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Ideal vs. Real Dependent Student Family Contributions

By Thomas A. Flint

Actual and Congressional Methodology (CM) family contributions were obtained for a sample of first-time beginning college students. The sample consists of 2,544 dependent students attending 396 institutions nationwide, drawn from the National Postsecondary Student Aid Study of 1990 (NPSAS:90). Results indicate that most parents contribute more than the amounts expected by need analysis formulae, but many inequities are present. Judged by the averages, in many instances higher-income parents actually contribute less than the CM expectation, while often lower-income parents actually contribute more than the CM expectation. These differences persist regardless of college cost level, even after capping CM contributions not to exceed actual costs. Results also indicate that the range of difference in averaged amounts of financial aid awarded to high-versus low-income families is less than the range of difference in averaged amounts of actual parental support between high- and low-income parents. Policy alternatives to reduce the inequities are discussed.

A major goal of the 1992 Reauthorization of the Higher Education Act of 1965 and of the National Commission on Responsibilities for Financing Postsecondary Education was to address the issue of affordability. When the growth in the costs of higher education outstrips families' ability to pay those costs, the question becomes: How will the costs be covered? At issue are the proper roles of parents, students, state and federal governments, private and philanthropic organizations, and higher education institutions themselves. One outcome of the policy debate and of Reauthorization is further modification of historic need analysis formulae which form the starting point of assessments of families' ability to pay. Despite the changes to the formulae, what has been retained is the historic principle that both parents and their dependents enrolling in college share in the responsibility of the related financial burdens.

Of concern to many is the perception that parents are contributing far less towards higher education than those of only a few decades ago. Kramer (1993) reviews the historical evidence, noting that in 1939-40 families paid about 63.7% of all monetary outlays for higher education, though by 1988-89 that proportion had fallen to about 37%. Simultaneously, parents appear to be shifting financial burdens to the students. A number of ways exist for students to cope with diminished parental support: choosing or transferring to lower-priced institutions, reducing living expenses, working or borrowing more, and increasing their reliance upon student financial aid. When parents fail to meet their expected contributions to college costs, then an inequitable financial burden falls upon their children, student financial aid programs, or both. On the other hand, parents who exceed their expected share

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“Most higher-income parents are doing no more in terms of extra contributions for their children than most lowest income parents—and sometimes they are doing less.”

relieve the financial pressures upon others, and some may do so readily, especially if their child attends a prestigious college. Similarly, colleges may induce greater family effort by leaving a 'gap' of unmet need in students' financial plans.

Despite the fact that the federal government has assumed a major role in the financing of higher education since passage of the Higher Education Act of 1965, since that time there have been relatively few empirical studies published on the relationships between federal (Title IV) need analysis systems and actual family contributions. Most published and unpublished work in this area is probably similar to Barks' (1979) study, an analysis at a single institution. In some of the earliest multi-institutional studies, Boyd and Fenske (1976) and Boyd, Fenske, and Maxey (1978) found that parents generally contributed less than expected, while another study in that period found that parents contributed as much or more than what was expected of them (Nelson, 1974). All three studies, however, used samples which do not permit generalization to national samples or to families not filing for financial aid. Jackson (1980) used the National Longitudinal Study to survey actual parental contributions, but did not compare these payments to ability to pay standards. Doran, Wagner and White (1985) report some results from an unpublished College Board study (1988) which show that most families pay in real dollars about what is expected, but they caution that their sample somewhat under-represents lower-income and public-sector enrollments. Their study further found that low-income parents contributed significantly more than expected, while high-income families contributed only slightly more, though there is also evidence that institutional characteristics such as selectivity play a role in determining whether families contribute more than their expected amounts.

The National Center for Education Statistics' (NCES) first major report (Choy and Henke, 1992) on the issue of actual versus expected contributions made several substantial improvements over all other studies previously done. First, a nationally representative data base was used (described more below). Second, the survey was not limited to students who had applied for financial aid, thus permitting an evaluation of ability-to-pay models in relation to all postsecondary students. This was possible because the survey items collected data enabling NCES to estimate family contributions using the federal formula. However, in reporting the findings, NCES compared actual parental contributions to *total family* expected contribution rather than the expected parent portion only. The report notes that this approach “does not provide an indication of whether parents and students meet the expected level together” (p.18), nor does it answer whether each met their separate portions individually.

This study describes actual versus formula-derived parent and student contributions at different college cost levels. The scope of this study is limited to dependent filers only, focusing upon traditional full-time college freshmen. While independent and part-time students now comprise a very large segment of total higher education enrollment, the issues surrounding need analysis for this group are sufficiently lengthy and complex to warrant a separate study in themselves. In

addition to studying actual and formula-derived contributions, amounts of financial aid awarded across college cost and family income levels will be examined.

Method

Sample

The sample for this study is obtained from the National Postsecondary Student Aid Study of 1990 (NPSAS:90). NPSAS:90 is the second of a series of federally funded studies of college-level students and parents, the first having been done in 1987. Among its purposes is to provide policy analysts and policymakers a descriptive source for answering fundamental questions about the financing of postsecondary education, especially student financial aid. Besides survey records obtained from 46,788 students at 1,130 institutions, NPSAS:90 surveyed 16,106 parents of undergraduates who are considered by federal definition to be dependent for financial aid purposes (National Center for Education Statistics, 1992). From detail in these surveys, family contributions could be computed, regardless of application filing status.

