

Regulation of Speech and Media Coverage of Corruption: An Empirical Analysis of the Mexican Press

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Restrictions to media freedom, in the form of repressive defamation legislation, are thought to affect the amount of information about corruption that the media report. Exploiting variation in regulation of speech across states in a federal country, Mexico, and using a novel data set based on content analysis of the local press, I estimate the effect of lack of freedom on the coverage devoted to acts of malfeasance by public officials. Corruption receives significantly less attention in states with a more repressive defamation law. Instrumental variable models corroborate the interpretation of the negative association between regulation and coverage as a causal “chilling effect.”

Restrictions to media freedom shield officeholders from criticism and prevent voters from holding them accountable. In democratic countries, corruption can be understood as a failure of accountability. Citizens cannot (always) directly observe the performance of the incumbent administration, and politicians (and the bureaucrats they control) exploit the asymmetry in information to extract rents (Persson, Roland, and Tabellini 1997). Cross-country evidence shows that “a free press is bad news for corruption”: Having free media (as captured by an index or by a proxy measure) is related to better governance outcomes (Adserá, Boix, and Payne, 2003; Brunetti and Weber 2003). The mechanism posited involves a link between press freedom and the amount of information available to citizens: Governance outcomes are better because thanks to the freedom they enjoy, the media provide more information to citizens, reducing the information asymmetry between citizens and government officials and the related rents the latter

might extract. In this direction, Leeson (2008) provides empirical evidence based on cross-national survey data about the relationship between the free media, citizens’ information, and political apathy.

This article provides the first direct estimate of the effect of legal provisions that restrict press freedom on the coverage of political, bureaucratic, and police malfeasance in the media. The estimate, based on a direct measure of coverage, exploits what resembles, to a certain extent, a natural experiment—the fact that the strictness with which speech is regulated varies across different political units (i.e., states) in a federal country. A cross-state analysis in a federal country has a distinctive advantage: A host of other factors (e.g., culture, party system, and political history) that might affect the political content of newspapers is held (almost) constant. Mexico provides a unique opportunity because freedom of speech is regulated by the criminal code (*Código Penal*) of each state. The intervention by the Supreme Court in freedom of

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The research reported here was carried out while the author was a Graduate Fellow at the Institute for Social and Economic Research and Policy, Columbia University, and then a Visiting Fellow at the Alexander Hamilton Center for Political Economy, New York University. I thank John Huber, Eduardo Leoni, Andrew Gelman, Shigeo Hirano, Jeronimo Cortina, Bill McAllister, Rebecca Weitz-Shapiro, Camelia Minoiu, Lucy Goodhart, the *AJPS* editor and the anonymous reviewers, the Quantitative Research in Political Science group at Columbia, the Columbia ISERP Graduate Fellows, members of the Political Studies Department at CIDE (Mexico City), and participants at the 2007 Political Methodology Summer Meeting and at a seminar in the Department of Politics at New York University for commenting on previous versions of this article and providing extremely useful advice. Replication materials are available from the AJPS Data Archive on Dataverse (doi:10.7910/DVN/23958).

American Journal of Political Science, Vol. 59, No. 1, January 2015, Pp. 175–193

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DOI: 10.1111/ajps.12110

speech cases is not pervasive, and therefore it does not create uniformity of the law across states.¹ Other federal countries have common standards set by the constitution, by federal statute law, or by federal supreme courts. For instance, the current legal framework regarding freedom of the media to report about public officials in the United States and Argentina, both federal countries, is based on Supreme Court rulings, and therefore the law is uniform across states and provinces.

The existence of the “chilling effect” of draconian libel laws on media content is part of the conventional wisdom, and the results I present below are far from counterintuitive. Yet, the specific policies that governments adopt to restrict the ability of the media to provide political information have not been the subject of extensive research. In formal models, censorship is often thought of as an all-or-nothing decision (e.g., Besley and Prat 2006; Egorov, Guriev, and Sonin 2009), and in empirical analysis, the degree of freedom of the press is usually blackboxed and summarized in an index. Moreover, the formal and empirical literature on the media as instruments of accountability has focused more on ownership and collusion between publishers and politicians; journalists might be prevented from seeking or pressured to avoid reporting information that damages the reputations and careers of the political friends of the publishers. Sutter (2001) argues that the political preferences of owners affect media content, and Besley and Prat (2006) suggest that politicians may offer rewards to media owners in exchange for favorable coverage. Di Tella and Franceschelli (2009) detect a negative correlation between the amount of government advertising in the four main newspapers in Argentina and their corruption coverage. Djankov et al. (2003) find a relationship between press freedom and the overall structure of ownership in a given national market; in particular, government ownership is related to reduced press freedom.

The substantive impact of “soft” forms of regulation, in particular, has not been studied adequately. In most countries with at least a semblance of democratic institutions, the government does not censor media content before it is published or broadcast. Indeed, preemptive control of media content requires a specialized bureaucracy—

costly to set up and maintain—whose existence cannot be easily hidden from the public. It might be unpopular for a government that presents itself as democratic to admit that it is attempting to control media content.

The ability of the government to prosecute reporters for defamation or for “insult to public authorities” (e.g., *desacato* in Latin American countries) should have a negative impact on the propensity of the media to report sensitive information (for Mexico, see Reporters Sans Frontières 2004). Journalists might act according to a rational deterrence model (Becker 1968), taking into account the possible costs and benefits of reporting, including the probability of being accused of defamation. In order to avoid being prosecuted or sued, journalists avoid reporting certain types of information.

The few studies that directly address the “chilling effect” adopt empirical strategies with considerable limitations: They are based either on a very small sample or on indirect evidence like recollections or hypothetical scenarios. Dent and Kenyon (2004) use content analysis of newspapers in Australia and the United States and a simple subjective coding of defamation law as stricter in the former than in the latter and show that newspapers in Australia are more reluctant to publish stories on potentially sensitive topics, in particular concerning the behavior of private corporations. Renas, Hartmann, and Walker (1989) survey editors of U.S. daily newspapers, asking them about their willingness to publish some potentially libelous articles under different standards of proof, and conclude that the chilling effect is substantial. Barendt et al. (1997) carry out structured interviews with the staff of national newspapers and a survey study of the regional newspapers in Great Britain and show that the local and regional media in the United Kingdom are inhibited by chilling effect considerations more than the large national media. They also provide an estimate of the number of articles of local interest that newspapers did not publish because of concerns with defamation lawsuits, based on the recollection of the respondents to the survey.

There are three main reasons why an empirical study of the effects of legal regulation on coverage is needed. First of all, the consequences of “softer” restrictions to media freedom are not limited to the costs borne by information professionals who decide to report. In a democracy, self-censorship has negative aggregate consequences in terms of reduced accountability: Its costs might be borne by a large majority of citizens. Second, from the point of view of the harassment of reporters, equilibria with almost perfect deterrence might be observationally equivalent to equilibria with complete freedom. In the perfect deterrence case, no reporter suffers any consequence because—out of fear—they all avoid sensitive topics; in the complete

¹Due to the civil law system, the ruling of the Court applies to the individual case referred to it but does not set a precedent automatically: A set of several decisions that uphold the same interpretation of the law is needed for precedent to be set and bind all courts of the nation. The Mexican Supreme Court does not have the power—granted to the constitutional courts of some Western European countries—to declare null and void a provision of statutory law when deciding an appeal of a lower court decision. See Navia and Rios-Figueroa (2005) for a description of constitutional adjudication in Mexico.

freedom case, no reporter suffers any consequence because the law protects the freedom to write about sensitive topics. Yet, from the point of view of citizens' access to information, the two situations differ wildly. And finally, one cannot exclude *a priori* that the effect of regulation on reporters' behavior might be negligible. Deterrence effects are not as widespread, or as easy to detect, as one might think. For instance, studying an admittedly very different substantive realm, Lee and McCrary (2009) estimate, based on longitudinal data, that the deterrence effect of incarceration on young criminal offenders in Florida is close to negligible.

According to the estimates presented below, newspapers published in relatively more repressive states (one standard deviation more repressive than average) feature on average almost 40% fewer corruption stories than newspapers published in relatively more permissive states (one standard deviation less repressive than average), all else equal. The robustness of the result to the inclusion of controls for several confounding factors highlights the chilling effect as a very plausible candidate for a causal explanation.² An instrumental variable model corroborates the interpretation of the negative association between severity of defamation law and the coverage of corruption in the printed media as a causal "chilling effect."

