The Distorted Grade Distribution: Inflating Grades Post the 1980s

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Faculty give grades to provide rewards, punishments, and reflections of academic performance of students. However, there are plainly other motivations at work as well. Average grades in American colleges and universities have been rising since the 1960s. Most agree that significant grade inflation in the United States began in the 1960s due to the Vietnam War, and stabilized in the 1970s. Inflating grades somehow resumed in the mid-1980s and there seems to be no end in sight. We contend that the motivational mechanisms behind inflating grades in the years post the mid-1980s are very different from the pre mid-1980s. The higher education sector experienced a paradigm shift in the 1980s when the market-oriented approach was introduced to the sector. Many corporate-world practices have been adopted. We believe the production function framework and the human behavior model are insufficient to understand the motivations behind inflating grades. Instead, a conventional Principal-Agent Theory can provide a framework to conceptualize the incentive system that stimulates inflationary grading practice.

Keywords: grade inflation, principal-agent theory, distorted distribution

INTRODUCTION

Grade inflation is the awarding of grades that are higher than students deserve. Yet, awarding higher grades in itself does not suggest grade inflation. For higher grades to constitute grade inflation, it is necessary to demonstrate that the grades are not associated with comparable students' accomplishments. Indeed, according to Stone (1995), grade inflation is an increase in reported grades unwarranted by student achievement. The issue of grade inflation has been discussed not just in the United States but also internationally. However, the debate on inflating grades is usually restricted by the lack of data (Durm, 1993; Juarez, 1996; McKenzie, 1979).

The goal of grading is to evaluate individual students' learning and performance. Grades are instruments employed by faculty to motivate students and to provide summaries of students' learning progress. They are also used by students as a signal of their quality, in an attempt to differentiate themselves from competitors in the labor market and/or in the pursue of further education. Potential employers and higher education institutions rely on grades to some degree in order to identify promising candidates. However, according to Rojstaczer and Healy (2010), the fact that the grading systems in American colleges and universities are unregulated, results in much grading variabilities among schools and areas of studies.

Granting higher grades has been in practice in American colleges and universities since the 1960s. Rising grades does not raise a concern as long as it comes with matching student accomplishments. According to Kuh and Hu's (1999) analysis on a large-scale student database, the average students' self-reported grade point average (GPA) rose significantly from 3.07 in the mid-1980s to 3.34 in the mid-1990s.

Yet, the higher grades are accompanied with a statistically significant decline in the students' course learning effort and the frequency and quality of students' interaction with faculty. By studying the Scholastic Aptitude Test (SAT) scores of college-bound seniors from 1972 to 2015, Lin (2019) documented stagnant SAT scores over the years, and the finding suggests that there is very little evidence on the improvement in students' achievements. Similar results can be found on Babcock and Marks (2010); Kutner, Greenberg, and Baer (2006); and Saenz and Barrera (2007). Grade inflation has become one of the most pronounced facts in the higher education world and in turn, it has been a topic of research for at least half a century (Durm, 1993; Juarez, 1996; McKenzie, 1979).

There is clear evidence of nationwide grade inflation over time as suggested by many empirical studies (e.g., Juola, 1976; Perry, 1943; Rojstaczer & Healy, 2010; Suslow, 1976). C was the most common grade in the years prior to 1960. In the mid-1960s, the GPA increased to about 2.4 or around a C+. However, by 2006, the average GPA was about 3.0 or roughly a B, and even higher in private institutions. A similar trend was also identified by Deresiewicz (2014). Perhaps a more serious implication of inflating grades is the resulting distorted grade distribution, or more precisely, the negatively skewed grade distribution, where more than 50% of the grades are above a B or increasingly a B-plus. The closer the curve gets squeezed to the ceiling, the harder it is to make distinctions on student quality and the less incentive students have to do their best (Lin, 2019). Indeed, according to Cole (1993), by rewarding mediocrity, we discourage excellence. Therefore, there is substantial research interest on grade inflation. Interested readers can find a few examples in the works of Butcher, McEwan, and Weerapana (2014); Carter, Wiant, and Allen (2008); Juola (1976); McSpirit, Chapman, and Kopacz (2000); and Rojstaczer and Healy (2010, 2012).

Researchers mostly agree that grade inflation began in the 1960s, stabilized in the 1970s, somehow resumed in the mid-1980s, but it is yet to end. The significant grade inflation from the 1960s is due to the Vietnam War. In the 1960s and early 1970s, instructors largely abandoned D's and F's so that students could avoid the Vietnam War era military draft (Lin, 2019). After the Vietnam War, grades stabilized in the 1970s but did not return back to the pre-1960s level. Grade inflation somehow resumed in the mid-1980s with unclear justifications.

