference call) "Sino-Forest has set up a committee to review the allegations, staffed by three of its independent directors: William Ardell, James Bowland and James Hyde. The committee has hired Osler Hoskin & Harcourt LLP to advise it on legal matters, and will also appoint an independent accounting firm to look at the company's numbers."

Responding to WSSs' Specific Arguments

A relatively rare strategy consists in the attempt to answer more specifically the WSSs' accusations, i.e., trying to show that it is logically incorrect.

Aurelius Partners vs. Gotham City (April 2, 2017 and April 8, 2017, Company statements) "[A]s of December 31, 2016, AURELIUS has a strong capital base of 416.4m EUR in cash, equity of 486.5m EUR (equity ratio of 27%) and total assets of 1.8bn EUR. […] AURELIUS has acquired 77 businesses since 2006, only four of which (5.19%) went into insolvency while being part of AURELIUS-Group. This is a very small number considering AURELIUS' strategy of acquiring distressed assets. […]

AURELIUS' NAV [Net Asset Value] is fully justifiable and plausible. A simple calculation shows that the company's implied NAV/EBITDA multiple is 8.9x, in line with the range for non-listed small and mid-sized companies in Europe of 7-10x. […] AURELIUS' consolidated accounts are under IFRS while the annual accounts of subsidiaries are under local GAAP. To make matters worse, these local GAAPs differ from country to country."

In this statement, the target firm responds to three accusations using logical arguments: first that the number of insolvent businesses is actually low, second that the NAV [Net Asset Value] implies a reasonable multiple, and third that the WSSs' argument regarding improper accounting is incorrect due to different accounting standards.

OA12. Relevant Additional Extracts of the Material we Analyzed About the Targets' Responses To WSSs' Accusations

Ethos (credibility)

Muddy Waters vs. Orient Paper (July 6, 2010) (Press article): "Muddy Waters, […] has no paper industry experience that qualifies them to appraise the quantity of Orient Paper's scrap paper inventory,"

Muddy Waters vs. American Tower (July 18, 2013) (Press article): "Mr. Taiclet said Muddy Waters had overlooked another investment source for the deal which "gets you the full amount."

Muddy waters vs. China internet nationwide (December 21, 2017) (Press article):"irresponsible, baseless and libelous statements".

Muddy Waters vs. Casino Group (December 17, 2015) (Statement): "This accusatory report contains grossly erroneous allegations that the Group will answer in detail".

Glaucus vs. Fullshare (May 2, 2017) (Statement): "The Report comprises statements which are misleading, biased, selective, inaccurate and incomplete as well as groundless allegations and irresponsible speculations."

Copperfield vs. Ebix (March 26, 2011) (Press article): "He [Raina] described as 'frivolous' any implications of misrepresentations in the company's financial disclosures."

Gotham City vs. Aurelius (April 8, 2017) (Statement): "Also, Gotham does not take all "footnotes" (correct: "Notes") from the Annual Report into consideration. It is not surprising, therefore, that its findings are incorrect."

Gotham City vs. Criteo (September 21, 2017) (Press article): "Ensuring high traffic quality is a key component of Criteo's Business model. Criteo regularly conducts external audits with renowned third parties on its traffic which do no correlate with the accusations of Gotham City."

Gotham City vs. Ebix (September 23, 2013) (Press article): "Our principal auditors, as well as our statutory auditors in each of the foreign jurisdictions in which the Company conducts operations, have issued unqualified opinions with respect to the Company's financial statements."

Intentions, Intention Toward the Receiver, Benevolence

China Lumena vs. Glaucus (April 3, 2014, Statement): "As mentioned in the Glaucus Report, Glaucus is a short seller and will make money if the price of the Company's shares declines."

Pathos (emotions)

Feeling of High Quality Using Generic Terms

High quality of their firm

Ebix vs. Gotham City (September 23, 2013, Business Wire) "Ebix has a strong balance sheet, a world class sales force and market-leading products."

TeliaSonera vs. Muddy Waters (November 15, 2015, Press article, Conference call) "let me make a couple of comments on the recent developments and the recent noise that we have had regarding our accounting standards"

Feeling that the Target Company Is the Victim of Unfair Accusations

Casino Group vs. Muddy Waters (December 17, 2015, Press release) "with the obvious intent to harm Casino, its employees and its shareholders." Attacking behavior (see explanation in MW report 3).

China MediaExpress Holdings vs. Muddy Waters (February 3, 2011, Press release) "To allay the concerns of those shareholder who have read the blog posts of the short sellers and wondered if there is any basis to their statements, management has provided below a preliminary review of the actual inaccuracies and misleading innuendo employed by these bloggers for their self-benefit".

Incorrect and deceptive arguments used by WSSs

St Jude Medical vs. Muddy Waters (August 30, 2016 and October 16, 2016, Press release, Conference call) "They have engaged in, and we expect them to continue to engage in, tactics that sensationalize, confuse and misrepresent, all towards achieving their own personal financial goals".