Table 1 describes the stages by which students for this study were selected from the NPSAS:90 records. This study is limited to dependent students, so students categorized by federal guidelines as self-supporting are excluded. Only first-time beginners in 1989-90 are studied here, to simplify the analysis. Since parental financial involvement is a critical issue here, only records with complete data, including student, parent, and field surveys, are used. For reasons related to another research project of the author's currently underway, sample selection was further limited to records where the student's educational aspiration is specified, where an admission test score was available or imputed, and where at least one parent had some postsecondary educational experience. The limitation of the sample to students who have at least one postsecondary-educated parent should lead us to expect that the results described here represent families who are more knowledgeable and motivated towards college than those of college freshmen generally (Billson and Terry, 1982; York-Anderson and Bowman, 1991). Thus, while one may less readily generalize from this study to all families, the results themselves should be less ambiguous since the parents know personally what the college experience means.

TABLE 1
Summary of Record Loss in Sample Selection

Total Undergraduate Records in NPSAS:90	46,788
Dependent students only	- 21,170
First-Time Beginners only	- 18,720
Student, Parent, and Field Survey Record	- 1,702
Parent(s) with some postsecondary education	- 1,685
Expected Family Contribution (EFC3) available	- 49
Attendance Status known	- 98
Institution Identifiable (IPEDS coded)	- 16
Student Educational Aspiration known	- 62
Admission test score known or imputed	- 742
Remaining records in sample	2,544

*"An overemphasis on
award availability may
serve to discourage
saving."*

Based on the selection criteria above, the number of NPSAS:90 records qualifying for inclusion in the sample totaled 2,544 students at 363 institutions. In table 2, major demographic characteristics in the sample are compared to results reported in the 1989 Cooperative Institutional Research Program (CIRP), a long-running annual survey of more than 250,000 incoming freshman at more than 600 colleges and universities around the United States (Dey, Astin, and Korn, 1991). The sample used here is very similar to the CIRP profile based on student gender, race, age, marital status, highest degree aspiration, and distance between the student's permanent home and the school. The sample is less similar to CIRP regarding parent variables. Compared to CIRP, parents in this sample are more educated, more likely to be married, and have higher-incomes.

Additionally, table 3 summarizes the institutional characteristics defined by records sampled for this study. A few limitations of this sample immediately become apparent in table 3. First, few students enrolled for less than a two-year program are included. Also, the proprietary sector is virtually excluded by nature of the selection criteria. Since many proprietary schools offer only certificate programs and rarely require typical college admission test scores such as the ACT or SAT (Apling, 1993), these two variables work jointly to exclude many proprietary school records otherwise present in NPSAS:90. Thus, findings in this study may be generalizable only to degree-seeking students. Also, although about 80% of undergraduates enroll in the public sector, in this sample the majority are enrolled in private institutions, which may be a reflection of higher parental education levels compared to freshmen generally. The preference for the private nonprofit sector in this sample may also stem from its greater reliance on college admission tests than, for example, public two-year or community colleges, which are less likely to require such test scores for admission.

Variables

To begin, the sources of the CM need analysis results will be explained. NPSAS:90 does not separately indicate the two portions comprising the total expected family contribution (EFC), the portion from the student and that from the parents. Furthermore, NPSAS:90 records contain three *separate* total EFCs: EFC1 is that obtained from the institutions, where available; EFC2 is that derived by federal formula from the raw application data which is abstracted in the survey; EFC3 is a composite based on EFC1 and EFC2. EFC3 is taken from EFC1 if available, otherwise from EFC2, and is further adjusted to incorporate the minimum contributions from students (\$700 dependent freshmen, \$900 for other dependent filers). EFC3 is the source of the total family contribution most commonly reported in NPSAS:90 analyses and is used for this study, since it best represents the federal formula used nationwide in 1989-90 for Title IV aid awards, which does include a minimum contribution from dependent students.

Since the separate student and parent portions of EFC3 are not found within NPSAS:90, the student contribution portion was calculated using the raw student data within NPSAS:90 and the federal formula

TABLE 2
Descriptive Characteristics of the Sample and
Selected Comparisons to CIRP Data for 1989 Freshmen
(Sample Cases = 2,544)

Variable	N=	%	CIRP	%
Males	1,247	49.0	46.2	
Females	1,297	51.0	53.8	
White, non-Hispanic	2,216	87.1	84.3	
Hispanic	78	3.1	2.7	
Black, non-Hispanic	147	5.8	9.2	
Asian/Pacific Islander	90	3.5	2.9	
American Indian	13	0.5	0.9	
Age 17 years	40	1.6	2.4	
18 years	1,644	64.6	71.6	
19 years	664	26.1	21.1	
20 years	102	4.0	2.1	
21 years and older	94	3.7	2.8	
Student is unmarried	2,534	99.6	98.0	(CIRP data year:1986)
Student is married	10	0.4	2.0	
Student's highest educational aspiration:				
Less than bachelor's	86	3.4	6.5	
Bachelor's degree	754	29.6	32.3	
Master's degree	1,150	45.2	37.0	
Ph.D./Professional degree	554	21.8	24.2	
Miles between permanent home and college attended:				
10 miles or less	364	14.4	17.2	
11-50 miles	589	23.2	26.8	
51-100 miles	362	14.2	15.9	
101-500 miles	841	33.1	29.7	
Over 500 miles	388	15.3	10.4	
Student's enrollment status:				
Full-Time	2,398	94.3	N/A	
Less than Full-Time	107	4.2	N/A	
Less than Half-Time	39	1.5	N/A	
Parents: Married				
Divorced, separated	2,146	84.4	72.3	
Widowed, other	319	12.6	22.6	
	79	3.0	5.1	
Income \$ 0-\$9,999				
\$0-\$9,999	145	5.7	5.7	
\$10,000-\$19,999	163	6.4	10.1	
\$20,000-\$29,999	289	11.4	14.0	
\$30,000-\$39,999	367	14.4	18.3	
\$40,000-\$49,999	419	16.5	12.8	
\$50,000-\$59,999	339	13.3	11.8	
\$60,000-\$99,999	599	23.5	18.0	
\$100,000 and up	223	8.8	9.3	
Father's Education:				
Less than H.S. Diploma	102	4.0	10.9	
H.S. Diploma / GED	306	12.0	27.7	
Trade School (< 4 year)	137	5.4	5.1	
Some College (< 4 year)	534	21.0	14.6	
Bachelor's degree	770	30.3	21.7	
Graduate/Professional degree	695	27.3	20.0	
Mother's Education:				
Less than H.S. Diploma	62	2.5	8.3	
H.S. Diploma / GED	572	22.5	34.8	
Trade School (< 4 year)	210	8.2	8.0	
Some College (< 4 year)	667	26.3	16.7	
Bachelor's degree	670	26.3	22.5	
Graduate/Professional degree	363	14.2	9.7	

