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# Research in Economics

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## Media exposure and corporate reputation

Luís Cabral <sup>a,b,\*</sup><sup>a</sup> Stern School of Business, New York University, United States<sup>b</sup> CEPR, London, UK

### ARTICLE INFO

#### Article history:

Received 14 June 2016

Accepted 7 July 2016

Available online 6 August 2016

#### Keywords:

Media

Reputation

Firm performance

### ABSTRACT

The media typically provide greater coverage of large and reputed corporations. I provide a theory of firm reputation dynamics based on the positive feedback effects resulting from the correlation between firm size and media coverage. I show that, in equilibrium, the dynamics of firm reputation are highly asymmetric: slow increases in reputation are followed by sudden drops. Moreover, endogenous media coverage implies greater dispersion of firm performance. Finally, I consider implications for corporate media strategy, namely the trade-off between “no news is good news” and “there is no such thing as bad publicity.”

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## 1. Introduction

Corporate reputation may be defined as the opinion that the public has about a certain firm. This opinion results from each person's experience as well as from hearing from other people's experience (through mainstream media, social media or simply through word of mouth). The economic theory of reputation, for all of its considerable development and variety, is limited by the assumption that reputation results from consumer experience with purchasing the seller's good (Klein and Leffler, 1981; Kreps and Wilson, 1982; Milgrom and Roberts, 1982; Shapiro, 1982, 1983; Tadelis, 1999; Cabral, 2000; Mailath and Samuelson, 2001; Board and Meyer-ter Vehn, 2013, 2014). The empirical literature, too, is based on the same premise (e.g., Jin and Leslie, 2009; Cabral and Hortaçsu, 2010).<sup>1</sup>

In this paper, I propose a theory of corporate reputation where media channels play an important role. The theory is based on a fundamental assumption: that media coverage is an increasing function of a firm's performance. While I am not aware of any empirical evidence regarding this assumption, it seems reasonable. For example, the media talk more about leading firms (where “leading” can be understood either in terms of size or in terms of perceived excellence); and to the extent that consumers get news about firms from the media, any reputation-relevant firm event becomes known to those agents at a faster pace than if it had occurred to a smaller firm. A similar argument applies to social media (that is, social media focuses primarily on leading firms). Finally, to the extent that word-of-mouth results from individual consumers' experience, one also expects the rate of information transmission to be greater the larger firm size is.

I derive both positive and normative implications from this assumption in a model of corporate reputation dynamics. First, I show that it implies persistence in corporate performance: firms that perform better are more likely to make the news; and, this gives these firms an advantage in capturing new consumers arriving in the market. Second, I show that the

\* Correspondence address: Stern School of Business, New York University, United States.

E-mail address: [luis.cabral@nyu.edu](mailto:luis.cabral@nyu.edu)

<sup>1</sup> Some of these references are not cast directly in terms of seller–buyer relationships, but can be easily adapted as such. For a formal introduction to the economics of reputation, see Cabral (2005). For a survey of application related to the Internet, see Cabral (2012). For a rather more advanced game-theoretic treatment, see Mailath and Samuelson (2006).

“buzz” effects created by media coverage imply a fundamental asymmetry in corporate reputation. As Warren Buffett and many others have put it in different ways, “it takes 20 years to build a reputation and five minutes to ruin it.” My explanation for this pattern is that firms with a high reputation are subject to closer scrutiny. Good news has relatively little impact on the firm's reputation, which is already high. Bad news, by contrast, travels very fast, thus “ruining” the firm's reputation at a fast pace.

These positive implications also beg the question of what a firm's media strategy ought to be. Some firms (e.g., Mars) are known for shunning media attention. Is this a good strategy? I show that there are essentially two effects to consider. First, wide media attention implies that bad news travels very fast (in fact, that is the reason why it takes “five minutes” to ruin a firm's reputation). In this sense, “no news is good news” may be the rule, though for a different reason than the standard use of the phrase. Second, media attention creates awareness, which in turn increases a firm's market share. In this sense, “there is no such thing as bad publicity,” as the saying goes. Moreover, the counterpart of the first effect is that good news also travels fast when a firm is subject to wide media attention. I show that an increase in media exposure may benefit or harm firm performance depending on the firm's current position as well as on the relative importance of consumer turnover.

