An Economic Model of Workplace Mobbing in Academe

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by

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Abstract

Workplace bullying or mobbing can be defined as the infliction of various forms of abuse (e.g., verbal, emotional, psychological) against a colleague or subordinate by one or more other members of a workplace. Even in the presence of academic tenure, workplace mobbing remains a prevalent issue in academe. This study develops an economic model that employs a Stackelberg differential game in order to analyze the interaction between a university administrator (or administrators) and a professor who is being “mobbed” by university administration, perhaps for political reasons related to the professor’s use of academic freedom and/or tenure to publicly criticize the actions of university officials. One of the model’s implications is the university administration may succeed in pushing out the tenured professor if the administration’s mobbing actions are greater than a combination of professor’s optimal salary and threshold quitting rate.

JEL Classifications: C70; I23; J50
Keywords: workplace mobbing, Stackelberg differential game, economic theory

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1. Introduction

Workplace bullying can be defined as the infliction of various forms of abuse (e.g., verbal, emotional, psychological) against a colleague or subordinate by one or more other members of a workplace. Since 2002, Australia’s Young Workers Advisory Service (YWAS), an organization that advocates for young workers, has fielded thousands of inquiries from young workers 25 years old and younger. Among those inquiries, the fourth most frequent type deals with bullying in the workplace (McDonald, Bailey, Oliver and Pini, 2007). A 2007 Workplace Bullying Institute/Zogby survey reported that 13 percent of U.S. workers are currently bullied, while 24 percent have been bullied in the past. That same survey reports also that about one-half of all American workers have either been the target of bullying in the workplace or have witnessed a co-worker being subjected to workplace bullying. Given its prevalence, workplace bullying has become a popular topic in academic research, wherein it is often also referred to as workplace mobbing.¹

For example, Sweeney (2007) finds that bullying superiors are most commonly found in service sectors of the economy, and that organizational flux or chaos is a common denominator for workplace bullying or mobbing. Both of Sweeney’s conclusions are supported more recently by Sidle (2009), while Sweeney’s conclusion about organizational chaos is also supported by Roscigno, Lopez and Hodson (2009), who indicate that poor workplace organization (i.e., chaotic and disorganized workplaces) fosters positive motivations for supervisory bullying as a managerial control tactic, or what Vandekerckhove and Commers (2003) refer to as “downward workplace mobbing,” or the intentional and repeated inflictions of psychological harm by superiors on subordinates in an organization.² In addition to these institutional elements, superior achievement also makes workers a target for workplace mobbing. Henagan and Bedeian

¹ According to Kenneth Westhues (2002: 30), in the 1980s a Swedish psychologist named Heinz Leymann “. . . identified a great threat to health and safety in what appear[ed] to be the healthiest, safest workplaces in the world.” Leymann (1990) coined the term workplace mobbing to describe it. This line of research differs from that concerning student-on-student bullying, which has its own characteristics and set of negative consequences (e.g., see Brown and Taylor, 2008).

² Duffy (2009) indicates that workplace bullying also imposes costs on organizations that, through their managers, engage in it. These costs come in the form of losses in productivity and reputation, and financial difficulties.
(2009) indicate that award-winning real estate agents perceive that they are targets of upward comparisons by competing real estate agents. As such, Henagan and Bedeian (2009) find that top performers’ comparison discomfort plays a role in how they react to their status, which may include avoidance behaviors and socially motivated underachievement.³

Two prominent authorities in the area of workplace mobbing are Field (1996; Marr and Field, 2001) and Westhues (1999, 2002, 2005 and 2006).⁴ Field (1996) developed an extensive typology related to bullying that is useful in exploring workplace mobbing in various settings. Westhues (2005) presents the phenomenon of workplace mobbing in academy by way of vignettes told by dozens of academics from Australia, Europe and North America. Westhues’ work laid the foundation for later studies on various forms of mobbing in academe, itself now a distinct sub-component of the overall subject area. Some of the more recent studies in this line of literature are from Heinrich (2006), Hecker (2007), McKay, Arnold, Fratzl, and Thomas (2008), and Tigrel and Kokalan (2009).⁵