Feeling that the Target Company and Market Participants Are in The Same 'Team'

Target firm and investors act hand in hand

SinoForest vs. Muddy Waters (June 3, 2011 and June 14, 2011, Press release, Conference call): "Many of our stakeholders endured losses while Muddy Waters benefited from the significant drop in the value of their investments which it precipitated."

St Jude Medical vs. Muddy Waters (August 30, 2016 and October 16, 2016, Press release, Conference call): "The allegations made by Muddy Waters and MedSec are irresponsible, misleading and unnecessarily frightening patients."

Logos (logic)

Statements About The 'Track Record'

Criteo vs. Gotham City (September 21, 2017, The Drum and Twitter) "90%+ customer retention rate" is evidence of the value it provides for clients."

Quindell vs. Gotham City (April 23, 2014, Factiva) "[T]o the Company's knowledge no one has made any significant money out of shorting Quindell's stock whereas private individuals and institutions have made significant money from investing in it'"

Using Third Parties to Justify That There Is No Problem

Use of reputed external parties

TeliaSonera vs. Muddy Waters (November 15, 2015, Press release, Conference call) "So there are no material misstatements and that's signed off by our auditor Deloitte."

New Oriental Education vs. Muddy Waters (October 29, 2012, Press Article and Conference Calls) "The Special Committee's investigation (…) concluded no substantive basis for the main Muddy Waters allegations."

American Tower vs. Muddy Waters (July 18, 2013, Press Release) "American Tower (…) said its accounts were audited"

Tibet water vs. Iceberg (October 4, 2017, Press Release) "Tibet Water confirms that each of the consolidated financial statements of the group for the fiscal years of 2011, 2012, 2013, 2014, 2015 and 2016 have been audited by PricewaterhouseCoopers."

Olam vs. Muddy Waters (November 29, 2012, Press release) "As stated by us in the past and also reported by many independent experts in the media, our accounting practices are fully compliant with international accounting standards."

China Internet Nationwide (December 21, 2017, Press article) "China internet nationwide financial services inc. announces formation of independent special committee to conduct independent review and investigation into Muddy Waters allegations."

Focus Media Holdings vs. Muddy Waters (November 22, 2011, Conference Call and Press article) "Focus Media also said it would recommend the audit committee to engage a third-party survey firm to conduct an independent accounting of its LCD screens, poster frame and in-store networks to confirm its claims."

OA13. Event Study: Investors' Reaction Surrounding the Disclosure of Target Firms' Responses

We examine whether target firms are able to convince investors through their reactions. Table OA8 presents the CAR surrounding 79 responses to WSSs' accusations for which we were able to identify a specific date. We compute CAR around different time windows surrounding the disclosure dates. Table OA8 shows that CAR surrounding target firms' responses are not significantly different from 0. We find a statistically insignificant average CAR of +0.32% in the window [-1; +1] suggesting that target firms do not convince investors.

Insert Table OA8 About Here

Table OA9 provides a similar analysis for each WSS. Again, we find that, on average, target firms do not positively influence stock prices with their responses. We even find that CAR surrounding responses to Citron's allegation are negative: -4.4% (significant at less than 5%, two-sided).

Insert Table OA9 About Here

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FIGURE OA1

Citron vs. Mallinckrodt (MNK) (June 5, 2017, Report #2) - Association of target firm with two well-known frauds

FIGURE OA2

Muddy Waters vs. Olam (November 27, 2012, Report #2)

FIGURE OA3

Citron vs. j2 Global (March 10, 2016, Report #1)

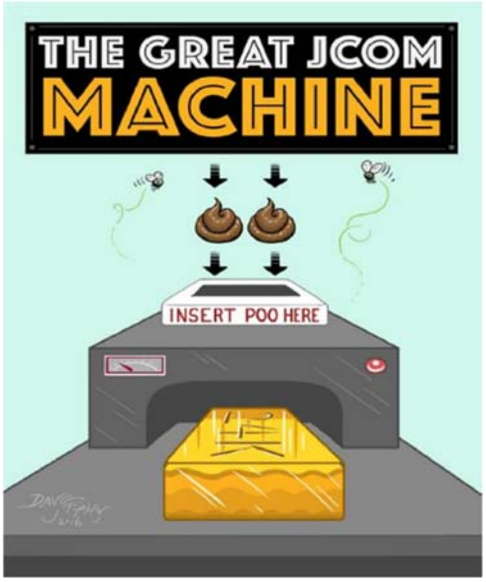

FIGURE OA4

Citron vs. Mallinckrodt (November 16, 2016, Report #1)

FIGURE OA5

Copperfield vs. Tucows (January 8, 2018, Report #1)

FIGURE OA6

Muddy Waters vs. NQ Mobile (October 24, 2013, Report #1)

NQ's Chief Security Architect testing NQ's encryption.

