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The CFP™ Certification Examination process: a discussion of the modified Angoff scoring method

J. David Ashby*

Southern Arkansas University, P.O. Box 9304, Magnolia, AR 71754, USA

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Abstract

The CFP™ Certification Examination[1], unlike many other professional examinations, is scored using a system that reports scores on a pass–fail basis but does not provide specific numerical scores. This grading system, known as the modified Angoff process, establishes a passing score for each examination and then incorporates adjusting factors to reconcile actual and expected testing results. The CFP Board also factors in an additional scoring adjusting to equate test scores for consistency over time. The purpose of this paper is to explain the methodology of the modified Angoff process and, in particular, how it relates to the Certified Financial Planner Board of Standards Certification Examination.

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1. Introduction

The modified Angoff process is a widely used, well-validated process for scoring an examination (Mullins and Green, 1994; Zieky, 1997). However, it is not a system that is well understood by CFP candidates, educators, or members of the financial planning profession. An informal survey of Program Directors of CFP Board-registered programs reveals that approximately one in five has some understanding of the modified Angoff process (Ashby, 2001). My purpose here is to discuss the modified Angoff process of establishing a passing score and, in particular, how it relates to the Certified Financial Planner Board of Standards Certification Examination.

* Tel.: +1-870-235-4304; fax: +1-870-235-4800.

E-mail address: jdashby@saumag.edu (J.D. Ashby).

[1] CFP™, Certified Financial Planner™, and  are certification marks owned by the Certified Financial Planner Board of Standards, Inc. These marks are awarded to individuals who successfully complete the CFP Board's initial and ongoing certification requirements.

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Successful completion of the CFP™ Certification Examination (the "Exam"), along with certain other requirements, leads to the CFP designation for a candidate. Many candidates for the CFP designation have previously taken one or more professional exams where the pass/fail mark is clearly defined and publicized (e.g., 70% and above is passing). However, in reporting test results to candidates, the CFP Board does not report any numerical scores, but rather simply a pass or fail status. The candidate has little information as to how well (or poorly) he or she did; i.e., how far did they miss the mark of a passing cut score. Not only do candidates not know their score, but they also do not know the required passing score, as the CFP Board does not publish a cut score. This results in confusion for both candidates and instructors who work in the financial planning educational programs across the country. Accordingly, I will attempt to shed some light on the modified Angoff process in an effort to eliminate some of the confusion.

2. The CFP™ Certification Examination

By some estimates, there are roughly 350,000 individuals in the U.S. who call themselves financial planners. Of these, only 38,000 are CFP certificants. Originally, candidates for CFP certification completed a series of six separate subject examinations in order to complete the educational component of the certification process. The subject areas were: financial planning fundamentals; insurance; investments; income taxation; retirement planning and employee benefits; and estate planning and taxation. Beginning in 1992, candidates seeking certification were required to take a 10-h Exam testing those same subject areas on an integrated basis.

The move to the comprehensive examination was justified based on the integrated nature of the financial planning process. Comprehensive financial planning requires the planner to evaluate the various topic areas simultaneously as he or she makes recommendations. The Exam is administered three times per year on the third Friday and Saturday of March, July and November. The Friday afternoon session is 4 h and there are two sessions of 3 h each on Saturday. Each Exam contains approximately 285 questions selected by the CFP Board's independent Exam administrator, the Chauncey Group International. This includes a total of 45–55 questions attached to three separate major cases with the balance of the questions being stand-alone multiple choice, matching, or three to four question item sets. Approximately, 5,000 candidates per year take the Exam and for the first time pass rate averages is 53%.

3. The goal of professional examinations

Professional exams in all areas have as their goal a gate keeping function; i.e., to allow those who are properly qualified to practice in the profession and to keep out those who are not. The ideal exam (which, of course, doesn't exist) would discriminate between the qualified versus nonqualified groups with complete accuracy. Such an exam would never fail a properly qualified candidate and never pass an unqualified candidate. The idea is to protect

the public from harm by requiring a minimum level of competency in the particular profession (Shimberg, 1992).