2. Some Basics

Tenure in academia sometimes poses a problem for college and university administrators, because it is costly to fire professors with tenure. Even though one could imagine situations in which administrators find a good cause to fire faculty holding tenure – e.g., they are unproductive – it can be much more difficult to fire other, more productive scholars with tenure.⁶ One might wonder why college administrators would entertain the possibility of firing an academic with tenure. There are a number of reasons for this, some economic, some organizational, and others more personal.⁷ Economically, one may be motivated to fire tenured faculty if they earn very high salaries and contribute very little in terms of teaching or research productivity.

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³ Workplace mobbing is often accompanied by various health effects for both the workers involved and their families. For an introduction to these issues, see Duffy and Sperry (2007). For further analyses, see Cassitto and Giordano (2003), Adoric and Kvartuc (2007), and Girardi, Monaco, Prestigiacomo, Talamo, Amedeo and Tatarelli (2007).

⁴ In addition to their written work, Field and Westhues maintain extensive Internet sites devoted to workplace bullying or mobbing.

⁵ Also see Tigrel and Kokalan (2009) for a review of the literature on workplace mobbing, particularly that focusing on academe in Europe and the United States, and Rosen, Katz and Morahan (2007) for a template for avoiding some forms of mobbing in the workplace.

⁶ So-called post-tenure review has been gaining ground at public universities over the past several years. This practice is ostensibly designed to identify unproductive faculty.

⁷ Some of the issues included in our analysis here could perhaps be mitigated by employment regulations not covered in this study. Also, the presence of unions and collective bargaining protections for university faculty work to protect such faculty at public universities in states where these institutions are permitted.
Younger, more productive academics can instead be employed, with the institution paying less for them in some cases. In organizational terms, sometimes colleges have to restructure and eliminate departments that do not generate enough income to cover their costs, which implies that tenured members (even the productive ones) of the department have to go. Finally there are often personal reasons that lead college administrators to terminate the employment of tenured faculty. Administrators may feel threatened by tenured faculty, due to lack of reputation capital (academic/intellectual, and otherwise), seniority and independence enjoyed by faculty members. This is particularly the case when the faculty member's reputation capital is combined with academic freedom, and the combination is then used to criticize the actions of the administration of the institution. In some instances, the criticism, which is valid, relates to a lack of integrity in the administration and its actions. This situation fits the premise in Cunningham (2009), which states that universities face a principal-agent problem related to their non-profit status and information asymmetries over the university administration’s actions. As Cunningham (2009) explains, the non-profit nature of universities may lead to insufficient monitoring of university administrators by the university’s trustees. Faculty may fill the trustees’ role provided that both monitoring and other costs associated with retaliation from administrators are low. In other instances, a faculty member whose academic reputation grows often has concerns about fairness relating to the distribution of rewards that may be well founded or misplaced, leading him or her to become difficult for the administration to deal with effectively. These two particular instances are likely far and away the most common catalysts for downward mobbing in academe. The former of these catalysts for academic mobbing involve a principled faculty and an unprincipled administration, while the latter allows for a principled administration and a principled or an unprincipled faculty. We refer to the former case as type A downward mobbing, while the latter is referred to here a type B downward mobbing.

Any decision made by the administrator that poisons the environment of the productive scholar may affect negatively that scholar’s research productivity. Some examples are well known, such as more bureaucracy through increases in the frequency of departmental meetings, and the creation of new

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8 Salary inversion, a situation where new hires in a field receive offers that are more lucrative than the compensation that is provided to their longer tenured, more experienced colleagues, is a common feature of some areas of academe. Our analysis focuses on those situations wherein salary inversion is not occurring.

