

**International
Institute of
Social Studies**

Erasmus

**MEDIA CREDIBILITY AND VOTER PENALISATION OF EXPOSED CORRUPT
POLITICIANS IN LATIN AMERICA**

A Study Focused on Social Media and Sustained Lack of Freedom of Expression

A Research Paper presented by:

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In partial fulfilment of the requirements for obtaining the degree of
MASTER OF ARTS IN DEVELOPMENT STUDIES

Major: ECD

Specialisation: Econometric Analysis

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The Hague, The Netherlands

November 2022

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List of Acronyms

ATE	Average Treatment Effects
ATET	Average Treatment Effects on the Treated
CAF	Corporación Andina de Fomento
ECAF 2018	Encuesta Corporación Andina de Fomento 2018
FEASI	Freedom of Expression and Alternative Sources of Information
HTE	Heterogeneous Treatment Effects
RCT	Randomised Control Trial

Abstract

The media landscape in Latin America is changing due to two influential factors. Firstly, freedom of expression has diminished for the past ten years and is projected to continue declining. Secondly, social media is rising as one of the most popular media channels to inform oneself about politics. This paper explores the consequences these trends have on the credibility audiences attribute to news exposing corrupt politicians and their willingness to penalise the exposed politicians in elections. The study focuses on ten Latin American cities and employs a randomised control trial using experimental data embedded in a survey. Through this method, credibility and penalisation levels are compared between state communications, newspapers, journalists on social media, and anonymous journalists on social media. The paper's key findings demonstrate that corruption reports published on social media are deemed less credible than those published by state auditors and newspapers. This effect is exacerbated when the source of the report is anonymous. In addition, corruption reports published on social media by anonymous sources have a negative effect on voter penalisation of corrupt politicians. Also, sustained lack of freedom of expression has a negative effect on the credibility attributed to state communications. Finally, lower levels of education have a negative effect on credibility attributed to social media, while higher political sophistication decreases the credibility and the voter penalisation attributed to reports published on social media anonymously.

Relevance to Development Studies

Corruption has a pervasive effect on development, affecting economic growth, increasing inequality, worsening public investment, and hindering efforts to protect the environment. This is particularly relevant in the case of grand political corruption in the form of funds misappropriation. In this case, one of the most discussed anti-corruption tactics is the electoral penalisation of corrupt politicians aided by media exposure and information availability. This topic has opened a vast field of research in development studies, particularly in the case of Latin America, where political corruption persists at high levels. This paper aims to contribute to this discussion by assessing how media credibility and voter penalisation is affected by the changing media landscape and the increased attacks on freedom of expression in Latin America.

Keywords

Political corruption; grand corruption; Latin America; Media credibility; Voter penalisation; Social media; Freedom of expression.

Acknowledgments

I would like to thank Elissaios Papyrakis and Mansoob Murshed for their guidance throughout this research process. I would also like to thank Lucila Berniell from Corporación Andina de Fomento for her valuable insights. Thank you to Nina Brehl and Lizi Akhvlediani for their moral support and for offering their advice whenever I faced any challenge. Finally, but most importantly, I would like to thank my parents for prioritising and valuing my education before anything else.

1. Introduction

Grand corruption in Latin America remains high, particularly in the public sector. Corruption at such high levels presents a cost for business prospects, economic growth, social mobility, and other key aspects of development (Mauro, 1995; Gupta et al., 2002). Latin Americans are aware of the harm corruption entails, but the region continues to fail in penalising corrupt politicians through elections (Berniell, de la Mata, and Italia, 2019). In some cases, voters expect the benefits of certain politicians being in office to exceed the costs of their corrupt behaviour (Winters and Weitz-Shapiro, 2013). In other instances, Latin Americans fail to penalise corrupt politicians due to lack of information in the media. The positive effects of media and information availability on the electoral penalisation of corruption have been confirmed by a number of seminal studies (Ferraz and Finan, 2008; Chong et al., 2014; Bobonis, 2016; Arias et al., 2019). The relationship between corruption and media has grown dramatically as researchers continue to contribute to an extensive literature. See Berti, Bratu, and Wickberg (2020) for a recent literature review. Some outcomes to note are the effects of press freedom on curbing corruption, the effects of media ownership and competition on corruption levels, and the changes in the public's perception of corruption due to its portrayal in the media. It is evident that media and its determinants, including freedom of the press, play a significant role in curbing corruption (Stapenhurst, 2000). There is little information, however, on the credibility of corruption cases in the news. The great majority of studies concerned with information availability and the penalisation of corruption assume that the information provided in the media is deemed credible by audiences. This paper focuses on the idea that the electoral penalisation of corruption aided by media exposure not only depends on the availability of information, but also on the *credibility* that audiences attribute to that information.

In recent years, media credibility in Latin America is affected by two factors. Firstly, over the past decade, freedom of expression has declined in the region. This trend is projected to continue, according to a forecast by the V-Dem Institute (2022). Low freedom of expression affects credibility for a number of reasons. On the one hand, the public's perception of censorship by the state leads to lower perceptions of credibility in traditional media such as newspapers and government communications (Chang, 2021). On the other hand, journalists who wish to report on sensitive issues must resort to alternative publishing sources such as social media, an outlet which several studies have demonstrated lacks credibility (Viviani and Pasi, 2017; Karlsen and Aalberg, 2021; Lin et al., 2016). Secondly, the media landscape is changing as social media has become the second most popular source of information about politics in Latin America (CAF, 2018). This again, affects the audience's perception of credibility in the news, given the medium's caveats in fact-checking and over-sensationalisation of news stories. Given these two reasons, this paper hypothesises that media credibility and Latin Americans' efforts to curb corruption through voter penalisation are at stake.

The great majority of studies that focus on medium or source credibility are not specified within the context of political corruption. Nonetheless, there are few notable exceptions. I would be remiss, for example, if the paper did not discuss one of the most relevant studies in connecting information credibility and voter penalisation of corruption. This is a paper concerned with the ability that citizens have to discern credible sources and how that may affect electoral accountability in Brazil (Winters and Weitz-Shapiro, 2017). It is one of the very few studies acknowledging that information

availability may not be sufficient to ensure the penalisation of corrupt politicians in the ballots; it is the *credibility* audiences attribute to the available information. Winters and Weitz-Shapiro conclude that cognitively and politically sophisticated citizens are better at discerning credible sources and are thus better equipped to act against political malfeasance or corruption. Hence, their study proposes that increasing education (together with the availability of information) is an effective mechanism to increase the electoral penalisation of corruption. Their focus lies on the determinants of individuals for better discerning credibility, while this paper instead focuses on the variation in the medium and source of information (particularly that of social media), and whether this has any implications on credibility and the penalisation of corruption. The motivation and intent of the paper, however, is strongly linked to Winters and Weitz-Shapiro's work. Two other interesting mentions are Muñoz et al.'s (2016) paper on corruption credibility affected by political party affiliations in Spain, and Botero's (2015) work on credibility affected by language in the context of corruption reports in Colombia. These studies demonstrate the increased relevance of information credibility in the fight against corruption through media and elections. This paper aims to contribute to this literature by providing a narrower perspective of media credibility, delving exclusively in the context of electoral penalisation against corrupt politicians, with a particular focus on social media and freedom of expression.

In order to test this, the study focuses on grand political corruption in the form of misappropriation of state funds, using Groenendijk's principal-agent political corruption model and Sobel's definition of credibility. This paper attempts to respond to the question, *how is the changing media landscape in Latin America affecting the credibility attributed to corruption reports in the media and the electoral penalisation of exposed corrupt politicians?* The paper hence devises four focused research questions, each of them tailored to address specific aspects of the changing media landscape in Latin America and their possible implications on credibility and the penalisation of corrupt politicians. These four questions and their respective hypothesis are laid out as follows:

1. *How does the rise of social media affect the level of credibility attributed to corruption reports in Latin America?* This research question is explored by responding the following: which media outlets and sources are most credible for Latin Americans in the context of journalists exposing political grand corruption? Particular attention is paid to social media, given its rise in popularity and the prospects of the medium dominating the informational space in the future. It should be noted, that the research questions make a distinction between media outlet (i.e. the medium or channel) and media source (i.e. the messenger or author). The paper studies a variety of media formats, including state communications, newspapers, journalists on social media, and anonymous journalists on social media. The first three are considered media outlets, while the last two share the same medium (i.e. social media) and allow the paper to assess differences in media sources. Given this distinction, the paper compares the level of credibility attributed by respondents based on the medium or source in which the corruption report is published. This first research question leads to two hypothesis:

H1a. Social media is expected to be deemed less credible than other media outlets. Even though this hypothesis is subject to debate in the literature, several studies have demonstrated that social media is particularly prone to disseminate untruthful information (Viviani and Pasi, 2017; Karlsen and Aalberg, 2021; Lin et al., 2016). This hypothesis assumes that the public is aware of this characteristic of social media, and would hence deem it less credible.

H1b. Anonymity on social media should hinder credibility even further, given that such reports miss a key credibility cue: the author's name. This hypothesis assumes that respondents are able to discern credibility cues and will have a negative response to anonymity when attributing credibility to a journalistic report.

2. *How does the rise of social media affect the electoral penalisation of exposed corrupt politicians in Latin America?* This research question is explored by responding the following: which media outlets and sources lead to a higher willingness of penalising corruption in the Latin American public? Again, the paper pays special attention to social media in this comparison. Similarly to the first research question, the paper compares the willingness of respondents to penalise a politician based on the medium or source in which they were exposed for corruption.

H2. The paper hypothesises that the effect of social media on voter penalisation should also be lower than that of state communications. This statement is based on the expectation that social media is less credible, as stated in H1a, and the assumption that higher credibility attributed to a corruption report would drive a higher penalisation of corruption. This also applies to anonymity on social media. In other words, one would expect the medium of social media to yield a negative impact on voter penalisation, regardless of the report's source.

3. *What are the determinants that increase media credibility and the electoral penalisation of corruption, depending on the media outlet in which corruption cases are reported?* The paper first conducts a correlational study to assess which individual or personal determinants may have a significant relationship with media credibility and voter penalisation. This test is carried out for every medium and source relevant to the experiment. After selecting the significant relationships established by the correlational test, the paper continues to assess if there is a causal relationship between those determinants and the two outcomes of interest (credibility and voter penalisation).

H3. The determinants that increase credibility are a person's educational level and political sophistication. Given this effect on credibility, the respondent's willingness to penalise the exposed politician is also expected to increase with higher levels of education and political sophistication. This hypothesis is based on the study conducted by Winters and Weitz-Shapiro (2017), which demonstrates that education and political sophistication are determinants of a person's ability to discern credibility. Hence, educated and politically sophisticated people should regard an anonymous report on social media as an unreliable source, since it is missing the basic credibility cue of an author's name. Given these expectations, education and political sophistication should also have an incremental effect on voter penalisation for the same media outlets as credibility.

4. *What role does freedom of expression play in the credibility attributed to corruption reports in the media and the electoral penalisation of exposed corrupt politicians?* The paper tests which media outlets and sources are affected in terms of credibility given a respondent's experience of low freedom of expression through a dictatorship. Given that all countries in the study have experienced a dictatorship in the 1970s and 1980s, the study defines a cohort of respondents born after 1980 to represent a group of Latin Americans that has not consciously experienced a dictatorship and sustained lack of freedom of expression. This cohort serves to compare the levels of credibility attributed to mediums concerned with censorship, namely state communications and newspapers. This research question yields two hypotheses:

H4a. Respondents who experienced a sustained lack of freedom of expression in their country will attribute less credibility to state communications and newspapers. This is because these are the two mediums that are most prone to censorship, as opposed to social media. If this censorship is perceived in the general public, credibility of censored media is expected to be low. This hypothesis is based on Chang's findings on the public's lower credibility perceptions of state communications in the setting of the authoritarian regime in China (2021).

H4b. The paper hypothesises that sustained lack of freedom of expression will translate into lower willingness to penalise a corrupt politician exposed by state communications, given the statement in H4a where lower credibility is expected for state communications.