TABLE 3
Selected Institutional Characteristics
Of Colleges Attended by the Sample's Students

	N =	Percent
Institutional Control:		
Public	1,123	44.1
Private	1,395	54.8
Proprietary	26	1.1
Institutional Level:		
Less than 2 year	4	0.2
Two-three year	295	11.6
Four year, not Ph.D.	1,055	41.5
Four year, Ph.D.	1,190	46.8
Sector (type/control summary):		
Less than 2 year Private	1	0.0
Less than 2 year Proprietary	3	0.1
Two-three year Public	129	5.1
Two-three year Private	152	6.0
Two-three year Proprietary	23	0.9
Four year Public	446	17.5
Four year Private	600	23.6
Four year, Ph.D. Public	548	21.5
Four year, Ph.D. Private	642	25.2
Cost Levels:		
\$ 1-\$ 5,000	632	24.8
\$ 5,000-\$10,000	911	35.8
\$10,000-\$14,999	535	21.0
\$15,000-\$19,999	288	11.3
\$20,000+	178	7.1
Institutional Selectivity in Admission*:		
Non-competitive	315	12.4
Minimally difficult	303	11.9
Moderately difficult	1,513	59.5
Very difficult	220	8.6
Most difficult	193	7.6

*Note: selectivity classifications are based upon institutions' own assessments of difficult in obtaining admission for most or all entering students, as reported in (Healy, Koether, and Lefferts, 1990).

(U.S. Department of Education, 1989). The parental portion of EFC was then obtained by subtracting the student portion from the total family contribution. Since the survey questionnaires captured enough of the data items essential to calculate an EFC, even families that did not apply for financial aid could have an EFC computed in NPSAS:90. Field workers and institutional personnel also transmitted financial aid file data into NPSAS:90 records.

For amounts regarded as actually given or lent to the student by the parents, responses were used from the parent survey question, "How much did you or will you and your spouse contribute (and lend) to help meet your child's education-related expenses?" (NPSAS:90 fields summed: AMTGIVE, AMTLOAN). For amounts regarded as the student's own contribution, the responses used were the students' (and spouse's) own work earnings during 1989-90 (NPSAS fields summed: WKINC,

SPSINC). Only ten students in the sample were married, so spousal earnings do not skew the overall findings. Finally, total financial aid received and total costs were obtained from institutional records (NPSAS fields used: TOTAID, TOTCOST).

Persons familiar with CM will immediately recognize some methodological issues here. First, the student portion of the family contribution in the dependent model includes an assessment of assets, resulting in an "income supplement," which is a portion of the student's net worth flowing into the contribution. No NPSAS:90 survey item asked students directly about any assets liquidated for college expenses during 1989-90, so the role of actual income supplements for the students in this study cannot be known. In all probability, the income supplement plays a minor role in the majority of cases. In this study about 68.5% of the students had a CM income supplement of \$0, 86% had a CM income supplement of less than \$200, and 90% had a CM income supplement of less than \$350. It has been observed that income supplements have generally played a minor role in the assessment of ability to pay, even for parents (Bletzinger, 1993).

A second issue involving the student portion of the family contribution in CM stems from the fact that the student contribution from income is based on an assessment of prior calendar year ('base-year') income, not the earnings which students may have during postsecondary enrollment. However, the use of base-year income in need analysis is historically grounded in its proven superiority in terms of accuracy and verifiability. As a practical matter, the best predictor of this year's income (hence current ability-to-pay) happens to be last year's earnings. When families can document otherwise to the satisfaction of the financial aid administrator, then the aid administrator can substitute an estimation of current-year income (College Entrance Examination Board, 1983). Nonetheless, the use of base-year income is primarily to improve the estimation of current earnings, which is the real source of contributions from income. Logically, contributions from past income should be expected to enter the formula through the income supplement as savings. This logic is equally applicable to the parents' income, for that matter.

Results

Table 4 reports the findings by cost and family income levels. College cost groups are in \$5,000 increments up to the \$20,000-and-up level. Each row within each cost level represents increments of \$10,000 in family income (based on the NPSAS:90 field FAMINC), up to the \$100,000-and-up level. Table 4 reports averaged parent and student contributions, averaged total financial aid, number of aided students, and number of students for each row. Readers may wish to inspect table 4 in connection with the observations which follow.