9 For greater efficiency, hereafter we use only the male gender in describing the actors in our model.
committees. Decisions affecting teaching, such as an increase in the number of classes taught per semester, increases in the average size of classes, and increases in the number of course preparations also impact negatively on the scholar’s research productivity. Other examples abound: an increase in the demand for self-sufficiency placed on the scholar, possibly leading him to spend more time writing grant applications, a reduction in resources for teaching (e.g., fewer teaching assistants) and research (e.g., fewer research assistants), and turning other faculty against the scholar in question, using gossip and other means (Faria, 1998). This latter example can be facilitated by an administrative redirection of resources and rewards from the faculty victim to the mobbing faculty member(s), who might also be tasked by administration with shirking some of their regular duties, which will later fall to the mobbing victim (faculty) to perform.

Admittedly, such actions by administrators and those who support them may also have the effect of diminishing the institution’s reputation among other colleges and universities. However, there is a veritable cottage industry developed around stratifying academic institutions on the basis of quality (e.g., ranking studies from U.S. News & World Report, Forbes, Kiplinger, etc.), and there is relatively little attention or expectation applied to those universities occupying the lower strata of this market. As such, the kinds of behavior described as type A downward mobbing in our model best apply to the many colleges and universities occupying those lower strata, where the reputational cost of such behavior is low. Westhues’ own research (see http://arts.uwaterloo.ca/~kwesthue/mobbing.htm) identifies 32 of the most instructive mobbing cases in academe from 2005-2010. The nine U.S. cases fitting the type A downward mobbing aspect of our model involve Brandeis University, Brooklyn College-CUNY, Medaille College (N.Y.), Missouri State University, Southern Illinois University-Carbondale, Southern Illinois University-Edwardsville, University of Georgia, University of Southern Mississippi and Virginia State University. Of these, only two involve institutions located in the higher strata of American academe.

One can argue that a tenured productive scholar can ignore mobbing simply by not showing up to meetings, refusing to apply for grants or to teach larger/additional classes. Let us assume that this is not possible, given that the institution’s rules are designed to require faculty to comply with this “extra work.” In this case, what is the best action for the productive tenured professor to choose? In the differential game
model developed in this paper, we show that the best strategy for the scholar is to do more research. This apparently is a paradox, because academic mobbing is designed to reduce, through the methods listed above, academic productivity. However, this conclusion ignores the dynamic optimal responses to incentives. A productive professor realizes that his environment is contaminated, and the administrator and those faculty who support the administrator are determined to make the professor’s academic life miserable. In order for the professor to keep his productivity as high as possible, he has to leave the institution, and the most effective way to get a new job placement in academe, with better working conditions, and possibly better pay, is by being more productive and successful.

The remainder of this study is organized as follows: Section 3 presents the basic economic model, the comparative statics analysis appears in section 4, and Section 5 offers some concluding remarks.

3. An Economic Model

The economic model presented here is a Stackelberg differential game in which a university administrator is the leader of a workplace. The tenured productive professor is the follower.10 We first present the professor’s problem, and then the administrator’s.

<table>
<thead>
<tr>
<th>Variables</th>
<th>professor’s income = y</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>professor’s research = R</td>
</tr>
<tr>
<td></td>
<td>professor’s consumption= C</td>
</tr>
<tr>
<td></td>
<td>administrator’s decisions= x</td>
</tr>
<tr>
<td>Parameters</td>
<td>marginal impact of income on the research path= a</td>
</tr>
<tr>
<td></td>
<td>depreciation of the publication stock = b</td>
</tr>
<tr>
<td></td>
<td>professor’s utility cost of research= c</td>
</tr>
<tr>
<td></td>
<td>professor’s rate of time preference= r</td>
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<tr>
<td></td>
<td>professor’s quitting parameter= q</td>
</tr>
<tr>
<td></td>
<td>administrator’s decisions on the research path= b</td>
</tr>
<tr>
<td></td>
<td>administrator’s rate of time preference= δ</td>
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<tr>
<td></td>
<td>administrator’s utility cost of a productive professor=</td>
</tr>
<tr>
<td></td>
<td>administrator’s utility benefit of a productive department=</td>
</tr>
</tbody>
</table>

The professor’s income reflects the interest of the administrator in increasing the professor’s productivity. Administrators invest resources and encourage publications, which improves the university’s