While I focus, for the sake of research design, on a single country, the substantive lesson can be extended to the politics of media regulation in young democracies in general. In most of them, press freedom is a particularly pressing issue, and scholars and analysts have manifested disappointment because extensions of media freedom tend to lag behind other democratic reforms. In fact, the experience of younger democracies in Eastern Europe (Hall and O'Neil 1998), Latin America (Fox 1998; Hughes and Lawson 2005; Waisbord 1998, 2000), and East Asia (Kim 2003) points to a stylized fact: Democratization is not sufficient to ensure that the conditions required for the press to perform its role of "watchdog" are in place. Yet, the debate on the establishment of a free press in new democracies might have been, to an extent, barking at the wrong tree. On the one hand, some have raised *a priori* skepticism regarding the ability of markets and private ownership of media outlets to provide citizens with the information needed in a democracy.

²A study of a nonrandom sample of Latin American journalists finds that 51% of the respondents said that they have been censored or forced to withdraw a piece by their supervisors, and 47% claim that they have practiced self-censorship. (see ICJ 2003). The potential ambiguity of the questions (from what is possible to infer from the press release) might inflate these numbers. See also Bajomi-Lázár (2003) for anecdotal evidence from Hungary that points to the same phenomenon.

The other side of the debate has relied on the prescription that private ownership of the media *per se* leads to a well-functioning press.³ The debate has overlooked or underemphasized how factors other than ownership, and short of outright censorship, affect the information that the media spread regarding the behavior of elected officials and public servants. By showing that legal regulation matters *a lot* in terms of media content, this article contributes to the debate by stressing the importance of the legal framework in which media organizations operate. The analysis I present shows the substantial effect that laws purported to protect reputations have on the dissemination of accountability-oriented information. The trade-off between accountability and the right to a reputation can be avoided, to an extent, if different rules are applied to ordinary citizens and public officials. For instance, the intuition that drives U.S. Supreme Court jurisprudence on the issue—different standards should apply to the right to a reputation for public figures and ordinary citizens—should be taken seriously. If defamation and libel laws have the consequence of shielding public officials from scrutiny, it is advisable to adopt looser standards of protection when the reputation that might be harmed is that of an agent endowed with considerable power and the ability to misuse public resources and abuse power.

Measuring Coverage of Corruption

Coverage of corruption in Mexican newspapers is studied through an original data set based on the content analysis of a random sample of newspapers from each of the 32 federal units in Mexico in 2001. The outcome of interest is coverage of corruption, measured as the number of articles that mention acts of corruption attributed to identifiable political, bureaucratic, and law enforcement agents. The analysis exploits the substantial variation in legal protection of speech that follows from the federal structure of Mexico; the sample size is large enough to be analyzed using statistical methods. Furthermore, self-censorship is inferred from observed patterns in the publication of news pieces about corruption rather than hypothetical scenarios or recollection of past behavior.

The empirical data on the coverage of corruption in the Mexican daily press come from the content analysis of the newspapers, carried out by the author, in the

³Iosifides (1999) provides a summary of the debate, focused more on diversity of opinions rather than accountability-oriented information.

collection of the Hemeroteca Nacional of the National Autonomous University of Mexico in Mexico City. The sample of 54 local (i.e., state-level) dailies, from each of Mexico's 32 federal units, includes two newspapers for most states (18), three newspapers in two states, and one in the remaining 12 states. In the case of 15 states, the sample includes a pair of newspapers, one controlled by a large chain, the Organización Editorial Mexicana (OEM), and one not owned by the chain.⁴ To obtain the sample, a list of local dailies was compiled, based on the information available in a directory generated and maintained by a third party.⁵ The list includes almost 400 dailies. The collection in the Hemeroteca Nacional is not equally extensive. Two newspapers for each state, one not owned by the OEM and, if it existed, one owned by the OEM, were chosen at random from the list.⁶ The content analysis of the hard copies was complemented, in the case of a few newspapers, with newspaper-days retrieved from the electronic archives.⁷

An efficient scheme to infer the yearly content of a newspaper is the "reconstructed week" (Lacy et al. 2001; Riffe, Aust, and Lacy 1993; see Hansen et al. 1998 and Riffe, Lacy, and Fico 2005 for textbook treatments). The sample analyzed here includes a set of six nonconsecutive daily observations: a Monday, a Tuesday, and so forth are chosen at random from the universe of days of the year for each newspaper.⁸ The sampling scheme accounts for potential day-to-day variation in the content of a newspaper without introducing dependence among individual (newspaper-day) observations. If the news content is

sticky from day to day (e.g., newspapers write follow-up stories in the days after a scandal emerges), coverage in day $t + 1$ is not independent of coverage in day t : If the quantity that needs to be measured is the content of an outlet over a longer period (e.g., a year), sampling non-consecutive days (in this study, 9 weeks apart from each other, on expectation) provides much more information than sampling consecutive days.⁹

The year 2001 was chosen for two reasons, one more practical and one more influenced by research design considerations. The practical consideration is that there is some delay between publication and inclusion in the Hemeroteca Nacional collection, and this choice ensured that when fieldwork was carried out, a comprehensive collection of newspapers, especially those of a more limited (statewide) scope, was available for sampling.

The research design consideration has to do with the salience of the topic of corruption in the coded year. The year 2001 is the first after the change of party control of the presidency, and is considered by many as the first year of full democracy for contemporary Mexico. The political system was at the time permeated by an anticorruption atmosphere fueled by the party that had just gained control of the presidency. Mexico before 2000 is a paradigmatic instance of competitive authoritarianism (Levitsky and Way 2010); for 71 years, the hegemonic *Partido Revolucionario Institucional* (PRI) controlled all levels of government, though still conducting periodic elections. In 2000, the conservative *Partido Acción Nacional* (PAN), finally in control of the country's highest office, but still facing significant competition from the PRI, had incentives to settle scores with the previous ruling party. At last in charge of the country's highest office, it could use corruption scandals to consolidate its new position of power. At this time, there were many opportunities for newspapers to write about corruption. When a topic (e.g., corruption in this case) is more salient, repressive rules matter the most. From a practical research design point of view, this makes it easier to detect the effects if they are present because the constraint of the law "binds": There are potentially many stories, some of which might be reported—if it is not too costly to do so—whereas others might not be reported because the costs are high. At the same time, salience of the substantive topic, by itself, cannot artificially produce a result like those reported below if the phenomenon is not taking place in the real world. To

⁴Ownership of a newspaper by the OEM was ascertained from the web page of the firm, <http://www.oem.com.mx/oem/> (accessed June 2, 2006).

⁵The list is available at <http://www.prensaescrita.com> (downloaded June 1, 2006).

⁶When a newspaper chosen by the original randomization was not available in the collection of the Hemeroteca, a random order was imposed to the complete list of newspapers from a state. If none of the newspapers on the list were available, a further simple randomization procedure was used to select among one of those available at the Hemeroteca. In many cases, the procedure chose the only available newspaper from a state.

⁷These are *El Universal*, *La Jornada*, *Ecos de Morelos*, *Diario de Yucatán*, *Diario de Chihuahua*, and *Diario de Juárez*. The selection of the dates was performed following the same scheme used for the hard copy newspapers.

⁸The rationale for restricting the sample to six, rather than seven, observations per newspaper is due to the fact that the Hemeroteca Nacional limits each borrowing request to three volumes of a single newspaper. Therefore, sampling one further day according to the scheme above would have required approximately half of the time required to sample the 6 days and was judged not cost-effective. When a sampled date was unavailable in the Hemeroteca, the next available volume was chosen, and the same day of the week in the date farthest from any date already sampled was chosen.