*Related literature:* The literature on corporate reputation is quite vast and draws on a number of disciplines (Barnett and Pollock, 2012). The strand of literature that is closest to my paper is the economic theory of reputation. Broadly speaking, there are two economic models of reputation: one developed by Klein and Leffler (1981), among others, is based on a repeated game played between a firm and consumers; a second one, pioneered by Kreps et al. (1982), is based on a game between a privately informed player (e.g., a firm) and a Bayesian updating audience (e.g., consumers). There are also many other variations, which typically combine aspects of the repeated-game and of the incomplete information approaches.<sup>2</sup> As I mentioned earlier, these approaches to reputation typically assume that consumers obtain information about firm performance by experiencing the firm's product (normally with observation noise). By contrast, I focus on the case when consumers obtain information from the “media,” with the important assumption that the amount of information that is disseminated depends on the firm's performance.

In terms of reputation dynamics, the paper by Phelan (2006) is closely related to mine. He models country reputation when the government may be a good type who keeps its promises or a bad type who takes advantage of the economic agent's beliefs. Specifically, if agents believe the government to be honest, then they invest in the country in question. Phelan (2006) shows that, in equilibrium, governments gradually build a reputation for being trustworthy—even if they are not. When reputation is sufficiently high, a bad-type government suddenly expropriates all of the private agents' investment, at which point its reputation is shattered. My model produces similar dynamics (gradual increase, sudden fall in reputation) but for a different mechanism. In particular, I assume away the possibility of moral hazard, which is the key driver of asymmetric reputation dynamics in Phelan (2006).

In terms of the underlying mechanism, my paper is closely related to Veldkamp (2005). She considers a macroeconomic model where agents undertake more economic activity in good times than in bad. Economic activity generates public information about the state of the economy. If the economic state changes when times are good and information is abundant, then asset prices adjust quickly and a sudden crash occurs. When times are bad, scarce information and high uncertainty slow agents' reactions as the economy improves; a gradual boom ensues. My model differs in two ways. First, instead of considering the macro-economy, my focus is on firm reputation dynamics. Second, in my model information is generated by media outlets rather than by the agents' activity. Having said that, the underlying mechanism generating asymmetric dynamics is fairly similar.

Cabral (2016) presents a theory of reputation dynamics where consumers adjust their beliefs asymmetrically: if quality exceeds expectations, reputation increases by a little, whereas if quality falls short of expectations then reputation drops at a high rate. Although the present paper shares some of the features of reputation dynamics, the underlying mechanism is quite different. Moreover, Cabral (2016) focuses on the firm's investment in reputation, whereas the present paper focuses on the effects of media exposure in reputation dynamics.

Last but not least, my paper is related to the strategy literature on resource accumulation and competitive advantage. One of the most common lines of argument for persistence of firm performance is that firm success is based on resources that are both unique and difficult to transfer from firm to firm (Wernerfelt, 1984; Barney, 1986; Dierickx and Cool, 1989). To the extent that firm reputation—in the sense considered above—is thought of as a unique resource, the dynamics implied by my model correspond to Dierickx and Cool (1989): firms that are better known get greater media coverage and thus become better known. In other words, corporate reputation is “sticky,” which in turn implies that corporate performance is “sticky” too.

## 2. Model

Corporate reputation is a very vast and multidimensional concept: there are many aspects of a firm's characteristics that matter, and there are many different audiences to whom it matters. For simplicity, I consider the case when firm reputation

<sup>2</sup> In Cabral (2005), I argue that the Klein–Leffler approach is best described as a theory of trust, not reputation. However, the practice of most scholarly work seems to use the term reputation indistinctly.

is a one-dimensional variable (firm quality) that matters to one audience (consumers). However, the results presented in the next sections would apply to other features of corporate reputation as well.

Consider an industry with a measure one of consumers.<sup>3</sup> Although there may be several sellers, my analysis focuses on one firm only; that is, I abstract from issues of firm competition and instead center on the relation between a firm and its customers.

In each period, a measure  $\nu$  of consumers exits the market, whereas an equal measure  $\nu$  enters the market.<sup>4</sup> All consumers who are older than one period are aware of the firm's existence. By contrast, among the new consumers only a fraction  $\beta_t$  become aware of the firm's existence during the first period. Below I return to the dynamics of the important coefficient  $\beta_t$ .

