Faculty Perceptions of Grades: Results from a National Survey of Economics Faculty*

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Abstract

Results from a survey of U.S. economics faculty (816 responses) indicate the extent to which grades are emphasised in their classes. We measure learning- and grade-orientations and relate our findings to empirical research in economics and educational psychology. We find agreement among economics faculty on a broad range of grade-oriented attitudes and behaviours. We note differences between views of economics faculty and empirical research on several key topics. Free-form comments indicate a concern with grade distributions, the influence of grades on student evaluations of teaching, and grade inflation.

JEL classification: A2

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1. Introduction

Relatively little is known about the views of economics faculty concerning grades despite the important role grades play in educational settings. Studies by Becker and Watts (1996, 2001a, 2001b) and Schaur *et al.* (2008) provide a good idea of which assessment tools economics faculty use. We also have information about best practice in assessment (Walstad, 2006). But little is known of faculty attitudes or behaviours toward grading or their perceptions of how students react to grades. This lack of knowledge is particularly startling given the apparent importance placed by economics faculty on grades (as evidenced by responses to our survey) and the influence that grading policies have on student learning outcomes and effect.

We know from research in educational psychology that the grading policies of teachers affect students' performance (Meece *et al.*, 2006). Policies that de-emphasise grades and promote mastery (learning) goals generally are positively associated with desired student outcomes, including increased learning (e.g. Harter, 1978; Moeller and Reschke, 1993), effort (Grolnick and Ryan, 1987; Ames and Ames, 1991), help seeking (Karabenick, 2004; Linnenbrink, 2005), enjoyment (Pekrun *et al.*, 2006), and long-term interest (Butler, 1987; Harackiewicz *et al.*, 2000; Henderlong and Lepper, 2002; Senko and Harackiewicz, 2005).[1] In contrast, an emphasis on grades generally is associated with anxiety, hopelessness and shame (Linnenbrink, 2005; Pekrun *et al.*, 2006), effort withholding (Thompson, 1994; Urdan *et al.*, 1998;

[1] Subject interest was reported by economics alumni as the second most important determinant in choosing to major in economics – behind positive experience in the principles class (Allgood *et al*., 2004).

Thompson and Perry, 2005), and preference for less challenging tasks (Harter, 1978). Of course, some students respond favourably to conditions that emphasise grades (Deci *et al.*, 1999; Cherry and Ellis, 2005; Betts and Grogger, 2003) but, as we discuss below, even these studies report students who are left behind.

This paper reports views on grades and grading policies of economics faculty across the U.S., adding to our knowledge of the extent to which economics faculty emphasise grades. Responses to our survey indicate that there is consensus among economics faculty on a range of grade-oriented views and behaviours and that economics faculty generally place great value on grades. We find that economics faculty tend to view grades as good motivators and are concerned about grading standards. Further, 40 per cent of faculty indicate they are influenced either 'some' or 'a great deal' by departmental or college expectations when they grade students' work. Free-form comments indicate concerns with grade inflation and use of student evaluations (which are seen to depend in part on grades) in promotion, tenure and pay decisions.

An examination of how economics faculty view and use grades is worthwhile given the extensive evidence from educational psychology. While the behavioural view of human motivation (e.g. Skinner, 1976) dominates economics, with its reliance on extrinsic motivation, cognitive psychologists have demonstrated that intrinsic motivation is important as well. In this more expansive view, people have some level of natural curiosity, seek to resolve discrepancies between what they see and what they know, and have aspirations and varying degrees of need for achievement. A comprehensive view of academic motivation takes into account the intrinsic as well as extrinsic motivations of students and sets classroom policies accordingly. While extrinsic rewards such as grades are effective motivators for some tasks (tedious, repetitive), they are less effective – and can even be detrimental – when applied to other tasks (those that are inherently interesting). In the latter case, the tasks are said to have intrinsic value and the extrinsic rewards may crowd out that value, reducing the students' interest (recent work in labour economics explores crowd-out as well; e.g. Falk and Kosfeld, 2006; Frey, 1998). In short, an over-reliance on extrinsic rather than intrinsic motivation will often lead to suboptimal outcomes.[2]

Our survey of the views of grades of economics faculty is made in light of this extensive evidence. Our primary goal is to measure the degree to which economics faculty emphasise extrinsic motivation (grades) and intrinsic motivation ('learning' goals) in their classrooms so that economics faculty as a whole can critically evaluate classroom policies. In making this distinction between intrinsic and extrinsic incentives, we do not mean to imply that grades and learning are mutually exclusive. Nor do we want to suggest that grades do not supply useful information to students and others (potential employers, parents, admissions offices) on the level of achievement attained by students. It is reasonable to conclude that under a given grading structure, a higher grade reflects, on average, a higher level of knowledge or understanding.[3] We also do not argue that grades are necessarily competitive or ineffective incentives. Rather, we maintain that what the empirical findings from educational psychology tell us is that the level of learning can be influenced (shifted) by the grading environment perceived by the student, sometimes in unexpected ways, and as a consequence we need to be aware of what we as faculty think about grades and how we use them.

[2] Those wishing a comprehensive review may consult Ames and Ames (1991), Deci *et al*. (1999) and Meece *et al*. (2006).

[3] For an argument that grades are subject to measurement error see Kirschenbaum *et al.* (1971, pp. 54-6). For example, they discuss a study in which copies of two high-school (secondary) English exam papers were sent to English teachers at 200 high (secondary) schools who were asked to mark the papers as they normally would at their school. The scale was 100 points, with 75 as passing. For one paper scores ranged from 64 to 98, with an average of 88.2. For the other, the range was 50 to 97, with an average of 80.2. Based on written comments provided by the scorers, the differences between high and low scores appeared to be based on subjective evaluation of what makes a 'good paper'; on varying emphasis on neatness, spelling, and punctuation; and on general ability of the writer to communicate the paper's primary message. A second study was performed by the same researchers, with a geometry assignment instead. The range of scores increased to 67 (low: 28 per cent; high: 95 per cent). Based on my own limited observations of similar cases in which papers were judged by a group of faculty, even using a common grading rubric does not solve the problem. Furthermore, other studies have shown that the same papers graded by the same instructor, separated by time, can receive markedly different scores. Thus, grades generated by different faculty or at different times contain much noise and as such may be unreliable measures of knowledge.

In the next section, we describe the survey instrument and method. We then summarise and analyse the findings. A selection of free-form comments are offered in the following section. Our paper concludes with a few recommendations for incorporating the insights from this research into the teaching of economics.