Many explanations for grade inflation have been provided and studied. With the general consensus that grade inflation in the pre-1980 years can be attributed to an external factor – the Vietnam War – the aim of this study is to suggest some potentially important aspects of inflationary grading practices post the mide-1980s that previous research has overlooked. We argue that the higher education sector experienced a paradigm shift in the 1980s, when a market-oriented approach was introduced to the sector. This shift led to a gradual but significant structural change. As such, while we take it as a given that faculty issue grades in part to provide rewards, punishments, and/or signals of academic performance of students, there are other motivations at play as well. It is our hope that this study can stimulate further academic attention to the inflationary grading practices. There remain many unanswered questions and considerable controversies within this area of research with respect to theoretical assumptions and empirical approaches to testing these theories.

In the next sections, we provide a brief discussion on the distorted grade distribution caused by inflating grades; details on the paradigm shift in the higher education sector and its implications on rising grades; we suggest a traditional Principal-Agent Framework on which grade inflation can be conceptualized and studied; and finally, we'll offer a discussion on the consequences of inflating grades, as well as some concluding remarks.

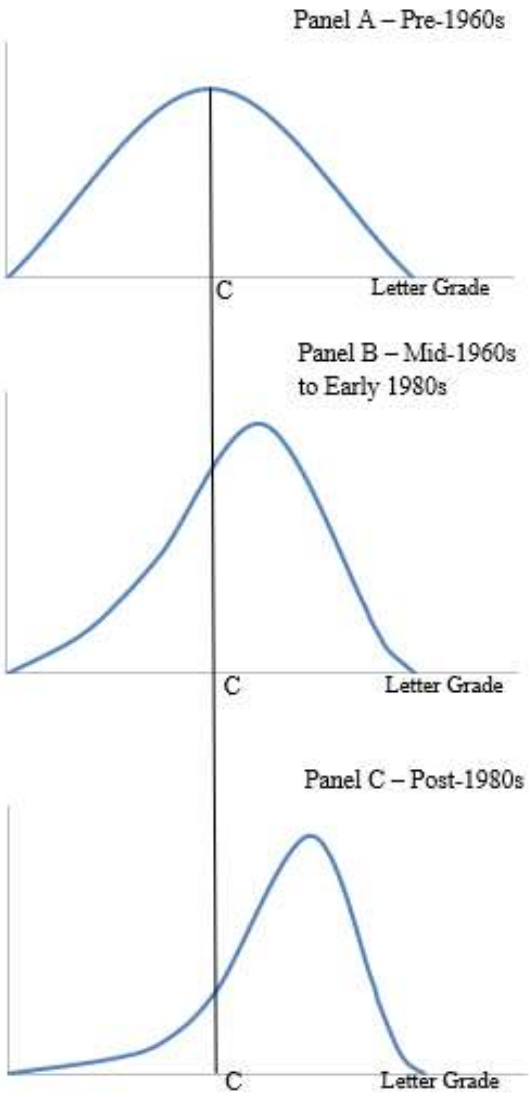
DISTORTED GRADE DISTRIBUTION

The current literature suggests a widespread sharp rise in grades from the mid-1960s to mid-1970s, with relatively little change in grades afterward until the mid-1980s. However, a slow rise in grades from the mid-1980s to the present is observed. Grade inflation does not only occur in the United States, it takes place internationally as well (e.g., Anglin & Meng, 2000; O'Grady & Guilfoyle, 2007). The practice of inflating grades is also not uniform among areas of studies. Some subjects experience little or no change in

average grades, while others have seen significant grade inflation. Interested readers should refer to Lin (2019), and Rojstaczer and Healy (2010, 2012) for extensive reviews on the grade inflation literature.

Due to data availability, the kind of large-scale systematic studies on grade inflation are limited. However, published research based on a wide variety of institutions indicate that inflated grades have quietly become the norm. The findings collectively suggest that prior to the 1960s, C was the most common grade, which implied a normal distribution of grades (Juola, 1976; Perry, 1943; Suslow, 1976). This is illustrated in panel A in Figure 1, showing a bell-shaped distribution of grading practice with C being the average. However, by the mid-1960s, C+ had replaced C and became the most usual grade, while D's and F's were becoming less common. This is shown in Panel B where the grade distribution is no longer normal, but instead shows a degree of skewness. Its slightly negative skewness suggests that C+ is the average, and that more than 50% of the students earned at least a C. By 2006, B had become the new average, and it was even higher in private institutions (Deresiewicz, 2014). Panel C in Figure 1 shows that the resulting distribution of college grades was further distorted and resembled a negatively skewed distribution. As a result, the majority of students earned an A or B, with much smaller chance of landing a D or F.