FIGURE OA7

Glaucus vs. Prince Frog International (October 16, 2013, Report #1)

The End

FIGURE OA8

Data structure – Targets' responses (Part 1)

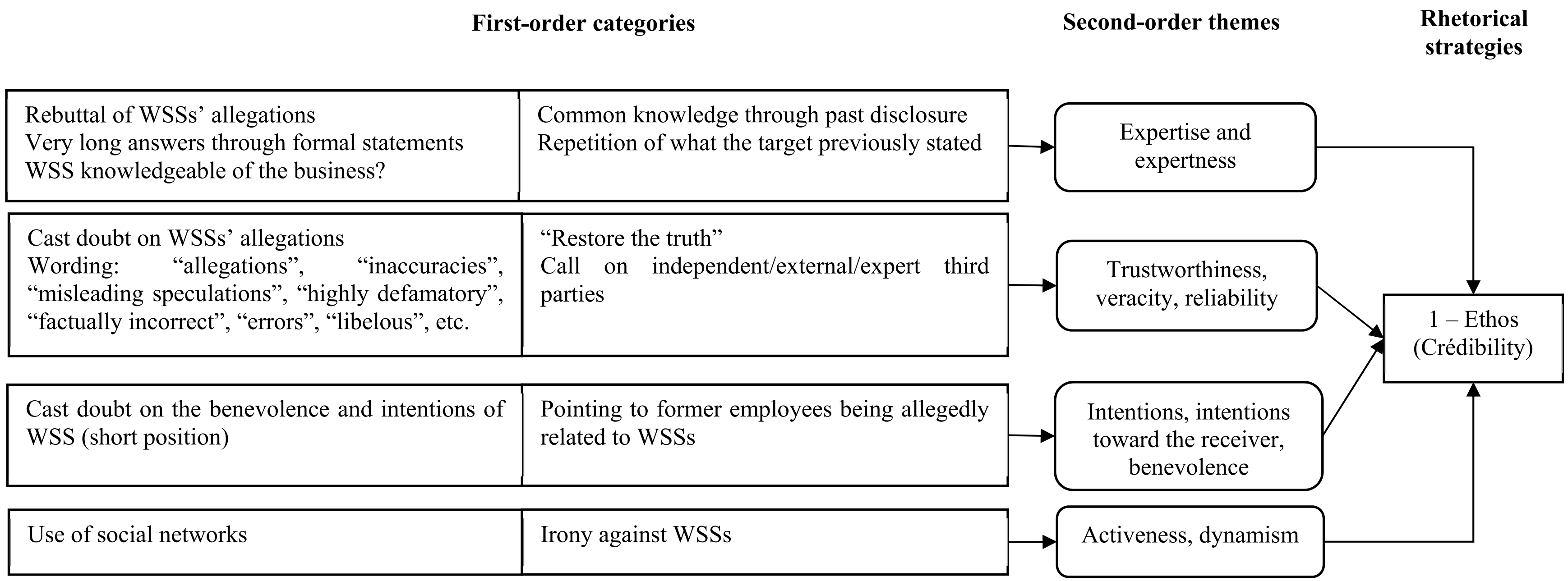

FIGURE OA8

Data structure – Targets' responses (Part 2)