⁹To assess *how much* more information this scheme provides, the day-to-day autocorrelation of the content would have to be estimated, and for this purpose, consecutive days should be coded for a sufficiently large number of newspapers.

be extremely cautious, the evidence presented below estimates the effect of legal regulation on media content when a substantial amount of information that could be published is available: in other words, *when it matters the most*. Nevertheless, discussion about the questionable nature of criminal sanctions for defamation had not really taken full steam, and therefore one faces a prototypical instance of a media regulation framework that lags behind other aspects of democratization, such as genuinely competitive elections.¹⁰

A precondition to assess the relationship between legal regulation of speech and coverage of corruption is variation in how punitive the law is. Criminal defamation law in Mexico varies along various observable dimensions. Two aspects seem *prima facie* the most relevant. The first is the maximum prison term prescribed if the defendant is found guilty; this can be coded from the penal code of each state. The second dimension of severity has to do with the requirements for indictment. An important component of the cost inflicted on journalists is the physical and pecuniary costs of the pretrial arrest and the defense, regardless of the final outcome of a trial. Zepeda Lecuona (2005) documents the widespread use of pretrial detention in the Mexican legal system. As a measure of how easy it is to indict someone for defamation, the variable *Defamation Indictments* was computed as the log average (over the years 1998–2000) of per capita indictments for defamation in the state, as reported in the *Estadísticas Judiciales 1998–2004*, published by the Instituto de Estadística, Geografía e Informática (INEGI). There is substantial variation in the prevalence of defamation cases across states. In the year 2000, for instance, there was a total of 768 indictments for defamation. Of these, 15% were in the state of Chiapas, another 15% in the state of Veracruz, and 10% in Michoacan. And while at the national level approximately four proceedings out of a 1,000 are for defamation, in the two most repressive states, defamation accounted for an impressive 2% of all criminal cases. A large proportion of cases is decided against the defendant—of the 524 cases decided in 2000, 73% were against the defendant. Unfortunately, the statistics do not report the average length of the sentences. The states with longer prison terms (e.g., Chiapas, Veracruz) display higher per capita indictments for defamation. Similarly, the states with shorter prison terms have lower rates of indictment. The simple correlation between maximum sentence and Defamation Indictments is 0.42

($p < .02$). Plausibly, both are affected by the same underlying dimension, the severity of the law itself. But given the possibility that the formal law does not necessarily reflect the functioning of the criminal justice system in a given state, past indictments are a better measure of the punitiveness of the legal system. In the hierarchical regression models, I focus on Defamation Indictments, and I correct for their possible endogeneity with instrumental variable models.

Details of the Content Analysis

The main section of the newspaper, the local section(s) (e.g., “Estado” and “Municipios”), and the crime and judicial section (e.g., “Policia”) were explored in full. The articles were identified based on the inspection of the title and the first two paragraphs. If they made references to politics, they were read in full and were included in the count if they mentioned any illegal act of a bureaucrat, politician, judge, or law enforcement officer, as long as it is related to the public position held or sought by the person described in the article.

The data set includes all the articles that mention acts of corruption that took place in the state in which the newspaper is published. The stories published in the Federal District about facts that took place locally but related exclusively to the federal administration were not included in the counts. This decision ensures that the same class of objects is coded in all the states. For example, some articles in *El Sol de México* that alleged a bribing scheme organized by President Vicente Fox to some opposition federal legislator to obtain his compliance were not included in the counts. They would have been counted as local if the legislator had been a representative of the Federal District in the Congress.

Restricting attention to local stories makes it possible to control for a potential confounder, the level of corruption in the state, for which a state-level measure is available. If the articles on malfeasance are affected by the amount of raw material available, variation across states in the prevalence of corruption affects local coverage but does not affect national coverage (that depends on the availability of stories at the national level, and therefore on the average prevalence of corruption in the whole country, but not on corruption in the state of publication). One could claim that analyzing news from all the country would control for the national level of corruption, which is clearly constant. Yet, newspapers in a given state might pay more attention to news of events that take place in contiguous states, or states in the same region (e.g., north,

¹⁰The crime of defamation was expunged from the federal criminal code in March 2007, following a vote in the Senate. The House of Deputies had first passed the bill in April 2006. It is still treated as a criminal offense in the state criminal codes.

Yucatán Peninsula); the availability of potential stories in a state becomes difficult to capture.¹¹

For each article, information was also recorded on the type of illegal act mentioned (e.g., extortion, vote buying), the source, the position (e.g., politician, bureaucrat), and the level of power (i.e., federal, state, local) of the alleged main culprit and of the possible accomplices mentioned in the story. The definition of corruption adopted—alleged crimes committed by elected and career government actors, related to their public position—encompasses acts such as embezzlement, illegal campaign finance, bribe taking, vote buying, electoral fraud, and irregularities in the awarding of public contracts. Cases of human rights abuses are included when the subject of the article is the behavior of law enforcement officers. Information regarding the section, the page, and an abbreviated version of the title was recorded to ensure that the data collection is replicable. An article is included in the count if it refers to an identified or identifiable person or bureau. For example, an article that mentions a campaign to reduce corruption but fails to reference actual instances of the phenomenon would not be included; similarly, an article that complains about widespread corruption in a given city but fails to refer to specific bureaus or individuals would not enter the counts.¹²

A total of 467 articles are included in the counts, distributed over 324 newspaper-day observations (six daily observations for 54 newspapers). The analysis is performed treating the newspaper-day as the unit of analysis; hence, the *N* in the regression models is 324.¹³

¹¹Moreover, this strategy bypasses the issue of news stories shared by different newspapers owned by the same firm. If that were the case, similarities across newspapers in the same chain or conglomerate could emerge from the fact that they share a national newsroom and publish the same articles. In the design of this research, on the other hand, similarities across newspapers with the same owner in different states can be attributed to an ownership-related newsroom culture.

¹²The articles were coded by the author. A research assistant (RA), recruited and instructed remotely, independently read and coded a random subsample of the newspaper-day observations—in total, 29 newspaper-day observations from 25 different newspapers. The RA identified overall many fewer articles than in the original data collection. Yet, all the articles coded by the RA, with two exceptions, were also present in the original data set, and the correlation between the original and the replicated counts at the newspaper-day level is .51. The article-level data set collected by the author is available from the AJPS Dataverse.

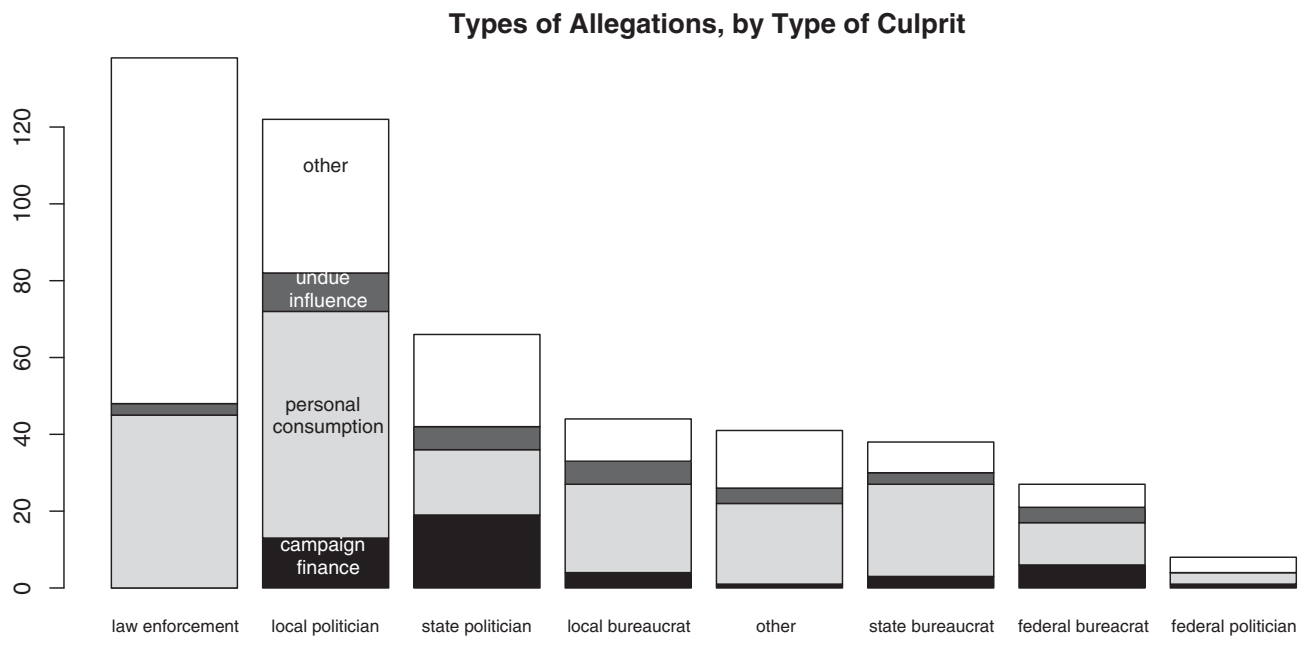
¹³An additional sheet was filled for every newspaper-day observation. It records the date, information on the editor and the publisher (when available), and a provisional count of the total number of articles coded. This sheet is the record for those newspaper-day observations for which no articles on corruption were found and coded.

A total of 23 newspapers in the sample belong to the Organización Editorial Mexicana (OEM). As of 2006, this firm owned 68 newspapers, 20 radio stations, one TV station, and other business in industries unrelated to publishing; moreover, it controlled the news agency Informex and was the largest publishing firm in the Spanish-speaking world, the third largest publisher in the world. Lawson's (2002) content analysis places the Mexico City daily controlled by the OEM, *El Sol*, in the category of "government-dependent" (i.e., PRI-friendly) newspapers. Three newspapers, all named *Novedades*, are controlled by the firm Grupo SIPSE, which is related to the major television network Televisa. Three more belong to a consortium, the Asociación de Editores de los Estados (AEE); two are owned by the group Asociación Periodística Síntesis; and two to Editorial Paso del Norte. The remaining 21 newspapers are either independently owned or belong to chains that have only one newspaper in the sample.

