“the issue of grade inflation has been discussed for many years but debates on the issue are usually restricted by a lack of data”

Anglin, P., Meng, R., *Evidence on Grades and Grade Inflation at Ontario’s Universities*. Canadian Public Policy, 16/3, 2000
Acknowledgments

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Outline

1. Background
2. Evidence
3. Impact
4. Sources
5. Solutions
6. Grade Variation at UW
7. Conclusion
Background

Section 1
Background

- no consensus on how Grade Inflation (GI) is defined

- I will define GI as:

  An increase in grades in one or more academic departments over time.

- no requirements on the student performance on the GI
Evidence of Grade Inflation at UW

Section 2
Evidence of GI at UW

Obtained data:

- every grade given in every undergraduate course, all faculties
- data ranges from 1988/89 to 2006/07 (19 years)
- grades stored as either letter grade or integer grade (0 to 100)
- prior to Fall 2001, many grades stored only as letters (F- through A+)

For each entry in the data I only have:

- grade (letter, integer, or no grade)
- year
- course number
- course name
- department
- faculty
Grade Inflation at UW

From 1988/89 to 2006/07, over all faculties and academic levels:

- 11.02% increase in undergraduate A grades
- A’s increased at a rate of $0.656 \pm 0.062 \%$ per year ($R^2 = 0.9633$)
The Impact of Grade Inflation

Section 3
The Purpose of Grading

The purpose of grading may be to [3]:
1. provide students with feedback
2. weed out students
3. motivate students
4. inform prospective employers and admissions committees

2006/07 Grade Distributions

<table>
<thead>
<tr>
<th>Grade</th>
<th>100 level MATH (11042)</th>
<th>400 level Fine Arts (50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>31.9</td>
<td>100.0</td>
</tr>
<tr>
<td>B</td>
<td>22.0</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>18.0</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>16.3</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>11.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

A | B | C | D | F | Total |
---|---|---|---|---|-------|
| 31.9%| 22.0%| 18.0%| 16.3%| 11.8% | 100% |

400 level Fine Arts:
- All students received an A.
Impact of GI

The purpose of grading may be to [3]:
1. provide students with feedback
2. weed out students
3. motivate students
4. inform prospective employers and admissions committees

Suppose a department gave A’s to all students at the 400 level every year.

Two cases:
1) A’s are given regardless of student performance, the purpose of grading students would be lost

2) Every student demonstrates outstanding performance no consensus on the impact of GI in this case [4,5]
Sources of Grade Inflation

Section 4
Sources of GI

Student Ability Increased?
• entirely possible
• no evidence of increase in mathematical preparedness of first year students at UW from 1991 to 1999 [6]

Maintain Departmental or Faculty “Standards”
• in the past, administrators at UW have pressured for higher grades [6]
• FAUW newsletters documents case when a math dean adjusted grades without the consent or authorization of the instructor [9]

There are Many other Possible Sources of GI
• see [11]
Solutions to Grade Inflation at UW

Section 5
1. **Enhance Undergraduate Transcripts** [7,10,11]
   - include additional statistics, such as:
     - course averages or course medians
     - class sizes
   - helps anyone who relies on transcripts to put grades into perspective
   - but does not address grade inflation directly

2. **University-wide Fixed Grade Distributions**
   - has been implemented at Princeton [4]
   - proposed many times in the GI literature (for example, [3,7,8,11])
   - controls GI
   - but final grades depend on who is enrolled in a course
Grade Variation at UW

Section 6
Grade Variation at UW

Faculty of Art, 400 Level Grades

% of A grades

2002/03 to 2006/07

1988/89 to 1992/93

Music
Dean of Arts
German
Renison
Fine Art
Psychology
Religious Stud
Sociology
History
Philosophy
Anthropology
Drama
Political Science
English
French
Economics
Business

17
Conclusions

Section 7
Conclusions

Grading patterns observed at UW

• 1988 to 2006: over all undergraduate student grades at UW, proportion of A’s increased by 11.02% (linear inflation rate of 0.656% per year)

Future Work

• expand on previous results [6] to investigate why UW has experienced grade inflation
Bibliography

[1] Anglin, P., Meng, R., Evidence on Grades and Grade Inflation at Ontario’s Universities. Canadian Public Policy, 16/3, 2000


Appendix: Linear Regressions By Faculty

Linear model: \( P_{f,n} = r_f t_n + b_f, \ f = 1, 2, \ldots 6 \)

where

\( P_{f,n} = \) proportion of A grades for faculty \( f \) at point \( n \)