2. The survey and method

The survey measures faculty views of learning and grades along a two-dimensional scale first developed by educational psychologists (Janzow and Eison, 1990; Eison *et al.*, 1993). Learning oriented (LO) attitudes and behaviours (five statements each) and grade oriented (GO) attitudes and behaviours (five statements each) comprise the 20 statement survey. Respondents use a five-point scale (1 = Strongly disagree/Never; 5 = Strongly agree/Always) to indicate level of agreement with the attitudinal statements (numbers 1 though 10) and frequency of use with the behavioural statements (numbers 11 through 20). The survey questions are shown in Table 2.

LO statements measure the extent to which faculty engage in attitudes or behaviours that have been identified in the educational psychology and education literatures as focusing students on learning (mastery). GO statements measure the extent to which faculty engage in attitudes or behaviours that focus students on grades (performance). Responses to the LO statements (2, 4, 7, 8, 10, 13, 14, 15, 16, 20) can be summed to form a total LO score. The remaining responses form the total GO score. Higher scores indicate greater LO or GO. Note that faculty can have (or lack) both LO and GO. Principal component analysis (on the data collected in this survey, and in prior surveys) supports the validity of this grouping of statements.

Each statement in the survey has empirical support in the educational psychology literature for its stated orientation. LO promotes collaboration, encourages improvement and provides choice. GO emphasises performance measurement, focus on the 'best and brightest' students, and competition. Faculty with higher LO scores tend to view grades as over-emphasised and overvalued and tend to be flexible in grading and the way they view disciplinary boundaries, while higher GO is associated with a concern with grade inflation and attention to the significance of grade point average (GPA) (Eison *et al.*, 1993).

The survey was administered online on the Oneonta College website and consisted of the 20 statements measuring learning and grade orientations plus an additional 11 demographic questions (contained in Appendix 1), which asked for information about the respondent and institution, and about such items as teaching loads, evaluation tools and weights of those tools when determining course grades at the undergraduate level. A request to complete the survey was emailed to 5915 members of 599 economics departments in the U.S.[4] Of the emails sent, 149 were returned as undeliverable. From the remaining 5766 recipients, 816 surveys were completed between 23 and 30 September 2008. The 816 responses represent a 14.2 per cent response rate. This response rate is similar to other recent national surveys of economics faculty (Schaur *et al.*, 2008).[5]

Table 1 (on the next page) provides a summary of the demographic and institutional data collected in our survey. These data indicate that 74 per cent of respondents were male, 40 per cent were full professors, and half were either associate (25 per cent) or assistant (24 per cent) professors, and the average number of years teaching was just more than 17.[6] Half of the respondents taught in PhD granting departments while 31 per cent taught in departments where the bachelors is the highest degree awarded. Average department size across the entire sample was 15.5 members.

[4] The email addresses were collected manually from individual department websites by the authors and several student assistants.

[5] The rate for Schaur *et al.* was 13.0 per cent in a similar mailing in 2005. They received 477 responses from a mailing to 3658 faculty using a private market mailing list – one from Market Data Retrieval (MDR). The advantage of MDR is that it identifies recipients by instructor specialisation, allowing researchers to determine response rates by specialisation. A disadvantage of MDR is its cost and one-time use policy (researchers do not actually have the email addresses – and cannot verify them).

[6] The percentage of females in the sample is generally reflective of the percentage in the profession (AEA CSWEP, 2008).

Table 1: Summary statistics (counts, unless otherwise noted)

Gender	Male	Female	N/R				
	581	191	8				
	74%	24%	1%				
Academic Rank	Full	Associate	Assistant	Other			
	316	197	185	83			
	40%	25%	24%	11%			
Years of teaching experience, average	17.51						
Number of faculty in department, average	15.48						
Highest degree offered	Ph.D.	MA	Bachelors	MBA	N/R		
	392	143	238	2	3		
	50%	18%	31%	0%	0%		
School in which department is housed	Agriculture	Business	Humanities	Liberal Arts	Public Policy	Science	N/R
	3	283	230	114	11	118	8
	0%	37%	30%	15%	1%	15%	1%
Influence of departmental grading expectations (Survey item #31)	A great deal	Some	Very little	Not at all			
	78	255	210	224			
	10%	33%	27%	29%			
Sections taught, number of students (averages for those who taught each level)		Sections	Students				
	Principles	2.59	162.2				
	Intermediate	1.62	65.3				
	Upper	1.82	55.8				
	Masters	1.29	35.6				
	Ph.D.	0.91	12.1				

	Principles		Intermediate		Upper	
	Primary	Secondary	Primary	Secondary	Primary	Secondary
Multiple Choice Exam		9%	7%	5%	4%	3%
Short Answer Exam		6%		7%		8%
Homework	2%		3%		2%	
Papers	1%	7%	3%			
Quizzes	1%	9%	1%	3%	1%	2%
Class Participation	0%	3%	0%	3%	1%	

While the number of recipients and the method used for acquiring their addresses supports our belief that they are representative of the academic economists in the U.S. generally, we have no way of knowing for sure whether the same is true for the respondents.[7] Given the opportunistic nature of our sample, we cannot be certain that the respondents reflect the profession as a whole. One approach to evaluating the representativeness of a survey sample (i.e. test for non-response bias) is to compare the early and late responses (Bose, 2001; Oppenheim, 1966). The presumption is that late responses (rather than the early responses) are more similar to non-responses, so that any differences between early and late responses indicate a non-response bias. We examine the first 75 and last 75 responses in our sample, and perform a series of *t*-tests for differences in sample means (for each data series gathered). The results indicate no significant ($p<0.05$) difference between early and late responses, except for degree level of institution (MA were more likely to be late responders, PhD early) and number of graduate students and economics majors taught (early responders were more likely to teach more of both). Given that there were no significant differences in LO and GO scores, gender, years teaching, teaching in business schools, teaching principles, teaching intermediate, and teaching upper level, we conclude that non-response bias is not an issue in this study.

3. Survey results

Individual statements

Summary statistics of responses are shown in Table 2. These results show that faculty generally exhibited strong grade oriented attitudes (GOA). Their broad agreement to GOA statements generally indicates support for grades as incentives (statements 1, 5) and the validity of grades as a measure of performance or ability (3, 6, 9). Statements 1 and 5 are the most agreed upon statements in the survey: 91 per cent of respondents agreed that grades were useful tools for increasing student performance; 89 per cent agreed that regularly scheduled exams were necessary for students to be expected to learn. Economics faculty appear to have a strong inclination to believe in the effectiveness of grades as extrinsic motivators, despite the limitations of grades noted earlier.

Mixed reviews of the effectiveness of grades as an extrinsic motivator have also been reported in the recent economics education literature. Grove and Wasserman (2006), for example, find that freshmen score better on exams when assignments are graded but other students do not, and Betts and Grogger (2003) find that while tougher grading (in high school) is initially correlated with higher scores on standardised tests, the long-term effect on scores is negligible – with the exception of minority students, for whom the effects are negative. And in a study involving students in introductory microeconomics, Dickie (2006) finds that grade incentives appear to exert a negative influence that offsets the beneficial effect of classroom experiments.