Actual Parental Contributions

With only a few exceptions, the averaged actual parental contributions in column (a) rise with each succeeding step in parental income levels across all the college cost levels. At the lowest cost level (less than \$5,000), parents of the lowest income contributed an average \$1,816

TABLE 4
Averaged Contributions, Differences, and Student Aid
By Income Levels Within College Cost Levels

	Parent Contributions					Student Contributions			Total Awards		Sample:	
	Actual (a)	CM (b)	Diff. (a-b)	Cap (c)	Diff. (a-c)	Actual (d)	CM (e)	Diff. (d-e)	(f)	All N = (g)	Aided N = (h)	
Overall Sample (\$)	6,086	11,246	-5,160	5,770	315	2,502	1,208	1,293	3,032	2,544	1,469	
COST \$ 1-\$ 4,999	2,987	7,925	-4,937	2,639	347	2,395	965	1,429	1,265	632	293	
Income \$ 0-\$ 9,999	1,816	1,238	578	949	867	1,911	1,020	891	3,053	35	30	
\$10,000-\$19,999	2,356	1,484	872	707	1,648	2,410	1,276	1,133	2,677	32	23	
\$20,000-\$29,999	2,455	2,329	125	1,697	757	2,446	1,247	1,199	1,693	79	44	
\$30,000-\$39,999	2,006	4,195	-2,189	2,387	-381	3,182	979	2,203	1,186	114	57	
\$40,000-\$49,999	2,967	5,581	-2,614	3,040	-73	2,286	920	1,365	936	128	58	
\$50,000-\$59,999	3,687	9,429	-5,741	3,395	292	1,993	886	1,106	1,362	79	40	
\$60,000-\$69,999	3,466	10,793	-7,327	3,422	44	1,992	798	1,193	736	76	21	
\$70,000-\$79,999	3,823	15,894	-12,070	3,088	734	2,517	953	1,564	995	32	9	
\$80,000-\$99,999	4,125	20,516	-16,391	3,480	644	1,951	820	1,130	359	36	7	
\$100,000 & up	5,761	34,701	-28,939	3,062	2,699	2,924	703	2,220	482	21	4	
COST \$5,000-\$9,999	4,333	9,038	-4,704	4,549	-215	2,632	1,131	1,500	2,420	911	542	
Income \$ 0-\$ 9,999	1,289	709	580	679	609	2,011	896	1,115	4,817	60	57	
\$10,000-\$19,999	1,296	1,442	-146	1,220	76	2,666	1,083	1,582	3,989	77	59	
\$20,000-\$29,999	2,311	3,070	-758	2,117	194	2,643	1,382	1,261	3,470	112	91	
\$30,000-\$39,999	3,793	4,899	-1,105	3,502	290	2,712	1,111	1,601	2,914	148	95	
\$40,000-\$49,999	4,748	7,630	-2,882	5,364	-615	2,964	1,069	1,895	1,767	147	75	
\$50,000-\$59,999	5,424	9,610	-4,185	6,376	-952	2,645	1,466	1,178	1,892	128	78	
\$60,000-\$69,999	5,634	12,947	-7,312	6,610	-976	2,339	1,047	1,291	1,427	93	36	
\$70,000-\$79,999	6,055	19,341	-13,285	7,163	-1,107	2,540	800	1,740	1,273	58	22	
\$80,000-\$99,999	7,831	20,884	-13,053	7,183	648	2,774	1,072	1,702	895	43	17	
\$100,000 & up	7,693	31,913	-24,219	6,891	801	2,575	883	1,692	918	45	12	

