Grade Inflation in UK higher Education

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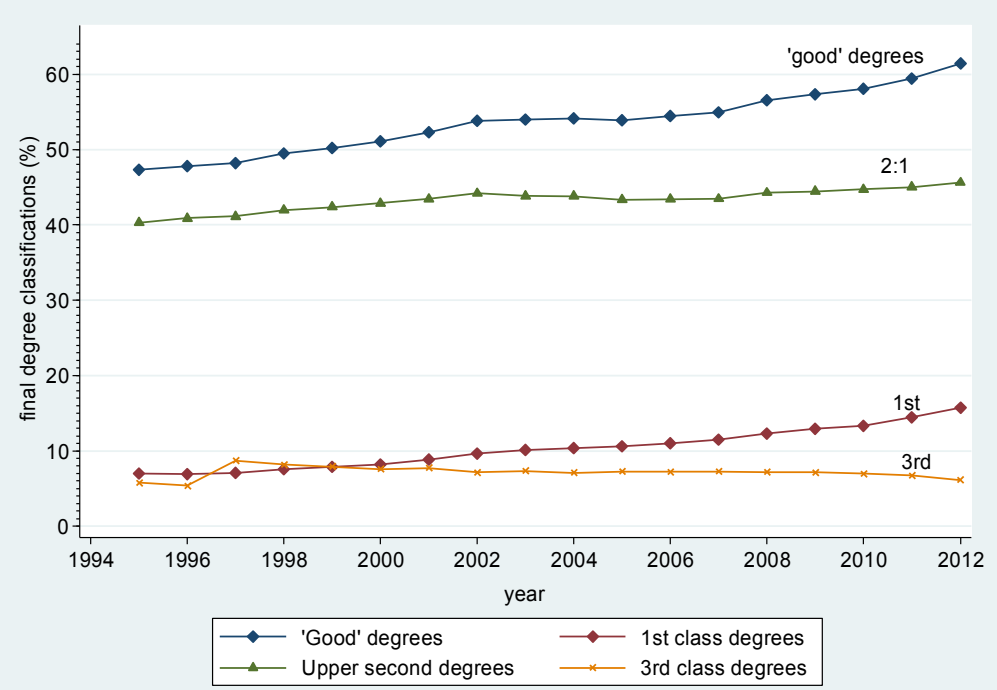
As UK higher education expanded in the 1990s there has been a corresponding increase in the relative proportion of 'good' honour (or bachelor) degrees awarded. In the UK a 'good' degree is often taken as the award of either a first class honours degree or an upper second. Recent evidence suggests that the proportion of 'good' honour degrees awarded to new graduating students by UK higher education institutions (HEIs) increased from 47.3% in 1994/95 to 61.4% in 2011/12. In absolute terms the number of 'good' degrees awarded increased by 113% over the period from 112,511 to 240,030 (HESA, 2012), see figure 1.

Figure 1: Honour Degree (Bachelors) Classifications (%)
All UK HEIs 1994/95 - 2011/12



Source: Higher Education Statistical Agency (various years)available at:http://www.hesa.ac.uk/index.php/content/view/1973/239/

Notes: All institutions include pre-1992, post-1992, and post-2003 universities, the Open University, Colleges of the Arts, and small specialist colleges, but exclude degrees awarded in Medical Schools.

The consequent compression of awards in the top end of the degree class distribution has led some commentators to question whether the current degree classification system provides correct signals on graduate quality and indeed whether the current system of degree

classification is fit for purpose (Smithers, 2011[1]; Gilleard, 2012[2]; Elton, 2004; Sadler, 2009). Grade inflation has also been a particular feature in the educational and national press[3], and concern over the phenomenon has been expressed by government. For instance, the incumbent Universities Minister, David Willets insisted that the 'whole system of degree classification does need reform' (*The Telegraph,* January 12, 2012). It has also been of international concern (see for example, Astin, 1998 and Rosovsky & Hartley, 2002, for the US; O'Grady & Guilfoyle, 2007, for Ireland; Dickson, 1984 and Anlin & Meng, 2000, for Canada; Marginson,1995, for Australia; Bauer & Grave, 2011, for Germany; and Bagues *et al* 2008, for Italy).

It is argued that the upward drift in the proportion of 'good' degree classifications in the UK may be due to the modularisation of degree programmes, changes in assessment methods, pressures on universities to improve their 'league table' position (Elton, 1998; Gibbs & Lucas, 1997; Yorke, 2002; Yorke *et al*, 2002), or simply a reflection of a fall in educational standards (Johnes, 2004). However, it is also possible that the increasing share of graduates with 'good' degrees may not be an indication of UK grade inflation, *per se*. For instance, it can be argued that students have become more diligent in their attitude to study realising the connection between 'good' degrees and labour market opportunities and remuneration. It may also reflect that more efficient methods of teaching and learning have been successfully employed in higher education. It may also be due to an increase in the 'quality' of new undergraduates, measured by their pre-entry qualifications.