[7] We used a single survey address to collect all the responses. In retrospect, we could have provided a separate survey for each Carnegie classification. That is, we could have created separate mailing lists by classification and directed recipients to a particular survey site depending on their classification. This would have provided response rates by type of institution. As it stands, we are not able to determine the response rate by classification. We do know that 50 per cent of the respondents indicated that the highest degree offered at their institution was the PhD whereas 54 per cent of all economics faculty (and presumably 54 per cent of the recipients) belong to PhD institutions (Kamath *et al.*, 2007). In our sample, 18 per cent belong to Masters institutions and 31 per cent to bachelors, whereas nationally the percentages are 30 and 10, respectively.

Table 2: Summary statistics of responses

#	Statement	Type	Ave	s.d.	(5)	(4)	(3)	(2)	(1)
	"Attitudes" statements 1-10				Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Without regularly scheduled exams most students would not learn the material I present.	GOA	4.26	0.87	45%	44%	5%	5%	1%
3	I think college grades are good predictors of career success in later life.	GOA	3.43	0.76	3%	49%	36%	10%	1%
5	I think it is useful to use grades as incentives to increase student performance.	GOA	4.14	0.64	26%	65%	7%	2%	0%
6	I wish my colleagues across the campus were tougher graders.	GOA	3.96	0.84	30%	41%	25%	4%	0%
9	I worry about colleagues who are giving an ever increasing number of As and Bs.	GOA	3.93	0.92	29%	45%	18%	8%	1%
2	I think students should be encouraged to collaborate rather than compete.	LOA	3.54	1.01	16%	42%	27%	12%	4%
4	Students' concern about grades often interferes with learning in my classroom.	LOA	3.07	1.12	9%	32%	20%	33%	6%
7	I don't mind if students enroll in my classes under the pass/fail/audit options.	LOA	3.60	1.06	20%	40%	23%	13%	4%
8	I think my colleagues across campus place too much emphasis on using grades to motivate students.	LOA	2.43	0.79	1%	5%	40%	44%	10%
10	I would prefer teaching a course in which no grades were given rather than a typical graded course.	LOA	2.26	1.09	5%	10%	20%	40%	27%
	"Behaviors" statements 11-20				Always	Often	Sometimes	Seldom	Never
11	I set grading standards that are designed primarily to challenge the brightest students in my classes.	GOB	3.08	1.07	8%	28%	37%	18%	9%
12	I emphasize in my conversations with students the importance of studying to obtain 'good grades.'	GOB	2.71	1.18	7%	21%	26%	29%	18%
17	I orient my teaching style (e.g., content, pace, difficulty level) to satisfy the needs of upper level students and hope that the others can keep up.	GOB	2.74	0.95	4%	16%	38%	34%	8%
18	I encourage students to focus primarily on their studies and to limit their participation in extracurricular activities which might jeopardize their GPA.	GOB	1.78	0.96	1%	4%	15%	29%	50%
19	I tell students that competition for grades prepares them for the competitive nature of adult life.	GOB	1.60	0.91	1%	4%	11%	21%	63%
13	I allow students the opportunity to choose among alternative assignments as a way to enhance motivation.	LOB	2.12	1.05	2%	9%	24%	31%	35%
14	I encourage students to raise questions in class that are topic-related but which also go beyond the scope of the tests which I prepare.	LOB	4.26	0.77	44%	41%	14%	2%	0%
15	I am willing to make exceptions to stated grading criteria when unusual circumstances arise.	LOB	2.83	1.05	8%	15%	36%	32%	8%
16	I design course assignments that encourage students to read outside my discipline.	LOB	2.65	1.03	5%	15%	33%	35%	12%
20	I reward student improvement and growth by weighing the students' progress in my grading system.	LOB	2.81	1.18	8%	20%	32%	22%	17%

GOA = Grade Oriented Attitude statement
LOA = Learning Oriented Attitude statement
GOB = Grade Oriented Behavior statement
LOB = Learning Oriented Behavior statement

The responses to statement 6 (and 9) indicate that economics faculty think faculty in other disciplines are easy graders. Grade inflation is a concern as well. Further, 89 per cent agreed with statement 3, 'I think college grades are good predictors of [career] success in later life', even though research findings indicate a tenuous relationship between grades and future career success (Cohen, 1984; Baird, 1985; Davidson and Lewis, 1997).[8] Thus, economics faculty place a heavy emphasis on grading and grades.

The next section of Table 2 shows that economics faculty exhibit mixed learning oriented attitudes (LOA), with strong LOA in their responses to statements 2 and 7, which generally de-emphasises the role of grades, but anti-LO in their responses to statements 8 and 10, which indicate a belief that grades are a necessary motivator for students (consistent with the strong GOA). A majority favour collaboration over competition (statement 2) and enrollment under the pass/fail/audit option (statement 7), both of which have been shown to promote positive learning outcomes. On the other hand, a majority disagree that faculty in other disciplines place too much emphasis on using grades to motivate students (mirroring the responses for statements 6 and 9).

In response to statement 4 ('Students' concern about grades often interferes with learning in my classroom'), a large minority of faculty identified concern with students' focus on grades (41 per cent agreed or strongly agreed to the statement). As 41 per cent agreed, we can reasonably conclude that for many, but not most, faculty students' concern about grades is a problem.[9]

Given the strong GOA noted above, it is surprising that respondents exhibit very little overt grade oriented behaviour (GOB), as shown in the next set of responses in Table 2. Teaching style and grading standards are not designed to accommodate more capable students at the expense of the less capable (statements 11 and 17). Further, faculty do not emphasise the importance of grades in conversations with students (statements 12, 18 and 19).

Respondents also score low on the LO behaviour (LOB) scale. Faculty allow students little choice in completing assignments, at least in an effort to enhance motivation (statement 13). As discussed in a previous section, choice has been shown to be an important factor in student motivation. Responses to statement 13 indicate that economics faculty provide little opportunity to 'choose among alternative assignments as a way to enhance motivation'. Anderman and Midgley (1998) note that allowing some degree of control over learning by giving students choices between different assignments does not mean teachers must relinquish control of the classroom: 'Even small opportunities for choice, such as whether to work with a partner or independently,' give students a greater sense of autonomy.

Two out of every five faculty indicated that improved performance is not weighed in grading decisions (statement 20). Further, many faculty are not willing to make exceptions to stated grading criteria when unusual circumstances arise (statement 15), perhaps concerned with the implications of breaking a 'contract' – as the syllabus is often viewed as representing. Also faculty are reluctant to encourage students to read from outside of the economics discipline (statement 16), despite the inherent multidisciplinary nature of economics. In many respects this is understandable, given time constraints and training typically provided to economics faculty.