A valid professional examination tests the content areas relevant to the practice of that particular profession. At the CFP Board, a Job Analysis Committee convenes approximately every 5 years to review the content areas being tested. They may decide certain additions, deletions or modifications to the body of knowledge based on changing conditions in the industry. From the work of the Job Analysis Committee, a questionnaire is sent to 1,000 or so CFP practitioners where they provide input on what is relevant in the profession. The results of the Job Analysis Committee are combined with the input from the CFP practitioners to develop a topic list for examination purposes. The topic list, know as *Topics for CFP Certification Examinations*, is then published in the CFP Board's Guide to Certification (2001) for examination candidates to review.

There are basically two approaches to the examination scoring process: norm-referenced exams and criterion-referenced exams (Mirone, 1990). Norm-referenced exams use a relative performance measure for setting standards. They are designed to pass a fixed percentage of candidates and the passing rate is determined prior to administration of the exam. ''Grading on the curve'' is a well-known method of norm-referenced testing. The major problem with norm-referenced testing is that pass rates are determined without regard to competency levels. This is directly at odds with the gate-keeping function of allowing only qualified candidates to practice in a given field.

In contrast to norm-referenced exams, criterion-referenced exams have pass scores that are based on some absolute level of knowledge in the field. How a candidate performs relative to other test takers is not important. Rather, the issue is whether that candidate exhibits some base level of knowledge that would enable he or she to practice without harming the public.

For a comparison of norm-referenced versus criterion-referenced testing, consider the Certified Public Accountant examination administered by the American Institute of CPAs. The AICPA traditionally set the passing score at 75% for each of the four sections of the CPA exam. Candidates scoring at this level or above were successful on that particular part of the exam. The AICPA scoring committee felt that 30% of candidates taking a particular section of the exam should pass (an example of norm-referencing). If, for example, only 25% passed a specific section, grading adjustment points were added until 30% of the candidates did pass. The 25% initial pass rate may have been the result of a more difficult exam. On the other hand, it could have been the result of a group of unprepared or weak candidates. However, there is a risk in adding points to allow another 5% of candidates to pass. Such arbitrary adjustment of scores may allow candidates to become certified that are not properly qualified to practice accounting.

Perhaps in recognition of the arbitrary nature of the 30% pass rate, the AICPA began transitioning to criterion-referenced examinations in 1997 (Garrett, Moffie and Sweeney, 1998). A panel of experts in the field (in this case, CPAs) determines the pass rate by coming to agreement on what the minimum knowledge requirements are and setting a corresponding cut score. Candidates are now passed based on the quantity of knowledge they exhibit, not on how they did relative to the others taking the exam. A shift to criterion-referenced exams occurred in the late 1970s and this type of testing now dominates most professional credentialing areas (Mullins and Green, 1994).

4. Angoff methodology and the CFP™ exam

The Angoff method is named for William Angoff, a research scientist employed by Educational Testing Services in the 1960s. Angoff methodology uses a criterion-referenced standard, thus avoiding the setting of an arbitrary relative minimum passing score. The Angoff method of establishing a passing score is designed to help determine whether or not a professional entering a particular field has the minimum level of competency necessary to practice in that field. For the CFP examination, a minimum level of competence means that a person is able to practice comprehensive financial planning without supervision.

Angoff (1971) believed the best way to determine the minimum level of competence was to assemble a panel of experts in that particular field to evaluate potential testing questions. A panel of judges would evaluate test questions as to the probability that a minimally acceptable candidate would answer the question correctly This seems like a logical approach but Zieky (1997) notes that asking the judges to estimate such probabilities is the major criticism of the Angoff process. Financial planning practitioners, like other professionals, tend to operate in specialized areas. An estate planning specialist might view a particular estate planning question as basic knowledge that all financial planners should know. However, an investment specialist that does not practice in the estate planning area might view the question as unreasonable. Thus, the two practitioners might view the same question totally different with respect to its difficulty level.