FIGURE 1
THE DISTORTED GRADE DISTRIBUTION



This distorted grade distribution is a serious concern and should not be taken lightly. Inflating grades in a systematic manner leads to the abandonment of the traditional bell-shaped, curve-based grading practice. It is still possible for students to fail since D's and F's are not abandoned entirely. However, grade inflation is elevating the grades of the good and the mediocre students. By the late 1900s, A's and B's represented 73% of all grades for public schools, and 86% of all grades for private schools (Rojstaczer & Healy, 2012). The distorted grade distribution implies that grades have become an unreliable measurement of students' performance, and as long as students show some effort, they will be almost always considered good to excellent. As a result, students' intentions for hard-work and their pursuit of excellence will be seriously discouraged.

While the Vietnam War was the primary external factor leading to grade inflation in the U.S. prior to the mid-1980s, the re-immergence of inflationary grading practice after the mid-1980s is puzzling. A question immediately arises: what happened in the 1980s that brought back the inflationary grade practice? The answer to this question is not fully understood. However, we believe that market competition and the changing structure of higher education institutions may help to answer this question. We argue that the re-appearance of grade inflation is due to the gradual paradigm shift the higher education sector experienced since the mid-1980s. We believe that two market-oriented approaches related to the shift – the widespread adoption of students' teaching evaluations, and the employment of contingent faculty. Students' teaching evaluations is not only used more extensively, but also the outcomes derived from these evaluations have become one key determinant on a professor's career advancement. As a result, a professor's grading practice is no longer a singular decision. The traditional role of grades revealing a student's true academic accomplishments is compromised. Instead, grading has become a complex task and an instructor's grading practice is influenced by many factors that were not previously considered. In the following sections, we detail the explanations of rising grades that we believe are the outcomes of the above-mentioned paradigm shift, and we propose a traditional Principal-Agent Framework on which we believe the phenomenon of grade inflation should be examined and reviewed.

THE PARADIGM SHIFT IN HIGHER EDUCATION AND GRADE INFLATION

As discussed previously, the early signs of grade inflation were observed in the late 1950s and 60s. It was followed by a stabilized grading pattern over the 1970s. However, during this decade, the grading practice did not go back to the previous levels. Grade inflation resumed in the mid-1980s and has yet to end. While the reason for grade inflation in the 1960s was external and political, researchers find the resumption of rising grades in the mid-1980s very puzzling.

While students' achievements do not rise along with their grades, grade inflation casts a serious concern. This is particularly true in the 1980s when an external factor – the Vietnam War era military draft – resulted in rising grades fading away. Yet, the 1980s was not only the decade when grade inflation resumed, but it was also the period when a new approach towards students was adopted by leaders in higher education institutions. That is, students were considered consumers/customers of a product (Bayer, 1996; Rojstaczer & Healy, 2010; Zirkel, 1994) and in turn, customers were granted the opportunities to provide feedback and hence rate the educational services. The intention of this approach is optimal since the feedback can in turn help to improve the services. Nonetheless, this market-oriented approach constitutes a significant paradigm shift in the higher education world and leads to a structural change in higher education institutions. Moreover, many corporate-world practices were adopted that compounded this paradigm shift. Among these, first was the students' teaching evaluation practice being used more extensively and carrying more weight toward a professor's career prospects. Second, similar to the ideas of cost control and retained operational flexibility, a growing number of faculty members became employed on a contingent basis. We believe that these two practices emerged due to the paradigm shift and are highly related to inflationary grading practices. Thus, they need to be considered in their totality as we examine the grade inflation phenomenon.

Grade Inflation and Students' Teaching Evaluation

The idea of students' teaching evaluation can be traced back to as early as the 1930s. However, students' teaching evaluations rose in prominence in college campuses in the 1970s (McKenzie, 1975), and only became increasingly common along with the establishment of the market-oriented approach in the 1980s. Those evaluations were created originally as a means to improve instructional efficiency. Yet in the 1980s and 90s, they also began to play a significant role in decisions regarding the promotion and retention of instructors. As of today, the practice of student evaluations is widespread.

Since the adoption of the student evaluation process as a means of monitoring and motivating faculty classroom performance, one phenomenon has caught many researchers' attention: average grades have increased substantially. According to Zangenehzadeh (1988), since the inception of student evaluations in the 1970s, grade inflation has become a consistent practice among faculty. An instructor can actually increase students' evaluation ratings by giving higher grades.