[8] Davidson and Lewis (1997) find that less prepared medical school applicants earned lower GPAs in medical school but did equally as well in their careers as those with better GPAs or scores going into medical school. Cohen (1984) conducts a meta-analysis of 108 studies correlating grade average in college to various criteria of adult achievement or success. His conclusions 'may be somewhat discouraging to those placing great importance on grades and their predictive power. It seems that how well a student does in college relates only marginally with success in a career' (p. 292). Professors, who typically have earned high GPAs during their many years of academic study, may be expected to believe that grades are strong indicators of future success. Nonetheless, the evidence is much less certain.

[9] The 39 per cent who disagreed or strongly disagreed do not cancel out the 'agrees'. If two out of five faculty indicate it is a problem then the fact that it's not a problem for the others is not central.

Overall, economics faculty are mostly in agreement (as measured by standard deviation of the responses) to GO statements more so than LO statements (8 of the 10 most agreed upon statements are GO). In sum, the survey responses suggest that economics faculty place heavy emphasis on the extrinsic motivating qualities of grades.

Demographic and institutional influences

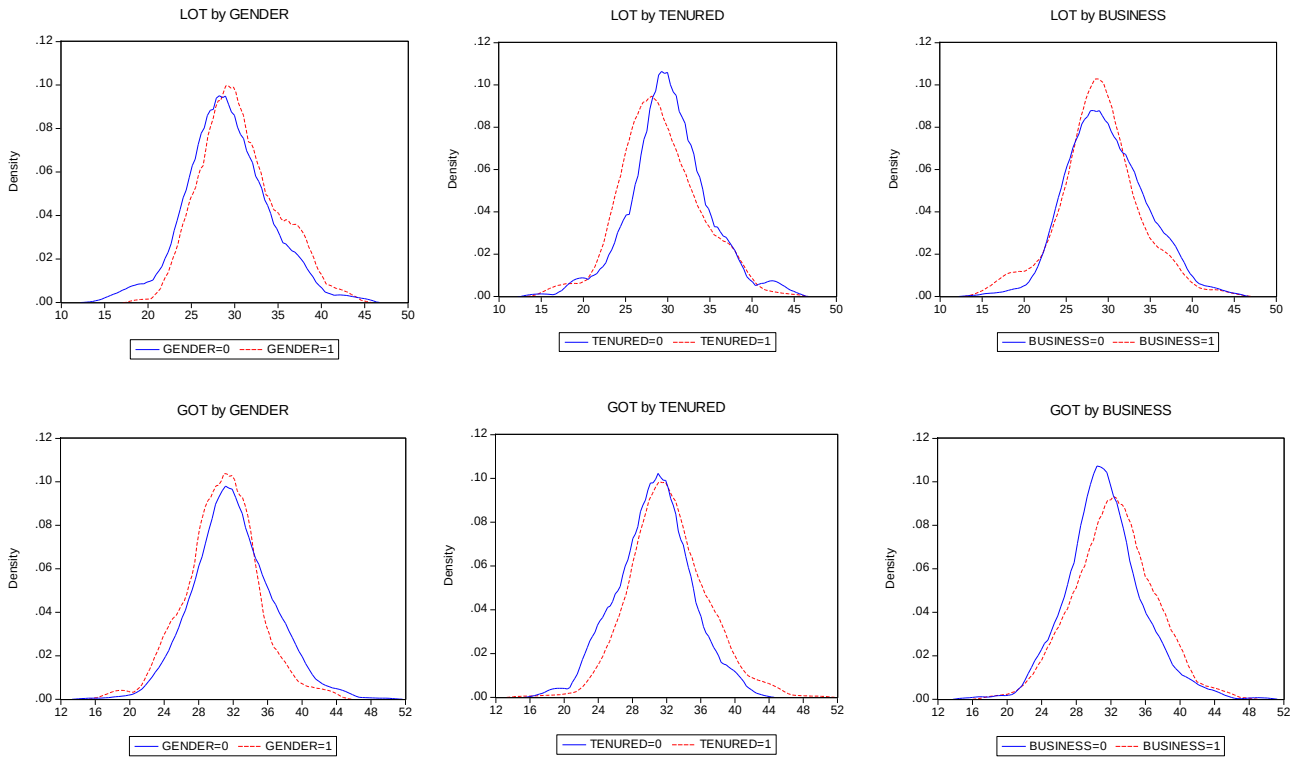
The views of economics faculty also seem to differ by certain individual and environmental characteristics. Tests for equality of means across groups indicate that gender, tenure status and business school affiliation are all correlated with learning and grade orientation. Table 3 presents summary results showing that females tend to be less GO and more LO compared to males; tenured faculty tend to be more GO and less LO compared to non-tenured faculty; and economics faculty affiliated with business schools tend to be more GO and less LO than economics faculty not affiliated with business schools. We also perform ordered logit regressions to account for correlation between these three factors. The results do not change. These regressions also show no differences in LO and GO based on number of course sections taught, number of students taught, or the course level (principles, intermediate, upper level or graduate). Complete results are shown in Appendix 2.

Table 3: Differences in learning orientation (LO) and grade orientation (GO) by individual and institutional characteristics

Measure	Differences by	df	t-value	Probability
GOT	Gender	770	3.56	0.0004
	Tenure Status	772	–5.19	0.0000
	Business School affiliation	762	–3.33	0.0009
LOT	Gender	770	–3.68	0.0003
	Tenure Status	772	3.17	0.0016
	Business School affiliation	762	2.55	0.0110

The differences by gender, tenure, and school affiliation can be seen in their distributions (kernel densities), as shown in Figure 1. We see a general shift of the distribution in each case. We hesitate to speculate on the reasons for the differences between males and females. With regard to differences by tenure status, one interpretation is that to get tenure, economics faculty are likely to have been judged hard graders (been very concerned with grades), based on our survey findings. In other words, faculty who appear to be soft graders may tend not to get tenure. Likewise, business schools may have an environment that encourages GO and less LO, or encourages faculty with those characteristics to select business schools. Given the limitations of our data, we leave for future research a rigorous examination of the reasons for these differences.

Figure 1: Kernel densities for learning orientation (LO) and grade orientation (GO) by gender (0 = males), tenure status (0 = non-tenured), business school affiliation (0 = non-business school economics faculty)



4. Free-form comments

Two hundred and two respondents (25 per cent of all respondents) submitted free-form comments. Many of the comments fall into three closely related areas: (1) standards and cross-faculty comparison of grade distributions; (2) the influence of grades on student evaluations and the influence of those evaluations on personnel decisions; and (3) grade inflation.