\$10,000-\$14,999	7,465	12,420	-4,955	6,826	638	2,697	1,296	1,401	4,085	535	355
Income \$ 0-\$ 9,999	2,674	1,012	1,661	1,012	1,661	2,684	1,224	1,460	7,349	35	33
\$10,000-\$19,999	3,448	3,155	293	2,537	911	3,056	2,221	835	5,020	27	21
\$20,000-\$29,999	4,386	2,395	1,991	2,331	2,055	2,075	1,229	846	6,630	70	61
\$30,000-\$39,999	5,338	6,294	-956	5,262	76	3,090	1,303	1,786	5,748	64	56
\$40,000-\$49,999	5,784	5,171	613	5,037	746	3,076	1,343	1,733	5,219	77	60
\$50,000-\$59,999	7,762	9,895	-2,133	8,181	-418	2,647	1,491	1,156	3,738	76	58
\$60,000-\$69,999	10,316	15,628	-5,312	9,802	513	2,590	1,069	1,521	2,510	50	21
\$70,000-\$79,999	10,555	17,940	-7,385	11,242	-687	2,520	1,198	1,321	1,791	38	18
\$80,000-\$99,999	12,018	21,170	-9,152	10,931	1,087	2,565	991	1,574	847	36	14
\$100,000 & up	12,475	41,587	-29,112	11,739	735	2,706	1,124	1,582	533	62	13
\$15,000-\$19,999	11,038	16,612	-5,574	9,919	1,118	2,265	1,657	608	5,188	288	178
Income \$ 0-\$ 9,999	1,861	927	933	927	933	4,143	873	3,269	10,804	13	12
\$10,000-\$19,999	3,718	3,237	481	3,237	481	2,637	1,554	1,083	10,499	20	18
\$20,000-\$29,999	4,454	5,871	-1,416	4,622	-168	1,582	1,189	393	8,131	11	8
\$30,000-\$39,999	6,518	5,704	813	5,190	1,328	2,217	2,211	6	7,502	27	20
\$40,000-\$49,999	9,017	8,018	998	6,263	2,753	2,105	2,759	-654	7,255	43	33
\$50,000-\$59,999	10,723	11,950	-1,227	9,477	1,245	2,490	2,418	72	5,835	39	32
\$60,000-\$69,999	12,717	16,363	-3,645	11,884	833	2,088	1,235	853	4,524	31	18
\$70,000-\$79,999	11,800	19,406	-7,606	14,000	-2,200	2,197	1,117	1,079	2,770	22	12
\$80,000-\$99,999	14,321	23,003	-8,682	14,375	-54	2,503	1,293	1,209	1,915	33	15
\$100,000 & up	18,836	40,506	-21,669	16,308	2,528	1,739	890	849	976	49	10
\$20,000 & up	13,905	22,131	-8,225	13,253	651	2,011	1,472	539	5,793	178	101
Income \$ 0-\$ 9,999	1,000	668	332	668	332	1,015	2,269	-1,254	11,453	2	2
\$10,000-\$19,999	4,807	2,373	2,433	2,373	2,433	1,866	907	959	18,170	7	7
\$20,000-\$29,999	6,452	3,443	3,009	3,443	3,009	2,931	1,398	1,532	11,010	17	16
\$30,000-\$39,999	11,578	5,834	5,743	5,834	5,743	1,999	1,612	387	9,433	14	12
\$40,000-\$49,999	10,768	10,363	405	8,926	1,842	2,857	1,257	1,600	7,581	24	17
\$50,000-\$59,999	12,332	14,571	-2,238	11,666	666	1,693	1,788	-95	5,883	17	10
\$60,000-\$69,999	14,868	15,345	-476	14,250	617	1,992	2,342	-349	3,373	19	10
\$70,000-\$79,999	15,863	23,825	-7,962	16,615	-751	1,339	1,226	113	4,449	11	8
\$80,000-\$99,999	18,197	17,910	286	15,062	3,135	2,252	2,138	114	6,869	21	11
\$100,000 & up	18,706	51,195	-32,489	22,143	-3,437	1,476	900	576	493	46	8

while at the highest income level (over \$100,000) they contributed \$5,761, approximately three times as much. At the highest cost level (more than \$20,000), such comparisons are difficult to make because of the very small cell sizes at the lowest income levels. In this study, only nine students from families with incomes less than \$20,000 had college costs exceeding \$20,000. However, with respect to the highest income families (over \$100,000), one observes twice as many students attending the highest cost colleges as the lowest cost colleges, and their parents' averaged actual contributions for the highest cost colleges are three times greater than at the lowest cost colleges (\$18,706 vs. \$5,761).

"Raising public-sector tuitions is a strategy rife with controversy."

Readers should be aware that some families reported actual contributions in excess of total costs reported in NPSAS:90. This anomaly is especially pronounced for middle- and high-income families at low-cost colleges. The reasons are unknown but no doubt many in number, including the funding of 'off-budget' expenses coincidental to enrollment but not actually education-related. No adjustments were made here in reporting these cases.

CM Expected Parental Contributions

Comparing actual to formula-derived parental contributions, it is evident in column (b) that the range of averaged need-analytic parental contributions across income levels is much broader than the actual contributions that these families make, regardless of college cost levels. At the lowest cost level (less than \$5,000), the highest income group (over \$100,000) has an average CM contribution about 28 times that of the lowest income group (under \$10,000). At the highest cost level (over \$20,000), the averaged CM parental contributions are even farther apart across income levels.

One may also observe within this sample that for unknown reasons, averaged formula-derived parental contributions do not inevitably rise at each step upward in income levels within cost levels. In the middle cost level (\$10,000–\$14,999), averaged contributions declined from the preceding levels for both the \$20,000–\$29,999 group and the \$40,000–\$49,999 group. In the highest cost level (\$20,000 and up), averaged CM parental contributions declined when moving from the \$70,000–\$79,999 group to the \$80,000–\$99,999 group (table 4). Since this study is descriptive only, the exact causes for these declines are unknown. Other than these few instances, the overall results are very much in keeping with the principle of 'vertical equity' in need analysis, which calls for higher expected contributions from families of progressively higher-incomes.

Difference between Actual and Expected Parental Contributions

The calculation of averaged differences between actual and expected parental contributions in the third column of table 4 is done at the individual student level, not upon the averages reported in the table (this is also true of the averaged student contributions reported in table 4). While the overall mean in actual parental contributions for this sample is \$6,086, the overall mean in CM formula-derived parental

contributions is \$11,246. In other words, the need analysis formulae expected approximately twice as much parental contribution as these families actually made. This fact may account for the overall mean of -\$5,160 in the averaged differences. In general, parents of students in this sample paid in real dollars less than what CM expected. While this is true at all college cost levels, it is not true at all income levels. Regardless of college cost level, the lowest income parents actually contributed more than need-analysis formula expectations, while the highest income families actually contributed less than expected. The latter phenomenon is due in part to the fact that while CM formula contributions may exceed real costs, at some point there is nothing more towards which to actually contribute. Costs do not rise to meet CM expectations. The theoretic CM contributions stand independent of real costs and are not arbitrarily capped at any cost level, real or imagined.

"It takes courage and conviction to tell a family of financial means unsatisfied by its student award letter that the mission of the financial aid office is to address unmet needs, not unmet wants."