An earlier comprehensive review of the literature on professor and course evaluations can be found by Costin et al. (1971). Students' teaching evaluation is considered a primary measurement of a professor's educational output. However, the problem is that if this output can be raised by some relatively costless means of changing students' grades, such a relationship can be exploited by the professor. While we would not expect the professor to intentionally alter students' grades in order to influence the evaluation outcome, such a possibility does exist. Most importantly, a motivation for doing so is un-ignorable.

Identifying and assessing the relationship between students' grades and their ratings on the course and its professor can be a challenge. However, according to Johnson (2003), for more than eighty years, researchers have investigated the relationship between grades and students' teaching evaluation. Nearly all studies conducted have resulted in reports of a positive correlation between these variables, but the debate continues over the cause of this association. Some scholars study the positive relationship in a production framework, where a course evaluation outcome is considered an educational output of professors (e.g., Kelley, 1972; Isely & Singh, 2005; McKenzie, 1975; Zangenehzadeh, 1988). Following this line of thinking, researchers have attempted to identify the anticipated positive impact of students' grades on the course and professor ratings in a single production function, and in a simultaneous equations framework assuming the two variables are simultaneously determined. As a result, a student's expectation of her/his course grade constitutes a positive impact on student ratings. Further, in a system of simultaneous equations, Zangenehzadeh (1988) demonstrated the inter-relationship between grade inflation and students' ratings of instructors. A student who expects a good grade would remunerate the instructor. This outcome suggests a great incentive for instructors to inflate grades. Students tend to bias their ratings of instructional quality in favor of teachers who grade generously. Similar outcomes can be found in Isely and Singh (2005) and Ellis et al. (2003).

Given that the problem is not adequately conceptualized, McKenzie (1975) attempted the task by developing an economic choice model of human behavior. The author assumed that a student's utility is a function of two goods – grades and leisure. Higher grades are preferred to lower grades, and a student's rating on an instructor and course depends positively on the utility the student acquires from attending the class. In this two-commodity model, there are two ways a student can achieve a higher utility level. First, a professor increases the instruction efficiency and keeps her/his grading standard constant. A student's "budget curve" will shift out to the right resulting in a higher utility and hence a higher rating on the instructor. However, increasing instructor efficiency imposes dis-utility on the instructor because it requires more effort and time. The instructor's attempt to improve instructional quality can also be risky since the effort may largely be discounted by the fact that students may not prefer or even be capable of handling a demanding course. Second, as an alternative, the professor can change her/his grading structure to achieve a positive effect on students' ratings, while maintaining her/his instructional efficiency. Therefore, the model suggests that student ratings can be manipulated by the instructor's grading structure, while keeping all other factors constant. If two professors are distinctly different in terms of teaching quality in the eyes of the students, the instructor who would have otherwise had the lowest rating, can at least partially offset the differential by easing up his grading practices.

Students' teaching evaluation was originally designed in an attempt to provide instructors valuable input with which they could make their teaching more effective. However, as student rating has become a major part of the portfolio of activities and documentations used to evaluate faculty members for promotion and tenure, this methodology inevitably create some un-ignorable incentives for an instructor to inflate grades. The point is that the use of a particular output measure may itself have some undesired side effects in influencing the allocation of resources in unintended ways. This is particularly true when we correlate the student evaluation levels to the faculty promotion and tenure decisions. As a result, we have the undesired consequence of an increase in production of the measured output, although that may actually correspond to a decrease in the desired output. While the outcomes derived from students' teaching evaluations are tied to a faculty's career prospects, professors unfortunately respond by lessening their requirements and escalating grades to meet students' expectations. The unpopularity of professors who give low grades can also be reflected in negative student evaluations at the end of a course, which in turn can negatively affect professors' career advancement (Sowell, 2008). Grade inflation ensues when stringently grading professors chase their more leniently grading colleagues toward the beginning of the alphabet (Johnson, 2003). Further, grade inflation makes life easier for professors who need not face time-consuming complaints from students about low or failing grades, nor deal with the unpleasantness that can accompany such complaints.

We contend that while students' ratings are given a significant weight on faculty promotion and tenure decisions, students' teaching evaluation creates an incentive system promoting lenient grading. Unfortunately, this system is further reinforced by the emerging trend of the employment of contingent faculty.

Grade Inflation and Contingent Faculty

The above-mentioned positive relationship between grades and students' teaching evaluations, as well as the underlying incentive mechanism for professors to inflate grades, are further strengthened by the increasing employment of contingent faculty. Contingent faculty are full- and part-time faculty who are appointed off the tenure-track. They serve in insecure positions with little job security and few protections for academic freedom. Their employment contracts are periodically renewable, but only contingent on their performance and the schools' needs. Their performance is primarily measured by their students' evaluations. Therefore, one would expect the incentives of inflating grades, as discussed previously, to be strongest in such a contingent position. Indeed, according to Kezim et al. (2005), the average grades by adjunct faculty were higher than those of either tenured or tenure-track faculty. Thus, these results suggest that the increased use of adjunct faculty may exacerbate grade inflation in higher education. By applying analysis of variance (ANOVA) and covariance (ANCOVA) models on a two-year dataset from business classes at a small public university, Sonner (2000) found that when controlling for class size, instructor credentials, subject and course level, adjunct instructors gave higher grades.