Standards and pressure to conform

Many respondents were concerned with pressure to conform to department grading norms. Views were wide-ranging. For example, it was often stated or implied that being at the low end of the distribution (relative to colleagues) is better than being at the high end. Others cited pressure from deans to provide higher grades and not to fail students.

Ten per cent of respondents indicated (on item #31) that department or college grading expectations had a 'great deal' of influence on how they grade. Another 33 per cent responded 'some' to that question. Roughly 29 per cent responded 'not at all'.

Many indicated that they adjust their grade distribution to be near the department average. 'I do compare my grade distributions with colleagues to determine if I am somewhat consistent.' 'I give fewer As, but aside from that I want my grade distributions to resemble those of my colleagues.' 'Implicitly I adjust the level of the course taught so the grade distribution looks like the rest of my

colleages [sic].' This last comment seems natural – standards must vary from school to school (introductory economics at Harvard is very different than at SUNY Oneonta). It also suggests a relative standard, with the measurement of student performance in one class being gauged by student performance in another.

One respondent wrote, 'In my intro classes it's difficult to hold higher standards than other faculty in my department. If I do, then about 30 per cent of my students hate me…' The same respondent continues, 'I have been redesigning my intro micro class for the past seven years and I believe that I am getting closer to an optimal model using Aplia, clickers and no exams.'

Several faculty compared the grades awarded in economics to those awarded in other disciplines. Lower grades in economics were most often seen as an indication of higher standards and rigour. They also may be driving students away from economics. As one put it, 'The signal value of grades is therefore eroded as many students do not really know where their comarative [sic] advantage lies.'

Not once did a respondent suggest that low grades are an indicator of poor teaching or irrelevant topics. Always, poor/low/harsh/tough grades were seen as upholding high standards. Almost always high standards were relative to other disciplines, which were often viewed as vaguely loose in their standards.

Grades, student evaluations, and personnel decisions

The role of course evaluations in tenure and promotion decisions was mentioned often. A few respondents explicitly stated that they did not grade as harshly as they might otherwise because harsh grades would hurt their student evaluations, which will then hurt their tenure, promotion and salary prospects. As one respondent noted, 'there is a noticable [sic] cost to holding to standards'. Another wrote, there is 'pressure not to set standards or expectations too high'.

On the other hand, too many high grades cause alarm. One respondent noted, 'when evaluating faculty colleagues exceptionally high student evaluations coupled with exceptionally high grades sets off alarms'. Another noted, 'Grading policies of faculty are more affected by the weight placed on course evaluations in promotion and tenure than any other policy.'

Several other comments indicated similar concern. The pernicious influence of grades in personnel decisions seems to be a cause for alarm. Students play a key role. One responder wrote, 'Students (most of them) are obsessed with grades. They will do anything to get a higher grade (again, not all students but most). They will try to move their grade up by tallying their points against my grade cuts and asking (or demanding) a point or two more.'

Grade inflation

The concerns with promotion and tenure and standards were intertwined with a concern with grade inflation. 'I want the grades in my class to be comparable to grades in other classes and therefore participate in the inflation' one respondent wrote.

While many economics faculty bemoan the pressure to accommodate students' expectations for high grades ('The pressure to give high grades both from the departmental colleagues and from the Dean of the College have reached epic levels'), others note pressure from colleagues and deans to avoid grade inflation ('Our department and college is very concerned about grade infation [sic]. If we started giving an unusual number of As, someone would speak to us about it to be sure we were upholding standards').

Grade inflation in other departments was seen by one faculty as an explanation for economics faculty not winning teaching awards ('It is however the case that faculty from our department almost never win college or university teaching awards, because these rely heavily on student's evaluations (which are biased upward when grades are inflated)').[10]

5. Conclusion

Grades are pervasive in higher education. Financial aid, scholarships, continuation in a major, parental approval, potential employment, and acceptance to graduate school are all tied to some extent to grades. It is only natural that faculty and students exhibit a 'grade orientation'. Indeed, economics faculty in our study agree that it is 'useful to use grades as incentives to increase student performance'. But, by emphasising grades as an incentive, economics faculty may be promoting the very orientation toward grades that many consider to be a problem. In our survey, 41 per cent of economic faculty agreed or strongly agreed that 'Students' concern about grades often interferes with learning in my classroom.' Certainly, faculty want students to be less concerned with grades and more focused on learning. Students apparently want this also, yet feel constrained by the emphasis placed on grades by teachers, parents, and others (Pollio and Beck, 2000).

Milton *et al.* (1986, p. 141) report that, 'Faculty may emphasise grades in their classrooms more than they need to or should. Faculty members have it within their power to reduce this pernicious and distorting aspect of educational practice that often seems to work against learning. If faculty would relax their emphasis on grades, this might serve not to lower standards but to encourage an orientation toward learning.' Based on our survey results, this is likely to be viewed with considerable skepticism by economics faculty. Yet, decades of empirical work in educational psychology, and even some recent findings in economics education, lend support to this claim.

There are practical issues limiting one's ability to de-emphasise grades. One respondent wrote: 'My approach to grading has to take into account the system of grades that students have learned in 14+ years of schooling. I would LOVE to do away with grades altogether, but the students in a single semester course do not often know how to act in that new environment...' The job is even more complicated when one considers the need also to convince colleagues, department chairs, deans and others. But note that grades do not have to be completely removed, simply de-emphasised. Repeated and widespread de-emphasis of grades in economics classes (as may already occur in other college classes) may be necessary to undo students' learned behaviour from many prior years.

For those looking for concrete recommendations for de-emphasising grades we provide the following shortlist, incorporating some findings from educational psychology, with examples of methods the authors have used in their classes:[11]

1. Use extrinsic rewards sparingly and in a non-controlling manner.
    a. Do not grade classroom experiments or class discussion, although other 'rewards' (e.g. small sweets) may be used without an emphasis on the reward or the performance itself. Appealing experiments and discussion will be enough to stimulate student effort. If students are not participating, change the activity (Dickie, 2006; Moeller and Reschke, 1993; Hahn *et al.*, 1989).

[10] A more detailed discussion of grade inflation is left for a future paper. But interested readers can examine a California State–Northridge study of grade inflation available at http://www.csun.edu/coc/report06.html. The website contains supporting data by school and department.

[11] Barbara Gross-Davis of UC-Berkeley provides details and additional suggestions, with references (http://teaching.berkeley.edu/bgd/motivate.html).

   b. Grade assignments satisfactory or unsatisfactory (with a minimum acceptable level of quality, e.g. B–, necessary for satisfactory work) as this will probably be seen as non-controlling, given that perfection is not required for full credit (Deci *et al.*, 1999; Grolnick and Ryan, 1987; Ames and Ames, 1991).