Given this approach, the paper contributes three distinct elements to the field. Firstly, the scope of the paper's analysis is unprecedented in studies assessing the relationship between media sources, credibility and voter penalisation of corruption. This paper covers ten major Latin American cities, allowing it to bear comparisons between different contexts and infer conclusions at a regional level for Latin America. Secondly, studies in media credibility and corruption often focus on traditional media channels. This paper takes into account traditional, state owned, and social media sources. This is particularly relevant given the rise in social media and the openness it entails regarding corruption investigations and reports. The rapid decline of newspapers and the rise of social media should drive publishers and journalists's attention to the credibility of alternative channels (i.e. social media) when publishing corruption reports. This is particularly concerning given the rise of fake news, polarisation, misinformation in social media and the impact this has on the credibility of legitimate reporting on corruption. Thirdly, this paper is also concerned with media credibility in a setting where freedom of expression is under attack. The paper assesses the effects of sustained lack of freedom of expression on the perception of credibility and voter penalisation depending on the medium and source of information. Overall, this research paper acknowledges the changing media landscape in Latin America and aims to study the possible implications this may have on the credibility audiences attribute to corruption reports, as well as the repercussions it may have on voter penalisation. In order to make these contributions, the paper conducts a randomised control trial using an experiment embedded in a survey titled *Encuesta Corporación Andina de Fomento* (ECAAF). The survey, which focuses on corruption and public office integrity, was conducted in 2018 by Corporación Andina de Fomento (CAF), a development bank based in Latin America. Additionally, the paper uses data on freedom of expression, retrieved from the V-Dem Institute Database.

The paper's results demonstrate that social media has a negative effect on credibility, validating the paper's first hypothesis. Despite this, in response to the second research question, social media does not have a significant negative effect on voter penalisation. Only anonymity on social media has a negative effect on both credibility and penalisation. This result indicates that penalisation is not affected by the medium, but rather by the source of the report. Regarding the third research question, results support findings in the literature concerned with education and minimal political sophistication. Belonging to educated and politically sophisticated groups in the sample has a positive effect on credibility. However, when assessing the willingness to penalise corrupt politicians, education loses its significance. Nonetheless, the paper's hypothesis is maintained for the credibility outcome. As for the fourth research question, results demonstrate that respondents who did not experience a dictatorship in

their adult life attribute more credibility to state communications. Hence, the paper's fourth hypothesis is validated, where sustained lack of freedom of expression drives distrust in state communications. Given these results for all four questions, the paper is able to make informed anti-corruption policy recommendations. These include initiatives and legislation to improve information quality and credibility on social media platforms, increasing education-oriented policies to enhance educational levels and political sophistication, and promoting initiatives that focus on fighting for freedom of expression and a free press.

The lack of penalisation of corruption, the attack on press freedom, and the rise of social media are all motivating forces for this study, bearing the question of what is the future of Latin America's media credibility, corruption reporting, and the electoral penalisation of corrupt practices. Hence, the paper intends to investigate a contemporary media setting to evaluate whether different media sources have varying effects on credibility and voter penalisation. The paper is structured as follows. Section 2 provides the context and conceptual framework that serves as a basis for the paper. Section 3 builds on this context by discussing the literature relevant to the paper's focus. Section 4 describes the data used in the analysis. Section 5 explains the methodology and specification relevant to each research question. Section 6 consists of a discussion of the results and Section 7 concludes the paper by summarising the paper, evaluating its limitations, and providing insights for future research.

2. Context and Conceptual Framework

2.1. *Corruption in Latin America*

Definitions of corruption vary across disciplines and scholars have different understandings about what constitutes corrupt behaviour. In this paper we take on Pellegrini's understanding of corruption (built on Nye) as such:

“Corruption is the misuse of entrusted power for private gain; it is behaviour which deviates from the formal duties of a given role because of private-regarding (personal, close family, private clique) pecuniary or status gains; or violates rules against the exercise of certain types of private regarding influence. This includes such behaviour as bribery (use of a reward to pervert the judgment of a person in a position of trust); nepotism (bestowal of patronage by reason of ascriptive relationship rather than merit); and misappropriation (illegal appropriation of public resources for private-regarding uses)” (Pellegrini, 2011, p17).

Based on this understanding, this paper focuses on grand corruption in the public sector, a form of corrupt behaviour that involves fewer people and larger exchanges of money reinforcing ties between business officials and political elites (Prasad et al., 2019). The reason behind this focus on grand corruption is the interest in assessing the determinants of electoral penalisation. Grand corruption is hence more applicable to this concept, given that it is more pertinent to high-level politics, as opposed to bureaucratic or petty corruption. Within Pellegrini's definition, this paper narrows its conceptualisation of corruption as the misappropriation of funds, using positions of power for private gain, in political spheres. It is important to make this distinction given that petty corruption does not tend to be a concern for media reports, since it entails a broader study of systematic and cultural elements of corruption. On the other hand, public sector corruption in the form of funds misappropriation presents a specific event in which an individual is to blame, which is relevant for media exposure and can be directed towards one culprit (politician). This is important to address, not only due to the nature of the corruption stories that the media tends to cover, but also to address the penalisation of corrupt politicians in elections.

Public sector corruption in Latin America consistently ranks as one of the highest in the world. With the exception of Chile and Uruguay, all Latin American countries rate poorly in corruption indexes. Transparency International rates the Latin American region with a Corruption Perception Index (CPI) of 35 on average. This index varies on a scale from 0 to 100, where the lower the index value the higher the perception of corruption. To put things into perspective, the average global CPI is at 43 points, meaning that Latin America is more corrupt than the world average (Transparency International, 2021). Also, the V-Dem's index on corruption in the public sector rates Latin America with a value of 0.52 for bribery, embezzlement, and misappropriating public funds. This index varies on a scale from 0 to 1, where the higher the score the higher the level of corruption. The global position for this index is at 0.51, a value which unfortunately remains high (V-Dem, 2021). Corruption at such high levels presents a cost for several factors significant to development. Gupta et al. (2002) demonstrated that high levels of corruption increase income inequality and poverty, suggesting that policies that reduce corruption will directly translate in a reduction of both inequality and poverty. In addition, corruption affects economic growth, investment and government expenditure choices

(Mauro, 1995). This has been corroborated by a vast number of studies (Shaw et al., 2011; d'Agostino, Dunne and Pieroni, 2016; Paulo et al., 2022; Everhart et al., 2009; Sharma and Mitra, 2019). Given these effects, corruption also affects other factors such as mortality rates, environmental conservation, health, and education. Escaleras and Register (2016) studied the correlation between high corruption levels and deaths due to natural disasters, caused by the mismanagement of public spending on natural disaster relief and infrastructure. Pellegrini (2011) addresses the implications of corruption on the environment, claiming that reducing corruption enhances the stringency of environmental policies. Anbarci, Escaleras and Register (2009) also demonstrate the negative effects of high corruption levels on the provision of improved access to sanitation and drinking water across 85 countries. Additionally, corruption reduces incentives to invest in human capital (Heyneman et al., 2008) and expected years of schooling (Duerrenberger and Warning, 2018). It is needless to say that corruption has a pervasive effect on a vast number of factors, hindering development and basic human rights for the most underprivileged (Moyo, 2017).

Data from a 2018 survey by CAF shows that Latin Americans are aware of the harm corruption entails for economic progress, social equality, and the quality of public services. They even single out corruption as the main issue their countries face. However, there is a major lack of trust in the judicial system to penalise corruption, which is the reason why many turn to electoral penalisation as a more viable anti-corruption solution. Nonetheless, citizens think that fellow Latin Americans do not worry enough about corruption and do not take corruption cases into account when casting their votes (CAF, 2018). These perceptions are correct, as Latin Americans have demonstrated a striking lack of penalisation towards corrupt politicians in elections (Berniell, de la Mata, and Italia, 2019). Scholars have attempted to understand this phenomenon through a number of reasons. In some cases, voters expect the benefits of certain politicians being in office to exceed the costs of their corrupt acts (Winters and Weitz-Shapiro, 2013). In other instances, voters living in countries with weak and corrupt institutions feel resignation towards political institutions and do not think their vote will change the state of corruption in the public sector (Agerberg, 2019). Most scholars, however, have focused on the fact that Latin Americans fail to penalise corrupt politicians due to lack of information in the media. The effect of the media (or information availability) on voter penalisation has been confirmed by a number of seminal studies. Ferraz and Finan (2008) have demonstrated that the availability of information about corrupt cases from state audits increase electoral penalisation of corrupt politicians in Brazil, while the propagation of these audits in the media have an even stronger effect on penalisation. Bobonis et al. (2016) follow this line by showing that Puerto Rican municipalities with timely audits before elections have considerably lower levels of corruption. The dissemination of audit results is paramount for these effects to materialise. Additionally, Chong et al. specify in a study based in Mexico that the availability of information about corrupt incumbents does increase electoral accountability, but it decreases voter turnout and does not increase the support for challengers' parties (2014). Another study of interest conducted by Arias et al. (2019) demonstrated that highly connected networks enable voters to coordinate amongst themselves and share information to penalise corrupt politicians. In addition, recent studies find a negative relationship between social media and corruption, even in contexts of low press freedom (Enikolopov et al., 2018; Jha and Sarangi, 2017). The connectivity and openness that social media offers may indicate a newfound opportunity to curb corruption. Overall, media plays a significant role in curbing corruption (Stapenhurst, 2000). It is for

this reason that this paper aims to study two key media determinants: credibility and freedom of expression. See Section 3 for a literature review on both topics.

2.2. Conceptual Framework: Principal-Agent Model

This paper bases its understanding of corruption within the Principal-Agent conceptual framework (Ross, 1973). This theory is based on a contractual relationship between an agent and a principal, in which the agent obtains a fee to serve the principal. Both the principal and the agent aim to maximise their expected utility, which depends mainly on the fee the principal pays to the agent and the actions the agent does in return as a service. However, both parties involved have self-serving interests that lie outside of the agreed contract. In addition, the relationship is obscured by informational asymmetry, given that the agent may possess better information about the state of operations compared to the principal. This informational asymmetry introduces an incentive of moral hazard for the agent, where the agent feels protected by the informational gap and is enabled to take risks and serve his or her own interests before the principal's. This presents a dilemma named the Principal's Problem, in which the principal must find ways to monitor the actions of the agent to ensure the contract is not in breach. In a fully transparent scenario, the Principal's Problem would reach Pareto efficiency, as both parties could negotiate the contract with full information and hold each other accountable. This, however, is never the case in reality.

Given this relationship between both parties, there are two key points of interest for the principal to address. Firstly, the fee through which the principal and the agent communicate. Depending on this fee, the principal can demand and communicate expectations on the agent's required actions. In addition, the principal can revoke or change the fee in response to the agent's breach of contract (ibid, p134). The second point of interest concerns the actions of the agent, which the principal must monitor in an attempt to close the informational gap. Developing a reliable monitoring mechanism is key for the principal to be able to increase transparency and take necessary (and informed) actions in the case of a breach of contract (ibid, p138).

The Principal-Agent theory is employed by several scholars to conceptualise corruption. The most relevant being Rose-Ackerman's work on bureaucratic bribery in company contracts (1975), Klitgaard's principal-agent model on corruption (1991), and Groenendijk's principal-agent model on political corruption (1997). In this paper we employ the latter, given that it reflects a political corruption scenario in a representative democracy, where the agent is an elected official and the principal represents the voters (1997, p222). This is a contractual relationship in which voters want the public official to work for their interests and in exchange (re)elect the public official. However, the interests of voters and the politician may differ, as public officials also have their own personal interests. In addition, the public official benefits from having discretionary power and finer information about the state of governance compared to the information voters have. Corruption arises as a consequent action of this discretionary power and informational asymmetry, which allows the agent to seize the opportunity of putting his or her personal benefit before the public's. There are two assumptions of the principal-agent model that hold in this scenario. Firstly, monitoring the agent presents a high cost for the principal. Voters cannot monitor the politician without incurring any costs related to the investigation and, if pertinent, the penalisation or prosecution of the public official.

Secondly, there is a weak connection between the agent's actions and the desired outcomes stipulated by the principal. In other words, the outcomes of public policies are not always directly related to the actions of the public official, given that governance does not rely solely on one individual. Hence, it is difficult for voters to be aware of the actions the public official is taking, since they cannot receive direct confirmation of the official's actions through the outcomes of the service he or she is providing. Public officials are thus shielded from the consequences of taking risks for their own benefit, which introduces an issue of moral hazard. In other words, the public official has an incentive to be corrupt, which is equivalent to a breach of contract in the principal's view. This presents a challenge for the principal, who should focus on finding relevant anti-corruption initiatives that reduce the agent's incentives and ability to be corrupt.