Exploratory Analysis

I focus on the consequences of regulation of speech on one dimension of news output: the quantity of news released to the public. The quality (e.g., reliability vs. sensationalism, article-specific bias vs. balance) of the reporting of such information is not analyzed. The Mexican press might be creating unfounded scandals rather than reporting useful information on malfeasance (Seligson 2002). Measuring systematically the reliability of the stories published would require one to check their truthfulness, something impractical in the case of a large sample of local newspapers. Given that the topic of this study is whether regulation of speech deters journalists, it is immaterial whether the stories published are true or false. Understanding what the optimal regulation regime is if the goal is to maximize truthfulness, on the other hand, is a thorny question beyond the scope of this study.

Figure 1 breaks down the allegations by type and culprit. Most of the culprits are law enforcement agents and local politicians, followed by state politicians and local bureaucrats. Federal-level politicians are referred to only in a minority of the articles. Allegations of illegal campaign finance (e.g., using public funds for partisan campaigns) is more common among state-level politicians (i.e., governors and members of the state congresses); local politicians are accused more often of using public resources for their private gain. Allegations categorized as "undue influence of private interests" (that encompass nepotism or favoritism) make up a relatively small proportion of

FIGURE 1 Number of Articles of Local Interest, by Category of Culprit and Type of Allegation

Note: The residual category of culprits includes members of the judiciary (e.g., judges, prosecutors) and of the military. The residual category of allegations includes, among others, human rights violations and electoral irregularities.

allegations and affect local bureaucrats and politicians the most. Unsurprisingly, illegal campaign finance is not practiced by law enforcement officers; the residual category, which includes human rights abuses, torture, abuse of power, and so forth, is the modal category. In the “personal consumption” category are included allegations of petty extortion, as well as more serious allegations such as “being in the pockets of the *narcos*.” For example, one of the cases reported by *Noroeste Sinaloa* in September 2001 is police complicity in the cover-up of the visit paid by a fugitive *narco* boss to the hospitalized son. The daily counts range from 0 to 8, with a mean of 1.4; the state averages range from 0 to 3.6. The average number of articles in the sample varies substantially across newspapers; the newspaper averages range from 0 to 5.7.

A first simple systematic analysis of the variation observed can be carried out by looking at the newspaper mean number of articles as a function of some state- and newspaper-level predictors. In the first three panels of Figure 2 the average count for each newspaper is plotted against Corruption, the maximum sentence prescribed by the Penal Code, and Defamation Indictments. The black line is a least squares fit. *Corruption* in the state of publication is measured by the survey-based index published by Transparencia Mexicana for 2001 (Transparencia Mexicana 2001). The survey asks respondents whether they had to pay a “mordida” (a bribe) to obtain the provision

of a public service. Corruption is positively related to the amount of coverage, and regulation of speech is negatively related to coverage. The relationship is not driven by outliers—the gray lines in the plots are least squares fits with iterative exclusion of one observation (i.e., one newspaper) from the sample, and the slopes vary very little regardless of which newspaper is dropped from the sample. The bottom-right panel plots the residuals from a regression of mean counts on Corruption against the residuals from a regression of Defamation Indictments on Corruption. On the vertical axis is the amount of coverage in excess of what is expected given the level of corruption in a state: Newspapers with positive values feature more news about corruption than expected; newspapers with values close to 0 have approximately the coverage one would expect given the prevalence of the phenomenon in the state; newspapers with negative values underreport corruption.¹⁴ A negative association between how strict defamation law is and coverage of corruption is apparent in the plot. Again, the association does not seem to be driven by any one outlier, as the slopes of the gray lines (the least squares fit with iterative exclusion) exhibit very little variation.

¹⁴Due to the Frisch and Waugh (1933) theorem, the slope of the least squares fit in the fourth panel of Figure 2 is the coefficient on the measure of the severity of defamation law in the multiple regression that controls for corruption.

technical terms, the parameter λ_{ijk} of the Poisson distribution, where newspapers are indexed by k , the states by j , and the days by i) can be modeled as a function of state-specific, newspaper-specific, and newspaper-day-specific parameters. Among other advantages, directly modeling the nested structure avoids the problem of adjusting the estimates of uncertainty (e.g., computing clustered standard errors) to account for the fact that the observations of multiple newspapers in a given state, and of multiple days in a given newspaper, are not independent. Bayesian estimation of the model parameters is convenient when directly modeling the hierarchical nature of the data. Moreover, the model with instrumental variables presented in the next section would be very hard (if not impossible) to estimate using a maximum-likelihood approach.

Of direct substantive interest are the regression coefficients that link state, newspaper, and election calendar variables to the expected number of articles in a given newspaper-day observation. In particular, the coefficient on the measure of regulation of speech estimates the magnitude of the “chilling effect.” All the models include measures of corruption to account for possible differences in the availability of corruption stories to report. The main measure used in the study is the index published by Transparencia Mexicana described above. The index measures petty corruption rather than high-end political corruption (e.g., kickbacks in public contracting, illegal campaign finance), whereas the articles deal with both types of corruption. Yet, the prevalence of high-level corruption is probably highly correlated with the prevalence of its low-level counterpart. Most importantly, the index is a victimization measure rather than a perception measure; hence, it is not affected by the attention that the media give to the phenomenon. In the regression models below, I also use two additional measures of corruption that address high-level corruption directly. The first, *Objective Corruption*, is an “objective” index based on missing infrastructure (del Castillo et al. 2005; see Golden and Picci 2005 for the details of the method). This index estimates corruption at the state level based on its cumulative effect on infrastructure provision and provides an assessment of past patterns, in the longer term, rather than current experience with corruption. The second, *State Capture*, is an ordinal ranking (“Incidencia de la corrupción en relación con la captura del estado”) proposed by the Centro de Estudios Estratégicos at ITESM and based on a survey of approximately 4,000 firms (the *Encuesta de Gobernabilidad y Desarrollo Empresarial*), carried out at the beginning of 2002. The index is based on responses to the following question: “On average, what percentage of the total revenues of firms similar to yours is used every year for unofficial payments to influence the content of

new laws, policies or regulations?” This measure captures the prevalence of “grand” corruption, at the state level, as perceived by entrepreneurs and managers in the private sector.

The regression models also account for variation in *Per Capita Income* (log of gross domestic product [GDP] by state in 2001 as published by INEGI, divided by state population from the 2000 census data), partisanship of the governor, indicator variables for the OEM and Novedades newspapers, and electoral calendar variables. Specifically, I include a dummy equal to 1 if an election for the state legislature is taking place in the next 30 days, *Election Month*, and a dummy equal to 1 if an election for the state legislature is taking place in the next 6 months, but not in the next month, *Election Semester*. The salience of local and state politics might increase in the proximity of an election. Half of the states held elections around the period under analysis; four states¹⁵ had gubernatorial elections, and 12 more¹⁶ had elections for the state legislature. Twelve of the newspaper-day observations in the sample are in the month prior to an election; 76 observations are in the period between 6 and 1 month before an election. The indicators for observations before an election are not capturing potential national-level time-specific shocks—as, for instance, a nationwide month of special attention to corruption—because the dates of the elections are not concurrent across states. The models also include *PRI Governor*, an indicator that takes the value of 1 if the governor in power at the time of publication is a member of the PRI, as reported by the Electoral Institute of each state, and the interaction between this indicator and OEM Newspaper.¹⁷ There is no interaction between the Novedades dummy and the PRI Governor dummy, as all the Novedades newspapers are published in states with a PRI governor.

Some of the models also include a measure of extralegal risk. The Inter American Press Association proposed a five-category ranking of the states according to the extralegal risks for investigative journalists. The states ranked as posing very high risk are Tamaulipas, Baja California, and Sinaloa; high-risk states are Sonora, Chihuahua, and Guerrero; Veracruz, México, Nuevo León, Coahuila, Chiapas, Michoacán, and Oaxaca are ranked as risky, whereas Distrito Federal, Jalisco,

¹⁵Baja California, Michoacán, Tabasco, and Yucatán.

¹⁶Aguascalientes, Baja California Sur, Chiapas, Chihuahua, Durango, Hidalgo, Puebla, Quintana, Sinaloa, Tamaulipas, Tlaxcala, and Zacatecas.