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10 For other Stackelberg differential games related to academic matters, see Faria (2005) and Faria, Besancenot and Novak (2011).
status and, as a consequence, the administrator’s reputation. In this sense, the administrator designs a professor’s contract in which professor’s income, \( y \), is an increasing function of the research path, which represents how the representative professor’s research evolves over time, \( \dot{R} \equiv dR/dt \), and also of research, \( R \), represented as the number of papers published in peer-reviewed academic journals. Additionally, the administrator makes decisions, \( x \), that affect the professor’s research productivity, thus affecting the professor’s income. One can write the professor’s income as:

\[
y = \left[ \dot{R} + hR - x(q(R) - b) \right] a^{-1}.
\]

If the administrator’s decisions, \( x \), negatively impact the professor’s income or research, the professor considers resigning his current academic appointment. In this case, the variable \( x \) captures the administrator’s effort to mob the professor. The professor being mobbed considers resigning his current academic appointment and securing a job elsewhere; in order to accomplish this goal, he has to be productive. As a consequence, the quitting rate, \( 0 < q(R) < 1 \), is a positive function of research \( R \), \( q_R > 0 \). The equation for the research path, in which there is a positive association among the quitting rate and \( x \), follows from equation (1):

\[
\dot{R} = ay + x(q(R) - b) - hR.
\]

In equation (1a) above, the parameter \( a \) captures the depreciation of the publication stock, \( R \).

The professor’s preferences over time are represented by the utility integral,

\[
\int_0^\infty \left[ \ln C - cR \right] e^{-\rho t} dt,
\]
where \( \rho > 0 \) is the professor’s rate of time preference, and \( C \) is the professor’s consumption. It is assumed that each point in time the professor exhausts all of his income, such that \( C = y \). Note that the professor’s research effort has a negative impact in his utility, as does research, with a unitary utility cost of \( c \).

Given that in the academic job market the professor has the ability to negotiate his salary, income, \( y \), is a control variable in the representative professor’s problem of maximizing (2) subject to (1a), which yields the following Hamiltonian function:
\[ J = \ln y - cR + \eta [ay + x(q(R) - b) - hR], \tag{3} \]

where \( \eta \) denotes the professor’s shadow value of research.

The first order conditions for the professor’s problem are:

\[ J_y = 0 \Rightarrow (1/y) + a\eta = 0, \tag{4} \]

\[ \eta - r\eta = -J_R \Rightarrow \eta - r\eta = -\{-c + \eta[xq_R - h]\}, \tag{5} \]

plus the transversality condition \( \lim_{t \to \infty} e^{-rt} \eta R = 0 \). \(^{11}\)

From equations (4) and (5), we derive the evolution of the professor’s income, \( y \), in time:

\[ y = y(xq_R - r - h) + acy^2. \tag{6} \]

Examination of equation (6) leads us to the first important result of the model, which is summarized in proposition 1:

**Proposition 1**: As an administrator’s effort to mob the professor increase, the optimal response by the professor is to increase his publication record so he becomes more marketable which, consequently, increases the professor’s income.

**Proof.** The growth rate of the professor’s income, \( \frac{\dot{y}}{y} \), increases, according to Equation (6), with the administrator’s decision to reduce his productivity, \( \frac{dy}{dx} = q_R > 0 \).

It is important to stress that proposition 1 holds given that when the scholar entertains the possibility of resigning and taking a job with another institution, he has to increase research effort and productivity, resulting in an acceleration of his earnings. Of course, the increase in income may appear through a raise provided by the professor’s current employer. However, that link may be severed if the administrator(s) engaged in mobbing that professor also determines the allocation of pay increases. In that case, the raise may be deferred, coming later in the form of a better job offer. That offer may or may not represent an increase in salary. Better working conditions, holding salary constant, represents an increase in one’s full wage.