\( r_f = \) rate of change of \( P_f \)

\( t_n = \) time (in years), \( n = 1, 2, 3, \ldots 19 \)

\( b_f = \) constant

<table>
<thead>
<tr>
<th>Faculty</th>
<th>( f )</th>
<th>( r_f )</th>
<th>( R^2 )</th>
<th>( t )</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHS</td>
<td>1</td>
<td>0.71 ± 0.30</td>
<td>0.57</td>
<td>4.73</td>
</tr>
<tr>
<td>ART</td>
<td>2</td>
<td>0.56 ± 0.09</td>
<td>0.89</td>
<td>12.00</td>
</tr>
<tr>
<td>ENV</td>
<td>3</td>
<td>0.69 ± 0.34</td>
<td>0.50</td>
<td>4.14</td>
</tr>
<tr>
<td>ENG</td>
<td>4</td>
<td>0.76 ± 0.23</td>
<td>0.72</td>
<td>6.56</td>
</tr>
<tr>
<td>MAT</td>
<td>5</td>
<td>0.51 ± 0.16</td>
<td>0.71</td>
<td>6.53</td>
</tr>
<tr>
<td>SCI</td>
<td>6</td>
<td>0.38 ± 0.23</td>
<td>0.36</td>
<td>3.08</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Faculty</th>
<th>( f )</th>
<th>( r_f )</th>
<th>( R^2 )</th>
<th>( t )</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHS</td>
<td>1</td>
<td>1.33 ± 0.30</td>
<td>0.82</td>
<td>8.80</td>
</tr>
<tr>
<td>ART</td>
<td>2</td>
<td>0.92 ± 0.18</td>
<td>0.87</td>
<td>10.47</td>
</tr>
<tr>
<td>ENV</td>
<td>3</td>
<td>0.83 ± 0.20</td>
<td>0.79</td>
<td>7.91</td>
</tr>
<tr>
<td>ENG</td>
<td>4</td>
<td>1.22 ± 0.30</td>
<td>0.72</td>
<td>8.23</td>
</tr>
<tr>
<td>MAT</td>
<td>5</td>
<td>0.38 ± 0.15</td>
<td>0.62</td>
<td>5.27</td>
</tr>
<tr>
<td>SCI</td>
<td>6</td>
<td>1.04 ± 0.19</td>
<td>0.87</td>
<td>10.82</td>
</tr>
</tbody>
</table>

\( R^2 \) is the coefficient of determination

F-test calculated at 99%, all measures of \( r_f \) significant
## Appendix: Grading Systems at UW

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentage Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>90-100</td>
<td>95</td>
</tr>
<tr>
<td>A</td>
<td>85-89</td>
<td>89</td>
</tr>
<tr>
<td>A -</td>
<td>80-84</td>
<td>83</td>
</tr>
<tr>
<td>B+</td>
<td>77-79</td>
<td>78</td>
</tr>
<tr>
<td>B</td>
<td>73-76</td>
<td>75</td>
</tr>
<tr>
<td>B -</td>
<td>70-72</td>
<td>72</td>
</tr>
<tr>
<td>C+</td>
<td>67-69</td>
<td>68</td>
</tr>
<tr>
<td>C</td>
<td>63-66</td>
<td>65</td>
</tr>
<tr>
<td>C -</td>
<td>60-62</td>
<td>62</td>
</tr>
<tr>
<td>D+</td>
<td>57-59</td>
<td>58</td>
</tr>
<tr>
<td>D</td>
<td>53-56</td>
<td>55</td>
</tr>
<tr>
<td>D -</td>
<td>50-52</td>
<td>52</td>
</tr>
<tr>
<td>F+</td>
<td>42-49</td>
<td>46</td>
</tr>
<tr>
<td>F</td>
<td>35-41</td>
<td>38</td>
</tr>
<tr>
<td>F -</td>
<td>0-34</td>
<td>32</td>
</tr>
</tbody>
</table>

- **Some** grades prior to 2001 recorded only as a letter grade
- UW used this table to convert percentages into letters
- no way of converting letters back to original percentages
Appendix: 2006/07 Grade Distribution

Observations:
1. Grades do not have a normal distribution
2. Peaks at 60%, 70%, 80%, and 90%
Appendix: Proportion of A’s by Faculty

100 Level Courses

- increase from 1988-2003 in ENG and MATH
- decrease from 2003-2006 in ENG and MATH
- linear regressions: statistically significant increase in proportion of A’s at the 100 and 400 level in all six faculties