In this study, the focus lies on one particular anti-corruption initiative: electoral penalisation facilitated by media exposure of political corruption cases. This paper builds on Groenendijk's model by focusing on the monitoring mechanisms available to the principal. In this case, there are four types of monitoring mechanisms, all of them involved in the publishing of corruption reports exposing a politician. The first type of monitoring mechanism is a state auditor. Governments often construct their own corruption monitoring and exposure apparatus in the hopes of inspiring the principal's trust. In other words, this mechanism relies on the state self-monitoring. What sets apart this first type of mechanism from the other three, is that the information originates from the agent's circle (i.e. the state). Hence, this mechanism could be jeopardised, since the state may use it as a political tactic. These tactics could include, for example, sacrificing one politician instead of uncovering widespread corruption in the state, or delegitimising a politician from the opposing party. The other three types of corruption monitoring and exposure belong to the media. In this case, the three types are different media outlets and sources: newspapers, social media, and anonymous journalists on social media. These are differentiated from the state auditor's communications by the fact that their mechanisms pertain to the principal instead of the agent. These monitoring mechanisms, however, are not perfect and also have their limitations. Firstly, media can be influenced by the agent in settings of strong state media ownership and low freedom of expression (Stapenhurst, 2000, p10). Thus, depending on the political situation of a country, the media may be powerless in serving its purpose as a monitoring mechanism. Secondly, media stakeholders have self-serving interests of their own. While media outlets play a significant role in exposing corruption, they can also fall prey to activities such as sensationalising news, seeking a boost in ratings, or adhere to political inclinations and personalities beyond objectivity (Ghosh, 2021). Thirdly, monitoring and exposing corrupt agents through the media can be very costly, particularly in countries where freedom of expression is at stake. Investigating corruption and informing voters is time consuming, expensive, and in some cases even violent or deadly (Stapenhurst, 2000, p11-12).

Given these limitations, monitoring mechanisms face a major hurdle in the quest to expose an agent's corrupt behaviour: credibility. In order to truly fulfil its purpose as a monitoring mechanism, an information outlet must be deemed credible by the principal. According to Sobel's credibility theory, "an agent becomes credible by consistently providing accurate, valuable information or by always acting responsibly" (Sobel, 1985, p557). This means that monitoring mechanisms must nurture a consistent reputation with the principal in order to be trusted. The limitations described above represent some of the factors that could harm this reputation and lead to lower credibility in the principal's eyes. In this

paper, credibility is determined by two factors: the variety in media outlets/sources and the variation amongst principals that form an audience. Firstly, the paper studies the differences in credibility attributed to different channels exposing corrupt agents, including state communications, newspapers, social media, and anonymous publications on social media. The paper hypothesises that this variation in format has consequences on the credibility attributed to the news in question, as well as the electoral penalisation of corrupt politicians. Secondly, while many principal-agent models tend to consider the principal as a singular entity, this paper focuses on the idea that the principal is in fact composed of a variety of principals. This is to say that voters have different determinants that affect their perception of news credibility and their willingness to penalise the corrupt agent in elections. These determinants may include the principal's educational level, gender, age, level of political sophistication, media preferences, amongst others. This paper's interest hence lies in two types of variation: one between corruption monitoring mechanisms and another between principals. Given this study on variation, the paper addresses the relationship between the media landscape and two outcomes of interest: credibility attributed to corruption reports, and the willingness to penalise the agent's breach of contract in elections.

Similarly to the definitions employed in Section 2.1, this conceptual framework enables the study to structure the concept of corruption within a set of boundaries, which provide a backdrop for the experiment and subsequent analysis. The choice of grand political corruption as the key form of corruption in the study is pertinent to reflect the agent's position of discretionary power and responsibility in relation to the principal. In addition, the Principal-Agent theory reflects the study's interest in the anti-corruption tactic of electoral penalisation. This is because the theory centres on the relationship between a public official and its voters, leaving systemic and judicial actions out of the main focus. This is not to say that the latter are not as relevant in the fight against corruption, but the contractual nature of the principal-agent theory caters to the point of interest of this study and is hence the most appropriate framework in this particular case.

3. Literature Review

3.1. Media Credibility

Credibility refers to the expectation that someone's word can be relied on. This expectation is built on that person's reputation, which relies on consistently providing truthful information (Sobel, 1985, p557). This plays a major role in media channels, in which credibility is a key element of sustained trust towards information sources (Tsfati, 2010, p23). The study of credibility in media has attracted fair attention from scholars. Most papers can be categorised into two areas: those that study source credibility and those that study medium credibility (Golan, 2010, p10). Source credibility studies evaluate the characteristics of messengers in media (e.g. speaker, organisation, etc.), while medium credibility studies evaluate the credibility attributed to media channels (e.g. television, newspapers, etc.). If we focus on the study of media channels, we see that most Latin Americans inform themselves about politics by watching television, but the second most popular source of information about politics is social media (CAF, 2018). Thus, the media landscape is changing with the rise of social media and so is the credibility it entails. One of the main factors affecting people's attraction to social media is media skepticism of traditional media (Tsfati, 2010, p38). Media skepticism in this case is defined as an inherent mistrust of journalists and the way they perform their profession. Tsfati demonstrated that media skepticism leads to consumption of non-mainstream media affiliated with political groups or ideologies and independent news sources (ibid). The caveat of non-mainstream media is that its defining characteristics tend to clash with journalistic professionalism or traditional news values (ibid, p26). In addition, information posted online does not entail an exhaustive factual verification (Flanagin and Metzger, 2000, p516). Contrastingly, in the case of traditional media, Asak and Molale (2020) demonstrate newspapers have low instances of fake news and generally abide by professional journalism principles. Nonetheless, Johnson and Kaye (2010) have found that audiences consider the Internet more trust-worthy than traditional media, particularly during electoral and campaigning seasons. Hence, it seems individuals do not always respond to traditionally backed credibility mechanisms, which are lacking in social and non-mainstream media. Given this general mistrust in traditional media, Lee (2010) demonstrated the determinants of credibility attribution are related to an individual's political ideology, trust in government and fellow citizens, as well as their opinions of the economy. Miller and Kurpius (2010) took a similar interest but instead assessed the determinants of credibility based on the characteristics of messengers in TV broadcasts. Their results show that citizen sources are deemed credible but less so than official sources, while race and group belonging do not affect credibility attribution to the messenger (Miller and Kurpius, 2010, p149). On a similar note, Meyer et al. (2010) suggest that it is the author's perceived expertise that contributes to credibility for news audiences. Hence, the source of information plays a key role in credibility in addition to the medium in which the information is published.

Given the rise in the public's preference for social media, studies concerned specifically with social media credibility have increased substantially. These studies can be categorised in two branches. The first branch of studies regards fact-checking information and evaluating indicators of credibility. These studies are mostly concerned with curbing the spread of misinformation on social media, mostly by providing solutions to address the recent phenomenon of fake news. Viviani and Pasi (2017) address solutions to tackle opinion spam, misinformation and fake news, as well as evaluating the credibility of

health news online. Yaqub et al. (2020) focus on one particular solution, demonstrating that the addition of credibility indicators to information online reduces the sharing of fake news on social media. Clearly, misinformation on social media is a concerning topic. A second branch of studies regards individuals' perception of credibility in social media given different specifications in the source. This branch takes a more behavioural approach to the study of social media credibility. Karlsen and Aalberg (2021) propose that news published on social media are deemed less credible by audiences, particularly when politicians are intermediary senders. This is diametrically opposite to Johnson and Kaye's findings discussed earlier, presenting a debate on whether social media is more or less credible than traditional sources such as newspapers or TV broadcasts. On a similar note, Tandoc (2018) claims that news shared by a news organisation on social media are perceived as more credible, compared to the same news being shared by friends on social media. This, however, only applies when the motivation to engage with the news is high. If motivation is low, audiences tend to engage in more heuristic cues that affect their ability to discern credibility in sources. Westerman et al. (2013) assessed credibility levels on Twitter, detailing that recency of tweets affected credibility attributed to information. Similarly, Lin et al. (2016) assessed three heuristics that affect the perception of credibility for tweets on Twitter, with authority cues being the strongest, and identity (self-assertion) and bandwagon (social conformity) cues following. The study of news credibility on social media continues to entice scholars and surprise the public. The credibility attributed to social media and online sources seems to be debatable when compared to traditional media sources. This may be due to contextual factors that affect the perception audiences have of journalism and politics. In addition, credibility may not be the only factor at play in the study of social media. There should be a distinction between credibility and persuasiveness of social channels. While some readers may not attribute credibility to social media sources, they are still persuaded by information on social media. This is because social media has specific design cues that purposefully attract audiences and persuade readers to engage with information regardless of the credibility they may attribute to it (Ghosh, 2021). Such a distinction between persuasion and credibility might shed some light on the debate at hand. It is clear, however, that the change in preferences towards social media thus poses a dilemma and should encourage the study of credibility and its implications on crisis management, health and political news. In this paper, the subject of interest is the latter, particularly concerned with the publishing of corruption reports about a politician.

3.2. Freedom of Expression in Media

In addition to the changing media preferences from an audience's point of view, the media landscape is changing from a governmental and journalistic perspective. In this case, we are referring to the unfortunate fact that freedom of expression is under attack in Latin America (V-Dem, 2022). Over the past ten years, freedom of expression and alternative sources of information have declined in the region. The main culprits in this trend are the rise in government censorship of the media and the increased harassment of journalists leading investigations and reporting on sensitive issues. This worsening trend will continue in the near future as most countries in Latin America have a high probability of experiencing a "closing event" in the informational space. This measure, published by the V-Dem, demonstrates the probability that a country will experience restrictions or attacks on

freedom of expression within a two-year window (ibid). In fact, Latin American countries almost account for half of the top twenty countries in the world with the highest probabilities of experiencing a closing event in the informational space. This bleak forecast has a particular effect on the investigation and reporting of sensitive and political matters, one of them being corruption. Hence, reporting corruption cases might get increasingly difficult for journalists and media sources, perpetuating the lack of available information about corrupt politicians in Latin America.

Freedom of expression is a particularly relevant topic in Latin America, given the region's history of dictatorships in the twentieth century, where freedom of expression was heavily suppressed. One of the most notorious and relatively recent string of dictatorships in Latin America was during the 1970s and 1980s, a time period in which only three Latin American countries enjoyed democracy. Since these notorious decades, the region has enjoyed an extended and more stable period of democratic governance with higher freedom of expression (Mainwaring and Pérez-Liñán, 2014, p4). This is, of course, with a few exceptions such as Venezuela, which is still in the grip of an oppressive regime (Patiño Villa and Almarío García, 2020). Given this history, it is alarming that freedom of expression is increasingly under attack throughout the Latin American region, demonstrating once again the fragility of this basic human right. Due to this alarm, this paper aims to consider the consequences this situation entails on corruption, media credibility, and voter penalisation.

A great number of studies have demonstrated the importance of press freedom on curbing corruption. Even though press freedom and media availability does increase the public's *perception* of corruption (Jha and Sarangi, 2017, p65; Rizzica and Tonello, 2020), Brunetti and Weder (2003) specify a causal relationship of higher press freedom to lower corruption levels in a cross-section study of 128 countries. Similarly, Chowdhury (2004) demonstrates the positive effect of press freedom and democracy on curbing corruption. Even though several studies contested the claim that democracy is effective in reducing corruption (Little, 1996; della Porta and Vannucci, 1999; Montinola and Jackman, 2002), the effect of higher press freedom on corruption seems to remain uncontested in the field (Ahrend, 2002; Dutta and Roy, 2016; Freille et al., 2007). Dutta and Roy (2016) claim that press freedom reduces corruption, and adhere that this effect is exacerbated in a context of higher media reach with press freedom. In addition, Freille et al. (2007) provide empirical evidence indicating a causal relationship running from freer press to lower corruption. They also maintain that political and economic influences on the media are related to corruption, while legal effects on media are not necessarily related to higher corruption levels. In other words, the degree of political control over the media's operations and publications has a stronger relation to corruption. Such control can be defined as criminal or civil charges as well as prosecution or threats to journalists. Legal influences such as libel, defamation or slander laws are not related to higher corruption levels (ibid, p842-843). Hence, political government censorship and harassment of journalists, as Latin America is experiencing, is particularly indicative of higher levels of corruption.