One additional point should be made about the negative numbers in overall means. Mathematically, many lower-income parents cannot have a shortfall in meeting expected CM by their actual contributions, because CM does not allow a negative EFC, though some have advocated just such an approach (Mortenson, 1992). Thus, \$0 actual contribution minus \$0 CM contribution equals \$0 difference, and never anything less. Only the parents with a non-zero CM contribution can have negative results here. Due to the absence of a cap on the CM at actual costs, differences in contributions appearing as shortfalls at the higher-income levels may be only artifacts. For this reason, CM results are capped at costs in column (c) of table 4 before comparison to actual contributions, as explained in the next section.

Difference between Actual and Capped CM Parental Contribution

When CM parental contributions are capped at the students' total costs and then compared to actual parental contributions in the fifth column of table 4, a different picture emerges. In all cost levels except one (\$5,000-\$9,999), parents of students in this sample generally are meeting or exceeding their capped CM expectations by their actual contributions. For the four cost levels which do show actual parental contributions exceeding the capped CM figures, the differences in contributions rise at each increasing cost category except the last (\$20,000 and up), at which the averaged difference falls to about half that at the next lower cost level of \$15,000-\$19,999 (\$651 vs. \$1,118). This effect is apparently due to the preponderance of very high-income families (\$100,000 and up) comprising 25% of all cases in this cost level, whose averaged difference in contributions is -\$3,437, a shortfall larger than any other in that column.

Although parents are generally contributing beyond their expected contributions (capped at costs), the burden of extra contributions across income levels varies greatly and inequitably at all cost levels. Though the overall difference in actual versus expected parental contributions for the \$20,000-and-up cost level is \$651, variations by income level are striking. The two cases at the lowest income level (below \$10,000) averaged \$321 more in real contributed dollars than expected by CM,

“Of concern to many is the perception that parents are contributing far less towards higher education than those of only a few decades ago.”

yet the parents at incomes \$50,000 to \$70,000 averaged only about twice that much (approximately \$650). As a proportion of income, the extra contributions made by the low-income parents are much greater than their wealthier counterparts. Even more dramatic are the sizes of extra contributions made by parents in the \$10,000 to \$40,000 income level in the \$20,000-and-up cost level, which are enormously greater than those of parents of \$40,000 to \$80,000 incomes, in terms both absolute and in proportion to income. In the cost level of \$15,000–\$19,999, again one sees a clustering of higher averaged extra contributions being made in the \$30,000 to \$60,000 income ranges, disproportionately large when compared to what is observed in the \$60,000 to \$99,999 ranges.

The differences between income levels in extra parental contributions are not limited to the costliest colleges. Inspection of all cost levels shows that on average, most higher-income parents are doing no more in terms of *extra* contributions for their children than most lowest income parents—and sometimes they are doing *less*. For example, in the lowest cost level, the averaged extra contributions made by parents in the two lowest income levels (below \$20,000) are not surpassed until one reaches the \$100,000-and-up income level. In the \$5,000–\$9,999 cost level, parents in the \$80,000-and-up income levels have averaged extra contributions within \$200 of the very lowest income level (less than \$10,000). In the third cost level (\$10,000–\$14,999), parents in the three lowest income levels (below \$30,000) have averaged extra contributions which exceed all the averages above the \$30,000 level, including the \$100,000-and-up income level. In the fourth cost range (\$15,000–\$19,999), one observes that parents in two income brackets, \$0–\$9,999 and \$10,000–\$19,999, are averaging hundreds of dollars in extra contributions, while families at two high-income levels, \$70,000–\$79,999 and \$80,000–\$99,999, show averaged *shortfalls* in actual parental contributions below the expected CM levels.

Actual Student Work Earnings

In contrast to actual and expected parental contributions, in column (d) of table 4 one finds considerable homogeneity in actual student work earnings across all cost levels and across income levels with cost groups. One does note, however, that at the higher cost levels, \$15,000–\$19,999 and \$20,000 and up, that the subgroup means, \$2,265 and \$2,011, respectively, are below the overall sample mean of \$2,502. Paradoxically, for the four top income levels (starting at \$50,000 and up), most of the lowest averaged student work earnings are found among those attending the most costly colleges (\$20,000 and up), as can be seen by comparing means of identical income levels across cost levels. This student behavior stands in contrast to the increasing sizes of actual parental contribution means across costs levels. Again, since this is a descriptive study, no causality can be inferred here. One may speculate that a variety of reasons may account for lower student earnings at costlier colleges, including greater student borrowing in lieu of work, fewer or more transitory job opportunities, or greater

parental financial effort for more prestigious college destinations chosen by these students.

CM Expected Student Contributions

As with the actual student work earnings just discussed, the case of need-analytic contributions of dependent students shows no clear progression of differences across income levels within cost groups in column (e), table 4. However, in contrast to actual student work earnings in the two highest cost groups, which are observed to be below the overall mean for the sample, the averaged expected contributions for the two highest cost groups (\$1,657 and \$1,472) are above the overall mean for the sample (\$1,208). Additionally, one may observe that in all cost groups, the averaged expected student contribution for students in the highest income level (\$100,000 and up) is the lowest, or among the lowest, compared to any other income bracket. The reasons that dependents of highest income families show the smallest expected contributions are not clear; perhaps these students are least likely to have prior work earnings and most likely to have parents who find ways to 'shelter' the students' assets away from the need analysis system.

"Very few students contribute less than their expected contributions."