We examine grade inflation using university-level data. These data, obtained from HESA, cover the academic years from 2005/06 to 2011/12 inclusive and comprise 700 observations on 100 UK (English, Welsh and Irish) universities. We include variables that capture specific characteristics of the graduating cohort (%female, %science students, %graduate cohort UK

1 *Mail Online*, September 23, 2011

2 Carl Gilleard, *The Telegraph,* January 12, 2012

3See for example 'Universities fix results in 'race for firsts'' (*Telegraph,* July 15, 2013); 'How to get a first-class degree' (The Telegraph, February 19, 2013); 'British universities bend their rules to award more firsts' (*Sunday Times*, July 13, 2013); 'Top jobs 'restricted to graduates with first-class degrees' (*Telegraph*, July 4, 2012); 'University marking to be reviewed over grade inflation fears' (*Guardian*, September 10, 2009);'Bursting bubbles; education standards' (*Economist*, September 29, 2007); 'Degree grades 'are too crude'' (*Times Higher Education*, May 7, 2004).

domiciled, %graduate from state schools, median entry points, and mean NSS score) and university contextual variables (university type, real expenditure on academic services, staff student ratio, and %FTE undergraduate students). These variables have been found to influence undergraduate degree performance in many UK studies (see, for example, Johnes & Taylor, 1987; Smith & Naylor 2001, 2005; Yorke, *et al.,* 2002; Naylor & Smith, 2004; Rogers, 2007; Barrow *et al.,* 2009; Richardson, 2010; and Iannelli and Huang, 2013).The summary statistics along with the definitions of the variables used in the empirical analysis are reported in table 1. We briefly note that on average, just under 60% of honour degrees awarded are either first or upper second class, a higher percentage of women (55.6%) graduate each year compared to their male counterparts, just under a quarter of all students graduate with a science degree, 83.6% of students are UK-domiciled, and 89.5% were formally educated in state schools or colleges. The median entry points for all universities is around 295 (equivalent to about two grade Bs and one grade C at A-level).

The empirical literature on grade inflation often fails to distinguish between 'pure' grade inflation (that may be indicative of falling standards) and improvements in student learning and performance due to improvements in teaching technologies (Johnes, 2004). We model grade inflation using an institution-level 'true' random effect (TRE) stochastic frontier estimator, advanced by Greene (2005), which is a development on previous stochastic random effects panel models in that it allows for time varying improvement in university inefficiency to be distinguished from cross section university heterogeneity. We also model grade inflation using standard panel modelling techniques as a check for the robustness of the TRE coefficient estimates. The results are presented in the table 2.

In summary we find that the quality of pre-entry qualifications, and being a UK domiciled student impacts positively on degree performance, but graduates from state schools are less likely to achieve a 'good' degree compared to their non-state school counterparts. It is also interesting to note that pre-1992 universities award proportionally more 'good' degrees than post-1992 universities. In terms of university characteristics we find very few significant effects. In regard to grade inflation we detect grade inflation since the academic year 2009, using the TRE specification in column [1] as demonstrated by the significance of the estimated coefficients on the time dummies. In general these results remain robust across the specifications reported, but both the standard random and fixed effects specifications

(reported in columns [2] and [3] in table 2) suggest grade inflation has been present in English, Welsh and Northern Irish universities since 2006.

It seems plausible that the observed upward drift in ‘good’ degree classifications may have been due to changes in the methods of assessment and the result of modularisation of degree programmes (Yorke, 2002; Elton, 1998). If grade inflation is associated with lenient marking then it is possible that there may be a conscious effort by UK universities to lower the ‘hedonistic’ price by lowering standards to attract fee paying students in recent times. Moreover, our finding may suggest that employers’ concern over using UK degree classifications as signals of graduate ability and current government efforts to review or replace the current system of degree classification may not be misplaced.