\(^{11}\) Notice that the second order condition, by deriving (4) with respect to \( y \), is satisfied because the Hamiltonian \( J \) is concave in relation to \( y \).
The administrator’s instantaneous utility function has three arguments; it is a positive function of his decisions to mob productive tenured professors, $x$, and the actual research level, $R$; it is a negative function of the professor’s income level, $y$, because after professors attain a certain status, partly reflected in their income, they may become more difficult to manage, which decreases the administrator’s utility. This is the case of type B downward mobbing described above. The administrator’s problem is to make decisions, $x$, in order to maximize his preferences over time,

$$\text{Max}_x \int_0^\infty [\ln x + \psi R - \beta y] e^{-\delta t} dt,$$

while taking into account the professor’s constraint, given by equation (2), together with the professor’s reaction function, described by equation (6). Notice that $\delta > 0$ is the administrator’s rate of time preference, and in the type B downward mobbing case, the positive parameter $\beta$ is a “jerk” parameter, capturing the degree to which the faculty is a thorn in the administrator’s side, while the positive parameter $\psi$ represents the marginal benefit of a productive department. In the case of type A downward mobbing, the “jerk” parameter, $\beta$, is equal to zero, reflecting a principled faculty, while $\psi$ is also equal to zero, which indicates that the administrator places no value on the institution’s academic reputation.\(^\text{12}\) Lastly, an extreme case of type A downward mobbing could be represented by considering a “sadistic” argument in $x$.\(^\text{13}\)

The Hamiltonian function for the administrator’s problem is,

$$K = \ln x + \psi R - \beta y + \lambda[a y + x(q(R) - b) - h R] + \mu[y(x q_R - r - h) + a c y^2],$$

where $\lambda$ and $\mu$ denote the administrator’s shadow value of the professor’s research and income. The first order conditions are,

$$K_x = 0 \Rightarrow \frac{1}{x} + \lambda(q(R) - b) + \mu v q_R = 0,$$

\(^\text{12}\) As explained earlier, what we refer to as type A downward mobbing will be more prevalent for lower-tiered colleges and universities.

\(^\text{13}\) In the extreme case, the administrator simply enjoys (derives utility from) bullying certain faculty.
\[ \mu - \delta \mu = - K_y \Rightarrow \mu - \delta \mu = \beta - [a \lambda + \mu (xq_R - r - h + 2ac)] , \] (11)

plus the transversality conditions: \( \lim_{t \to \infty} e^{-at} \mu y = \lim_{t \to \infty} e^{-at} \lambda R = 0 . \)

Imposing the stationary conditions, \( \dot{R} = y = \mu = \lambda = 0 \) in (2), (6), (10) and (11), and considering equation (9), we can determine the steady state values of \( R, y, x, \mu \) and \( \lambda \):

\[ \begin{aligned}
   \dot{R} = 0 & \Rightarrow ay + x(q(R) - b) - hR = 0 \\
   \dot{y} = 0 & \Rightarrow y(xq_R - r - h) + acy^2 = 0 \\
   \dot{\lambda} = 0 & \Rightarrow \delta \lambda = [\psi + \lambda (xq_R - h) + \mu yxq_{RR}] \\
   \dot{\mu} = 0 & \Rightarrow \delta \mu = [a \lambda + \mu (xq_R - r - h + 2ac)] - \beta \\
   \frac{1}{x} + \lambda (q(R) - b) + \mu yq_R = 0
\end{aligned} \] (12) - (16)

The system of equations in (12)-(16) simultaneously determines the steady state values of \( R, y, x, \mu \) and \( \lambda \). In order to simplify this system, we assume a simple explicit linear formulation for the quitting rate, \( q(R) = qR \).