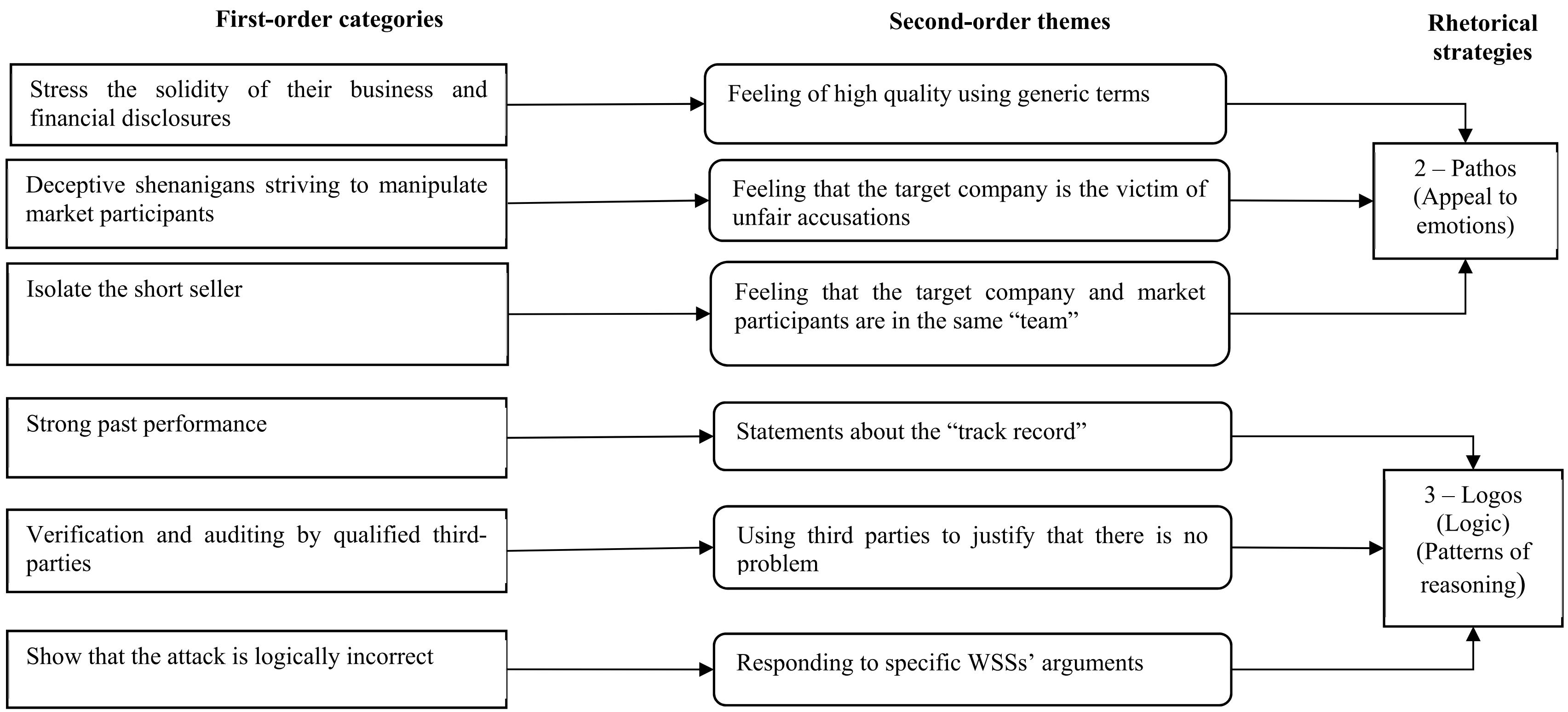

TABLE OA1

Theoretical Framework on Rhetoric

Rhetorical srategies	Components	Definitions
Ethos (character, credibility)	Expertness, expertise	Knowledge of the subject, “this expertise may be in the form of quantity of pertinent information, degree of ability or skill, or validity of judgment” (Giffin 1967, 107), “extent to which a speaker is perceived to possess knowledge relevant to the issue and is thus capable of making correct assertions” (Rhee and Fiss 2014, 1739-1740)
	Trustworthiness, veracity, reliability	“Dependability, predictability, or consistency” (Giffin 1967, 107), “degree to which audiences believe that the assertions the speaker makes reveal what he or she knows” (Rhee and Fiss 2014, 1739-1740), “perceived willingness of the source to make value assertions” (McCracken 2005, 98), “honesty, integrity and believability of an endorser as perceived by a target audience” (Erdogan et al. 2001, 40)
	Intentions, intention toward the receiver, benevolence	“Attitude toward the well-being of the receiver” (McCroskey and Young 1981, 25), “specific values having as their core objective the preservation and enhancement of the welfare of others” (Schwartz 1992; Choi and Wang 2007, 348), “intentions toward the listener perceived by him as favorable or unfavorable” (Giffin 1967, 107)
	Activeness, dynamism	“Dynamism of the speaker as perceived by the listener, that is, communication behavior which appears to be more active than passive” (Giffin 1967, 107)
	Personal attractiveness, personal attraction	“Personal attraction of the speaker for the listener” (Giffin 1967, 107)
Pathos (Appeal to emotions)		Emotional influence of the speaker on the audience. Examples of emotions are anger, pity, fear and their opposites (Aristotle 350 B.C.E., 2004, 60). “Pathos is aimed at influencing audience attitudes by evoking an emotional response. It involves the use of figurative language, particularly metaphor” (Brennan and Merkl-Davies 2014, 608). Pathos can be developed by using (1) vivid, concrete language, (2) emotionally loaded language, (3) examples that evoke certain emotions, and (4) an emotional tone (Carroll 2013, 84-85)
Logos (Logic – Patterns of reasoning)		Logos can be demonstrated by (1) using theoretical, abstract language, (2) using historical examples or analogies, (3) including definitions, (4) including factual data and statistics, and (5) by using quotations, including citations from experts or authorities (Carroll 2013, 85)