Given this trend in the region, two elements are at stake. Firstly, the penalisation of corrupt politicians will remain low or decline due to lack of information in the media, given the discussion in Section 2.1. As press freedom is constrained, information about corruption cases will diminish its reach in the media and thus decrease its effect on electoral penalisation (Stapenhurst, 2000, p10). Secondly, government censorship affects the credibility that audiences attribute to the media. On the

one hand, information that is censored by the government is less credible, as Chang (2021) demonstrates in the context of China, information provided by authoritarian governments lacks credibility in the public's view. On the other hand, journalists who wish to report on sensitive issues will have to resort to alternative sources for publishing. These sources, mainly on social media, may not seem as credible as traditionally backed sources. However, this is subject to a debate depending on context, as demonstrated in Section 2.2. For example, Jha and Sarangi (2017) claim that negative effects of social media on corruption are not contingent on press freedom. However, social media does complement press freedom, enhancing the negative effects on corruption in countries with free press (ibid, p68). In addition, journalists who are subject to harassment and threats might opt to publish their investigations anonymously. The anonymity of authors would, again, affect the perceived credibility of information by audiences. As discussed earlier, the determinants of a messenger play a significant role in the credibility audiences attribute to journalism (Meyer et al., 2010; Miller and Kurpius, 2010). In the case of an anonymous author, audiences cannot appeal to these cues in order to discern the credibility of the journalist's message. Hence, context concerned with press freedom does play a significant role in credibility and the effects of media on taming corruption.

Overall, the attack on freedom of expression and the surge in social media preferences will affect media credibility. Also, given the discussion in Section 2.1., this effect should be expected to translate on the efforts to curb corruption through media availability and voter penalisation.

4. Data

This paper uses data and an experiment embedded in a household survey titled *Encuesta Corporación Andina de Fomento* (ECAAF). This survey was conducted in 2018 by CAF, and focuses on corruption and public office integrity. ECAAF covers a sample of 9,621 individuals spread evenly across ten major Latin American cities. These cities include Buenos Aires (Argentina), La Paz (Bolivia), Sao Paulo (Brazil), Bogota (Colombia), Quito (Ecuador), Mexico City (Mexico), Lima (Peru), Panama City (Panama), Montevideo (Uruguay), and Caracas (Venezuela). Respondents were given a monetary incentive for their time and effort spent in answering the household survey. The sample is randomised by geographically delimited strata in order to ensure the spatial spread of the sample. The strata are defined by the neighbourhoods in every city of interest. Within each stratum, the number of sample points are defined in proportion to the population of that stratum. These sample points are randomly selected. The sample is balanced for observable variables of gender, age, and country of origin. See Appendix A for further detail.

In addition to the ECAAF 2018, the paper complements the analysis with country-level data on freedom of expression. This data is retrieved from the V-Dem Institute Database for each of the ten countries included in the ECAAF 2018 data set. The data in this paper is thus categorised in three sections: (i) an experiment embedded in ECAAF 2018, (ii) survey data from ECAAF 2018, and (iii) country-level data from the V-Dem Institute Database. Each of these sections are explained in detail below.

4.1. The Experiment

One particular experiment from ECAAF 2018 motivates this study. This experiment can be found in question 43 in the ECAAF 2018 questionnaire (available here: <https://scioteca.caf.com/handle/123456789/1468>). In this experiment the respondent is told about a report exposing irregularities in the purchase of materials authorised by a minister. This report is published in different media channels/sources, which are considered treatments in the experiment. The respondents are thus randomised into three treatment groups and one control group. The control group is told that a state auditor releases the report. The first treatment group is told that the nation's most popular newspaper releases the report. The second treatment group is told that a named journalist publishes the report on social media (Facebook, Twitter, Instagram, etc). The third group is told that a group of anonymous journalists publish the report on social media. The researcher then asks two questions. The first question is concerned with how credible does the respondent find the report, based on the media channel in which it is published. The respondent's perception of credibility based on their treatment is expressed on a Likert scale (1: not credible; 5: very credible). The second question in the experiment is concerned with how likely it is that the respondent votes for the minister in question in the following presidential elections. The response to this question is, again, based on a Likert scale (1: not likely; 5: very likely). See Appendix B for the wording of the experiment in the survey.

It should be noted that the experiment is subject to some limitations. One of the limitations arises from the fact that this is an experiment embedded in a survey. This may raise concerns about the survey questions prior to the experiment, given that they may condition the responses to the treatments. As the survey proceeds, the respondent's awareness of corruption may become more salient

and thus increase their inclination to believe a report about a corrupt politician regardless of the media source their treatment suggests. In other words, their perception of credibility may be overestimated. Similarly, their willingness to penalise a corrupt politician might increase throughout the survey. However, while this may affect the overall mean of the outcome variables, it should not affect the differences between treatments. Another limitation is that the treatments in the experiment are not made salient in any way for the respondents. The report and minister that are central to the questions in the experiment are both hypothetical and immaterial. While this ensures that no political or media figure is attached to the conceptualisation of the experiment, this does leave the concept of the corruption report open to interpretation for the respondent. The paper hence makes the assumption that the corruption report is conceptualised similarly by respondents. In other words, the understanding of the treatment is homogenous across all respondents. Additionally, the paper assumes that respondents do not make associations between the hypothetical minister and relevant political figures in their respective countries.

Table 1: Binary Variables for Credibility and Penalisation

	Likert Scale	N	Binary	N
Credibility (Total Obs: 7,558)	1: Not credible	1,415	0: Not credible	3,727
	2: Not very credible	2,312		
	3: Somewhat credible	2,467	1: Credible	3,831
	4: Quite credible	855		
	5: Very credible	509		
Penalisation (Total Obs: 7,561)	1: Not likely	3,802	1: Penalised	5,308
	2: Not very likely	1,506		
	3: Somewhat likely	1,516	0: Not penalised	2,253
	4: Quite likely	384		
	5: Very likely	353		

Definition of binary variables for credibility and penalisation.

Source: Author's analysis using data from ECAF 2018 (CAF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468> ; Retrieved: 11 May 2022

In order to facilitate the interpretation of results and the analysis in general, the variables for credibility and penalisation were both redefined into binary variables. Instead of carrying out the study on a Likert scale, the two outcome variables of interest are stipulated in binary terms. In the case of credibility, the binary variable is redefined in such a way that the balance of responses is maintained between 0: not credible and 1: credible. Hence, those who responded 1 (not credible) and 2 (little credible) are defined as 0 (not credible); those who responded 3 (somewhat credible), 4 (quite credible) and 5 (very credible) are defined as 1 (credible). As for the penalisation responses, those who responded 1 (not likely to vote) and 2 (not very likely to vote) are defined as 1: penalised; those who

responded 3 (somewhat likely to vote), 4 (quite likely to vote) and 5 (very likely to vote) are defined as 0: not penalised. The balance and definition of these two variables can be seen in Table 1 above.

Additionally, it should be noted that the original experiment included a fourth treatment group, in which respondents were told the report is published by a minor opposition party. However, this treatment group was excluded from the analysis since the key sources of interest were state communications, traditional media and social media. This decision reduces the sample of the experiment by 1,943 observations. This does not cause any concerns, since the relevant sample used in this study amounts to 7,678 observations and retains its original balance in terms of observable characteristics. Due to missing data, however, from the total of 7,678 observations, the analysis of the experiment comprises 7,558 observations for the credibility question and 7,561 observations for the penalisation question. These missing values do not amount to a substantial number in comparison to the overall sample. Also, they are random and do not present a systematic reason requiring further evaluation. See Appendix C for details on the distribution of the experiment's observations by treatment and control groups.

The paper hence utilises three treatment groups and one control group. The control group's specification represents the state in order to provide a publisher in the experiment that is unrelated to the press. Corruption reports from the state are aligned with the government, while journalists carry out their own independent investigations. This bears the question of how much do people trust their governments compared to the press. This is particularly interesting in the context of low press freedom, nodding at Chang's (2021) study on the information credibility of authoritarian governments. Hence, the paper pays particular attention to the control group when testing the fourth hypothesis. Treatment 1, on the other hand, represents the traditional written press (i.e. newspapers), which is in decline (CAF, 2018). This treatment enables the study to weigh in on the debate concerning credibility of traditional and social media sources, discussed in Section 2.2. This also applies to Treatment 2, which represents the press in social media. In this treatment, the credibility of the author should not bias responses, since the only factor that changes between Treatments 1 and 2 is the publishing medium. Thus, this second treatment allows the study to evaluate the effects of social media on credibility and voter penalisation, which addresses the paper's first and second hypotheses. This effect contributes, again, to the credibility debate discussed in the literature. In addition, the effects for both Treatment 1 and 2 help in addressing the future of media credibility in Latin America, which is the key motivation of this study. As for Treatment 3, the main concern is the repercussion anonymity might have on media credibility. Hence, it is a treatment that aims to indicate variation depending on the source rather than the medium of the corruption report. This treatment serves the study in two distinct ways. Firstly, the treatment allows the paper to assess the importance and effect of the absence of credibility cues in a source. This is particularly relevant when testing the third hypothesis of the paper on the individual determinants of credibility and penalisation. Secondly, the treatment may also represent countries in which journalists are harassed and may resort to publishing anonymously. Additionally, it should be noted that this treatment is only assessed through social media due to two reasons. On the one hand, major newspapers would not publish an anonymous corruption report accusing ministers. On the other hand, social media is the only medium in which independent journalists can publish sensitive information in heavily censored countries, given that social media is a more open and democratised informational space than traditional sources (Gravett, p126, 2020).

Overall, the specification of the control and treatment groups fulfils the purpose and motivation of the study. Firstly, by including state sources to address issues of press freedom and their effect on credibility and penalisation. Secondly, by including traditional and social media sources to address the implications of the rise of social media. And thirdly, by including a treatment with an anonymous journalist, which allows the study to assess the attention audiences dedicate to credibility cues.

4.2. ECAF 2018 Data

The analysis of the experiment is complemented with additional variables from ECAF 2018. The purpose of this data is to analyse certain individual determinants that could influence the respondents' perception of credibility and their willingness to penalise corruption within each treatment group. The selected data includes variables on three factors.

The first factor is the respondent's individual characteristics, which include gender, age, whether they lived through a dictatorship, and the maximum level of education attained. From the descriptive statistics in Table 2 at the end of Section 4.2, we can see that the sample is balanced with 48.4% of survey respondents being male and 51.6% being female. Also, the information on age demonstrates that the survey was conducted with adults only, ranging from 20 years to 59 years of age. Age here plays an important role in defining additional variables for age groups that are associated with specific characteristics (e.g. having lived through a dictatorship). In order to do this, the paper defined a binary variable indicating whether respondents were born after 1980. Given that all countries in the study have experienced a dictatorship within the 1970s and 1980s (Mainwaring and Pérez-Liñán, 2014, p4), those who were born after 1980 represent a group of Latin Americans that has not consciously experienced a dictatorship and sustained lack of freedom of expression. This cohort serves to compare the levels of credibility attributed to mediums concerned with censorship, namely state communications and newspapers. As for the maximum level of education achieved, the original variable includes 13 levels of education. This is simplified into a binary variable distinguishing between those who did not complete secondary school and those who attained an educational level of secondary school or higher. This distinction does not only serve as a simplification for the analysis, but it is also pertinent to the context of Latin America. According to World Bank Data (2020), the average rate of people who completed secondary school in the countries relevant to this study is 49 percent. Hence, attaining a secondary school degree marks a balanced distinction between those who are more educated from those who have less education. As Weitz-Shapiro and Winters (2017) demonstrated, education plays an important role in people's ability to discern credible sources. It is also linked to their level of political sophistication. Hence, education is expected to play a significant role in this analysis.

The second factor is the respondent's political attitude, including four variables that intend to showcase the respondent's concerns and dedication to politics. The first variable regards whether the respondent is familiar with concepts of right-wing and left-wing politics. This information demonstrates the respondent's grasp of basic concepts and whether they have a minimal level of political sophistication. It is also a variable that is indicative of a certain level of general knowledge and education. The addition of this variable allows this paper to test Winters and Weitz-Shapiro's theory of political sophistication and its effect on credibility. The second variable identifies the respondent's

electoral participation in the last presidential election. This provides information about the respondent's involvement in the most key democratic political activity, indicating whether the respondent shows a basic level of political participation. Voting in presidential elections gives the respondent the ability to penalise corrupt politicians. Hence, voting is an indication of the respondent's agency in the second key outcome of interest of this paper: electoral penalisation of corruption. Moreover, voting may actually be motivated by the willingness to penalise corruption. The third variable is concerned with whether the respondent considers corruption to be the biggest issue in their country. This variable indicates the respondent's concern about corruption and suggests the tension corruption presents in the public. Such concern could play a role in the credibility the respondent attributes to corruption cases exposed in the media. Respondents who are concerned about corruption would be expected to have a stronger probability of attributing more credibility to corruption cases in the media. It also indicates the kind of political agendas that would attract the respondent the most, as well as their willingness to penalise corrupt politicians. The fourth variable involves the respondent's perception of his or her fellow citizens' concern about corruption. In other words, the variable responds to the question, do fellow citizens think about corruption when voting? This variable indicates whether the respondent is cynical about the democratic choices his fellow citizens make. A high level of cynicism in elections might affect the respondent's willingness to penalise corrupt politicians. If one does not think he or she is accompanied in the decision to penalise corruption in elections, one may prioritise other factors relevant to the candidates when casting their vote. These four variables described above could play a role in the level of credibility the respondent attributes to corruption reports and their willingness to penalise corruption. It should be noted that there are some missing values for the variables concerned with electoral participation and political sophistication. Nonetheless, these are negligible given that their sum only amounts to 2 percent of the total number of observations.