2. Provide choice (concerning assignments, topics to be discussed, due dates) (Anderman and Midgley, 1998).
   a. Allow students to choose which assignments to submit for credit (either requiring a minimum number of satisfactory assignments or reducing the weight on exam scores for each satisfactory assignment).
   b. Allow students to choose topics for class discussion from a list of possible topics.

3. Promote mastery of learning by providing opportunities to revise unsatisfactory work.
   a. Encourage students to revise and resubmit unsatisfactory work – even if it is graded 0-100 or A-F.

4. Avoid competition; base evaluation on criterion-referenced standards.
   a. Communicate to students that work is evaluated on set standards, not relative to other students' work (Urdan *et al.*, 1998; Thompson and Perry, 2005).

5. Encourage attributing success to effort and interpreting mistakes as learning opportunities.
   a. Repeatedly impress upon students that effort is the most important determinant of success in your course (not ability or luck); offer students concrete examples of how and on what they should be exerting effort. At the same time, make it clear to students that they must ultimately show a certain level of proficiency for a successful learning experience.
   b. Praise effort rather than outcome (Henderlong and Lepper, 2002).
   c. Allow students to replace poor grades (e.g. by allowing the score on a comprehensive final exam to replace lower exam scores), keeping them 'in the game' throughout the semester.

The healthy response rate to our survey is an indicator of the high interest in this topic among economics faculty. For many, grades have become a sore spot. This paper provides a record of the attitudes and behaviours of economics faculty on a variety of grade-related topics and serves as an important attempt to open a dialogue among economics faculty and between faculty of economics and other disciplines. Comparing the views of economics faculty to the empirical evidence sheds light on the likely effects of our common policies. Future research should apply insights from educational psychology to the economics classroom. This would extend beyond simple replication of prior studies – which may be warranted at first – to an extension, incorporating fundamental economic concepts such as opportunity costs and formal modelling (possibly of the type recently being explored in labour economics).[12] The focus of current research in economics education would then expand from content and methods of instruction, both very important areas, to include student motivation and incentives.

[12] Frey (1998), Falk and Kosfeld (2006) and Murdock (2002).

References

Allgood, S., Bosshardt, W., Van der Klaauw, W. and Watts, M. (2004). 'What Students Remember and Say about College Economics Years Later', *American Economic Review,* Vol. 94(2), pp. 259-265.

Ames, R. and Ames, C. (1991). 'Motivation and Effective Teaching', in (B. F. Jones and L. Idol, eds) *Educational Values and Cognitive Instruction: Implications for Reform,* Hillsdale, N. J.: Erlbaum.

Anderman, L. and Midgley, C. (1998). 'Motivation and middle school students', ERIC Clearinghouse on Elementary and Early Childhood Education. ERIC Document Reproduction Service No. ED 421 281.

AEA CSWEP (2008). 'Report of the Committee on the Status of Women in the Economics Profession', *American Economic Review,* Vol. 98(2), pp. 611-18.

Baird, L. (1985). 'Do grades and tests predict adult achievement?', *Research in Higher Education*, Vol. 23, pp. 3-85.

Becker, W. E. and Watts, M. (1996). 'Chalk and Talk: A National Survey on Teaching Undergraduate Economics', *American Economic Review,* Vol. 86(2), pp. 448-53.

Becker, W. E. and Watts, M. (2001a). 'Teaching Economics at the Start of the 21st Century: Still Chalk and Talk', *American Economic Review,* Vol. 91(2), pp. 446-51.

Becker, W. E. and Watts, M. (2001b). 'Teaching Methods in U.S. Undergraduate Courses', *Journal of Economic Education,* Vol. 32(3), pp. 269-79.

Betts, J. R. and Grogger, J. (2003). 'The Impact of Grading Standards on Student Achievement, Educational Attainment, and Entry-Level Earnings', *Economics of Education Review,* Vol. 22(4), pp. 343-52.

Bose, J. (2001). 'Nonresponse Bias Analyses At The National Center For Education Statistics', Proceedings of Statistics Canada Symposium. Accessed at http://www.fcsm.gov/committees/ihsng/StatsCan2_JB.pdf.

Butler, R. (1987). 'Task-Involving and Ego-Involving Properties of Evaluation: Effects of Different Feedback Conditions on Motivational Perceptions, Interest, and Performance', *Journal of Education Psychology,* Vol. 79(4), pp. 474-82.

Cherry, T. L. and Ellis, L. V. (2005). 'Does Rank-Order Grading Improve Student Performance? Evidence from a Classroom Experiment', *International Review of Economics Education,* Vol. 4(1), pp. 9-19.

Cohen, P. A. (1984). 'College grades and adult achievement: A research synthesis', *Research in Higher Education,* Vol. 20, pp. 281-94.

Davidson, R. C. and Lewis, E. L. (1997). 'Affirmative Action and Other Special Consideration Admissions at the University of California, Davis, School of Medicine', *Journal of the American Medical Association,* Vol. 278(14), pp. 1153-8.

Deci, E., Koestner, R. and Ryan, R. (1999). 'A Meta-analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation', *Psychological Bulletin,* Vol. 125(6), pp. 627-68.

Dickie, M. (2006). 'Experimenting: Does It Increase Learning in Introductory Microeconomics?', *Journal of Economic Education*, Vol. 37(3), pp. 267-88.

Eison, J., Janzow, F. and Pollio, H. R. (1993). 'Assessing Faculty Orientations Towards Grades and Learning: Some Initial Results', *Psychological Reports,* Vol. 73, pp. 643-56.

Falk, A. and Kosfeld, M. (2006). 'The Hidden Costs of Control', *American Economic Review,* Vol. 96(5), pp. 1611-30.

Frey, B. (1998). *Not just for the money: an economic theory of personal motivation,* Beacon Press: Boston.

Grolnick, W. and Ryan, R. (1987). 'Autonomy in Children's Learning An Experimental and Individual Difference Investigation', *Journal of Personality and Social Psychology,* Vol. 52(5), pp. 890-8.

Grove, W. A. and Wasserman, T. (2006). 'Incentives and Student Learning: A Natural Experiment with Economics Problem Sets', *American Economic Review,* vol. 96(2), pp. 447-52.

Hahn, S., Stassen, T. and Reschke, C. (1989). 'Grading Classroom Oral Activities: Effects on Motivation and Proficiency', *Foreign Language Annals,* Vol. 22, pp. 241-52.

Harackiewicz, J. M., Barron, K. E., Tauer, J. M., Carter, S. M. and Elliot, A. J. (2000). 'Short-term and long-term consequences of achievement goals: Predicting interest and performance over time', *Journal of Educational Psychology,* Vol. 92, pp. 316-30.