TABLE OA2

Interpretation of Whistleblowing Short Sellers' Names

WSS	Explanation/meaning of the name	Source(s) for explanation
Citron	Andrew Left initially launched his research firm under the brand StockLemon.com whose name was obviously referring to the idiom "lemon" that refers to low quality cars and was used by Akerlof (1970) in his seminal article on information asymmetry. Akerlof (1970) explains that "bad cars […] in America are known as 'lemons' ". Nowadays, "lemons" refer to "something (…) that is unsatisfactory or defective" (https://www.merriam-webster.com/dictionary/lemon) or something that is found to be defective only after its purchase. The name of Andrew Left's entity was later changed to "citron" which is the translation of the word "lemon" in several languages (e.g., Czech, Danish, French, Swedish).[7]	Our interpretation. (La Roche 2015)
Copperfield	Name based on David Copperfield, the American magician/illusionist. The choice of this name may refer to various "tricks" by target firms to provide an "illusion" of value.	Our interpretation, strengthened by the use of the image below on Copperfield's website which represents a hat and a magic wand.[8] 
Glaucus Group	This organization's name has a double meaning: 1) The first meaning is from the Greek mythology: "According to Greek mythology, Glaucus, a god of the sea blessed with the power of prophecy, frequently came to the rescue of distressed sailors and fishermen. We founded Glaucus Group California, LLC in 2011 to help investors navigate treacherous financial waters in search of great investment opportunities". "Glaucus, provided pivotal assistance to Jason and the Argonauts in their quest for the Golden Fleece." 2) Glaucus Group also refers to the Glaucus Atlanticus, a small sea slug with a painful sting who prey on other larger pelagic organisms.[9]	https://glaucusresearch.com/ Glaucus report on Gulf Resources (April 26, 2011, Report #1) Several images of Glaucus Atlanticus are shown on Glaucus Research website. 

[7] Other languages use a word based on the same root as "citron", e.g., citroen (Dutch), Zitrone (German), citronu (Letton), citrina (Lithuanian), sitron (Norwegian), citrón (Slovakian).
[8] https://seekingalpha.com/author/copperfield-research/articles#regular_articles. (Last accessed: April 17, 2019)
[9] Srinivasulu et al. (2012, 52).

Gotham City	Based on the character of Batman.	Our interpretation, strengthened by the following quotation: "It is not who we are underneath, but **what we do** that defines us – Gotham City": end of the second report on Gowex (emphasis in the original). Original sentence in the movie "Batman begins": "It's not who I am underneath, but what I do that defines me".[10]
Iceberg	An iceberg is "a large floating mass of ice detached from a glacier" (https://www.merriam-webster.com/dictionary/iceberg). Possible reference to the "visible part of the iceberg".	Our interpretation
Muddy Waters	"He needed a good name for his nascent firm to lend it some credibility. Block recalled a Chinese proverb: 'Muddy waters make it easy to catch fish' ('浑水摸鱼' [Hun Shui Mo Yu]). In other words, opacity creates opportunities to make money. This way of thinking has unfortunately become endemic in global capital markets." "He explains by way of the firm's name, Muddy Waters. It's derived from a Chinese phrase that says the easiest way to catch fish is by muddying the water, forcing it to the surface". In Chinese, this proverb means to "take advantage of the circumstances to make a profit".	(Teitelbaum 2015) http://www.quoteswise.com/carson-block-quotes.html (Last accessed: April 17, 2019) (Barboza and Ahmed 2011)

[10] In our interview, Daniel Yu (Gotham City) confirmed our interpretation: "Yes. Batman was the inspiration. I have personally been a fan of Batman for many years. And second is, I am also from New York. (…) Gotham City is often a code name for Manhattan, for New York City. Gotham City is therefore characterized with a double entendre. So, (…), being a New Yorker as well as believing in justice, I thought Batman was an appropriate symbol for (…) the art of short selling. (…) And (…) like young Bruce Wayne [whose parents were murdered] I suffered immense trauma in 2008, namely I had purchased shares of (…) Freddie Mac [which collapsed during the financial crisis]".

TABLE OA3

Financial Characteristics of Target Firms Before The First Report

	N	Mean	St. Dev	1st Q.	Median	3rd Q.
ROA_{t-1}	159	-0.0807	0.4421	-0.0499	0.0491	0.1194
$EBITDA\ MARGIN_{t-1}$	146	-0.7401	3.3418	0.0096	0.1844	0.3298
LEV_{t-1}	159	0.1853	0.2303	0.0000	0.0893	0.3095
MTB_{t-1}	140	3.6642	4.9965	1.4579	2.7202	5.4248
$CASH_{t-1}$	127	0.2184	0.2192	0.0638	0.1432	0.2607
MV_{t-1} *(million USD)*	149	3,701.82	9,156.89	281.22	728.42	2,146.16
$SIZE_{t-1}$	159	12.8617	2.3534	11.7688	12.9372	14.1423

ROA_{t-1} = Income before extraordinary items of the fiscal year before the first WSS report divided by lagged total assets; $EBITDA\ MARGIN_{t-1}$ = EBITDA divided by total revenues of the fiscal year before the first WSS report; LEV_{t-1} = Total debt divided by total assets at the end of the fiscal year prior to the first WSS report; MTB_{t-1} = Market-to-book ratio of equity at the end of the fiscal year prior to the first WSS report; $CASH_{t-1}$ = Cash and cash equivalent divided by total assets at the end of the fiscal year prior to the first WSS report; MV_{t-1} = Market value of equity at the end of the fiscal year prior to the first WSS report; $SIZE_{t-1}$ = Natural logarithm of total assets at the end of the fiscal year prior to the first WSS report.