Difference between Actual and Expected Student Contributions

The first phenomenon to observe here contrasts sharply with the parent data: very few students contribute less than their expected contributions. Few shortfalls are present in the averages. The next observation stems from two results already mentioned. First, limiting our observation to the two highest cost groups (\$15,000–\$19,999 and \$20,000 and up), lower-than-overall actual work earnings in conjunction with higher-than-overall CM expected contributions result in much lower-than-overall remainders when the differences between the two are calculated. As a result, students in the two highest cost groups show less than half the difference calculated for students in the three lowest cost groups. In other words, students in the lowest cost groups (below \$15,000) report more than twice the amount of work earnings beyond their expected contributions than do students above that cost level. Within each cost range, though, there is no obvious pattern across income levels to account for this difference between actual earnings and formula-derived expectations.

Amounts of Student Financial Aid

Not surprisingly, the subgroup means for cost levels show that the average amount of financial aid to students is higher at each succeeding college cost level in column (f), table 4. Furthermore, within each cost level, one may observe a general but not perfect progression of decreasing averaged financial aid amounts as income levels rise. Such a result is in keeping with the notion that most financial aid is need-based, so that as costs rise and/or family income declines, the amounts awarded in financial aid should increase. While the averaged amount of financial aid awarded in each cost group appears to be largest for the lowest income levels (below \$10,000), the higher-income brackets do not lose much relative distance in averaged awards. Excluding the

two highest income levels (\$80,000 and up) whose averaged awards are generally quite small across all cost levels (less than \$1,000), families of incomes up to \$80,000 appear to be benefitting from awards averaging up to 25% of the averaged amounts given to families in the very lowest income level (below \$10,000). Disparities in amounts of aid awarded reflected by these averages appear to be much smaller than the disparities in the underlying family incomes.

The relative distances between highest and lowest income groups across variables are noteworthy. Consider first the relative distances of income groups within the middle cost group (\$10,000–\$14,999) where 35% of this sample is located. While the amount of averaged actual parental contribution of the highest income group is about 4.5 times that of the lowest income group (\$12,475 vs. \$2,674), the averaged amount of financial aid for the low-income group is more than 13 times that given the highest income group (\$7,349 vs. \$553). However, this case is an extreme. Comparing the lowest income group to the \$70,000–\$79,999 group, the higher-income group averages four times as much actual parental contribution (\$10,555 vs. \$2,674), and the low-income group averages about four times as much awarded aid by comparison (\$7,349 vs. \$1,791). A regressive relationship between the ratios of aid awarded and actual parental contributions begins to appear in the next income level down (\$60,000–\$69,999), such that the lowest income group (below \$10,000) within this cost bracket benefits from about three times as much financial aid while parents at that low-income level contribute nearly four times as much by comparison to their peers at \$60,000–\$69,999 income. In other words, the amount of financial aid for the low-income families does not increase as rapidly as do the extra parental contributions apparently needed to support the students' costs. Similar effects may be observed elsewhere in the tables.

Discussion

Since Congressional Methodology is no longer used to award need-based student financial aid, an immediate question may arise about changes to expected family contributions under its successor, Federal Methodology (FM). At this writing, midway through FM's first year 1993–94, no complete answers exist. The details of the formula changes from CM to FM are considerable and beyond the scope of this article. However, estimates of differences based on analyses of FM compared to CM have been done both by ACT and the College Board (American College Testing, 1992a, 1992b; Heffron, 1992a, 1992b; College Entrance Examination Board, 1992). Table 5 summarizes some data published by the College Board (1992) shortly after FM came into law following Reauthorization in 1992. Assuming actual parent and student contributions are held constant, the dramatic shifts downward in levels of formula expectations will mathematically eliminate many cases of contribution shortfalls and will dramatically increase levels of extra contributions. Unfortunately, such improvements would only be on paper, because no new real dollars would flow into higher education.

The presentation of cost levels in the tables is sector-neutral. The reality is that there are few community colleges whose annual costs exceed \$20,000 or private colleges whose annual costs are \$5,000 or

TABLE 5
Estimated Changes in Parent and Student Contributions
From Congressional Methodology (CM) to Federal
Methodology (FM) Published by the College Board (1992)
(Reprinted with Permission)

Parents' Adjusted Gross Income	92-93 FILERS (5,000 CASES)				91-92 FILERS (4,797 CASES)			
	Parent		Student		Parent		Student	
	CM	FM	CM	FM	CM	FM	CM	FM
Overall Sample	\$ 4,265	\$ 3,778	\$2,077	\$ 721	\$ 4,082	\$ 3,632	\$2,051	\$ 512
\$ 0	148	258	1,916	280	101	2	1,616	45
\$ 1-\$10,000	313	282	1,952	416	202	122	1,761	164
\$10,001-\$20,000	403	316	1,975	638	540	322	2,034	471
\$20,001-\$30,000	1,164	1,013	1,955	609	1,476	1,213	2,174	630
\$30,001-\$40,000	2,794	2,422	2,032	728	2,843	2,424	2,051	483
\$40,001-\$50,000	4,286	3,843	2,102	746	4,962	4,312	2,031	496
\$50,001-\$60,000	6,600	6,004	2,129	832	6,963	6,394	2,053	546
\$60,001-\$70,000	8,929	8,043	2,127	877	10,110	8,892	2,234	683
\$70,001-\$80,000	11,472	10,494	2,302	1,050	11,797	10,860	2,301	861
\$80,001 and up	18,946	17,103	2,692	1,450	15,296	14,573	2,312	928

less. Statistical tests were performed comparing those parents who met or exceeded the capped CM contribution with those parents who contributed less than the capped CM expectation across the sectors described in table 3. Students in this sample having parents who contribute less than the capped CM contribution are enrolled in public sector institutions in disproportionate numbers (Chi square = 80.91, 8 d.f., $p < .0001$). The residuals suggest that the effect is largest in two-year public institutions, followed by four-year Ph.D. and non-Ph.D. public institutions, in that order. Private institutions (excluding proprietary) had disproportionate numbers of students whose parents contributed more than the capped CM expectation. While the reasons that students choose public sector institutions are many and complex, one large financial benefit from choosing the public sector which many families apparently enjoy is the much greater likelihood that their parents may contribute less than the formula-derived contribution amount used in Title IV need analysis.