The purpose of higher education institutions is to provide educational services. While student enrollment increases, more faculty is needed. By using the data from the National Center for Educational Statistics, Lin (2015) showed a very disproportionate growth of part-time faculty. During the 1987–2011 period, full-time faculty grew by 46% while the total student enrollment grew by a comparable 38%. However, part-time faculty employed over the same period grew by 183%, a rate more than triple the growth of full-time faculty. In 2011 in particular, universities hired 761,996 part-time faculty members, more than surpassing the 716,619 full-time employed faculty. The year 2011 marked the first year with more than 50% of the instructional duties being conducted by part-timers. Furthermore, according to the Digest of Education Statistics (2018), the percentage of tenured faculty has declined since 1993-1994. At those institutions with tenure systems, 46% of full-time faculty had tenure in 2017-2018, compared with 56% in 1993-1994. The above figures jointly imply a growing employment of contingent faculty (non-tenure track and part-timers) at universities.

This line of research collectively implies that a professor's grading practice no longer serves a simple task of differentiating students by their classroom performance. Unfortunately, a faculty's career advancement is becoming dependent on grading practices. A professor's grading decision is more than

likely influenced by the operating conditions (such as enrollment and recruitment) of the programs/departments/schools.

With the above mentioned market-oriented approaches installed, some schools try to tackle the grade inflating practices from a policy perspective. There are a few studies trying to examine the effects of some administrative policies attempting to combat grade inflation. For instance, Addy and Herring (1996) attempted to test the effects of imposing a minimum GPA in the upper division accounting at the School of Accountancy at Mississippi State University. Their business school had been requiring a minimum 2.0 GPA across all classes, when it was decided that a 2.5 GPA in upper division accounting classes was required in order to graduate with a major in accounting. A total of 444 students were included in the study. The authors concluded that while the requirement did not impact the GPA of the good accounting students, it did increase grade inflation so that lower performing students could remain in the program. Thus, this newly installed administrative policy does not deliver the intended effect of flunking out unprepared students. In other words, it did not really help to improve the overall student quality upon graduation.

In a different study, Butcher et al. (2014) evaluated an anti-grade-inflation policy that capped more course averages in Wellesley College at a B+. The cap was binding to high-grading departments but not for low-grading ones. The authors found that such a grade cap had little effect on the receipt of top honors. However, in departments affected by the cap, the policy reduced enrollments, and lowered students' ratings of professors. Furthermore, there is little evidence showing that better teachers attracted better students, or that quality teachers provided more effective instruction, resulting in more students learning and higher average grades.

To understand and analyze this academic issue, a production function framework is clearly not sufficient; neither is the human behavior model by McKenzie (1975). The reason being that those frameworks do not consider the influences by the school operating aspects. Given the need to understand the incentive system that promotes inflating grades, we believe that a traditional Principal-Agent Framework serves the purpose.

Grade Inflation – A Form of Agency Cost

As detailed above, grade inflation has been an issue in academia since the 1960s. In the Vietnam War era, there was little debate as to why grades were rising. Influenced by external and political factors, professors clearly were grading more generously. In the 1970s, with the end of military draft pressures on the student body, slightly more stringent grading was observed. Unfortunately, the grading practice never regained the previous levels resulting in a distorted grade distribution. It is the resumption of grade inflation in the 1980s that particularly puzzles researchers. Various factors seem to be associated with the trend of rising grades, and those factors are in fact correlated. We believe the time has come to arrive at a theoretical formulation of grade inflation. A traditional Principal-Agent Theory Framework can be valuable to understand the trend of grade inflation and its underlying mechanisms.

In a traditional Agency-Theory Framework, the principal's goal is to maximize his/her welfare, or the net expected economic value. To achieve this goal, the principal will have to design an incentive or reward system to ensure the agent's participation and to induce the agent to take the actions the principal desires. An equivalent way of saying this is that the reward system minimizes agency costs. Formally, the principal is to maximize her utility/profit while making sure the agent will participate and choose the right actions. That is, the maximization of the principle's utility is subject to participation constraint and incentive compatibility constraint. For our purposes, the principal is the college/university and the agent is the professor. Thus, the participation constraint suggests that the university needs to provide an employment contract such that the professors/instructors would like to remain in the position. The incentive compatibility constraint, on the other hand, suggests a mechanism that will induce the desired actions from the professors. Thus, tying a faculty member's "performance" to the reward is one of the concepts derived from this framework. Compared to the corporate world, the incentive mechanism a typical university has is rather straightforward, since it only involves tenure/promotion (for tenure-track and tenured faculty) and/or contract renewal (for contingent faculty).