TABLE OA4

Event study: Cumulative Abnormal Returns Surrounding Disclosure of WSSs' Reports

Panel A: Event study surrounding the issuance of WSSs' reports (First report)

CAR	N	Mean	Sig	St. Dev	1st Q.	Median	3rd Q.
[-40; -1]	153	0.1280	***	0.5408	-0.1358	0.0057	0.2178
[-40; -21]	153	0.0466	***	0.1917	-0.0522	0.0119	0.1180
[-20; -11]	155	0.0405	***	0.1725	-0.0476	0.0058	0.0882
[-10; -6]	155	0.0120		0.1199	-0.0515	-0.0029	0.0628
[-5; -2]	155	0.0185		0.1447	-0.0527	-0.0129	0.0484
[-1; 0]	155	-0.0819	***	0.1319	-0.1385	-0.0620	-0.0134
[-1; +1]	155	-0.1123	***	0.1709	-0.1783	-0.0811	-0.0174
[+1; +5]	155	-0.0210	*	0.1345	-0.0760	-0.0136	0.0430
[+6; +20]	155	-0.0005		0.1405	-0.0631	0.0017	0.0605
[+21; +40]	154	-0.0355	*	0.2242	-0.1011	-0.0041	0.0730

***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using a two-tailed test.

Panel B: Event study surrounding the issuance of WSSs' reports (First report) (by WSS)

CAR	N	Mean	Sig	St. Dev	1st Q.	Median	3rd Q.
Citron							
[-1; +1]	92	-0.0813	***	0.1563	-0.1479	-0.0609	-0.0062
Copperfield							
[-1; +1]	15	-0.0983	***	0.0650	-0.1641	-0.0876	-0.0338
Glaucus							
[-1; +1]	19	-0.1718	***	0.1847	-0.2205	-0.1046	-0.0667
Gotham City							
[-1; +1]	8	-0.2728	**	0.2406	-0.4166	-0.1647	-0.1033
Iceberg							
[-1; +1]	3	-0.0659	*	0.0318	-0.0866	-0.0817	-0.0292
Muddy Waters							
[-1; +1]	18	-0.1557	***	0.2156	-0.2640	-0.0479	-0.0170

***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using a two-tailed test.

Panel C: Event study surrounding the issuance of WSSs' reports (multivariate analysis)

	(1)	(2)	(3)	(4)	(5)
	CAR[-1; +1]	*CAR[-1; +1]*	*CAR[-1; +1]*	*CAR[-1; +1]*	*CAR[-1; +1]*
First_Report	-0.077***	-0.076***	-0.080***	-0.075***	-0.098***
	(-4.93)	(-4.59)	(-4.38)	(-3.98)	(-4.28)
$SIZE_{t-1}$				0.006	-0.002
				(0.52)	(-0.13)
ROA_{t-1}				0.013	0.047
				(0.40)	(1.03)
MTB_{t-1}				0.002	-0.000
				(0.93)	(-0.09)
LEV_{t-1}				-0.016	0.051
				(-0.32)	(0.88)
WSS FE	No	Yes	Yes	Yes	Yes
Year FE	No	No	Yes	Yes	Yes
Country FE	No	No	Yes	Yes	No
Industry FE	No	No	No	No	Yes
Observations	337	337	337	297	297
Adj. R^2	0.0588	0.0789	0.1356	0.1248	0.1207

***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using a two-tailed test.

First_Report = 1 if the WSS publishes for the first time a report targeting the firm; The variables *Copperfield*, *Glaucus*, *Gotham*, *Iceberg*, and *MWR* (Muddy Waters Research) take the value of one if the report is published by these firms respectively, and 0 otherwise; $SIZE_{t-1}$ = Natural logarithm of total assets at the end of the fiscal year prior to the first WSS report; ROA_{t-1} = Income before extraordinary items of the fiscal year before the first WSS report divided by lagged total assets; MTB_{t-1} = Market-to-book ratio of equity at the end of the fiscal year prior to the first WSS report; LEV_{t-1} = Total debt divided by total assets at the end of the fiscal year prior to the first WSS report; FE = Fixed effect. t-statistics are presented in parentheses below each coefficient and are based on standard errors clustered at the firm level. Abnormal returns (*AR*) are computed by subtracting the S&P 500 return from the target firm stock returns of day *t*. Cumulative abnormal returns (CAR) are computed by summing abnormal returns from day *t-k* to *t+l*.