The third factor concerns the respondent's media choices, including whether they are social media users and their media preferences to inform themselves about politics. The first variable indicates whether the respondent uses any form of social media. The inclusion of this variable controls for the respondent's access to social media platforms, as well as their openness to using them. This question in the ECAF 2018 provides examples of these social media platforms (Facebook, Twitter, Instagram, etc) in order to avoid any confusion for the respondent. As for media preferences, the data presents one variable in which respondents could choose the medium they prefer the most to inform themselves about politics. The choices included television, radio, newspapers, digital newspapers, and social media. For the purpose of this study, the variable was redefined into two binary variables concerned with the paper's mediums of interest (i.e. newspapers and social media). The first indicates whether the respondent prefers social media rather than other types of media to inform themselves about politics. The second indicates whether the respondent prefers newspapers (physical and digital) rather than other types of media to inform themselves about politics. These two variables control for the respondent's medium preference, which could influence the level of credibility they attribute to one medium over the other. The reason behind their preference, however, is not disclosed. These variables concerned with media preferences have some missing values that pertain to two main groups. The first one comprises those respondents who did not find their preferred medium in the question's response options. The second group includes those respondents who claim to not be interested in politics and

thus claim the question does not apply to them. Overall, the total number of missing values amounts to 245 observations. This is not a significant amount in comparison to the total amount of observations.

Table 2: Descriptive Statistics ECAF 2018

Variable	N	Mean	Std. dev.	Min	Max
Dependent Variables					
Credibility	7,558	0.507	0.500	0	1
Penalisation	7,561	0.702	0.457	0	1
Individual Characteristics					
Gender	7,678	0.483	0.500	0	1
Age	7,678	37.390	11.528	20	59
Education: Basic	7,673	0.284	0.451	0	1
Political Attitudes					
Political Sophistication	7,527	0.612	0.487	0	1
Voted	7,659	0.801	0.399	0	1
Worried about corruption	7,678	0.506	0.500	0	1
Fellow citizens worry about corruption	7,678	0.583	0.493	0	1
Media Choices					
Social Media User	7,662	0.726	0.446	0	1
Media Preference: Social Media	7,433	0.234	0.424	0	1
Media Preference: Newspapers	7,433	0.037	0.190	0	1
Lives in country with high freedom of expression	7,678	0.690	0.463	0	1
Country Fixed Effects					
Argentina	7,678	0.104	0.305	0	1
Bolivia	7,678	0.104	0.305	0	1
Brazil	7,678	0.105	0.306	0	1
Colombia	7,678	0.104	0.306	0	1
Ecuador	7,678	0.104	0.306	0	1
Mexico	7,678	0.105	0.306	0	1
Panama	7,678	0.062	0.241	0	1
Peru	7,678	0.104	0.306	0	1
Uruguay	7,678	0.106	0.308	0	1
Venezuela	7,678	0.102	0.303	0	1

Descriptive statistics of total sample.

Source: Author's analysis using data from ECAF 2018 (CAF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468> ; Retrieved: 11 May 2022

See Table 2 above for the descriptive statistics of all aforementioned variables. This summary remains consistent for the control and treatment groups. We can hence assume that, given the effective randomisation of observable characteristics, there should be no systematic difference between groups in unobservable characteristics. Please see Appendix D for a summary of all variable descriptions. In addition, it should be noted none of the independent variables have strong correlations that concern the study. Please see Appendix E for the correlation tests between independent variables.

4.3. Country-Level Data

In addition to the ECAF 2018 data, the paper also uses country-level data retrieved from the V-Dem Institute database. The data is retrieved for the same year as ECAF's completion (2018) for consistency reasons. The V-Dem Institute provides an index measuring the degree of freedom of expression in a given country. The *Freedom of Expression and Alternative Sources of Information* (FEASI) index responds to the question, "to what extent does government respect press and media freedom, the freedom of ordinary people to discuss political matters at home and in the public sphere, as well as the freedom of academic and cultural expression?" (V-Dem, 2022). This measure compiles several variables concerned with press freedom, including freedom of discussion, media censorship, media bias, self-censorship, competition in media, harassment of journalists, and academic and cultural expression. The variable ranges from 0 to 1, from complete absence to absolute freedom of expression.

Given that this is a country-level variable, the paper redefined the data to apply it at an individual level together with the survey data from ECAF 2018. In order to do this, each respondent in ECAF 2018 was attributed a binary value, where 1 corresponded to those who live in a country with a FEASI index higher than 0.8. As for those who live in a country where freedom of expression is low (i.e. FEASI index below 0.8), they are attributed a value of 0. This binary variable allows to differentiate the country levels of freedom of expression at an individual level. The variable is appropriately defined, given that there is little variation amongst countries with high FEASI index values. The point of interest is thus the fact of whether a country has high freedom of expression or not, instead of the variation in freedom of expression itself. Also, the cut-off point for the binary variable is at 0.8 to accurately portray the situation in Latin America. By having 0.8 as the cut-off point, three countries that have a particularly low freedom of expression fall in the 0 category. The rest are relatively similar, so it is pertinent that they all belong in the category with higher freedom of expression. The descriptive statistics for this variable are found in Table 2 above. To see the relation between the original and binary variables, consult Table 3 below.

Table 3: Freedom of Expression and Alternative Sources of Information

Country	FEASI Index	ECAF 2018 N	Lives in country with high freedom of expression	ECAF 2018 N
Venezuela	0.244	786	0: lives in country with low freedom of expression (FEASI<0.8)	2,384
Bolivia	0.743	798		
Colombia	0.779	800		
Brazil	0.803	800	1: lives in country with high freedom of expression (FEASI>0.8)	5,291
Panama	0.808	475		
Ecuador	0.838	800		
Mexico	0.851	805		
Argentina	0.852	797		
Peru	0.929	800		
Uruguay	0.973	814		
Total	10	7,678	7,678	

Freedom of Expression and Alternative Sources of Information Index ordered by country from lowest to highest level, with respective binary variable.

Source: Author's analysis using data from V-Dem Institute database (V-Dem, 2022) and ECAF 2018 (CAF, 2018); Available at: <https://v-dem.net/vdemds.html>; Retrieved: 22 July 2022

5. Specification and Methodology

This paper intends to test four hypothesis using the data described above. The central methodology in this paper, given the experimental nature of the data, is a randomised control trial (RCT). As mentioned in Section 4, ECAF 2018 was carried out following a systematic randomisation method. This ensures the minimisation of biases in the assignment of the treatments and allows the study to infer causal differences between these groups. The experiment's design allows the paper to assess the effects of different mediums/sources of information on two outcomes: (i) perception of credibility of a corruption report, (ii) the willingness to penalise a corrupt politician mentioned in the report. In all cases, these outcomes are assessed at a regional level with country fixed effects. This allows the paper to assess regional trends but also to control for each country's particular situation, given that the context of corruption and freedom of expression differs for each country. All regressions include fixed effects for all countries except Uruguay, which acts as a reference category. Uruguay is the choice as a reference due to its extreme situation in both low corruption levels and high freedom of expression. Hence, Uruguay serves as an optimal reference point since it has a similar position in relation to all other countries.

The paper first obtains the Average Treatment Effect (ATE) per outcome to evaluate the differences in treatments compared to the control group. Then the study carries out a probit regression in order to motivate the selection of relevant determinants for both outcomes. Finally, these determinants are used to generate Heterogeneous Treatment Effects (HTE) in order to assess the difference in effects on both outcomes given a respondent's treatment and specific group belongings (e.g. gender, age, educational level, etc).

5.1. Average Treatment Effects

The ATE allows the study to obtain the difference in the degree of credibility and penalisation attributed to each treatment compared to the control group. Since the sample and the treatment assignment are randomised, we assume that the Average Treatment Effect on the Treated (ATET) is equal to the ATE. In other words, the selection and heterogeneity effects in the model are eliminated. Also, spillover effects from treatments are not a concern since the treatments are assigned instantaneously in the household survey. There is no time between the assignment and the response to the treatment for spillover effects to happen.

There are two models, one for each outcome variable:

$$\text{Credibility}_{ij} = \alpha + \beta_1 T_1 + \beta_2 T_2 + \beta_3 T_3 + \delta_{ij} + \varepsilon_{ij}$$

$$\text{Penalisation}_{ij} = \alpha + \beta_1 T_1 + \beta_2 T_2 + \beta_3 T_3 + \delta_{ij} + \varepsilon_{ij}$$

The coefficients of interest in these models are those pertaining to the treatment dummy variables (T_1, T_2, T_3). Each of these are compared to the control group dummy variable, which acts as a reference category. The coefficients thus provide the treatment effects for every treatment group. The models also include a constant α , country fixed effects δ , and an error term ε .

5.2. Probit Regression

Secondly, the study carries out a correlational test to assess which individual determinants (e.g. gender, age, etc.) may serve as variables of interest for the HTE analysis. This is carried through a probit regression, given that the dependent variables are both binary. All results in this case are correlational given the endogenous nature of the model. Nonetheless, this test allows the study to select specific groups that seem to have a statistically significant relationship with the outcome variables. It is in Section 5.3. below where these groups will be used to test a causal relationship through the HTE analysis.

Before proceeding with the regression, the study carries out a heteroscedasticity Breusch-Pagan test. In the case of the credibility model, we cannot reject the null hypothesis, meaning there is no heteroscedasticity present. However, in the case of the penalisation model, we must reject the null hypothesis, which indicates there are heteroscedasticity issues. Given this result, the study performs a robustness check of standard errors in all regressions.

The specifications of the models estimating credibility and penalisation for each treatment group are the following:

$$\text{Credibility}_{ij} = \alpha + \beta_1 \text{Individual}_{ij} + \beta_2 \text{Politics}_{ij} + \beta_3 \text{Media}_{ij} + \delta_{ij} + \epsilon_{ij}$$

$$\text{Penalisation}_{ij} = \alpha + \beta_1 \text{Individual}_{ij} + \beta_2 \text{Politics}_{ij} + \beta_3 \text{Media}_{ij} + \delta_{ij} + \epsilon_{ij}$$

In both cases the outcome of interest is expressed on a binary scale (0: not credible; 1; credible) (0: not penalised; 1; penalised). The models are specified per individual, i , and country, j . The outcomes depend on three vectors. The first vector includes the respondent's characteristics, comprising gender, age, and whether they finished secondary school or not. The second vector defines the respondent's political attitude, comprising variables indicative of whether they are familiar with the concepts of right-wing and left-wing politics, their participation in the last presidential elections, whether they consider corruption to be the biggest issue in their country, and whether they believe that fellow citizens are concerned about corruption when voting. The third vector identifies their media preferences, including whether they are a social media user, their preferred choice of media to inform themselves about politics, and whether they live in a country with high freedom of expression. The models also include a constant α , country fixed effects δ , and an error term ϵ . This analysis is carried out for each treatment and control group individually. The coefficients of interest in this case are those associated with the independent variables included in the model. Those variables with statistically significant and sizeable coefficients are selected for further analysis through an HTE method.

5.3. Heterogeneous Treatment Effects

Once the determinants are selected, the paper defines specific heterogeneous groups to assess whether they incur an additional effect on credibility or penalisation based on their treatment. In this case, the paper assesses whether there is a heterogeneity effect in the ATE tested above.