¹⁷The Mexican Federal Electoral Institute provides links to the Electoral Institutes of each state at <http://www.ife.org.mx/portal/site/ife/menuitem.817e056eb3040a830465237d100000f7> (accessed August 13, 2006).

Morelos, Campeche, and Yucatán are ranked as difficult. *Extralegal Risk* is a variable that takes the values 0 to 4 in ascending order of risk. While one can be concerned about the quality of this measure, given the unclear criteria with which the rankings are derived, there are no better alternatives available for the early years of the decade.

The models incorporate a state-specific random intercept that accounts for “overdispersion”: substantively, the random components take into account the fact that there is variation across states not captured by the predictors. Notice that Poisson regression models as implemented in most statistical packages attribute all the variation in the counts to the predictors and to Poisson randomness. There is no error term in the equation that links the Poisson parameter to the predictor variables. The models presented here, on the other hand, recognize that the predictors do not fully explain the variation in the underlying parameter (which is, from the substantive point of view, the mean number of articles for a given newspaper-day).¹⁸

Results of the Basic Analysis: The Chilling Effect

The result of the simple regression, displayed in the scatterplot with least squares fit above, is replicated in a fuller model of the newspaper-day counts: All else equal, stricter defamation law is systematically associated with a smaller number of articles that mention acts of corruption.

Table 1 reports summaries of the estimates, namely, the mean and the standard deviation of the posterior distribution, and the (one-tailed) probability values.¹⁹ The probability values report the probability that the sign

of the coefficient is the opposite of the sign of its posterior mean: Formally, I report $\Pr(\beta > 0)$ for parameters with negative posterior mean, and $\Pr(\beta < 0)$ for parameters with positive posterior mean (Gill 1999). The p-values convey information regarding the reliability of inferences based on the sign of the posterior mean and are used to assess the statistical significance of the coefficients.

The first model in Table 1 measures corruption with the Transparencia Mexicana index; in the second and third models, I also include, respectively, the measure of capture and the measure of long-term corruption. In the fourth model, I include the measure of risk described above. The result of main interest is robust across specifications: The estimate of the regression coefficient on Defamation Indictments is between -0.47 and -0.48 , and its p-value is below .05 in the four specifications. To assess the substantive meaning of the finding, the nonlinearity of the model has to be taken into account. The top left panel of Figure 3 plots, for a median newspaper, the expected number of articles against the measure of severity of defamation law. Two newspapers, published in a state one standard deviation below the mean and one standard deviation above the mean of Defamation Indictments, differ on average by between an article a day and three articles a week.

The estimate of the coefficient on Corruption is positive, somewhat small, and far from statistically significant in all four models. Corruption coverage is positively associated with the prevalence of the phenomenon, but the association is substantively relatively small and imprecisely estimated, and inferences about it are not reliable. All else equal, a median newspaper published in a state one standard deviation above the mean of Corruption features something between the same number of articles as, and one article every 2 days more than, a newspaper in a state one standard deviation below the mean of Corruption.

The coefficients on the other control variables are not of direct interest, but here I describe them briefly. The coverage of corruption increases when elections approach. The increase is mild 6 months to 1 month prior to the election, and inferences about this coefficient might be somewhat unreliable ($p = .11$). The increase is sharp (and reliably positive: $p = .04$) in the last month before the election. The median newspaper, all else equal, increases its coverage of corruption by up to one article every 3 days in the semester prior to the election, and by between an article every 3 days and an article a day in the month before the election. An important proportion of articles about corruption reports mutual accusation by politicians—these increase during the electoral campaign. Moreover, before elections, the attention to local politics increases.

¹⁸The models were fit in WinBUGS (Spiegelhalter et al. 2003). The regression coefficients were given uninformative priors; to mildly constrain the values of the variance of the distribution from which the random intercepts are drawn, the variance parameter of the random intercept was assigned a weakly informative, folded Cauchy prior distribution. See Gelman (2006). The continuous inputs of the regression were standardized by subtracting the mean and dividing by two standard deviations to make interpretation easier (Gelman 2008). Moreover, the Markov Chain Monte Carlo sampler runs faster if all the variables are on the same scale. See Spiegelhalter et al. (2003). The \hat{R} statistics took the value of 1 for all the parameters; the variance between chains is the same as the variance within each chain, and this fact is compatible with convergence being achieved. See Gelman and Rubin (1992).

¹⁹Bayesian estimation does not simply provide point estimates of the parameters of interest and their variance; rather, the result of an estimation is the posterior distribution of the parameters, which contains all the current information regarding them. The posterior mean and standard deviation can be considered roughly equivalent to point estimates and standard errors in a classical framework.

TABLE 1 Posterior Mean, Standard Deviation (in Parentheses), and p-Value (in brackets) for Coefficients Estimates of the Models with Random State Intercepts

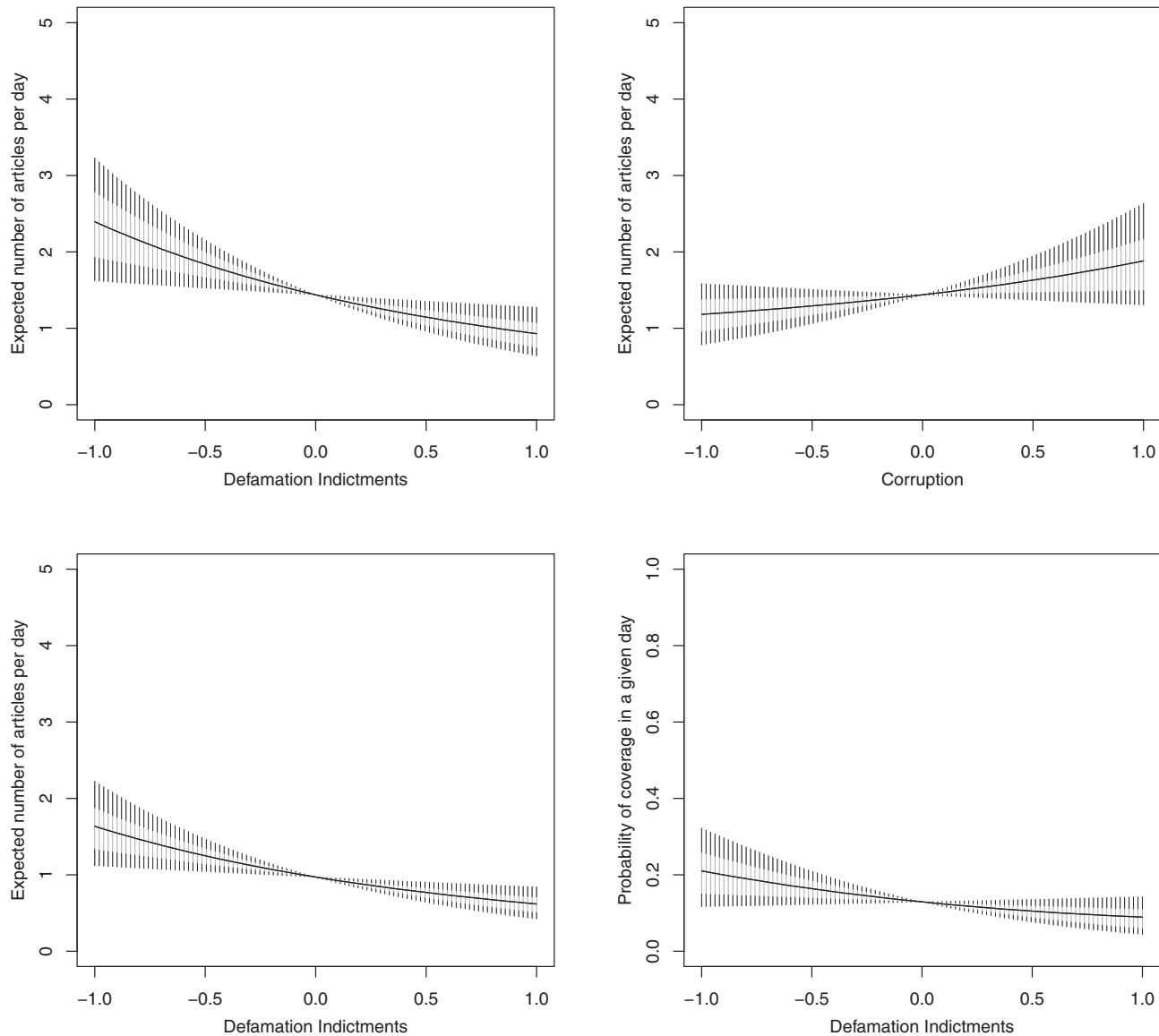
	1	2	3	4	5	6
Intercept	0.21 (0.18) [0.12]	0.2 (0.18) [0.13]	0.21 (0.19) [0.13]	0.15 (0.2) [0.23]	−0.2 (0.19) [0.16]	−1.83 (0.46) [0]
PRI	−0.31 (0.22) [0.07]	−0.31 (0.23) [0.08]	−0.31 (0.24) [0.1]	−0.36 (0.24) [0.06]	−0.11 (0.23) [0.34]	−0.73 (0.59) [0.1]
Election month	0.47 (0.27) [0.04]	0.47 (0.28) [0.05]	0.46 (0.27) [0.05]	0.47 (0.27) [0.04]	0.4 (0.32) [0.11]	0.74 (0.87) [0.19]
Election semester	0.17 (0.15) [0.12]	0.16 (0.14) [0.11]	0.17 (0.13) [0.11]	0.16 (0.14) [0.11]	0.02 (0.16) [0.44]	1.09 (0.45) [0.01]
OEM	−0.01 (0.15) [0.48]	−0.01 (0.15) [0.5]	−0.01 (0.15) [0.5]	−0.01 (0.16) [0.46]	−0.11 (0.19) [0.29]	−0.15 (0.49) [0.39]
Novedades	−0.37 (0.2) [0.03]	−0.37 (0.19) [0.02]	−0.37 (0.19) [0.03]	−0.36 (0.19) [0.03]	−0.04 (0.22) [0.43]	−0.5 (0.62) [0.21]
Corruption	0.23 (0.27) [0.19]	0.16 (0.28) [0.29]	0.24 (0.34) [0.24]	0.23 (0.27) [0.18]	0.12 (0.25) [0.33]	0.31 (0.55) [0.29]
GDP	−0.12 (0.26) [0.33]	−0.12 (0.28) [0.32]	−0.12 (0.3) [0.35]	−0.17 (0.26) [0.25]	−0.2 (0.26) [0.23]	0.38 (0.51) [0.23]
Defamation	−0.47 (0.27) [0.04]	−0.48 (0.29) [0.04]	−0.48 (0.28) [0.05]	−0.47 (0.27) [0.04]	−0.49 (0.26) [0.03]	−0.51 (0.51) [0.15]
PRI by OEM	0.19 (0.22) [0.19]	0.27 (0.28) [0.16]	−0.02 (0.36) [0.47]	0.07 (0.09) [0.23]	0.15 (0.25) [0.26]	0.31 (0.69) [0.33]
Corruption (second measure)		0.27 (0.28) [0.16]	−0.02 (0.36) [0.47]			
Risk				0.07 (0.09) [0.23]		