At the CFP Board, this panel of experts charged with test question evaluation is referred to as the Pass Score Committee. The Pass Score Committee is a diverse group of CFP practitioners. Their job is to review and agree on what a beginning financial planner would need to know at a minimum level of competence to obtain the CFP certification. The Pass Score Committee answers the question: ''What percent of beginning minimally competent CFP practitioners would know the answer to a particular question?''

5. Some examples

To illustrate the Angoff process, consider the following questions released by the CFP Board from the test bank in January 1999.

Exhibit 1

A client sold an apartment building last year for $100,000, paying a sales commission of $5,000 plus $2,500 closing costs. The building originally cost $80,000 20 years ago. Total straight-line depreciation of $40,000 had been taken. The building had a mortgage of $60,000 that was assumed by the buyer. What is the seller's adjusted cost basis?

A. *$32,500*
B. *$37,500*
C. *$40,000*
D. *$52,500*

Most practicing financial planners would recognize this as a basic question regarding the calculation of basis. While the problem contains some facts not necessary to answer the question (distracters), this is a fairly straightforward calculation that most practicing financial planners should be able to make. The members of the Pass Score Committee might conclude on average that 80% of minimally competent CFP practitioners would know this fact and be able to advise clients accordingly. Accordingly, this question might be assigned an Angoff rating of 0.80 when calculated into the minimum passing score. (Note that the numerical ratings in this example are my own examples and not based on any actual numbers.)

Now consider the following question regarding estate planning, also released by the CFP Board in January 1999.

Exhibit 2

Mrs. Bailey dies leaving her entire $3.2 million estate to her penniless husband, Mr. Bailey. Their estate goes to their children at his death. He has terminal cancer with a life expectancy of 1–2 years. The alternative valuation date computes Mrs. Bailey's entire estate equal to $3.0 million. Select the post mortem technique he should utilize to reduce the overall estate tax liability of both estates.

A. elect to use date-of-death valuation
B. elect to use alternate valuation date
C. disclaim $625,000 and elect to use the alternate valuation method
D. disclaim $1,500,000 and elect to use the alternate valuation method

This question requires considerably more evaluation than the previous question. Selection A is an obvious throwaway. However, the other four responses are all potential solutions. Most candidates would recognize that the alternate valuation date could be used in this situation. The question of using a disclaimer arises for options C, D and E, requiring additional analysis. If a disclaimer is appropriate, what is the proper amount for Mr. Bailey to disclaim? A number of candidates may recognize that option C, the $625,000 (the exclusion amount in 1998) would avoid wasting Mrs. Bailey's unified credit. However, disclaiming $1,500,000 would utilize Mrs. Bailey's exclusion amount plus equalize the estate, an important consideration given the facts of Mr. Bailey's short life expectancy and the progressive nature of the tax tables. This question requires the candidate to bring together a number of factors to arrive at the correct solution of minimizing the tax liability of both estates. The collective judgment of the Pass Score Committee might be that only 30% of minimally competent practicing CFP certificants would correctly arrive at this conclusion. Thus, this question would be assigned an Angoff rating of 0.30.

Since the purpose of the Exam is to differentiate between those who meet the minimum job knowledge requirements established by the CFP Board and those who don't, extremely easy or extremely difficult questions are avoided. A question that can be answered by practically every candidate does little to differentiate between qualified and unqualified students. Neither does a question that is so technical or obscure that virtually none of the candidates can answer it. So, questions with extremely high or low difficulties are generally not included on the Exam.