In the simplest form of the agency theory where the principal has complete information, the principal actually chooses the agent's action in her design of the incentive reward function. Therefore, the incentive compatibility constraint that the principal faces is merely to make sure that the action the agent takes, is in fact the action that the principal wants him to take. All the principal has to do is determine the expected economic value from inducing each possible action by the agent, and then induce the action that maximizes the principal's expected value. Thus, with full information, the incentive compatibility constraint is really inessential. With the understanding that grade integrity represents the extent to which grades are strictly commensurate with the quality, breadth, and depth of students' academic achievement, the simplest form of the theory implies that if a rigorous grading practice is deemed to be the best action for a university, and the university has full information on the many aspects of professors' grading practices, its faculty will maintain grading integrity. However, the issue is that information is imperfect. An agent's action is most often unobservable to the principal. The principal will need to use some performance matrix to make inferences on the agent's actions. The agent's reward will then be dependent on the observed performance. In the context, one of the key measurements of a professor's educational performance or output is the outcomes from the students' teaching evaluations. This observed output serves as one of the primary determinants in a faculty's tenure, promotion decision or contract renewal. Since students' ratings carry a significant weight toward the decisions relating to a professor's career advancement, it is obviously in the professors' best interest to have outstanding ratings.

We do not believe professors intentionally inflate grades in order to secure better student ratings. However, research has shown that students evaluate their professors based on the students' own performance in class. If students are doing well, they give professors high ratings; conversely, if they are not doing well, they give low ratings. In this case, a self-perception bias may exist since the standards that students apply to themselves may be quite different from those acceptable to their professors. From this perspective, the practice of generous grading is likely adopted by professors at least for self-protection purposes, because the ratings are used as a justification to grant or deny tenure, promotion, salary increases and/or contract renewal.

While the students' teaching evaluation is taken as the measurement of a professor's educational performance, and its outcomes are tied to an instructor's career prospects, it unfortunately deviates from its originally envisioned purpose of providing feedback for professors to improve their courses. There are three major complications to this framework. The first is that there are many actions a professor can take to ensure good ratings. However, they represent different levels of costs or "dis-utilities" to a professor. Thus, it is a natural outcome to pick the action with the lowest level of dis-utility while still delivering equivalent student ratings. While the positive correlation between student ratings and grades is present, a professor will likely choose more generous grading practices. Yet this action may not be in the best interest of the university, at least, from the educational quality perspective. The second complication is that the university has little incentive to prevent this. The reason is that to maximize the institution's expected economic value, student enrollment has to be at a comfortable level. As a result, failing or giving students low grades is not a decision that universities would be supportive of, since this action will likely lead to low retention rates. Third, colleges and universities nowadays are more reliant on funding support from their alumni. Therefore, they have great motivation to make their graduates successful. Grading more generously, so as to increase the likelihood of their graduates having better post-undergraduate prospects, seems to be a meaningful way of supporting their students. This rationale has become more accepted, as long as students are treated as "customers". An instructor's grading practice is no longer an individual decision, but rather an action that correlates her/his own career advancement with the prospects of her/his institution.

We can also make a few predictions from the framework analysis described above. First, since students' evaluations carry a much heavier weight toward the renewal of a contingent faculty's employment contract, we would expect more serious grade inflation among this type of faculty. Second, in the same way, inflationary grading practice is predicted to be more pronounced among tenure-track or probationary faculties. Third, there should be a variation on the degree of grade inflation among institutions. The practice of inflating grades is expected to be more common within marginal or struggling colleges and universities.

In other words, professors might be more likely to maintain a more stringent grading practice in schools with no shortage of interest in their programs.

DISCUSSION AND CONCLUSIONS

While we take it as a given that professors grant grades in part to reflect the academic performance of their students, there are other motivations at play as well. In this review, we contend that the higher education sector experienced a paradigm shift in the 1980s when a market-oriented approach was introduced to the sector. Grade inflation is the outcome of a mixture of factors. Students' teaching evaluation serves as an important channel through which teachers obtain valuable feedback from students. Faculty in turn improve their teaching accordingly. However, since evaluation scores are also related to a faculty member's career prospects, this inevitably creates some conflicts of interest. Empirical studies have largely held that students' grades and evaluation outcomes are positively related. That is, students seem to reward leniently-grading instructors with higher course evaluations. Moreover, the motivation of inflating grades is unfortunately reinforced by the increasing employment of contingent faculties. In this review, we show that the number of contingent faculty in colleges and universities in the United States grew at a rate four times that of tenured and tenure-track faculties.