Note: N = 324 in all models. The outcome variable in Models 1–4 is the count of articles about corruption; in Model 5, the outcome is the count of articles on petty corruption; and in Model 6, the outcome is the publication of at least one article about grand corruption. Models 1–5 are Poisson models, whereas Model 6 is a binary logistic model. The main measure of corruption is the Transparencia Mexicana measure in Models 1–5 and state capture in Model 6. The second measure of corruption in Models 2 and 3 is, respectively, state capture and the infrastructure-based measure.

Neither the coefficient on the OEM dummy nor its interaction with the dummy for PRI governor is close to statistical significance. Conversely, the newspapers owned by SIPSE, all else equal, feature substantially fewer articles on corruption; the estimate of the coefficient on the Novedades indicator is −0.36, with p-value .03. For

the median newspaper, ownership by this firm is associated with a reduction in coverage by one article every 2 or 3 days. An explanation based on demand effects and geographic specialization of this firm—explored in the United States case by Gentzkow and Shapiro (2006)—can be excluded: Two of the newspapers are published in

FIGURE 3 Expected Number of Articles, in the Median Newspaper, as a Function of Regulation of Speech and Corruption



Note: The top plots are based on the estimates of Model 1. The bottom left plot is based on Model 5 and the bottom right on Model 6. The predictors are standardized so they have mean zero and standard deviation equal to 0.5. The darker segments display the 80% credible interval, and the lighter segments display the 50% credible interval.

southern states in the Yucatán Peninsula and one in the Pacific state of Guerrero. In states ruled by a PRI administration, the coverage is on average lower, but not statistically significantly so. Finally, the coefficient on Extralegal Risk is positive, and not statistically significant, against the theoretical expectation that journalists in riskier environments display less of a propensity to report about sensitive topics. Similarly, no reliable inference can be made regarding the relation between GDP and coverage of corruption.

I exploit the fact that each article was coded for level of power of the main culprit mentioned, to calculate two additional quantities: the number of articles that talk about low-level petty corruption, meaning acts committed by local officials (both civil servants and city-level politicians) and law enforcement agents, and the number of articles that talk about illegal acts committed by politicians at the state and federal levels (excluding, then, mayors and city council members). Columns 5 and 6 report the results of models for these alternative outcome

variables. The model in column 5 is a random-effects Poisson model like those on the aggregate counts, and the outcome variable is the number of articles mentioning petty corruption. The coefficient on the measure of defamation law is remarkably similar to those on the full data. Column 6 reports the estimates of a random-effects logit model, where the outcome variable takes the value of 1 if at least one article was published, and 0 otherwise. Given that articles about high-level political figures are overall less frequent, the count is very often equal to 0; hence, modeling it as a binary variable is more appropriate than modeling it as a Poisson random variable. The coefficients in this model are not directly comparable to those in the other columns of the table. Again, the coefficient on the measure of defamation law severity is negative and substantively quite large, but its p-value does not reach the conventional threshold of 5%. All else equal, the probability of reading news about high-level corruption in an average newspaper in a relatively more liberal state (one standard deviation more liberal than average) is around 7 percentage points higher than in a relatively more repressive state (one standard deviation more repressive than average).

The results for the control variables are not remarkably different in the robustness check models, even if some of the estimates are less precise. Corruption still has a positive but not statistically significant association with coverage. Coverage is still associated with the electoral calendar, but the increase is concentrated in the election month for articles about lower-level corruption and in the 6 months prior to the election for high-level corruption. The coefficient on the dummy for PRI-controlled states is still negative, but its p-value is quite larger in Model 5 and somewhat larger in Model 6. The estimates of the coefficient on the dummy for OEM newspapers are not distinguishable from zero, as before, but now also the coefficients on the dummy for Novedades newspapers are no longer statistically distinguishable from zero. Finally, the interaction between the PRI state dummy and the OEM newspapers dummy is positive and large (and its p-value is .07, close to the conventional threshold) in the model for high-level corruption.

Instrumental Variable Regression Model

While the basic analysis in the previous section shows a robust statistically significant negative association between repressive regulations and amount of corruption coverage, a causal interpretation is not yet warranted due

to the concerns with endogeneity one might raise. First of all, the variable that measures repressiveness of the law in the models presented here, Defamation Indictments, is a measure of *past enforcement* rather than a measure of the law as recorded in the statutes. Moreover, the severity of the law itself might be affected by an unobserved “assertive” tradition of the newspapers in a given state. Legislators might stiffen the law that regulates speech in order to protect themselves from “watchdog” journalists. As a consequence, the severity of the law is endogenous to coverage; the law might be more punitive when the unobserved “style” of the newspapers is assertive. A well-documented instance of this phenomenon took place in 2004, when the Chiapas legislature and governor passed a reform of the penal code that increased minimum sentences for the crimes of defamation and libel from 2 to 3 years, increased the maximum sentences from 5 to 9 years, and eliminated the possibility of posting bail for such offenses. The governor reportedly wanted to settle scores in a conflict with the media that dated back to his election campaign in 2000, when a columnist of the daily *Cuarto Poder* discovered that the candidate governor never obtained the law degree he claimed to hold (Villanueva 2004).

Due to this form of endogeneity, the results of the regression presented above might underestimate the chilling effect. An instrumental variable model can overcome these potential problems and support the interpretation of the negative relationship between defamation law and coverage of corruption as a causal “chilling effect.” The penal codes provide potential instruments for the severity of defamation law: The severity of criminal law for other offenses cannot directly affect the coverage of corruption, but it is related to the overall severity of the penal code in a state. There is a “natural” ranking of the seriousness of crimes; legislators and citizens can be reasonably expected to believe that the more serious crime must be punished with longer prison terms. For instance, once the minimum mandatory sentence for homicide is chosen, it bounds from above the punishment for offenses that are naturally ranked as less serious than homicide (e.g., crimes against reputation). Similarly, if the requirements for indictment vary with the severity of the law for a given crime, and the severity of the law for a given crime is predicted from the severity of criminal law in a given state, measures that capture the latter can be used as instruments for the former.