Table 1
CFP™ Certification Examination calculation of minimum passing score hypothetical example

	Number of questions	Angoff rating	Total (two points each)
Stand-alone questions			
	9	0.20	3.60
	12	0.30	7.20
	15	0.40	12.00
	21	0.45	18.90
	23	0.50	23.00
	24	0.60	28.80
	17	0.65	22.10
	21	0.70	29.40
	24	0.75	36.00
	23	0.80	36.80
	20	0.85	34.00
	25	0.90	45.00
Subtotal	234		296.80
Case questions (three points each)			
	2	0.30	1.80
	3	0.40	3.60
	4	0.50	6.00
	8	0.60	14.40
	6	0.65	11.70
	6	0.70	12.60
	5	0.75	11.25
	6	0.80	14.40
	7	0.85	17.85
	4	0.90	10.80
Subtotal	51		104.40
Total	285		401.20

As stated previously, each Exam contains approximately 285 questions with 45–55 of those being case questions. Questions are given additional weight if they are attached to a major case as opposed to stand-alone. Stand-alone questions, such as the two examples given above, are weighted at two points each. Case questions are weighted at three points each. A stand-alone question with an Angoff rating of 0.7 would add into the raw cut score at 1.4 total points (0.7×2 points); a case question with the same probability would add 2.1 points (0.7×3 points) to the cut score.

A hypothetical example (Ashby, 2001) of calculating the minimum passing score for an examination is given in Table 1. For the particular mix of questions listed, the candidate would have to score a minimum of 401.20 points in some combination of stand-alone and case questions. Note that the total possible points on the Exam is calculated as follows.

Stand-alone questions	234 at two points each	468
Case questions	51 at three points each	153
Total possible points		621

From this example, the candidate may conclude that the pass score in percentage terms is 64.6% (401.20/621); i.e., approximately 184 questions of the 285 need to be answered correctly. It is incorrect to make such an inference. The candidate could achieve the necessary cut score by answering anywhere from 175 to 200 questions correctly, depending on the mix of stand-alone questions versus case questions answered correctly. Note that this is a hypothetical cut score for this particular group of questions. If the mix shifted to more difficult questions, the cut score would drop because of more low Angoff ratings. Conversely, if the mix shifted to easier questions (more high Angoff ratings), the cut score would rise. Thus, it is somewhat meaningless to talk about a raw percentage score when using Angoff. This explains why candidates' scores are not reported; such reporting would probably only increase the confusion level. The important point is that a standard of what is minimally required to gain the CFP certification is used to establish the passing score.

6. The Beuk adjustment procedure

A particular administration of the Exam may include a cut score adjustment referred to as a Beuk compromise adjustment (Breyer, 1993). The Beuk adjustment involves comparing actual results expected results. The Pass Score Committee members are asked individually to make one additional estimate: the percent of candidates that should pass the Exam. In referring to Fig. 1, note that the square box on the diagonal lies at the intersection of the mean value of that estimate (percent of candidates expected to pass) coupled with the cut

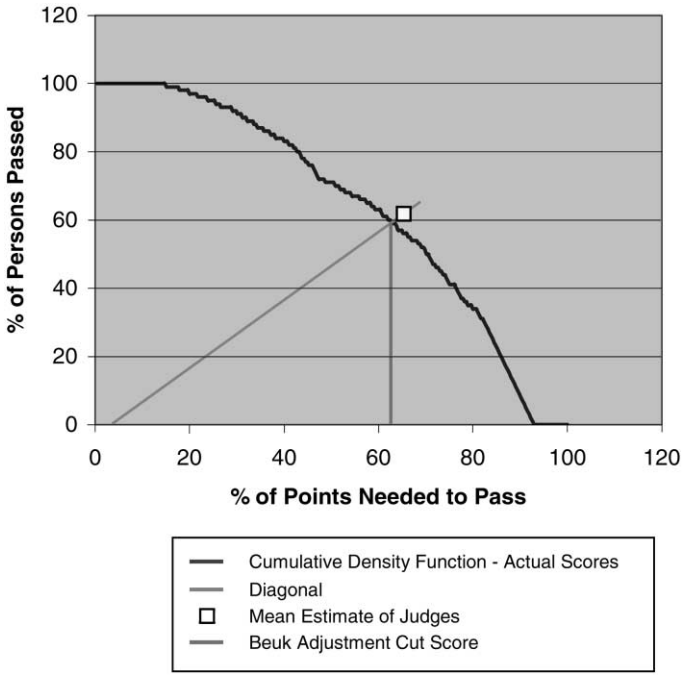

Fig. 1. Hypothetical Beuk adjustment.