Using equations (12)-(15) to express \( R, y, \mu \) and \( \lambda \) as functions of \( x \) [see Appendix A], and substituting them into equation (16) yields implicitly the optimum set of administrator’s decisions, \( x^* \), aimed at reducing the quality of the professor’s academic life:

\[ x \left[ b - q \left( \frac{bx - (r + h - xq)c^{-1}}{xq - h} \right) \right] \left( \frac{\psi}{\delta + h - xq} \right) - xq \left( \frac{a \psi (\delta + h - xq)^{-1} - \beta}{\delta - r - h + xq} \right) \left( \frac{r + h - xq}{ac} \right) = 1 . \] (17)

In order to have positive solutions for \( R, y, \) and \( \lambda \), and negative solution for \( \mu \) (since \( \mu \) is the shadow price of the professor’s salary in the administrator’s problem – a “bad” for the administrator), the following inequalities should hold [see derivation in Appendix B]:

1) \( \delta > r \)

---

\(^{14}\) Notice that the second order condition is satisfied by deriving (9) with respect to \( x \), because the Hamiltonian \( K \) is concave in relation to \( x \).
Inequality i) indicates that the administrator is more impatient than the professor, and inequality ii) indicates that $x^*$ lies in a confined interval defined by the ratio between the depreciation of the publication stock and the quitting rate, $h/q$, signifying that the higher it is, the greater the administrator’s effort in mobbing the tenured professor. Another way of expressing this relationship is that if the quitting rate is high (i.e., the job mobility of the professor is high), the administrator will put less effort into mobbing the professor.

From equation (13) we determine the optimal value of income $y^*$ as a function of the optimum value of $x^*$, implicitly determined by equation (17):

$$y^* = \frac{r + h - x^* q}{ac}.$$  \hspace{1cm} (18)

The consideration of equation (18) yields the following proposition:

**Proposition 2**: The steady state values of the professor’s income and the administrator’s decisions are inversely related, $\frac{dy^*}{dx^*} = -\frac{q}{ac} < 0$.

Substituting $y^*$ and $x^*$ into equation (12) yields the optimum research of the productive tenured professor, or $R^*$ (expressed as a function of $x^*$):

$$R^* = \left( \frac{hx^* - (r + h - x^* q)c^{-1}}{x^* q - h} \right)$$ \hspace{1cm} (19)

Note that from (19) we have:

$$\frac{dR^*}{dx^*} = -\frac{bhx^2}{(q - hx^{-1})^2} + \frac{q}{c(xq - h)} + \frac{q(r + h - xq)}{c(xq - h)^2}$$ \hspace{1cm} (19')

The consideration of (19') yields proposition 3 below:

**Proposition 3**: As $r - \frac{cbh}{q} > 0$, the steady state values of the professor’s research and the administrator’s decisions are positively related.

**Proof**: $r - \frac{cbh}{q} > 0$ implies $\frac{dR^*}{dx^*} > 0$. 

Proposition 3 shows that the administrator’s decision to mob the professor does not impact the professor’s research negatively, because the professor’s optimal research increases with the administrator’s decisions. In the type B downward mobbing case, the administrator likes the productive contribution of the professor, but dislikes the professor. The administrator’s intent is to make the professor leave the institution, while still retaining and enjoying the laurels conferred by having a highly-productive department. In order to address this issue we assume the professor resigns when the quitting rate is above a given exogenous threshold level, \( \bar{q} \): \( qR \geq \bar{q} \).

This is the object of Proposition 4:

**Proposition 4**: The optimal level of the administrator’s decision is successful in making the professor leave the institution if:

\[
1) \left( ay^* - h(\bar{q} / q) \right) (b - \bar{q})^{-1} < x^*
\]

\[
\text{Proof: } q(R^*) \geq \bar{q} \Rightarrow R^* \geq \frac{q}{q} \Rightarrow qR \geq \bar{q} \; \text{true since } rq > cbh \text{ which is assumed in inequality ii). Solving it for } x^* \text{ yields: } x^* < 
\]

\[
\frac{r + h - x^* q c^{-1}}{x^* q - h}
\]

\[
\frac{q}{q}
\]

\[
\text{which is equivalent to: } x^* < \left( ay^* - h(\bar{q} / q) \right) (b - \bar{q})^{-1}
\]

Proposition 4 shows that the administrator can succeed in pushing the productive tenured professor out of the institution if the administrator’s behavior leads to \( x^* < \left( ay^* - h(\bar{q} / q) \right) (b - \bar{q})^{-1} \) (i.e., \( x^* \) is smaller than a combination of professor’s optimal salary and the ratio between the threshold quitting rate and the quitting rate).