We believe that in an attempt to understand the phenomenon of grade inflation, a traditional Principal-Agent Framework can help to characterize the various motivations behind grade inflation among colleges and universities. Grading is no longer an individual decision. It is related to both professors' career advancement, as well as to schools' prospects. Under many circumstances, inflationary grading practice is only a natural outcome.

A more serious implication of inflating grades, however, is the resulting distorted distribution of grading practice. The grading practice had shifted from a bell-shaped distribution with a center of C in the years before 1960, to a negatively skewed distribution in the post mid-1980s years, where more than a majority of students earned an A or B. This distorted grade distribution results in consequences that may warrant future research. The first consequence is that grades no longer serve the purpose of revealing valuable information about an individual's absolute and relative abilities. If GPA is positively related to a student's post-undergraduate prospects, students would much prefer enrolling in courses with instructors who grade generously, because they would then have a better chance of finishing college with higher GPAs. This would result, however, on potential employers' choices about whom to hire being seriously misled. Second, if students' effort is a meaningful input into the education production process of human capital, then the declining time investment may signify the declining production of such human capital. In order to achieve higher productivity, a firm may have to constantly upgrade physical capital in order to compensate for the declining quality of human capital. Third, since the rate of grade inflation is not uniform among different areas of study, some subjects would experience little or no change in average grades, while others would see a significant grade inflation. If grades are not an indication of students' strengths and weaknesses, then the expectation of a good grade in a certain discipline will influence students' choice of courses. By lowering the relative price of some subjects compared to others, students may choose the "wrong" field of study in terms of their own comparative abilities. This can in turn lead to a misallocation of resources in an economy and society.

REFERENCES

Addy, N., & Herring, C. (1996). Grade Inflation Effects of Administrative Policies. *Issues in Accounting Education*, *11*(1), 1–12.

Babcock, P.S., & Marks, M. (2010). The Falling Time Cost of College: Evidence from Half a Century of Time Use Data. *NBER working paper # 15954*.

Bayer, A. (1996). What is Wrong with "Customer"? *College Teaching*, *44*.

Birnbaum, R. (1977). Factors related to University Grade Inflation. *Journal of Higher Education*, *48*(5), 519–539.