The instrumental variable model might not rule out endogeneity completely. While violations of the exclusion restriction—direct effects from punitiveness of criminal statute law to coverage of corruption—seem extremely implausible, violations of the ignorability assumption

(exogeneity of the instrument) can never be ruled out when instruments are not randomly assigned. There might be some unobservable trait (e.g., a more traditionalist or authoritarian political culture) that affects the instruments (how punitive a state's criminal justice system is), the treatment (regulation of speech), and newspapers attitudes regarding their "watchdog" role with respect to politicians and bureaucrats. Yet, the set of variables that affect all three phenomena is a proper subset of the set of confounders; there are fewer factors that affect criminal justice, regulation of speech, and corruption coverage than factors that affect only regulation of speech and corruption coverage.

I estimate a simultaneous equations model for μ_j , the state-level component of the Poisson parameter, and D , the severity of defamation law.²⁰ The reduced form I estimate is

$$\mu_j = \xi X_j + \beta \gamma Z_j + \epsilon_j, \quad (1)$$

$$D_j = \delta X_j + \gamma Z_j + \eta_j, \quad (2)$$

where μ is the state-level component of the Poisson parameter, D is the severity of defamation law, Z are the instruments, X is a matrix with the remaining state-level covariates, and β is the structural parameter that captures the effect of defamation law on coverage of corruption. Equation (2) is equivalent to the first stage in two-stage least squares estimation, and Equation (1) is Equivalent to the second stage.

Two instruments are included in the matrix Z : *Homicide Law*, the minimum mandatory sentence for the crime of *homicidio*, and *Prison Escape*, the maximum sentence for *evasión de presos*, aiding and abetting the escape of a prisoner. The sources are the penal codes of each state.

Table 2 reports the estimated coefficients for the instrumental variable models. The instrumental variable model corroborates the negative relationship between severity of defamation law and corruption coverage, and supports an interpretation of the negative association as a causal chilling effect. The structural parameter, which captures the causal effect of regulation of speech, is negative, and the p-values are small and below the 5% threshold in all the models.

The top left panel of Figure 4 plots the expected number of articles for a median newspaper, as a function of Defamation Indictments, once the endogeneity is taken into account. All else equal, a newspaper published in a relatively more repressive state (one standard deviation more repressive than average) features between one

and almost two articles a day fewer than a newspaper published in a relatively libertarian state (one standard deviation less repressive than average). The bottom left panel of Figure 4 plots the predicted probability of finding an article about grand corruption in a given day, for a median newspaper, as a function of Defamation Indictments. The probability of a finding a report of grand corruption on a given day is 30 percentage points higher, all else equal, in a relatively less repressive state (one standard deviation below the mean) than in a relatively more repressive one (one standard deviation above the mean).

When the potential endogeneity of the severity of defamation law is accounted for, coverage is predicted more closely by the prevalence of corruption in the state. The two panels on the right in Figure 4 show, respectively, the expected number of articles about corruption as a function of the Corruption index, and the probability of finding coverage about grand corruption as a function of State Capture, for a median newspaper. Comparing a less corrupt and a more corrupt state (one standard deviation below and above the mean of corruption), the expected coverage is almost double in the more corrupt state. Similarly, if one compares a newspaper published in a relatively less captured and a relatively more captured state, the probability of finding coverage about corruption involving higher-level politicians increases by 18 percentage points.

The results for the other predictors are largely consistent with those of the basic analysis. The electoral effects emerge, even if they are estimated less precisely than in the basic analysis. As before, when the analysis is restricted to grand corruption, the short-term effect is not detectable, whereas the increase in the 6 months before the election is stronger and highly statistically significant.

The coefficients on the OEM dummy are again not near statistical significance, whereas newspapers of the Novedades group feature significantly less coverage of corruption, in the analysis of the data without disaggregation; however, as before, the estimates are negative but not statistically significant when the counts are disaggregated by type of coverage. Non-OEM newspapers in states with a PRI governor feature slightly fewer stories of corruption than those in states governed by the former opposition parties, but the effect is not estimated precisely, and inferences based on this result might be unreliable. The probability of finding coverage about high-level corruption, on the other hand, is significantly lower. Per Capita Income again does not predict coverage: The coefficient is very close to 0 and nowhere near statistical significance. Finally, the coefficient on Extralegal Risk, included in Model IV3, is positive, and its p-value is a relatively

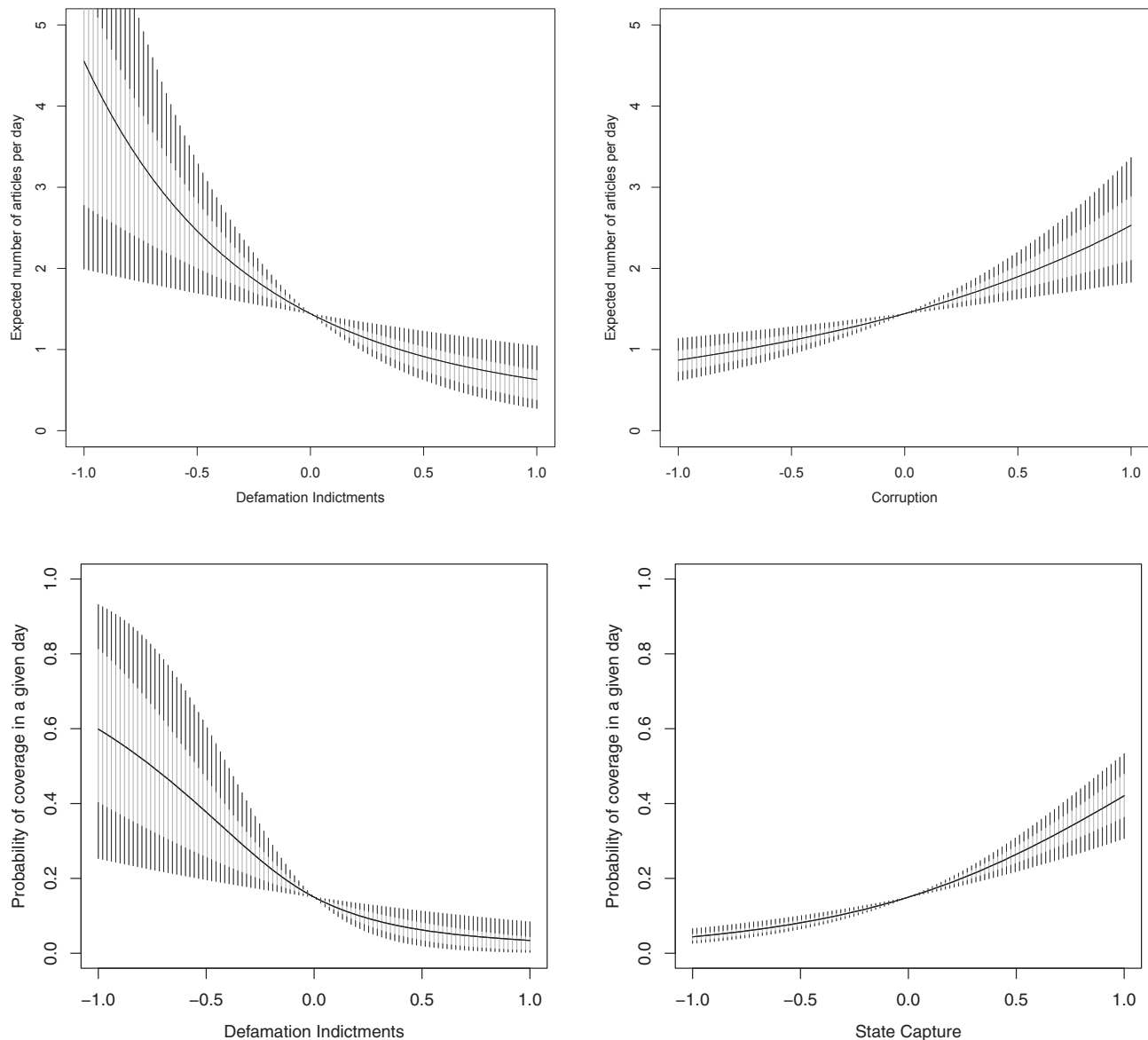
²⁰See Lancaster (2004) for an introduction to instrumental variable models in a Bayesian framework.