The source of uncertainty in the model is firm quality at time  $t$ ,  $q_t$ , which I assume is governed by a simple stochastic process. Specifically, I assume that  $q_t \in \{0, 1\}$ ; and that, each period, there is a probability  $\lambda$  that the value of  $q_t$  changes. I will refer to firms with  $q_t=1$  as “good type” or “top firms” or “top quality” firms.

Consumers do not become immediately aware of the news of changes in firm quality. Specifically, I define firm reputation at time  $t$ ,  $r_t$ , to be the fraction of consumers who know about the firm's existence and believe that it is of top quality ( $q_t=1$ ). Under perfect and immediate information,  $r_t=1$  if  $q_t=1$  and  $r_t=0$  if  $q_t=0$ , that is, a good-type firm is perceived as such by all and a bad-type firm is perceived as a good-type firm by no one. In my model,  $r_t \in (0, 1)$  (that is,  $r_t \neq q_t$ ) for two reasons: first, some consumers are unaware of the firm's existence; second, some consumers have not gotten the news that  $q_t$  has changed from its prior value.

I now come to the central element of the model,  $\beta_t$ , which I refer to as media coverage. It plays two crucial roles in my analysis: first, it affects the rate at which new consumers become aware of the firm's existence; and second, it affects the rate at which news about the firm's quality reach consumers. The paper's fundamental assumption is that media coverage is correlated with firm performance. Specifically, I assume that

$$\beta_{t+1} = (1 - \delta)\beta_t + \delta r_t$$

In the above equation,  $1 - \delta$  measures the degree of “stickiness” in media coverage. In words, if  $\delta = 1$ , then media coverage is very sensitive to firm performance. Lower values of  $\delta$  correspond to the case when media coverage only responds partially to changes in  $r_t$ .

Finally, firm reputation,  $r_t$ , evolves as follows:

$$r_{t+1} = \begin{cases} (1 - \nu)r_t(1 - \beta_t) & q_t = 0 \\ (1 - \nu)(r_t + (1 - r_t)\beta_t) + \nu\beta_t & q_t = 1 \end{cases}$$

To understand the nature of the equations of motion, suppose that a fraction  $r_t$  of consumers believe (at time  $t$ ) that the firm is a top firm, even though the firm is actually not a top firm (that is,  $q_t=0$ ). Of the  $r_t$  measure of consumers, a fraction  $\nu$  leave the market (“die”). Of the remaining  $(1 - \nu)r_t$ , a fraction  $\beta_t$  learn through the media that the firm is not a top firm. It follows that, going into the next period, the total fraction of consumers who believe the firm is a top firm is only  $(1 - \nu)r_t(1 - \beta_t)$ . Finally, none of the newborn consumers add to the firm's reputation: either they do not know about the firm's existence or, if they do, they find out that it is not a top firm.

Now suppose that the firm is currently (at time  $t$ ) a top firm (that is,  $q_t=1$ ). All of the consumers who remain in the market and believe that the firm was a top firm will continue to do so (regardless of whether they get any news or not). Moreover of the  $(1 - \nu)(1 - r_t)$  consumers who remain in the market and did not believe the firm was a top firm, a fraction  $\beta_t$  changes their belief. Finally, we should also add a measure  $\nu\beta_t$ , the consumers who are born and receive news that the firm is a top firm.

I should note that there are elements of “behavioral economics” in the present model. In particular, I assume that consumers are not sophisticated enough to factor in their beliefs the fact that firm type changes with probability  $\lambda$  and the fact that silence (that is, not receiving news regarding the firm) might imply a change in the likelihood that the firm is a good or a bad type. Considering how Bayesian updating depends on the particular details regarding type spaces and so forth, I find my modeling assumption fairly realistic: if consumers receive news regarding a firm's type, they update their beliefs accordingly; otherwise, they maintain their previous assessment.

In the next section I consider the model implications in terms of firm reputation dynamics and the distribution of firm value.

<sup>3</sup> This is the appropriate mathematical approach to consider the case when there is a large number of consumers, each of whom is too small to be of any significance for firm dynamics.

<sup>4</sup> This assumption may be understood strictly (consumers leave the market and are replaced by new consumers); or it can be thought of analogically as meaning that a fraction of consumers forget about the firm's existence. In reality, both effects are likely to be relevant.