Harter, S. (1978). 'Pleasure Derived from Challenge and the Effects of Receiving Grades on Children's Difficulty Level Choices', *Child Development,* Vol. 49, pp.788-99.

Henderlong, J. and Lepper, M. R. (2002). 'The Effects of Praise on Children's Intrinsic Motivation: A Review and Synthesis', *Psychological Bulletin,* Vol. 128(5), pp. 774-95.

Janzow, F. and Eison, J. (1990). 'Grades: Their Influence on Students and Faculty', *New Directions for Teaching and Learning*, Vol. 42(summer), pp. 93-102.

Kamath, R. R., Thomas, E. G. and Wang, Y. (2007). 'Academic and personal characteristics of economics faculty in U.S. colleges and universities', *International Journal of Business Research*, Vol. 7(3), pp.29-40.

Karabenick, S. (2004). 'Perceived Achievement Goal Structure and College Student Help Seeking', *Journal of Educational Psychology*, Vol. 96(3), pp. 569-81.

Kirschenbaum, H., Napier, R. and Simon, S. (1971). *Wad-Ja-Get? The Grading Game in American Education*, New York: Hart.

Linnenbrink, E. (2005). 'The Dilemma of Performance-Approach Goals: The Use of Multiple Goal Contexts to Promote Students' Motivation and Learning', *Journal of Educational Psychology*, Vol. 97(2), pp. 197-213.

Meece, J., Anderman, E. and Anderman. L. (2006). 'Classroom Goal Structure, Student Motivations, and Academic Achievement', *Annual Review of Psychology*, Vol. 57, pp. 487-503.

Milton, O., Pollio, H. and Eison, J. (1986). *Making Sense of College Grades,* San Francisco: Jossey-Bass.

Moeller, A. J. and Reschke, C. (1993). 'A Second Look at Grading and Classroom Performance: Report of a Research Study', *The Modern Language Journal*, Vol. 77(2), pp. 163-69.

Murdock, K. (2002). 'Intrinsic motivation and optimal incentive contracts', *RAND Journal of Economics*, Vol. 33(4), pp. 650-671.

Oppenheim, A. N. (1966). *Questionnaire Design and Attitude Measurement,* New York: Basic Books.

Pekrun, R., Elliott, A. and Maier, M. (2006). 'Achievement Goals and Discrete Achievement Emotions: A Theoretical Model and Prospective Test', *Journal of Educational Psychology*, Vol. 98(3): 583-97.

Pollio, H. R. and Beck, H. P. (2000). 'When the Tail Wags the Dog: Perceptions of Learning and Grade Orientation in, and by, Contemporary College Students and Faculty', *The Journal of Higher Education*, Vol. 71(1), pp. 84-102.

Schaur, G., Watts, M. and Becker, W. E. (2008). 'Assessment practices and Trends in Undergraduate Economics Courses', *American Economic Review*, Vol. 98(2), pp. 552-56.

Senko, C. and Harackiewicz, J. M. (2005). 'Regulation of Achievement Goals: The Role of Competence Feedback', *Journal of Educational Psychology*, Vol. 97(3), pp. 320-36.

Skinner, B. F. (1976). *About Behaviorism,* Vintage: New York.

Thompson, T. (1994). 'Self-worth protection: Review and implications for the classroom', *Educational Review,* Vol. 46(3), pp. 259-74.

Thompson, T. and Perry, Z. (2005). 'Is the Poor Performance of Self-Worth Protective Students Linked with Social Comparison Goals?', *Educational Psychology*, Vol. 25(5), pp. 471-90.

Urdan, T., Midgley, C. and Anderman, E. (1998). 'The Role of Classroom Goal Structure in Students' Use of Self-Handicapping Strategies', *American Educational Research Journal,* Vol. 35(1), pp. 101-22.

Walstad, W. B. (2006). 'Assessment of Student Learning in Economics', in (W. E. Becker, M. Watts and S. R. Becker, eds) *Teaching Economics, More Alternatives to Chalk and Talk,* Cheltenham, UK: Edward Elgar.

Appendix 1: Demographic questions

21. Are you Male or Female?
    ___ Male ___ Female

22. What is your academic status (rank)?
    ___ Assistant Professor (tenure track)
    ___ Associate Professor (tenured)
    ___ Professor (tenured)
    ___ Full-time: Lecturer/Visiting (non-tenured)
    ___ Part-time: Lecturer/Visiting (non-tenured)
    ___ Other, please specify

23. How many years have you been teaching? ___

24. What is the highest degree awarded by your department?
    ___ Bachelors
    ___ Masters
    ___ Doctorate
    ___ Other, please specify

25. In which school/division is your department?
    ___ School of Business
    ___ School of Social Sciences
    ___ Other, please specify

26. Approximately how many full-time economics faculty are in your department? ___

27. How many course sections and students do you teach in a typical academic year in each of the areas listed below? (Leave blank areas not taught.)

	Course sections	Number of students (total)
Principles, undergrad	_____	_____
Intermediate, undergrad	_____	_____
Upper level, undergrad	_____	_____
MA or MBA	_____	_____
PhD	_____	_____

28. For each course level that you teach, indicate the TWO most significant evaluation tools by placing a 1 in the box for the method that accounts for the greatest portion of the course grade and a 2 in the appropriate box for the second greatest portion. Leave blank if you do not teach the course level shown.

	Essay / Short answer exams	Multiple choice exams	Homework	Quizzes	Papers	Class participation/ presentations
Introductory Level						
Intermediate						
Upper level, graduate						

29. What subject area do you regularly teach? Check all that apply.
    Select no more than 5.
    ___ Micro
    ___ Macro
    ___ International (trade/finance)
    ___ Econometrics/statistics
    ___ Financial (incl. Money & Banking)
    ___ Public Finance
    ___ Urban/Regional
    ___ Industrial Org/Regulation/Government
    ___ Labor
    ___ Environmental
    ___ Other, please specify

30. What percentage of all the students that you teach in a typical academic year are of each type listed below? (Use 100 for 100%, 50 for 50%,....). Skip this question if you are unsure.

	Percentage
Econ majors	_____
Business / Business economics majors (non-econ)	_____
Non-econ, non-business	_____

31. To what extent does department or college grading expectations, whether explicit or implicit, influence how you grade students or the course grades you submit? We invite you to use the comment box at the end of the survey to explain.
    ___ Not at All
    ___ Very Little
    ___ Some
    ___ A great Deal

32. Please enter comments in the space below.

Appendix 2: Complete results

TABLE A-1: Ordered Logit Regression with Learning Oriented (LO) total score as the dependent variable, n = 744.