The specifications in this case are the following:

$$\text{Credibility}_{ij} = \alpha + \beta_1 T_k + \beta_2 T_k X_{ij} + \beta_3 X_{ij} + \delta_{ij} + \epsilon_{ij}$$

$$\text{Penalisation}_{ij} = \alpha + \beta_1 T_k + \beta_2 T_k X_{ij} + \beta_3 X_{ij} + \delta_{ij} + \varepsilon_{ij}$$

This specification includes the treatment group, an interaction term between the treatment group and the variable concerned with the heterogeneous group, and the variable itself. The models also include a constant α , country fixed effects δ , and an error term ε . The coefficient of interest in this case is the one pertaining to the interaction term, which provides the additional effect of the group variable on the treatment effect. This specification will allow the study to assess if certain characteristics of respondents enhance or diminish treatment effects on credibility and/or penalisation.

6. Results

6.1. Average Treatment Effects for Credibility

If we look at the treatment effects for every media outlet in Table 4 below, we see that newspapers are perceived to be the most credible source of information regarding the corruption report. Newspapers have a probability of 3 percent of being deemed more credible than state communications. This result is statistically significant at the 10 percent level. Newspapers may be deemed more credible given that they represent a medium that is independent from the state. This means that newspapers are free to publish corruption reports without being influenced by the state, while state communications may choose to conceal information about the corruption case (especially if a member of their own political party is involved). This is only applicable to those countries where there is freedom of expression and newspapers can publish without being policed by the state. Despite this reasoning, the difference in credibility is small, which may indicate that traditional media and state communications are similar or intertwined in the mind of the public.

In the case of the second treatment, the effect on credibility demonstrates that a journalist publishing on social media has a probability of being deemed less credible than state communications by 3.9 percent. This is statistically significant at the 5 percent level. This means that audiences trust the state to self-monitor more than journalists on social media. This finding corroborates the paper's first hypothesis. There are two possible reasons behind this effect. Firstly, as demonstrated by the literature explored in Section 3.1, social media is a medium that is prone to deficiencies in fact-checking, source verification, and other credibility indicators. This result may thus indicate that the public is aware of these negative characteristics. Secondly, information about politics is often sensationalised on social media. Stories that induce more emotions in the public, especially anger, are promoted through algorithms in many social media platforms to drive engagement (Ghosh, 2021). In the case of state auditors, information may be perceived as more objective and have more serious qualities given the source. Hence, this result may indicate that respondents are aware of social media's leniency towards sensational news and attribute less credibility to the medium. Nonetheless, it should be noted again that the difference in credibility is too slight to infer any definite conclusions. This may be because the state also has its own limitations in terms of credibility, namely the incentive to conceal information as discussed above.

When we compare the first and second treatments, we see that social media is regarded as a less credible medium. This comparison allows the paper to weigh in on the debate discussed in Section 3.1., regarding which medium is deemed most credible by the public. Given this study, in the context of corruption reports in Latin America, traditional media is considered to be more credible than social media. This confirms the paper's first hypothesis on the credibility effect between newspapers and social media. Nonetheless, these effects are too slight to take a definite stance in the ongoing debate. One thing this debate demonstrates, which is echoed in this paper's results, is that it seems audiences do not make stark credibility distinctions between mediums despite some of the negative characteristics of social media discussed in the literature (e.g. fake news, polarisation, lack of journalistic process, etc.).

In addition to the distinction between mediums, the ATE results also allow the paper to infer the effects of variation in source. In this case, we are speaking of the comparison between Treatments 2 and 3, which regard the same medium but a different source. If we regard anonymity on social media,

we find that credibility is even lower than that of the second treatment. An anonymous journalist on social media has a probability of 4.4 percent of being deemed less credible than state communications. This result is statistically significant at the 1 percent level. Compared to the negative effect of 3.9 percent mentioned earlier for Treatment 2, it is clear that source anonymity does affect credibility. These results corroborate the paper’s first hypothesis regarding the effect of anonymity on perceived credibility. However, the difference in effects between the second and the third treatments is minimal, meaning that anonymity does not seem to provoke a strong negative response from audiences in terms of the report’s credibility. This has two possible implications. Firstly, it may indicate that audiences in countries where freedom of expression is low are more lenient to believe anonymous journalistic pieces. This is because readers may be aware of the risks that journalists face when investigating and publishing about corruption. In these instances, anonymity does not hinder credibility since it is regarded as a necessity rather than the omission of a credibility cue. In this case, respondents in countries with low freedom of expression would be diminishing the negative effect of Treatment 3 on credibility. The second implication, however, seems more plausible. In this case, the slight difference in credibility between Treatments 2 and 3 may indicate that Latin American audiences are not able to discern or do not give proper attention to the absence of credibility cues in publications concerned with politics. The Latin American media is thus facing a credibility crisis, in which the difference in perceived credibility between credible and non-credible sources is small. These small effects are corroborated by the mean credibility for every treatment group, which lies around 0.5 in a range between 0 and 1 (see Appendix F). While this may seem to be an indication that Latin Americans are indifferent towards credibility, the standard deviation of all treatment groups demonstrates the opposite. In all instances we see a relatively high standard deviation, which indicates that responses about credibility are not close to the mean. This reinforces further the notion that media credibility is in crisis, and the ability of audiences to discern credibility is widely disparate. Such disagreement presents a motivation for further investigation on the determinants of credibility across the sample.

Table 4: ATE on Credibility

	Credibility Coefficient
T1: Newspapers	0.030*
	(0.065)
T2: Social Media	-0.039**
	(0.016)
T3: Social Media Anonymous	-0.044***
	(0.008)
N	7,558

Treatment effects on credibility per treatment group compared to control group (state auditor).

p-values in parentheses: * p<0.10, ** p<0.05, *** p<0.01

Source: Author’s analysis using data from ECAF 2018 (CAF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468> ; Retrieved: 11 May 2022

6.2. Average Treatment Effects for Penalisation

In the case of treatment effects for electoral penalisation, seen in Table 5 below, the coefficients for newspapers and social media are small and not statistically significant. This means that we cannot reject the null hypothesis that the two information mediums have different effects on the willingness to penalise corruption based on a journalistic report. This result indicates that, in the case of newspapers and social media, variation in formats does not matter in driving the electoral penalisation of corruption, as long as the corruption report is available to the public. Given this conclusion, the rise of social media does not pose a threat to the penalisation of corruption. Nonetheless, further investigation below demonstrates that this may not be the case after all, since social media is deemed less credible and credibility has a positive correlation with penalisation.

The third treatment of anonymity on social media has a negative effect on the probability of penalising the corrupt politician by 3.5 percent, compared to the control group. This result is statistically significant at the 5 percent level. One of the possible reasons for this lower penalisation is the lack of credibility for Treatment 3 demonstrated in Section 6.1. As respondents do not deem the report credible given its source, the information about the corrupt politician would not warrant a penalising action. Similarly to the credibility effects per media source, this effect on penalisation is small.

Table 5: ATE on Penalisation

	Penalisation Coefficient
T1: Newspapers	-0.001
	(0.951)
T2: Social Media	-0.014
	(0.339)
T3: Social Media Anonymous	-0.035**
	(0.024)
N	7,561

Treatment effects on penalisation per treatment group (medium/source) compared to control group (state auditor).

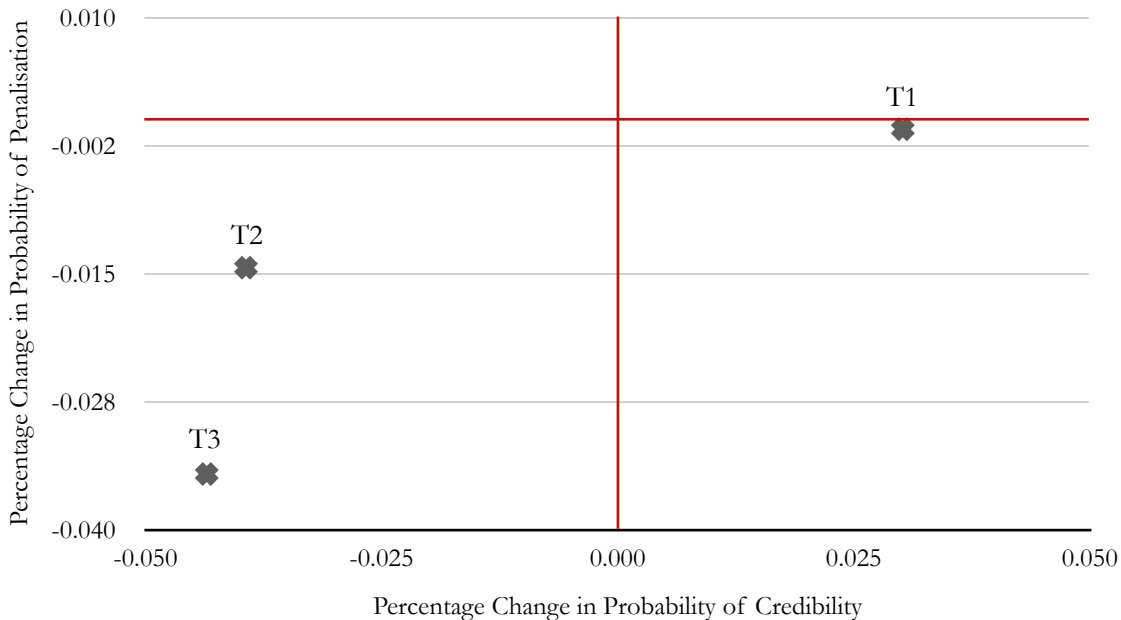
p-values in parentheses: * p<0.10, ** p<0.05, *** p<0.01

Source: Author's analysis using data from ECAF 2018 (CAF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468>; Retrieved: 11 May 2022

Nonetheless, there is a clear correlation between credibility and penalisation as demonstrated in Figure 1 below. This scatter plot illustrates the coefficients for each treatment group compared to the control group for both credibility and penalisation. The figure shows that credibility and penalisation have a positive relationship, in which higher levels of credibility are correlated with a higher willingness to penalise the corrupt politician. This trend is clear across all treatment groups. While this is not a

direct causality, it should be noted that studies concerned with media availability curbing corruption should consider the relationship between media credibility and the electoral penalisation of corruption. This is particularly relevant, given the rise of less reputable sources such as social media and anonymous sources on social media.

Figure 1: Average Treatment Effects on Credibility and Penalisation



Treatment effects on credibility and penalisation per treatment group (medium/source) compared to control group (red lines). Treatment 1: top right hand corner; Treatment 2: top left hand corner; Treatment 3: bottom left hand corner

Source: Author's analysis using data from ECAF 2018 (CAF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468>; Retrieved: 11 May 2022

6.3. Determinants of Variation in Credibility and Penalisation

The probit models allow the study to select certain respondent determinants that cause variation on credibility and/or penalisation. This is a correlational study that motivates further investigation into certain groups within the sample. The variables selected are used to test the HTE in Section 6.4 below. The selection of these variables is motivated by the significant correlations some respondent groups have to both outcomes of interest.

Table 6: Determinants of Variation in Credibility

	C: State Auditor	T1: Newspaper	T2: Social Media	T3: Social Media Anonymous
Gender	-0.040 (0.108)	0.029 (0.231)	-0.017 (0.495)	-0.024 (0.334)
Age	-0.002 (0.141)	-0.001 (0.666)	-0.001 (0.666)	0.001 (0.599)
Education: Basic	-0.116*** (0.000)	-0.114*** (0.000)	-0.121*** (0.000)	-0.067** (0.021)
Political Sophistication	0.115*** (0.000)	0.125*** (0.000)	0.093*** (0.001)	0.057** (0.038)
Voted	0.007 (0.829)	0.040 (0.226)	0.052 (0.102)	-0.013 (0.694)
Worried about corruption	-0.029 (0.250)	-0.015 (0.567)	-0.034 (0.170)	0.033 (0.193)
Fellow citizens worry about corruption	-0.067*** (0.007)	0.003 (0.915)	0.001 (0.979)	-0.062** (0.012)
Social Media User	0.009 (0.776)	0.011 (0.717)	0.088*** (0.005)	0.064** (0.037)
Media Preference: Social Media	0.052* (0.084)	0.093*** (0.002)	0.064** (0.034)	0.012 (0.680)
Media Preference: Newspapers	0.109* (0.076)	-0.066 (0.324)	0.060 (0.351)	0.076 (0.230)
Lives in country with high freedom of expression	0.125** (0.024)	0.187*** (0.000)	0.094* (0.088)	0.004 (0.945)
N	1,771	1,805	1,816	1,788

Correlational study on credibility per treatment and control groups.

p-values in parentheses: * p<0.10, ** p<0.05, *** p<0.01

Source: Author's analysis using data from ECAF 2018 (CAF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468> ; Retrieved: 11 May 2022

In the case of the probit credibility model, seen in Table 6 above, there are three determinants that warrant further testing. These include education, political sophistication, and the level of freedom

of expression in the respondent's country. The first one, education, has a statistically significant relationship with credibility at the 1 percent level. Those who have not completed secondary school have a negative relation to credibility by 11.6 percent for the state auditor's report. This tendency holds for all the other treatment groups, meaning that there is a negative and significant relationship between the respondents' level of education and the level of credibility they attribute to all media sources. This is corroborated by the correlation between credibility and the second determinant of interest, political sophistication. This is because education and political sophistication are strongly related (Winters and Weitz-Shapiro, 2017). Those respondents who are politically sophisticated demonstrate a higher level of credibility across all media sources. Newspapers and state communications have the strongest correlations between credibility and political sophistication, being 12.5 and 11.5 percent respectively. These are statistically significant at the 1 percent level. A possible reason behind these trends associated with education and political sophistication is that more educated people are better able to discern credibility and thus trust themselves to search for cues in the text or verifiable sources rather than base their perception of credibility on the medium alone. Nonetheless, it is surprising that less educated people seem to be more critical of the third treatment than those who are more educated, as anonymity should be perceived as credibility hindering. The reason behind this relationship is unknown. As for the third determinant, those respondents who live in a country with higher freedom of expression have a positive relation with attributing credibility to state communications, newspapers and social media by 12.5, 18.7 and 9.4 percent, respectively. This demonstrates that higher freedom of expression is associated with higher credibility in the media, particularly in the case of state communications and traditional media, which are the most heavily censored in settings of low freedom of expression.