It is important to stress that if the professor leaves the institution as a result of the administrator’s mobbing, the administrator wins in the short run since he gets rid of the hated professor, while keeping his legacy, through his publications, of an enhanced institution’s reputation.15 However, after a few years, the actual value of the former stock of publication depreciates, and if the professor’s replacements do not keep up in terms of productivity the institution and possibly the administrator are worse off.

4. Comparative Statics

15 Upon securing new employment elsewhere, the professor can thwart some of this by changing his or her university affiliation on the by-lines of forthcoming journal articles and other publications.
In addition to the relationships among the endogenous variables that are exposed in Propositions 2 and 3, comparative statics analysis illuminates other properties of the model. The marginal impact of each parameter appears in the Table 2 below:

<table>
<thead>
<tr>
<th></th>
<th>$a$</th>
<th>$b$</th>
<th>$c$</th>
<th>$q$</th>
<th>$r$</th>
<th>$\delta$</th>
<th>$\beta$</th>
<th>$\psi$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$x^*$</td>
<td>(+)</td>
<td>(-)</td>
<td>(+)</td>
<td>(?)</td>
<td>(-)</td>
<td>(+)</td>
<td>(-)</td>
<td>(-)</td>
</tr>
<tr>
<td>$y^*$</td>
<td>(-)</td>
<td>(+)</td>
<td>(-)</td>
<td>(+)</td>
<td>(?)</td>
<td>(+)</td>
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<tr>
<td>$R^*$</td>
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<td>(+)</td>
<td>(?)</td>
<td>(+)</td>
<td>(-)</td>
<td>(+)</td>
</tr>
</tbody>
</table>

The salient feature of the comparative statics analysis is that optimal professor’s income, $y^*$, and optimal professor’s research, $R^*$, react to the parameters of the model in an inverse way to that of the optimal administrator’s decisions, $x^*$. Note that the impact of the professor’s quitting parameter, $q$, on all variables is ambiguous.

The optimal administrator’s decision (downward mobbing), $x^*$, increases with marginal impact of income on the research path, $a$, the professor’s utility cost of research, $c$, and the administrator’s impatience, $\delta$, and it decreases with the depreciation of the publication stock, $h$, the administrator’s decisions on the research path, $b$, the professor’s rate of time preference, $r$, the administrator’s utility cost of a productive professor, $\beta$, and the administrator’s utility benefit of a productive department, $\psi$. This makes sense in the type A downward mobbing situation for a malicious and anxious administrator who envies the professor’s accomplishments, and gets more envious when the professor in question achieves additional academic laurels, perhaps because these laurels increase the professor’s reputation capital, which, when combined with academic freedom and tenure, make the professor a more difficult adversary for the administrator with regard to exposing administration malfeasance at the institution.

Optimal income, $y^*$, and optimal research, $R^*$, increase with administrator’s decisions on the research path, $b$, the scholar’s impatience, $r$, the depreciation of the publication stock, $h$, the administrator’s utility cost of a productive professor, $\beta$, and the administrator’s utility benefit of a productive department, $\psi$. They are reduced by the marginal impact of income on the research path, $a$, by the utility cost of research, $c$, and by the
administrator’s impatience, δ. Again, it makes sense to think that in the type A downward mobbing situation a malicious and anxious administrator will try to reduce the professor’s salary as much as possible (or avoid its growth) so that a scholar who seeks employment elsewhere will face better salary and benefits prospects in the academic labor market.

5. Conclusion

This study deals with workplace mobbing in academe. The economic model developed here employs a Stackelberg differential game in order to analyze the interaction between a university administrator (or administrators) and a professor who has been “targeted” by university administration, perhaps for political reasons related to the professor’s use of academic freedom and tenure to publicly criticize the unprincipled actions of university officials. Here, the administrator is the leader, and the professor is the follower.