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GENDER	0.4304	0.15128	2.845	0.0044
TENURED	–0.5530	0.14034	–3.940	0.0001
BUSINESS	–0.3034	0.13906	–2.182	0.0291
PRINCIPLES_S	–0.0011	0.00049	–2.260	0.0238
INTERMEDIATE_S	0.0011	0.00127	0.935	0.3495
UPPER_S	–0.0024	0.00180	–1.385	0.1661
GRAD_S	0.0001	0.00249	0.079	0.9369
PRIN_SECT	0.0023	0.03511	0.066	0.9473
INTM_SECT	–0.0853	0.07445	–1.147	0.2514
UPPER_SECT	0.0551	0.07305	0.755	0.4501
GRAD_SECT	0.0456	0.08651	0.528	0.5974
	Limit Points			
LIMIT_16:C(12)	–7.205937	1.013602	–7.109238	0.0000
LIMIT_17:C(13)	–6.102603	0.600611	–10.16066	0.0000
LIMIT_18:C(14)	–5.247706	0.412585	–12.71908	0.0000
LIMIT_19:C(15)	–4.885428	0.356836	–13.69096	0.0000
LIMIT_20:C(16)	–4.404930	0.299688	–14.69840	0.0000
LIMIT_21:C(17)	–4.030918	0.266116	–15.14720	0.0000
LIMIT_22:C(18)	–3.864262	0.253745	–15.22893	0.0000
LIMIT_23:C(19)	–3.591904	0.236528	–15.18594	0.0000
LIMIT_24:C(20)	–3.008977	0.208478	–14.43305	0.0000
LIMIT_25:C(21)	–2.548581	0.193012	–13.20430	0.0000
LIMIT_26:C(22)	–2.041067	0.181379	–11.25305	0.0000
LIMIT_27:C(23)	–1.650002	0.175305	–9.412186	0.0000
LIMIT_28:C(24)	–1.199075	0.170122	–7.048335	0.0000
LIMIT_29:C(25)	–0.758983	0.166493	–4.558650	0.0000
LIMIT_30:C(26)	–0.348498	0.164692	–2.116053	0.0343
LIMIT_31:C(27)	0.031286	0.164313	0.190403	0.8490
LIMIT_32:C(28)	0.341794	0.165026	2.071147	0.0383
LIMIT_33:C(29)	0.661109	0.166923	3.960572	0.0001
LIMIT_34:C(30)	1.039585	0.171133	6.074714	0.0000
LIMIT_35:C(31)	1.409345	0.177819	7.925740	0.0000
LIMIT_36:C(32)	1.608473	0.182752	8.801389	0.0000
LIMIT_37:C(33)	1.943836	0.193317	10.05515	0.0000
LIMIT_38:C(34)	2.409252	0.213821	11.26762	0.0000
LIMIT_39:C(35)	3.061541	0.258240	11.85539	0.0000
LIMIT_40:C(36)	3.389590	0.289315	11.71592	0.0000
LIMIT_41:C(37)	3.602639	0.313196	11.50284	0.0000
LIMIT_42:C(38)	3.978397	0.363625	10.94094	0.0000
LIMIT_43:C(39)	4.574054	0.470187	9.728159	0.0000
LIMIT_44:C(40)	4.798743	0.520638	9.217035	0.0000

TABLE A–2: Ordered Logit Regression with Grade Oriented (GO) total score as the dependent variable, n = 744.

Variable	Coefficient	Std. Error	z–Statistic	Prob.
GENDER	–0.3657	0.15037	–2.432	0.0150
TENURED	0.7170	0.14381	4.986	0.0000
BUSINESS	0.5251	0.14216	3.693	0.0002
PRINCIPLES_S	1.21E–05	0.00038	0.031	0.9745
INTERMEDIATE_S	–0.0004	0.00130	–0.366	0.7137
UPPER_S	0.0008	0.00186	0.433	0.6645
GRAD_S	–0.0002	0.00312	–0.093	0.9253
PRIN_SECT	0.0325	0.03247	1.003	0.3155
INTM_SECT	0.0473	0.07492	0.631	0.5277
UPPER_SECT	–0.0143	0.06775	–0.212	0.8317
GRAD_SECT	–0.0683	0.09543	–0.716	0.4736
	Limit Points			
LIMIT_18:C(12)	–6.097132	1.009869	–6.037548	0.0000
LIMIT_19:C(13)	–5.401951	0.721012	–7.492174	0.0000
LIMIT_20:C(14)	–4.994411	0.594322	–8.403541	0.0000
LIMIT_22:C(15)	–4.295928	0.431985	–9.944622	0.0000
LIMIT_23:C(16)	–3.885608	0.362085	–10.73119	0.0000
LIMIT_24:C(17)	–3.014938	0.260491	–11.57405	0.0000
LIMIT_25:C(18)	–2.333114	0.213536	–10.92611	0.0000
LIMIT_26:C(19)	–1.948111	0.195835	–9.947739	0.0000
LIMIT_27:C(20)	–1.526328	0.182105	–8.381567	0.0000
LIMIT_28:C(21)	–1.061226	0.172696	–6.145068	0.0000
LIMIT_29:C(22)	–0.697445	0.168202	–4.146467	0.0000
LIMIT_30:C(23)	–0.271592	0.165295	–1.643076	0.1004
LIMIT_31:C(24)	0.190916	0.164249	1.162352	0.2451
LIMIT_32:C(25)	0.606880	0.165171	3.674253	0.0002
LIMIT_33:C(26)	1.044430	0.168113	6.212657	0.0000
LIMIT_34:C(27)	1.464461	0.172153	8.506735	0.0000
LIMIT_35:C(28)	1.881892	0.177475	10.60370	0.0000
LIMIT_36:C(29)	2.210563	0.183016	12.07852	0.0000
LIMIT_37:C(30)	2.538226	0.190195	13.34538	0.0000
LIMIT_38:C(31)	2.931805	0.201160	14.57449	0.0000
LIMIT_39:C(32)	3.315835	0.215143	15.41220	0.0000
LIMIT_40:C(33)	3.848507	0.242929	15.84212	0.0000
LIMIT_41:C(34)	4.253969	0.272732	15.59759	0.0000
LIMIT_42:C(35)	4.534038	0.298792	15.17457	0.0000
LIMIT_43:C(36)	4.828431	0.331857	14.54975	0.0000
LIMIT_44:C(37)	5.241158	0.389638	13.45135	0.0000
LIMIT_45:C(38)	6.231469	0.600150	10.38318	0.0000
LIMIT_46:C(39)	6.639020	0.725849	9.146554	0.0000
LIMIT_49:C(40)	7.334229	1.013344	7.237650	0.0000

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