Butcher, K.F., McEwan, P.J., & Weerapana, A. (2014). The Effects of an Anti-Grade-Inflation Policy at Wellesley College. *Journal of Economic Perspectives*, *28*(3), 189–204.
Carney, P., Isakson, R.L., & Ellsworth, R. (1978). An Exploration of Grade Inflation and Some Related Factors in Higher Education. *College and University*, *53*(2), 217–230.
Carter, C.C., Wiant, K.J., & Allen, M.T. (2008). Evidence of Grade Inflation at an AACSB-Accredited Business School. *Academy of Business Education Conference Proceedings.*
Chan, W., Hao, L., & Suen, W. (2007). A Signaling Theory of Grade Inflation. *International Economic Review*, *48*(3), 1065–1090.
Cole, W. (1993). The Perils of Grade Inflation. *Chronicle of Higher Education*, pp. B1–B2.
College Board. (2015). *Total Group Mean SAT Scores of College-Bound Seniors, 1972–2015 in Total Group Profile Report*.
Costin, F., Greenough, W.T., & Menges, R.J. (1971). Student Ratings of College Teaching: Reliability, Validity, and Usefulness. *Review of Educational Research*, *41*(5), 511–535.
Deresiewicz, W. (2014). *Excellent Sheep: The Miseducation of the American Elite & the Way to a Meaningful Life*. Free Press, New York.
Digest of Education (54th Edition). (n.d.). National Center for Education Statistics. U.S. Department of Education.
Douglas, S., & Sulock J. (1995). Estimating Educational Production Functions with Correction for Drops. *Journal of Economic Education*, *26*(2), 101–112.
Durm, M. (1993). An A is not an A is not an A: A History of Grading. *The Education Forum*, *57*, 294-297.
Ellis, L., Burke, D.M., Lomire, P., & McCormack, D.R. (2003). Student Grades and Average Ratings of Instructional Quality: The Need for Adjustment. *The Journal of Educational Research*, *97*(1), 35-40.
Feldman, K.A. (1976). Grades and College Students' Evaluation of their Courses and Teachers. *Research in Higher Education*, *4*(1), 69-111.
Gordon, M.E. (2006). When B's Are Better. *Chronicle of Higher Education*, *B10*.
Isely, P., & Singh H. (2005). Do Higher Grades Lead to Favorable Student Evaluations? *Journal of Economic Education*, *36*(1), 29–42.
Johnson, V.E. (2003). *Grade Inflation: A Crisis in College Education*. Springer, New York.
Juarez, T. (1996). Why Any Grades at all, Father? *Phi Delta Kappan*, pp. 374–377.
Juola, A.E. (1976). *Grade Inflation in Higher Education: What Can or Should We Do?* National Council on Measurement in Education Annual Meeting, San Francisco, CA. (ERIC Document Reproduction Service No. ED129917).
Kelley, A.C. (1972). Uses and Abuses of Course Evaluations as Measures of Educational Output. *Journal of Economic Education*, *4*(1), 13–18.
Kezim, B., Pariseau, S.E., & Quinn, F. (2005). Is Grade Inflation Related to Faculty Status? *Journal of Education for Business*, *80*(6), 358-364.
Kolevzon, M.S. (1981). Grade Inflation in Higher Education: A Comparative Study. *Research in Higher Education*, *15*(3), 195–211.
Kuh, G.D., & Hu, S. (1999). Unraveling the Complexity of the Increase in College Grades from the mid-1980s to the mid-1990s. *Educational Evaluation and Policy Analysis*, *21*, 297–320.
Kutner, M., Greenberg, E., & Baer, J. (2006). *A First Look at the Literacy of America's Adults in the 21st Century*. National Center for Educational Statistics. U.S. Department of Education.
Levine, A., & Cureton, J.S. (1998). *When Hope and Fear Collide: A Portrait of Today's College Student* (1st ed.). San Francisco: Jossey-Bass.
Lin, Y.P. (2015). The Scope of Professional Administrators in Academia and Its Implications. *Journal of Economics and Economic Education Research*, *16*(3), 107-118.
Lin, Y.P. (2019). Rising Grades: A Review. *Journal of Applied Economics and Business Research*, *9*(4),177-185.
McKenzie, R.B. (1975). The Economic Effects of Grade Inflation on Instructor Evaluations: A Theoretical Approach. *The Journal of Economic Education*, *6*(2), 99–105.

McKenzie, R.B. (1979). *The Political Economy of the Education Process*. Boston: Martinus Nijhoff Publishers.
McSpirit, S., Jones, K., Chapman, A., & Kopacz, P. (2000). Identifying Grade Inflation at an Open-Admissions Institution. *College Student Journal*, *34*(2), 228 –239.
Nelson, J.P., & Lynch, K.A. (1984). Grade Inflation, Real Income, Simultaneity, and Teaching Evaluations. *Journal of Economic Education*, *15*(1), 21–37.
Perry, W.M. (1943). Are Grades and Grading Systems Comparable from Institution to Institution? *Registrar's Journal*, *18*, 159–165.
Rojstaczer, S., & Healy, C. (2010). Grading in American Colleges and Universities. *Teachers College Record.*
Rojstaczer, S., & Healy, C. (2012). Where A is Ordinary: The Evolution of American College and University Grading, 1940–2009. *Teachers College Record.*
Saenz, V.B., & Barrera, D.S. (2007). *Findings from the 2005 College Student Survey: National Aggregates*. UCLA Higher Education Research Institute.
Seiver, D.A. (1983). Evaluations and Grades: A Simultaneous Framework. *Journal of Economic Education*, *14*(3), 32–38.
Siegfried, J., & Fels, R. (1979). Research on Teaching College Economics: A Survey. *Journal of Economic Literature*, *17*(3), 923–969.
Sonner, B.S. (2000). A is for "Adjunct": Examining Grade Inflation in Higher Education. *Journal of Education for Business*, *76*(1), 5-8.
Sowell, T. (2008). *Economic Facts and Fallacies*. Basic Books, New York, NY.
Stone, J.E. (1995). Inflated Grades, Inflated Enrollment, and Inflated Budgets: An Analysis and Call for Review at the State Level. *Education Policy Analysis Archives*, *3*(11), 1-30.
Suslow, S. (1976). *A Report on an Interinstitutional Survey of Undergraduate Scholastic Grading: 1960s to 1970s*. Office of Institutional Research, University of California Berkeley.
Varian, H.R. (1992). *Microeconomic Analysis* (3rd ed.). W. W. Norton & Company.
Zangenehzadeh, H. (1988). Grade Inflation: A Way Out. *The Journal of Economic Education*, *19*(3), 217–226.
Zirkel, P.A. (1994). Students as Consumers. *Phi Delta Kappan*, *76*, 168–171.