score estimate computed in Table 1. The diagonal passes through the box and its slope is a ratio of standard deviations defined as

$$\text{Slope of diagonal} = \frac{\sigma_{\text{pass rate estimates}}}{\sigma_{\text{pass score estimates}}}. \quad (1)$$

Thus, the slope represents the variability of the judges' pass rate estimates in relation to the variability of the judges' pass score estimates. The curved plot shows the percentage of candidates passing at each percentage score from low to high (i.e., the empirical test results). If there is a discrepancy between the actual results and the expected results, the pass score may be adjusted downward or upward.

In this example, the pass score may be adjusted downward from 64.6% (the value from the example in Table 1) to 62% on the percent of items answered correctly to pass. The vertical line that drops from the intersection of the curved plot and the diagonal represents the Beuk adjustment. The adjustment allows for the fact that judges' estimates differ significantly from actual results and some compromise may be necessary. It should be emphasized that these scores are examples only and not representative of actual CFP™ Certification Examination results or conditions.

7. Examination equating

Criterion-referenced examination processes such as the Angoff method allow for the controlling of several factors that were not accounted for under traditional norm-referenced exams. First, the level of candidate preparedness may vary with some groups being better prepared than others. In addition, exam difficulty may vary from test to test depending on the mix of questions. The overall goal is consistency: a candidate passing the examination today meets the same level of minimum required proficiency as the candidate of 2 or 5 years ago. This section is the mechanism that controls for these variations from test to test. Examination equating refers to the process whereby a mini-exam is embedded within the overall exam (Breyer, 1995) This mini-exam contains questions used on previous exams, located at the identical place in the current exam as in previous exams. These mini-exam questions are scored and compared to previous exams. Since the questions are common to previous exams, variations in the mini-exam scores are likely due to the first variable, the level of candidate preparedness.

Consider first the case of a score on the embedded questions that has (1) a performance equal to that of the prior tests in which those questions appeared, and (2) a score on the total exam that appears higher than that of past examinations. The equal performance on embedded questions (the mini-exam) indicates the candidate population is equal in preparation to previous groups. But the higher-level performance on the total exam indicates the overall new examination form is somewhat easier. Thus, the cut score would be adjusted upward to account for the decreased level of difficulty of the overall exam.

Next, consider the case of a score indicating (1) higher performance on the embedded questions but (2) a lower score on the total examination compared to past performances. This indicates an above average group of candidates in terms of preparedness but an overall examination that is somewhat more difficult. The result is that the cut score for this test

would be adjusted downward. This score equating process permits the same minimum knowledge requirements standard to be applied to all candidates regardless of the difficulty of the particular CFP™ Certification Examination the candidate was administered.

8. Summary

My purpose is to shed light on the passing score process used in the CFP™ Certification Examination, a scoring process widely used but not widely understood among financial planning educators. The modified Angoff method of establishing a passing score avoids the use of arbitrary relative cut scores and incorporates the expected knowledge level of minimally qualified candidates as judged by experts practicing in the field. The Beuk procedure allows for a systematic adjustment of differences between expected and actual results. Examination equating promotes consistency from one exam to the next, allowing for variations in test difficulty and candidate preparedness. Thus, the gate keeping function of allowing only those qualified to enter a profession is better served and the public better protected. Hopefully, this explanation of the passing score setting process will be of benefit to those involved in the financial planning educational process as well as candidates who take the exam in the future.

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