Panel D: Long-term cumulative abnormal returns following the publication of the first WSSs' research report

CAR	N	Mean	Sig	St. Dev	1st Q.	Median	3rd Q.
Two months after the attack	154	-0.1452	***	0.2964	-0.2582	-0.0828	0.0223
Three months after the attack	153	-0.1695	***	0.3464	-0.3035	-0.1249	0.0259
Six months after the attack	149	-0.2260	***	0.5014	-0.4087	-0.1513	0.0556

***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using a two-tailed test.

Panel E: Long-term cumulative abnormal returns following the publication of the first WSSs' research report (by WSS)

CAR	N	Mean	Sig	St. Dev	1st Q.	Median	3rd Q.
Citron							
Two months after the attack	91	-0.1026	***	0.2578	-0.2277	-0.0453	0.0637
Three months after the attack	90	-0.1151	***	0.3139	-0.2721	-0.0931	0.0813
Six months after the attack	88	-0.1858	***	0.5248	-0.3825	-0.0797	0.0921
Copperfield							
Two months after the attack	15	-0.2064	***	0.1959	-0.3566	-0.1702	-0.0600
Three months after the attack	15	-0.2224	***	0.2218	-0.3035	-0.2288	-0.0357
Six months after the attack	15	-0.1862	*	0.3487	-0.3930	-0.1513	0.0528
Glaucus							
Two months after the attack	19	-0.2911	**	0.4684	-0.4550	-0.1385	0.0069
Three months after the attack	19	-0.3654	***	0.4834	-0.5656	-0.2695	0.0259
Six months after the attack	18	-0.2641	**	0.5091	-0.5081	-0.2927	0.0662
Gotham City							
Two months after the attack	8	-0.2403	**	0.2201	-0.2649	-0.2184	-0.0824
Three months after the attack	8	-0.2777	**	0.2288	-0.3637	-0.2567	-0.1350
Six months after the attack	8	-0.3824	***	0.3320	-0.6143	-0.3844	-0.2355
Iceberg							
Two months after the attack	3	-0.0784		0.1588	-0.2354	-0.0820	0.0821
Three months after the attack	3	-0.0567		0.2181	-0.2984	0.0028	0.1255
Six months after the attack	3	-0.2372		0.3191	-0.6006	-0.1081	-0.0029
Muddy Waters							
Two months after the attack	18	-0.1241		0.3312	-0.2258	-0.0133	0.0455
Three months after the attack	18	-0.1608		0.4160	-0.2829	-0.0880	0.0382
Six months after the attack	17	-0.3530	**	0.5863	-0.4249	-0.1741	-0.0734

***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using a two-tailed test.

TABLE OA5

Status in Datastream of Target Firms in the Summer of 2018

Panel A: Target firm status following the attack (in August 2018)

	N	Mean	St. Dev	1st Q.	Median	3rd Q.
DEAD	171	22.8%	42.1%	0.0%	0.0%	0.0%
DELISTED	171	19.9%	40.0%	0.0%	0.0%	0.0%
SUSPENDED	171	3.5%	18.5%	0.0%	0.0%	0.0%
Total	171	46.2%				

Panel B: Target firm status following the attack (in August 2018) by WSS

	N	Mean	St. Dev	1st Q.	Median	3rd Q.
Citron						
DEAD	100	27%	45%	0%	0%	100%
DELISTED	100	24%	43%	0%	0%	0%
SUSPENDED	100	0%	0%	0%	0%	0%
Total		51%				
Copperfield						
DEAD	17	12%	33%	0%	0%	0%
DELISTED	17	12%	33%	0%	0%	0%
SUSPENDED	17	0%	0%	0%	0%	0%
Total		24%				
Glaucus						
DEAD	20	15%	37%	0%	0%	0%
DELISTED	20	15%	37%	0%	0%	0%
SUSPENDED	20	20%	41%	0%	0%	0%
Total		50%				
Gotham City						
DEAD	9	22%	44%	0%	0%	0%
DELISTED	9	11%	33%	0%	0%	0%
SUSPENDED	9	0%	0%	0%	0%	0%
Total		33%				
Iceberg						
DEAD	3	33%	58%	0%	0%	100%
DELISTED	3	0%	0%	0%	0%	0%
SUSPENDED	3	0%	0%	0%	0%	0%
Total		33%				
Muddy Waters						
DEAD	22	18%	39%	0%	0%	0%
DELISTED	22	18%	39%	0%	0%	0%
SUSPENDED	22	9%	29%	0%	0%	0%
Total		45%				