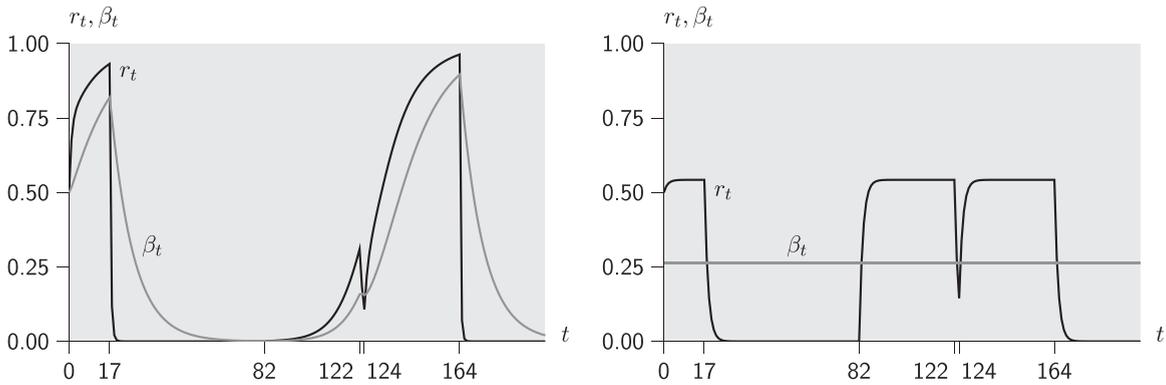


Fig. 1. Media exposure and reputation dynamics.

### 3. Media exposure and reputation dynamics

As I mentioned in the previous section, the source of randomness in the model is given by changes in firm type, which I assume take place exogenously at a rate  $\lambda$ . As an illustration, I generated a series of time periods when firm type changes. Assuming  $\lambda = 0.03$  and the default random seed, I get the following series of 5 switches in 200 periods (on average there should be 6): quality starts off high, switches to low at  $t=17$ , then to high at  $t=82$ , then to low and to high at periods  $t=122$  and  $t=124$ , and finally switches again to low at  $t=164$ .

The dynamics of media exposure and reputation are illustrated in the left panel of Fig. 1, where I assume that  $\nu = 0.3$  and  $\delta = 0.1$ ; and where I begin my simulation from the initial values  $r_0 = 0.5$  and  $\beta_0 = 0.5$ . The  $r_t$  line represents firm reputation (which I will also refer to as firm performance), whereas the  $\beta_t$  line represents media exposure. Given my assumption regarding media exposure dynamics, we observe a high correlation between  $\beta_t$  and  $r_t$ . (In other words, the correlation between  $r_t$  and  $\beta_t$  is an assumption, not a result.)

*Asymmetric reputation dynamics:* The first result illustrated by Fig. 1 is a fundamental asymmetry in firm dynamics. As can be seen, firm reputation and media exposure are increasing during periods when quality is high and decreasing during periods when quality is low. Moreover, increases in firm reputation during periods when quality is high are much slower than the drop in reputation following a switch to low quality. The reason is that, when quality is low, so is firm media exposure, which implies that, when quality turns to  $q_t=1$ , the news travel very slowly. By contrast, when the switch from high to low quality takes place, media exposure is very high and thus the bad news travel very fast.

Notice that, to the extent that media exposure is “sticky”, the movements in  $\beta_t$  are smoother than the movements in  $r_t$ . This is important in explaining why the drop in  $r_t$  is so sudden: even though quality is dropping, the media are still talking about it. Conversely, when a firm's reputation begins to increase from zero (or close to zero), media coverage lags behind, which helps explaining the slow take up.