As for the probit penalisation model, seen in Table 7 below, there are three determinants that demonstrate significant relationships with the outcome variable. The first one is age, which has a positive and statistically significant relationship with penalisation across all media sources. These marginal probabilities, however, are small. Thus, age will not be considered for the HTE tests in Section 6.4. The second interesting determinant is the belief that fellow citizens worry about corruption when voting. This belief has a positive and statistically significant relationship with the willingness to penalise the corrupt politician for all media sources except state communications. Overall, this tendency could indicate that respondents are positively influenced by their perception of fellow citizens to penalise corrupt politicians in elections. The last determinant is, again, the level of freedom of expression in the respondent's country. Living in a country with higher freedom of expression is positively correlated to penalising the corrupt politician by 10.9 percent for those who got the report from state communications and 11.2 percent for those who got the report from newspapers. Further investigation could indicate that higher freedom of expression increases perceived credibility of traditional sources and, similarly, raises the willingness to penalise the corrupt politician.

Table 7: Determinants of Variation in Penalisation

	C: State Auditor	T1: Newspaper	T2: Social Media	T3: Social Media Anonymous
Gender	-0.006 (0.787)	0.003 (0.875)	0.007 (0.743)	-0.019 (0.404)
Age	0.004*** (0.000)	0.004*** (0.000)	0.003*** (0.002)	0.002** (0.050)
Education: Basic	-0.034 (0.225)	-0.029 (0.282)	-0.004 (0.880)	-0.003 (0.918)
Political Sophistication	-0.008 (0.739)	0.048* (0.052)	-0.019 (0.428)	-0.037 (0.135)
Voted	-0.016 (0.572)	-0.043 (0.130)	0.016 (0.575)	0.004 (0.908)
Worried about corruption	0.059*** (0.010)	0.005 (0.828)	0.018 (0.426)	-0.004 (0.851)
Fellow citizens worry about corruption	0.008 (0.707)	0.052** (0.022)	0.046** (0.041)	0.052** (0.024)
Social Media User	0.061** (0.036)	-0.002 (0.946)	-0.042 (0.127)	-0.001 (0.981)
Media Preference: Social Media	-0.027 (0.328)	0.030 (0.266)	0.043 (0.105)	-0.005 (0.870)
Media Preference: Newspapers	0.002 (0.976)	0.021 (0.712)	0.030 (0.578)	0.003 (0.961)
Lives in country with high freedom of expression	0.109** (0.037)	0.112** (0.038)	0.042 (0.422)	0.020 (0.705)
N	1,775	1,799	1,882	1,783

Correlational study on penalisation per treatment and control groups.

p-values in parentheses: * p<0.10, ** p<0.05, *** p<0.01

Source: Author's analysis using data from ECAF 2018 (CAF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468> ; Retrieved: 11 May 2022

6.4. Heterogeneous Treatment Effects: Credibility and Penalisation

While the probit models above cannot substantiate a causal relationship between the respondents' determinants and credibility or penalisation, the models do motivate the study of certain groups of respondents. In order to do this study by group, the paper conducts a set of heterogeneous treatment effects for the following five determinants: level of education, political sophistication, the influence of fellow citizens, and freedom of expression (measured through the age cohort of Latin Americans who did not experience a dictatorship). Each group yields at least one statistically significant effect on credibility or penalisation, except for the influence of fellow citizens. See Tables 8 and 9 below to see the results.

Table 8: Heterogenous Treatment Effects on Credibility

	C: State Auditor	T1: Newspaper	T2: Social Media	T3: Social Media Anonymous
Education: Basic	0.008	0.002	-0.050*	0.039
	(0.796)	(0.951)	(0.084)	(0.189)
Political Sophistication	0.031	0.037	-0.001	-0.067**
	(0.258)	(0.174)	(0.980)	(0.014)
Freedom of Expression (born after 1980)	0.048*	-0.008	-0.007	-0.032
	(0.071)	(0.773)	(0.794)	(0.235)
Fellow citizens worry about corruption	-0.039	0.041	0.033	-0.035
	(0.150)	(0.124)	(0.225)	(0.192)
N	1,771	1,805	1,816	1,788

Heterogeneous treatment effects on credibility per treatment and control groups. Coefficient belonging to interaction terms between treatment groups and group variable.

p-values in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Author's analysis using data from ECAF 2018 (CAF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468> ; Retrieved: 11 May 2022

Table 9: Heterogenous Treatment Effects on Penalisation

	C: State Auditor	T1: Newspaper	T2: Social Media	T3: Social Media Anonymous
Education: Basic	-0.020	-0.034	0.042	0.010
	(0.467)	(0.200)	(0.117)	(0.705)
Political Sophistication	-0.010	0.062**	-0.008	-0.043*
	(0.684)	(0.013)	(0.744)	(0.088)
Freedom of Expression (born after 1980)	0.003	-0.017	-0.007	0.022
	(0.918)	(0.475)	(0.788)	(0.365)
Fellow citizens worry about corruption	-0.034	0.022	-0.015	0.030
	(0.159)	(0.375)	(0.534)	(0.241)
N	1,775	1,799	1,882	1,783

Heterogeneous treatment effects on penalisation per treatment and control groups. Coefficient belonging to interaction terms between treatment groups and group variable.

p-values in parentheses: * p<0.10, ** p<0.05, *** p<0.01

Source: Author's analysis using data from ECAF 2018 (CAF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468> ; Retrieved: 11 May 2022

In the case of education, only the second treatment yields a statistically significant effect. Those respondents who have not finished their secondary education have a 5 percent lower probability of deeming the report credible when it is published on social media. This is compared to those who have achieved a secondary school level or higher, and is statistically significant at the 10 percent level. This result may be indicative of the importance the source has over the medium in some cases. Even though social media is prone to negative elements that hinder credibility, there are sources that publish on social media that are verifiable and have journalistic integrity. These are sources that may have a more educated audience. Hence, those who are more educated may not see social media as an unreliable medium, assuming that they obtain their information about politics on these verifiable sources. It is for this reason that those who are more educated attribute more credibility to social media than less educated respondents. This reasoning is similar to the idea that more educated people are better at discerning credibility and thus trust themselves to search for cues in the text or verifiable sources rather than base their perception of credibility on the medium alone.

In addition, political sophistication has a statistically significant effect amongst those who were told the report was published by an anonymous journalist on social media. Given this treatment, being minimally politically sophisticated decreases the probability of finding the report credible by 6.7 percent. This result is statistically significant at the 5 percent level. This seems intuitive, given that politically sophisticated people are better able to discern credibility and distrust anonymous publications. This corroborates Winters and Weitz-Shapiro's findings (2017) concerned with political

sophistication and someone's ability to discern credibility. It should be noted that this result contradicts the correlational study in Section 6.3. The reason behind this contradiction is unclear. Nonetheless, the paper is more concerned with the results from the HTE test, since they provide a causal and more reasonable perspective supported by literature.

Another interesting finding in the HTE results is the effect of being born after 1980. This is an age cohort that has not consciously experienced a dictatorship in Latin America (with the exception of Venezuela). The results show that respondents who have not experienced a dictatorship have higher probability of finding the state-published report by 4.8 percent. This finding nods at the idea that dictatorships have a lasting detrimental effect on credibility and trust in the state. This notion builds on Chang's (2021) findings of lowered state credibility under authoritarian regimes. What this result demonstrates is that a strong breach of trust such as a regime and sustained lack of freedom of expression has long-term impacts in the public's perception of state credibility. The fourth hypothesis is thus corroborated by this result. This finding calls for further investigation on the long-term effects of oppression and low freedom of expression, and the way audiences consume media and interact with state communications.

In the case of penalisation, only political sophistication has a statistically significant effect in the first and third treatments. For those who were told the report was published on a newspaper, being politically sophisticated increases the probability of penalising the politician by 6.2 percent. This is statistically significant at the 5 percent level. On the other hand, if the report is published by an anonymous journalist on social media, being politically sophisticated decreases the probability of penalisation by 4.3 percent. This is statistically significant at the 10 percent level. Similarly to the results on credibility, the treatment that lacks a key credibility cue (i.e. the author's name), has a negative effect on the penalisation of corruption. It could be argued that given the lack of substantiation in the report's credibility, politically sophisticated audiences are reluctant to penalise the politician in question. In the case of newspapers, a media outlet that is deemed more credible, the effect of being politically sophisticated is positive regarding penalisation. This could again indicate the positive relationship between credibility and penalisation.

Given the results above, the third and fourth hypotheses are validated in certain cases, depending on the treatment group. Even though the results and their significance may not be maintained for all treatment groups, those findings that are statistically significant do provide valuable insights to the third and fourth research questions presented in the paper.

7. Conclusion

This paper successfully assesses four hypothesis concerned with media, credibility and the electoral penalisation of corruption. The first hypothesis concerning the credibility of social media received mixed results. Overall, social media seems to have a negative effect on credibility, but the effects are small and the heterogeneous treatment effects do not have enough statistical significance to corroborate the hypothesis. Similarly, the paper's second hypothesis, which is concerned with the effect of social media on the penalisation of corruption, is only partially sustained. Only the third treatment, anonymity on social media, has a significant negative effect on penalisation. This result indicates that penalisation is not affected by the medium, but rather by the source of the report. This finding thus calls for further investigation on the media determinants of low electoral penalisation. It could be interesting to assess the difference in penalisation given a variety of sources within a single medium. As for the third hypothesis, HTE results support findings in the literature concerned with education and minimal political sophistication. Belonging to educated and politically sophisticated groups in the sample has a positive effect on credibility. This effect is only sustained by those who are politically sophisticated when assessing the willingness to penalise the corrupt politician. Finally, the results concerned with the fourth hypothesis demonstrate that respondents who did not experience a dictatorship in their adult life attribute more credibility to state communications. Hence, the hypothesis is validated and presents an opportunity to further investigate the long term consequences of sustained lack of freedom of expression.

Given these results, the paper makes three key policy recommendations. The first recommendation is to promote initiatives that are concerned with improving social media as an informational space. The motivation behind this recommendation is that the rise of social media is inevitable, even though it is deemed a less credible medium compared to others. Several studies have addressed opportunities for improvement, including fact-checking, increasing journalistic integrity, and source verification, amongst others (Viviani and Pasi, 2017; Yaqub et al., 2020). Some social media platforms have promised to take action and perform said improvements, but their goals fall short from addressing the scale of the problem (Ghosh, 2021). This matter is subject to a heated debate, questioning whether improving the quality and credibility of information should be left to the volition of social media companies (ibid). The road to enhancing the public's perception of credibility on social media is still a long way from reaching an impactful change. The second recommendation echoes the findings of Winters and Weitz-Shapiro's paper (2017). It is evident that the role of political sophistication is key in driving the penalisation of corruption. Increasing education and political sophistication enables a population to advance their skills in discerning credible sources and assess the journalistic integrity of corruption reports. This is worrying, since approximately 49 percent of young Latin Americans do not complete their secondary school requirements (World Bank Data, 2020). Reducing social inequality and poverty, as well as enhancing appropriate education-oriented policies, are at the forefront in improving this low achievement in education. The third recommendation is concerned with addressing the attacks on freedom of expression that continue to happen in the Latin American region. Lack of freedom of expression affects the penalisation of corruption by repressing media availability, as many studies in the literature have demonstrated (Ahrend, 2002; Dutta and Roy, 2016; Freille et al., 2007). This study, however, also demonstrates that lack of freedom of expression

has a long-term impact on the way audiences interact with information in the media. This is because prolonged periods of repressed freedom of expression result in lack of trust and credibility in media outlets and sources related to the state. This paper's results stress the importance of supporting initiatives that draw attention and fight against sustained censures on press freedom.