TABLE 2 Posterior Mean, Standard Deviation (in Parentheses), and p-Values (in brackets) for the Estimates of the Coefficients of the Instrumental Variable Models

	IV1	IV2	IV3	IV4	IV5
Intercept	0.12 (0.19) [0.26]	0.07 (0.22) [0.34]	0.06 (0.24) [0.4]	−0.27 (0.25) [0.11]	−1.75 (0.44) [0]
PRI	−0.16 (0.23) [0.23]	−0.16 (0.22) [0.23]	−0.19 (0.23) [0.2]	0.03 (0.21) [0.46]	−0.9 (0.44) [0.01]
Election month	0.42 (0.25) [0.05]	0.41 (0.27) [0.06]	0.4 (0.28) [0.07]	0.29 (0.32) [0.18]	0.66 (0.73) [0.21]
Election semester	0.14 (0.13) [0.15]	0.12 (0.13) [0.18]	0.11 (0.13) [0.21]	0.04 (0.14) [0.39]	1.05 (0.39) [0]
OEM	−0.06 (0.16) [0.35]	−0.03 (0.14) [0.41]	−0.04 (0.15) [0.39]	−0.14 (0.18) [0.23]	0.13 (0.36) [0.36]
Novedades	−0.35 (0.2) [0.03]	−0.33 (0.19) [0.05]	−0.32 (0.2) [0.05]	−0.14 (0.22) [0.26]	−0.23 (0.47) [0.3]
Corruption	0.53 (0.24) [0.01]	0.53 (0.27) [0.03]	0.57 (0.31) [0.04]	0.44 (0.27) [0.06]	1.41 (0.36) [0]
GDP	0.01 (0.21) [0.49]	0.03 (0.2) [0.43]	−0.04 (0.22) [0.44]	−0.04 (0.2) [0.43]	0.14 (0.33) [0.32]
Defamation	−0.99 (0.56) [0.03]	−1.49 (1.07) [0.02]	−1.74 (1.37) [0.03]	−1.53 (1.29) [0.05]	−2.4 (1.59) [0.02]
PRI by OEM	0.2 (0.21) [0.18]	0.26 (0.22) [0.11]	0.16 (0.29) [0.29]	0.01 (0.19) [0.5]	−0.02 (0.48) [0.48]
Corruption (second measure)		0.17 (0.2) [0.21]	0.16 (0.21) [0.21]		
Risk			0.3 (0.23) [0.09]		
<i>Assignment equation (“first stage”)</i>					
Homicide	0.13 (0.13) [0.16]	0.12 (0.12) [0.16]	0.09 (0.11) [0.18]	0.08 (0.12) [0.24]	0.21 (0.12) [0.03]
Prison Escape	0.46 (0.17) [0.01]	0.45 (0.17) [0]	0.45 (0.18) [0.01]	0.38 (0.18) [0.02]	0.41 (0.17) [0]

Note: N = 324 in all models. The outcome variable in Models 1–3 is the count of articles about corruption; in Model 4, the outcome is the count of articles on petty corruption; and in Model 5, the outcome is the publication of at least one article about grand corruption. Models 1–4 are Poisson models, whereas Model 5 is a binary logistic model. The main measure of corruption is the Transparencia Mexicana measure in Models 1–4 and state capture in Model 5. The second measure of corruption in Models 2 and 3 is, respectively, state capture and the infrastructure-based measure.

FIGURE 4 Expected Number of Articles, in the Median Newspaper, as a Function of Regulation of Speech and Corruption (Top Panels), and Probability of Coverage about Grand Corruption, as a Function of Regulation of Speech and State Capture (Bottom Panels)



Note: The top plots are based on estimates from Model 1, and the bottom plots are based on estimates from Model 5. The predictors are standardized so they have mean zero and standard deviation equal to 0.5. The darker segments display the 80% credible interval, and the lighter segments display the 50% credible interval.

low .09. This result contradicts the conventional wisdom and casts doubt on the quality of the ranking. Very likely, more than capturing risk itself, the index also captures the opportunities and past propensity of reporters to talk about “shady” topics, and the overall degree of lawfulness of the state.

One of the requirements for instrumental variable models is a “significant first stage”—the instruments

must be correlated with the endogenous regressors. In the assignment equation (the “first stage”), the coefficients for the two instruments are positive, and the coefficient on Prison Escape is highly statistically significant in all models. I also performed placebo experiments to assess whether the estimates presented above are driven by a modeling artifact. With placebo instruments, designed to be unrelated to the treatment and the outcome, the

model does not detect any effect of defamation law on the coverage of corruption.²¹

Conclusions

Regulation of speech reduces the amount of accountability-oriented information spread by the media. Conditional on several potential confounders, there is a systematic negative association between how punitive defamation law is and the number of articles that mention events of political and bureaucratic corruption and police misconduct in Mexican newspapers. According to the estimates of the basic analysis, up to one article a day is “missing” in newspapers published in states with a more repressive legal environment, compared to those published in more permissive states. The result is even more striking if the severity of defamation law is instrumented for with the severity of criminal law for other offenses: Restrictive regulation of speech substantially reduces the coverage of corruption in the media.

Some remarks about these results are in order. On the one hand, it should be kept in mind that studies based on samples of newspapers at the subnational level might yield estimates with high variability. One or two newspapers may never be a large enough sample to precisely estimate patterns that obtain across subnational units, given the amount of potential variation across newspapers published within any one subnational unit. The sampling variability of state-level estimates of the amount of coverage that a given topic receives is necessarily quite high; in practice, at the state level, there might be one assertive newspaper and many more outlets that have a conciliatory attitude with officeholders, and the inclusion or exclusion of one of the more assertive newspapers might affect the picture one gets of the amount of coverage reserved to the topic of corruption by the newspapers published in a given state. In addition, in the specific case of Mexico, the criteria of inclusion of a given newspaper in the collection of the Hemeroteca Nacional are not necessarily informed by the desire to provide a faithful representation of the range of media outlets published in each state.²² In the coming years, as electronic archives of media outlets

become more widespread outside the restricted group of advanced democracies, opportunities might become available to study media behavior in younger democracies, and in emerging and developing economies, using automated text analysis on very large samples of media outlets. Yet, at the moment, human coding of a sample of manageable size seems to be the only available empirical strategy to address questions like the one addressed in this article.

On the other hand, if regulation of speech only affects the behavior of some newspapers (e.g., those that do not have friendly relationships with the government or with prosecutors), the results provided here are underestimating the effects of regulation on coverage. Moreover, even in states with the most permissive regime of regulation of speech, the existence of criminal laws might affect decisions regarding what is to be published. For these reasons, the estimates provided here could be considered a lower bound to the “chilling effect” of punitive regulation of speech in Mexico.

The evidence also suggests that the poor performance of the judicial system often noticed in developing countries (Djankov, Bowler, and Hiskey 2001) and in Latin America in particular (Becker 1999; Prillaman 2000; Staats, Bowler, and Hiskey 2005) might not affect to the same extent different spheres of operation of courts and prosecutors. When the reputation of well-positioned actors like politicians and bureaucrats is at stake, the threat of judicial prosecution is sufficiently credible to have an observable—both statistically and substantively significant—deterrence effect on the behavior of reporters and editors. In this sense, one can conjecture that judicial institutions are malfunctioning on purpose. Uninterested, for instance, in enforcing the property rights of less powerful actors, they are effective when they are used to shield government officials from public scrutiny.

Some more general conclusions for the study of the media and government accountability, in particular in young democracies, can be drawn. The role of the media in providing information that allows citizens to control political and bureaucratic corruption is relatively well understood. Adserá, Boix, and Payne (2003) and Brunetti and Weber (2003) provide cross-country evidence on the relationship between freedom of the press and corruption; Gentzkow, Glaeser, and Goldin (2004) relate the decline of the corruption that had been prevalent during the Gilded Age in the United States to the success of the independent and informative newspapers at the end of the 19th century. In a democracy, self-censorship has negative aggregate consequences in terms of reduced accountability—its costs might be borne by a large majority of citizens.

²¹I reestimated the model in Equations (1) and (2), replacing the two instruments described above with two placebo variables on the same scale of the instruments in *Z*, but by construction unrelated to the assignment of the treatment and to the outcome. See Bound, Jaeger, and Baker (1995) and Chamberlain and Imbens (1996) for a discussion of this technique.

²²I thank an anonymous reviewer for helping me clarify these concerns.

I show how punitive defamation law discourages investigative journalism and considerably reduces the amount of information available to the public. Due to decreased monitoring and less effective accountability, the prevalence of corruption might increase and impose high costs potentially on the whole of society. Restrictions to press freedom, then, might have very visible negative consequences for the functioning of democracies and the quality of government. While usually presented as a means to the (legitimate) end of protecting reputation, legislation that treats defamation as a criminal offense shields politicians and public servants from disclosure of their malfeasance and indirectly creates incentives for officeholders to abuse their power or engage in profitable illegal activities. Given the potentially very high cost that the restrictions to information circulation might have in terms of good governance, the trade-off between the right to a reputation and the freedom of the media should be solved in the direction of more media freedom.

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