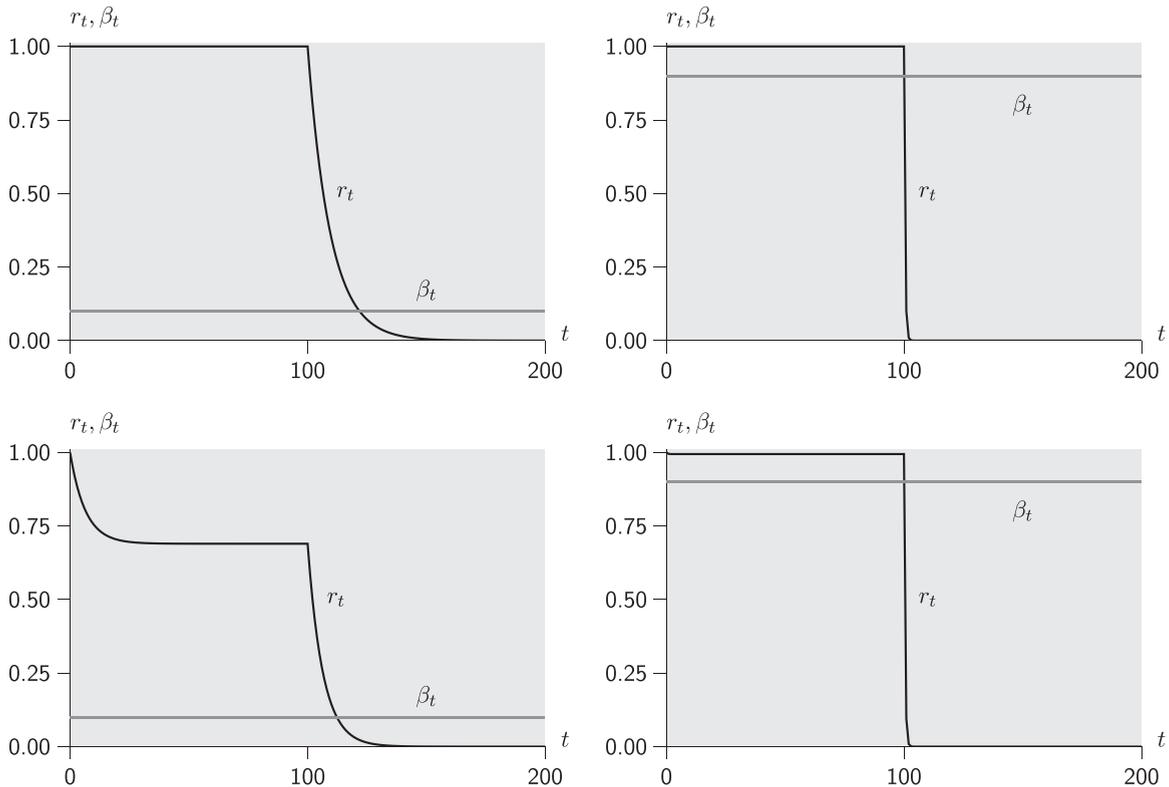
In order to understand the role played by media coverage in the asymmetric pattern of reputation dynamics, I run a counter-factual simulation where the degree of media coverage is fixed at the sample average of the first simulation (which I estimated to be 0.2625). The results are shown on the right panel of Fig. 1. As can be seen, the dynamic path of  $r_t$  is now rather symmetric: upward adjustments are just as quick as downward adjustments in  $r_t$  following a change in firm quality. In other words, goods news travel as fast as bad news. This makes sense, given that, by construction, the underlying model is symmetric (that is, the switch from good type to bad type, as well as the adjustment of reputation are symmetric other than through the value of  $\beta$ ).

*Variation in firm performance:* There is a second difference between the variable- and fixed-exposure cases. When media coverage responds to firm reputation (left panel), the resulting distribution of firm sizes is much wider than in the case when media coverage is constant. In the latter case, the values of  $r_t$  vary between 0 and a little over 0.5, whereas in the variable coverage case the values of  $r_t$  vary between 0 and almost 1. The explanation for this difference is that variable media coverage creates a positive-feedback effect on firm performance: high-performance firms are talked about more, which creates greater awareness of their existence and in turn feeds into their performance.

Greater variation in firm performance is also related to persistence of firm performance. Dierickx and Cool (1989) state that

Sustainability will be enhanced to the extent that adding increments to an existing asset stock is facilitated by possessing high levels of that stock. The underlying notion is that “success breeds success”: historical success translates into favorable initial asset stock positions which in turn facilitate further asset accumulation (p. 1507).

In my model, “adding increments to an existing asset stock” (firm reputation) are the stock of goodwill represented by  $r_t$  are “facilitated by possessing high levels of that stock” because of the nature the “media” process, namely because of my assumption that better firms receive greater coverage.



**Fig. 2.** Media policy and firm performance. The left panels correspond to low media exposure ( $\beta = 0.1$ ), whereas the right panels correspond to high media exposure ( $\beta = 0.9$ ). The top panels correspond to no consumer turnover ( $\nu = 0$ ), whereas the bottom panels correspond to positive consumer turnover ( $\nu = 0.1$ ).