TABLE OA6

Number of Unique Target Firms Per Industry

Industry (ICB)	No.	Pct	Industry (ICB)	No.	Pct
Aerospace	1	0.3%	Heavy Construction	1	0.3%
Alternative Fuels	1	0.3%	Industrial Machinery	4	1.0%
Apparel Retailers	1	0.3%	Insurance Brokers	1	0.3%
Automobiles	1	0.3%	Internet	8	2.1%
Banks	3	0.8%	Iron & Steel	1	0.3%
Biotechnology	6	1.6%	Media Agencies	3	0.8%
Broadcast & Entertain	1	0.3%	Medical Equipment	6	1.6%
Building Mat.& Fix.	2	0.5%	Medical Supplies	1	0.3%
Bus.Train & Employmnt	1	0.3%	Mobile Telecom.	1	0.3%
Business Support Svs.	2	0.5%	NA	1	0.3%
Clothing & Accessory	1	0.3%	Nonferrous Metals	1	0.3%
Coal	3	0.8%	Other Inv. Trusts	1	0.3%
Commodity Chemicals	2	0.5%	Personal Products	2	0.5%
Computer Hardware	3	0.8%	Pharmaceuticals	6	1.6%
Computer Services	4	1.0%	Publishing	1	0.3%
Consumer Electronics	1	0.3%	Real Estate Hold. Dev	1	0.3%
Consumer Finance	2	0.5%	Real Estate Services	1	0.3%
Divers. Industrials	1	0.3%	Recreational Products	1	0.3%
Dur. Household Prod.	3	0.8%	Recreational Services	1	0.3%
Elec. Office Equip.	1	0.3%	Renewable Energy Eq.	4	1.0%
Electrical Equipment	7	1.8%	Semiconductors	4	1.0%
Electronic Equipment	3	0.8%	Soft Drinks	3	0.8%
Exploration & Prod.	3	0.8%	Software	5	1.3%
Farm Fish Plantation	1	0.3%	Spec.Consumer Service	8	2.1%
Financial Admin.	2	0.5%	Specialty Chemicals	2	0.5%
Fixed Line Telecom.	2	0.5%	Specialty Finance	5	1.3%
Food Products	6	1.6%	Specialty Retailers	5	1.3%
Food Retail.Wholesale	1	0.3%	Telecom. Equipment	4	1.0%
Forestry	2	0.5%	Travel & Tourism	1	0.3%
Furnishings	2	0.5%	Unquoted equities	7	1.8%
General Mining	1	0.3%	Waste. Disposal Svs.	5	1.3%
Gold Mining	2	0.5%	Water	1	0.3%
Healthcare Providers	3	0.8%	Total	171	100.0%

TABLE OA7

Descriptive Statistics - Responses of Targeted Companies

Whistleblowing Short Seller	Company statements	Conference calls analyzed	(including conference calls with responses)	Press articles analyzed	Total number
Citron	4	15	(2)	22	
Copperfield	0	8	(0)	12	
Glaucus Group	17	3	(1)	10	
Gotham City	3	9	(2)	36	
Iceberg	6	5	(4)	23	
Muddy Waters	14	16	(6)	100	
Total	44	56	(15)	203	303

TABLE OA8

Event study: Cumulative Abnormal Returns Surrounding Target Firms' Responses to WSSs' Research Report

CAR	N	Mean	St. Dev	1st Q.	Median	3rd Q.
[-10; -6]	79	-0.0190	0.1004	-0.0379	-0.0085	0.0148
[-5; -2]	79	-0.0104	0.0889	-0.0206	0.0012	0.0213
[-1; 0]	79	0.0063	0.1476	-0.0144	-0.0011	0.0133
[-1; +1]	79	0.0032	0.1447	-0.0330	-0.0020	0.0134
[+1; +5]	79	0.0065	0.1490	-0.0342	-0.0017	0.0271
[+6; +20]	79	0.0095	0.1480	-0.0323	0.0137	0.0837

***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using a two-tailed test.

Abnormal returns (*AR*) are computed by subtracting the S&P 500 return from the target firm stock returns of day *t*. Cumulative abnormal returns (CAR) are computed by summing abnormal returns from day *t-k* to *t+l*.

TABLE OA9

Event Study: Cumulative Abnormal Returns Surrounding Target Firms' Responses to WSSs' Research Report by WSS

CAR	N	Mean		St. Dev	1st Q.	Median	3rd Q.
Citron							
[-1; +1]	20	-0.0440	**	0.0861	-0.0561	-0.0098	0.0036
Copperfield							
[-1; +1]	3	-0.0205		0.0198	-0.0415	-0.0177	-0.0022
Glaucus							
[-1; +1]	19	0.0468		0.2567	-0.0351	-0.0001	0.0074
Gotham City							
[-1; +1]	8	0.0183		0.1045	-0.0314	0.0066	0.0416
Iceberg							
[-1; +1]	6	-0.0045		0.0372	-0.0275	-0.0050	0.0171
Muddy Waters							
[-1; +1]	23	0.0082		0.0785	-0.0142	-0.0017	0.0282

***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using a two-tailed test.

Abnormal returns (*AR*) are computed by subtracting the S&P 500 return from the target firm stock returns of day *t*. Cumulative abnormal returns (CAR) are computed by summing abnormal returns from day *t-k* to *t+l*.