Having said that, we cannot claim these conclusions without acknowledging that the paper is subject to certain limitations. Firstly, the paper does not consider other channels outside of written press and social media, such as radio or television. This is a missed opportunity given that television is the most popular media channel to inform oneself about politics for Latin Americans (CAF, 2018). Secondly, as mentioned in Section 4.2, prior survey questions might have conditioned the respondent to have a stronger response against corruption in the experiment. Thirdly, the salience of the treatments is not strong as the report in question is immaterial and the experiment is carried out vocally in the midst of the survey. Nonetheless, the analysis retains its internal validity given the experimental nature of the data and the methodology used in the study. It is the external validity, however, that poses the paper's strongest limitation. This study does not treat politics in depth and is not concerned about the affiliation readers have to certain political parties and how that affects the credibility they attribute to media channels or their willingness to penalise corruption. It is important to note that media channels and authors also have political affiliations and, in many cases, a loyal following amongst readers. In order to gain external validity, the study would have to shift its focus to one particular context and truly reflect the political intricacies and affiliations attached to the electoral process, the media and the penalisation of corruption. Despite this caveat, this paper makes a compelling contribution to the field by providing an encompassing assessment of Latin America as a region and introducing social media as a medium of interest and freedom of expression in the connection between media credibility and the electoral penalisation of corruption.

Given this contribution, the study succeeds in placing social media at the heart of the credibility and penalisation discussion. This is a medium that offers a plethora of opportunities for further investigation. An interesting approach would be to assess social media's persuasive characteristics beyond credibility. For example, social media has a stronger impact on emotions than traditional media. Anger caused by sensationalising news and emotionally inducing posts are more prone to drive action in audiences such as protesting, voting, etc. In the context of corruption, this could apply to the willingness of voters to penalise a corrupt politician. Credibility plays a role in the penalisation of corruption, but it should be noted that credibility is only one element of persuasion to drive action. Social media is a complex and evolving medium, which comprises several elements of persuasion and engagement. This presents an opportunity to assess these elements and rethink how we interact with information and how this affects our actions in political settings.

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Appendices

Appendix A:

Table A: Randomisation of Survey Respondents

	N	Percentage
Gender		
Male	3,705	48.25%
Female	3,973	51.75%
Age Group		
20-24	1,216	15.84%
25-29	1,151	14.99%
30-34	1,062	13.83%
35-39	1,029	13.40%
40-49	1,752	22.82%
50-59	1,468	19.12%
N	7,678	100%

Source: Author's analysis using data from ECAF 2018 (CAF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468> ; Retrieved: 11 May 2022

Appendix B: Wording of experiment from ECAF 2018

A report is published about irregularities in the purchase of office materials authorised by a minister

Randomise Sample:

Control group: a state auditor publishes the report

Treatment 1 group: a newspaper with most readers in the nation releases the report

Treatment 2 group: a journalist publishes the report on social media (Facebook, Twitter, Instagram, etc.)

Treatment 3 group: a group of anonymous journalists publish the report on social media (Facebook, Twitter, Instagram, etc.)

[Omitted in Analysis] Treatment 4 group: a minor political party publishes the report

Q1: On a scale from 1 to 5, how credible would you find this report?

R: 1-not credible; 2-not very credible; 3-somewhat credible; 4-quite credible; 5-very credible

Q2: On a scale from 1 to 5, how likely is it that you would vote for this minister if they present themselves as a candidate in the next presidential elections?

R: 1-not likely; 2- not very likely; 3-somewhat likely; 4-quite likely; 5-very likely

Appendix C:

Table C: Balance of Randomised Treatment Groups

	C: State Auditor	T1: Newspaper	T2: Social Media	T3: Social Media Anonymous
Gender				
Male	918	921	928	938
Female	987	993	1.020	973
Age Group				
20-24	288	305	334	289
25-29	291	271	294	295
30-34	270	267	262	263
35-39	239	277	263	250
40-49	434	441	436	441
50-59	383	353	359	373
N	1,905	1,914	1,948	1,911

Source: Author's analysis using data from ECAF 2018 (CAF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468> ; Retrieved: 11 May 2022

Appendix D:

Table D: Description of Independent Variables

Variable	Description
Individual Characteristics	
Gender	Respondent's gender. Male=1; Female=0
Age	Respondent's age
Education: Basic	The respondent has not completed secondary school.
Political Attitudes	
Political Sophistication	The respondent has a minimal level of political sophistication, meaning he or she is familiar with the concepts of right wing and left wing politics.
Voted	The respondent voted in the last presidential elections.
Worried about corruption	The respondent believes corruption is the greatest issue his or her country faces.
Fellow citizens worry about corruption	The respondent believes his or her fellow citizens worry about corruption and penalise it with their vote.
Media Choices	
Social Media User	The respondent is a social media user of any platform (e.g. Facebook, Twitter, Instagram, etc).
Media Preference: Social Media	The respondent prefers using social media to inform himself or herself about politics over any other type of media.
Media Preference: Newspapers	The respondent prefers using newspapers (physical and digital) to inform himself or herself about politics over any other type of media.
Lives in country with high freedom of expression	The respondent lives in a country where freedom of expression is higher than 0.8 on the V-Dem scale (0-1). Countries below 0.8 include: Bolivia, Colombia, Venezuela.

Description of independent variables.

Source: Author's analysis using data from ECAF 2018 (CAF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468> ; Retrieved: 11 May 2022

Appendix E: Correlation between independent variables

Table E: Correlation Between Independent Variables

	Credibility	Penalisation	Gender	Age	Education: Basic	Political Sophistication	Voted	Worried about corruption	Fellow citizens worry about corruption	Social Media User	Media Preference: Social Media	Media Preference: Newspapers	Lives in country with high freedom of expression
Dependent Variables													
Credibility	1.0000												
Penalisation	-0.0570	1.0000											
Individual Characteristics													
Gender	0.0043	-0.0068	1.0000										
Age	-0.0336	0.0771	-0.0212	1.0000									
Education: Basic	-0.1180	0.0043	-0.0291	0.1403	1.0000								
Political Attitudes													
Political Sophistication	0.1097	0.0272	0.1556	0.0877	-0.1754	1.0000							
Voted	0.0276	0.0002	-0.0387	0.1819	0.0094	0.1209	1.0000						
Worried about corruption	0.0083	0.0246	0.0642	-0.0029	-0.1174	-0.0056	0.0042	1.0000					
Fellow citizens worry about corruption	-0.0112	0.0490	-0.0506	-0.0352	-0.0714	0.0432	0.0189	0.0398	1.0000				
Media Choices													
Social Media User	0.0924	-0.0026	0.0012	-0.3448	-0.2037	0.1587	0.0109	0.0275	0.0494	1.0000			
Media Preference: Social Media	0.0698	-0.0057	0.0244	-0.2297	-0.1371	0.0608	-0.0472	0.0007	-0.0070	0.2887	1.0000		
Media Preference: Newspapers	0.0159	0.0001	0.0334	0.0191	-0.0528	-0.0059	0.0029	-0.0011	-0.0054	-0.0361	-0.1089	1.0000	
Lives in country with high freedom of expression	0.0150	-0.0157	-0.0016	0.0315	0.0420	-0.0845	0.0695	-0.0833	0.0151	0.0278	-0.0214	0.0266	1.0000
N = 7,678													

Source: Author's analysis using data from ECAFE 2018 (CAFE, 2018); Available at: <https://scioteca.cej.com/handle/123456789/1468>; Retrieved: 11 May 2022

Table E: Correlation Between Independent Variables (Continued)

	Credibility	Penalisation	Gender	Age	Education: Basic	Political Sophistication	Voted	Worried about corruption	Fellow citizens worry about corruption	Social Media User	Media Preference: Social Media	Media Preference: Newspapers	Lives in country with high freedom of expression
Argentina	-0.0429	-0.0092	0.0068	0.0108	0.0841	0.0749	0.0752	-0.1126	0.0354	0.0456	-0.0169	-0.0330	0.2317
Bolivia	-0.0232	-0.0475	0.0164	-0.0535	-0.0222	-0.0123	0.0714	0.0049	-0.0556	-0.0734	-0.0271	-0.0097	-0.5101
Brazil	0.0124	0.0134	-0.0100	0.0045	-0.0533	-0.0093	-0.0249	0.0559	-0.0371	0.0550	0.0506	0.0002	0.2333
Colombia	0.0249	0.0602	-0.0099	0.0145	-0.0745	0.0663	-0.0471	0.1671	0.1041	0.0446	-0.0275	-0.0102	-0.5124
Ecuador	0.0024	-0.0436	0.0075	-0.0436	0.0919	-0.1112	0.1036	0.0023	-0.0063	-0.0021	0.0048	-0.0040	0.2272
Mexico	-0.0521	-0.0822	-0.0060	0.0141	-0.1258	-0.0800	-0.0790	-0.0047	-0.0273	-0.1011	-0.0163	0.0456	0.2267
Panama	0.0162	0.0364	0.0006	0.0200	-0.0299	-0.1001	-0.1139	0.0200	0.0056	-0.0343	0.0094	0.0197	0.1755
Peru	0.0564	0.0121	-0.0119	0.0271	-0.0961	-0.0850	0.0911	0.1255	0.0451	0.0167	-0.0299	0.0458	0.2372
Uruguay	0.0324	0.0556	0.0112	0.0185	0.1918	0.1638	0.0287	-0.2155	0.0076	0.0539	-0.0327	-0.0306	0.2258
Venezuela	-0.0251	0.0111	-0.0042	-0.0087	0.0348	0.0748	-0.1322	-0.0485	-0.0735	-0.0136	0.0891	-0.0208	-0.4934
N = 7,678													

Source: Author's analysis using data from EC-AF 2018 (C-AF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468>; Retrieved: 11 May 2022

Table E: Correlation Between Independent Variables (Continued*)

	Argentina	Bolivia	Brazil	Colombia	Ecuador	Mexico	Panama	Peru	Uruguay	Venezuela
Argentina	1.0000									
Bolivia	-0.1182	1.0000								
Brazil	-0.1180	-0.1190	1.0000							
Colombia	-0.1187	-0.1197	-0.1195	1.0000						
Ecuador	-0.1150	-0.1159	-0.1157	-0.1164	1.0000					
Mexico	-0.1147	-0.1156	-0.1155	-0.1161	-0.1124	1.0000				
Panama	-0.0888	-0.0895	-0.0894	-0.0899	-0.0870	-0.0868	1.0000			
Peru	-0.1200	-0.1210	-0.1208	-0.1215	-0.1177	-0.1174	-0.0909	1.0000		
Uruguay	-0.1142	-0.1152	-0.1150	-0.1157	-0.1120	-0.1118	-0.0865	-0.1170	1.0000	
Venezuela	-0.1143	-0.1153	-0.1151	-0.1158	-0.1121	-0.1118	-0.0866	-0.1170	-0.1114	1.0000
N = 7,678										

Source: Author's analysis using data from EC-AF 2018 (C-AF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468>; Retrieved: 11 May 2022

Appendix F:

Table F: Descriptive Statistics per Treatment and Control Group

	C: State Auditor	T1: Newspaper	T2: Social Media	T3: Social Media Anonymous
Credibility				
Mean	0.521	0.550	0.480	0.477
Standard Deviation	0.500	0.500	0.500	0.500
N	1,771	1,805	1,816	1,788
Penalisation				
Mean	0.714	0.714	0.700	0.680
Standard Deviation	0.452	0.452	0.458	0.466
N	1,775	1,799	1,882	1,783

Descriptive statistics on credibility and penalisation per treatment and control groups.

Source: Author's analysis using data from ECAF 2018 (CAF, 2018); Available at: <https://scioteca.caf.com/handle/123456789/1468> ; Retrieved: 11 May 2022