In the model the administrator may benefit from the reputation of the institution. The institution’s reputation increases with faculty productivity. However, the administrator dislikes the productive professor, and mobs him. The administrator’s mobbing works to contaminate the professor’s working environment by, among other things, increasing unnecessary work (committees, grants, etc.), increasing teaching (number of courses, number of course preparations, etc.), reducing resources (travel, graduate student support, etc.) and spreading malicious rumors about the targeted professor. The economic model indicates that, when subjected to what we refer to as either type A or type B downward mobbing by the university’s administration, it is optimal for the professor to increase his research in order to increase his job mobility. As our model points out, the administrator may succeed in pushing out the tenured professor if the administrator’s mobbing actions are greater than a combination of professor’s optimal salary and threshold quitting rate. If the professor leaves, in the short run the administrator wins. However, if the replacements for the professor do not keep up with his productivity, in the long run the institution and the administrator lose, because the institution’s reputation falls as a result of reduced research productivity.
Appendix A

Using \( q(R) = qR \), eqs. (12) to (16) can be rewritten as:

\[
\begin{align*}
R = 0 & \Rightarrow ay + x(qR - b) - hR = 0 \Rightarrow R = \frac{bx - ay}{xq - h} \quad (12') \\
y = 0 & \Rightarrow y(xq - R - h) + acy^2 = 0 \Rightarrow y = \frac{r + h - xq}{ac} \quad (13') \\
\lambda = 0 & \Rightarrow \delta \lambda = [\psi + \lambda(xq - h)] \Rightarrow \lambda = \frac{\psi}{\delta + h - xq} \quad (14') \\
\mu = 0 & \Rightarrow \delta \mu = [a\lambda + \mu(xq_R - r - h + 2acy)] - \beta \Rightarrow \mu = \frac{a\lambda - \beta}{\delta - xq_R + r + h - 2acy} \quad (15') \\
\frac{1}{x} + \lambda(q(R) - b) + \mu y q_R = 0 & \Rightarrow \frac{1}{x} = \lambda(b - qR) - \mu y q \\ \\
\end{align*}
\]

Inserting Eq. (13') into (12') yields:

\[
R = \frac{bx - c^{-1}(r + h - xq)}{xq - h} 
\] (12'')

Inserting Eqs. (13') and (14') into (15') yields:

\[
\mu = \frac{a\left(\frac{\psi}{\delta + h - xq}\right) - \beta}{\delta - xq_R + r + h - 2(r + h - xq)} \Rightarrow \mu = \frac{a\left(\frac{\psi}{\delta + h - xq}\right) - \beta}{\delta + xq_R - r - h} 
\] (15'')

Note that equation (13') is equation (18) in the text and equation (12'') is equation (19) in the text.

Substituting equations (12''), (15'') and (13') into equation (16') yields equation (17) in the text.
Appendix B

Taking into account eqs (12’), (15’), and (13’), (14’) and (17), the following inequalities are necessary to guarantee feasible solutions:

\[ y > 0 \Rightarrow 1) r + h > xq \]
\[ \lambda > 0 \Rightarrow 2) \delta + h > xq \]
\[ R > 0 \Rightarrow 3) h > xq, \text{and} 4) cbx < r + h - xq \Rightarrow cbx + xq < r + h \]
\[ \mu < 0 \Rightarrow 5) \delta + xq > r + h > xq, \text{and} 6) a \psi < \beta (\delta + h - xq) \Rightarrow xq < \delta + h - \frac{a \psi}{\beta} \]
\[ x > 0 \Rightarrow b > qR \Rightarrow \frac{b}{q} > \frac{b x - c^{-1} (r + h - xq)}{xq - h}; \text{as} \ xq - h < 0 \Rightarrow c(xq - h) \frac{b}{q} < cbx - (r + h - xq) \Rightarrow 7) xq > r + h - \frac{cbh}{q} \]

Assuming that the administrator is more impatient than the professor:

\( i) \) \[ \delta > r \]

We can combine inequalities 1)-7) in the following sequence of inequalities:

\( ii) \) \[ \delta + h > \delta + xq > r + h > \delta + h - \frac{a \psi}{\beta} > h > xq > r + h - \frac{cbh}{q} \]
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References