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Table 1 Summary Statistics

	Variable Definition	Means and
Students characteristics		
% Good Degrees	Percentage of 1st Class and upper second (2:1)	59.27
% Female Graduates	Percentage of FTE HE Female students graduating in	55.57
% Science Graduates	Percentage of FTE students on science related	24.75
% UK Domiciled Students	Proportion of FTE undergraduate students domiciled	83.56
% Students from State	Percentage of young full-time undergraduate entrants	89.51
Median entry points	Median entry tariff points of students on admission to	294.88
Student Satisfaction (NSS	The average value of overall student satisfaction with	81.67
University Characteristics		
University type	Pre-1992 = 0.50 ('old' universities)	1.00
ln Expenditure (in 1998	Natural logarithm of real total expenditure (£'000)	9.12
Staff-Student Ratio	Numerator: Total FTE of students studying at higher	17.64
% FTE Undergraduate	% of FTE undergraduate students a proportion of all	81.13
% First Year drop Outs	Percent of full-time first degree entrants who are no	8.89
VC tenure (years)	VC experience measured by years in post	5.39
N		*700*

Notes to table:

(a) Standard deviations are reported in parenthesis for continuous variables.

(b) t-tests are used to test differences in means between pre and post 1992 universities. The appropriate critical value at the 5% level of significance is ⧫1.96.

(c) Scottish Universities, the Open University, colleges of the arts, and small specialist colleges are also excluded from the analysis due to their atypical undergraduate intake. The University of Buckingham which is a private institution that awarded honour degrees after two-years of study is also excluded.

Table 2 True Random Effects, Standard Random Effects, and Standard Fixed Effects Estimates (log form)

Variable Name	True University Random Effects (Half Normal) [1]	University Random Effects [2]	University Fixed Effects [3]
Students Characteristics			
Ln (% Female Graduates)	0.077 (0.070)	0.078 (0.088)	-0.140 (0.206)
Ln (% Science Graduates)	-0.007 (0.009)	-0.017 (0.009)*	-0.015 (0.012)
Ln (% UK Domiciled Students) (lagged 3 years)	0.151 (0.082)*	0.124 (0.098)	0.386 (0.180)**
Ln (% Students from State Schools) (lagged 3 years)	-0.268 (0.102)***	-0.253 (0.045)***	0.078 (0.151)
Ln (Median entry points) (lagged 3 years)	0.254 (0.046)***	0.253 (0.045)***	0.152 (0.051)***
Ln (NSS score) (lagged 1 year)	0.001 (0.102)	-0.041 (0.099)	-0.065 (0.107)
University Characteristics			
Pre-1992 university	0.042 (0.019)**	0.054 (0.025)**	†
Post-2003 university	-0.025 (0.036)	-0.037 (0.026)	†
Post-1992 university	*f*	*f*	†
Ln (expenditure (in 1998 prices))	-0.001 (0.011)	-0.006 (0.723)	-0.002 (0.018)
Ln (Staff-student ratio)	-0.011 (0.027)	-0.010 (0.029)	-0.006 (0.034)
Ln (% FTE undergraduate students)	-0.083 (0.107)	-0.053 (0.125)	0.056 (0.170)

Variable Name	True University Random Effects (Half Normal) [1]	University Random Effects [2]	University Fixed Effects [3]
Ln (% First year drop outs) (lagged 3 years)	-0.032 (0.014)**	-0.042 (0.015)***	-0.025 (0.014)*
Ln (VC tenure (years))	0.0004 (0.0039)	0.0004 (0.0043)	0.003 (0.004)
Year Dummies			
Year dummy 2012	0.096 (0.013)***	0.103 (0.014)***	0.116 (0.017)***
Year dummy 2011	0.054 (0.011)***	0.068 (0.012)***	0.078 (0.014)***
Year dummy 2010	0.031 (0.011)***	0.046 (0.012)***	0.052 (0.014) ***
Year dummy 2009	0.009 (0.009)	0.023 (0.009)**	0.032 (0.009)***
Year dummy 2008	0.003 (0.007)	0.014 (0.008)*	0.022 (0.008)***
Year dummy 2007	0.002 (0.009)	0.007 (0.007)	0.012 (0.007)
Year dummy 2006	*f*	*f*	*f*
σ_i	†	0.067	0.153
σ_e	†	0.056	0.056
rho_i	†	0.589	0.882
Within-R^2	†	0.314	0.337
ρ	†	†	-0.039
	0.081 (0.008) ***	†	†
	0.029 (0.004) ***	†	†
	2.767 (0.011) ***	†	†
F-statistic[§] / Wald test	665.83[0.000]	589.25 [0.000]	8.35 [0.000] [§]
Log likelihood	-915.6472		1090.5931
Observations	700	700	700
Number of universities	100	100	100

Notes to table:
(a) Robust standard errors corrected for clustering by university are reported in parentheses.
(b) * significant at 10%; ** significant at 5%; *** significant at 1%
(c) † denotes not applicable in estimation.
(d) *f* denotes base category in estimation.
(e) σ_i and σ_e are the estimated standard deviations for the fixed effects and the error term respectively, rho_i is the fraction of the variation in the dependent variable accounted for by the fixed effects an ρ is the correlation between the fixed effects and the included variables.