#### 4. Media policy

Media exposure is a two-edged sword: being talked about in the mainstream media and social networks has two positive effects: first, it creates greater awareness of the firm's existence; and second, it diffuses good news about the firm's performance, which in turn improves the firm's reputation. Against these positive effects, media exposure has the negative effect of spreading bad news quicker, thus destroying a firm's reputation at a faster pace.

At the risk of stating the obvious, firms like good publicity and generally speaking shun bad publicity. An optimal media policy would increase media exposure whenever the firm has good news and reduce media exposure whenever the firm has bad news.<sup>5</sup> In practice, it is difficult to follow a very selective media policy, for which reason an increase in media exposure is a mixed blessing. In this section, I show by numerical simulation how these different effects play out in terms of corporate reputation dynamics.

In order to better separate the various effects, I consider the extreme case when media policy corresponds to a uniform shift in firm exposure to the media. For this purpose, I force the value of  $\beta_t$  to be constant over time. In terms of model parameters, this corresponds to  $\delta = 0$ , which implies  $\beta_t = \beta_0$ . I then think of media policy as affecting the value of  $\beta_0$ . In Fig. 2, I report the results corresponding to two values of  $\beta_0$ : low media exposure ( $\beta_0 = 0.1$ ), in the left panels; and high media exposure ( $\beta_0 = 0.9$ ), in the right panels.

Moreover, for illustration purposes, I consider the case when firm type changes once, at  $t = 100$ , from  $q_t = 1$  to  $q_t = 0$ . Finally, I assume that firm reputation starts off at the highest possible level,  $r_t = 1$ . Admittedly, this is a long series of assumptions: the cases I consider in Fig. 2 are very particular. However, they serve to illustrate some basic points and features that I expect to be present more generally.

The top two panels correspond to the case when  $\nu = 0$ , that is, no new consumers arrive in the market. This effectively shuts down the firm awareness channel. Given that, we see that average (as well as discounted) firm performance is greater in the left panel. The reason is that, with low media coverage, news of the drop in firm quality (at time  $t = 100$ ) travel slower, thus allowing the firm to keep a positive reputation for longer. In other words, the top panels provide the best evidence for the idea that, in some cases, "no news is good news."

<sup>5</sup> Media policy also attempts to spin the news in the firm's favor, a possibility that, important as it is, I do not consider in this paper.

By contrast, the bottom two panels correspond to the case when  $\nu = 0.1$ , that is, a fraction of 10% new consumers arrive in the market in each period. Now the low media strategy clearly underperforms with respect to the high media exposure strategy. True, the news of the switch from  $q=1$  to  $q=0$  travel faster under the high media exposure strategy. However, lowering media exposure has the adverse effect of lowering firm awareness. As a result, even though  $q_t=1$  for all  $t < 100$ , firm reputation drops considerably in the lower left panel due to the fact that old consumers leave the market and are replaced by new consumers, most of whom are unaware of the firm's existence. In other words, if the top panels are an example of “no news is good news,” the bottom panels are a better example of the dictum that “there is not such thing as bad publicity.”

The best media policy is likely to trade-off a series of costs and benefits. For example, if consumer turnover ( $\nu$ ) is very high, the a high media exposure policy tends to be better, everything else equal. By contrast, any degree of corporate risk aversion is likely to favor a low-exposure media policy, since the latter tends to smooth out the path of  $r_t$ .

## 5. Concluding remarks

I have only reported a very limited number of numerical simulations. I performed many other simulations with different parameter values, the results of which are available upon request. While the precise resulting dynamics vary considerably, the qualitative features discussed in the previous sections remain robust.

Much of my theory—arguably all of it—hinges on a central assumption: that media coverage of each firm depends positively on that firm's performance (which in my simple model corresponds to both reputation and sales). This suggests that a first task for empirical analysis is precisely to test such hypothesis. One way to do this is to gather data on media mentions by firm and test the correlation of these with various measures of firm performance over time (allowing for firm or industry fixed effects and possibly for performance observation lags).

My model implies additional testable correlations. To the extent that the importance of media coverage varies across industries, I would expect media-intense industries to feature greater asymmetries in firm reputation dynamics (slow increase, sudden decrease). Moreover, everything else constant, media-intense industries should feature greater dispersion and greater persistence of firm performance.

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