Policy Implications

The major finding on parental contributions bears repeating: While on average a majority of parents in this sample are meeting or exceeding their expected contributions (capped at cost), very large inequities between income levels show up in those averages within every cost level. The same cannot be said of their children's contributions, regardless of cost levels or income levels. While nearly all students are exceeding their expected contributions, many of their parents are falling short. Since the sample contains families having at least one college-educated parent, it cannot be lack of firsthand knowledge of higher education experience which causes the parents to pay less than expected.

Parental contribution shortfalls present many policy problems. First, their shortfalls reduce the total amount of money available to

"Students in the lowest cost groups report more than twice the amount of work earnings beyond their expected contributions than do students above that cost level."

finance higher education. Money not paid by the parents must be made up either by their children, creating potential problems of intergenerational equity (McPherson and Skinner, 1986), or by transfers between students in the form of institutional aid awards, or by taxpayers through federal and state financial aid programs. Additionally, public trust in the legitimacy of need-based student aid could collapse rapidly at some point at which too many parents successfully evade what they should be paying. No one knows what model of financing would replace today's system if it were publicly discredited.

The foremost policy question one might ask is, What should be done about the kinds of inequities reported above? First, one must recognize that *nothing* might be done, so that current inequities (perhaps no worse than at present) persist into the future. However, if change occurs to resolve the disparities, one or more of the following directions must be taken. Some of these alternatives have already received book-length treatment. In brief, they are:

Change the need analysis formula (again). Clearly, one way to obliterate differences is simply to make the formula *descriptive* rather than *prescriptive*. Needless to say, this approach surrenders the idea of goal-setting in policy, and with it, any hope of rational answers to questions about who should pay the costs of higher education, and why they should pay. Moreover, the dynamics of conflict situations suggest that instability in the formula can trigger its collapse and abandonment as all parties with vested interests in financing higher education turn to some other standard around which to negotiate (Schelling, 1960).

Change parental behavior. This alternative calls upon parents directly to pay their expected amounts. If the need analysis system is both rational and fair, then the object of the game is to win converts. For some parents, convincing them to support need analysis is similar to supporting the institution of free speech: one's belief in the system has to transcend results that are personally distasteful. Clearly, the task is easiest when parents have enough time to prepare accordingly. On the other hand, parents unwilling to shoulder the financial responsibilities for their children's welfare will never be convinced.

In recent years two kinds of policy thrusts have been directed towards college financial planning behavior. First, financial aid awareness and early awareness initiatives have sought to better inform families with college-bound children. More specifically, the 1992 Reauthorization requires the Secretary of Education to create PC-based software enabling families to learn about college options and to estimate family financial aid eligibility. Parents show strong interest in such information (Brouder, 1987). By providing early means of estimating ability to pay, families at least have awareness of financial responsibilities they are expected to meet while there is still sufficient time to prepare.

The second policy thrust concerns college savings plans. By 1989, 18 states had started incentive programs for college savings plans (Hansen, 1989). Currently some considerable effort is underway to discover

correlates of parental saving (Hossler and Vesper, 1993). The question in savings incentives is how to encourage saving without fostering the perception among savers that they will be 'punished' later by the need analysis formula (Case and McPherson, 1986). Although it is not clear why more parents do not save for their children's college, inadequacies in parental college savings have been documented in surveys going back decades (Roper, 1961). Some evidence suggests a potential dual payoff from college savings plans to access and choice in higher education (Flint, 1993).

An insight which seems to have eluded policymakers concerns the possible linkages between early awareness programs and college savings by parents. While early awareness of financial aid *award programs* serves to promote access and choice (especially among those whose predisposition to attend college is wavering), the early awareness of financial aid *need analysis* (both costs and ability-to-pay determinations) would seem to be the critical element to stimulate savings and eventual parental financial support among those having the ability to save. In fact, an overemphasis on award availability may serve to *discourage* saving (Hossler and Vesper, 1993).

"While nearly all students are exceeding their expected contributions, many of their parents are falling short."

Increase or redirect student aid funding towards low-income families. This alternative compels parents to pay their expected contributions by shifting awards towards those families least able to pay. Presumably, parents with middle to high-incomes would contribute what they are capable (by need analysis standards) rather than withdrawing their support to their dependents in the higher education system. Low-income families are underrepresented in higher education, the loss of low-income student enrollments in the early 1980's is in evidence (Davis and Johns, 1989), and higher education remains very economically stratified (Mortenson, 1993). Some analysts contend that virtually every major development in need analysis and appropriations since the passage of the Middle Income Student Assistance Act in 1978 has benefited students from high- and middle-income families at the expense of low-income students (Mortenson, 1990). While a broad base of support across socioeconomic levels may be a necessity to keep student aid politically viable, public sentiment favors only the 'truly needy' receiving funding. Public confidence in the integrity of aid programs wanes in the face of apocryphal stories of student aid recipients driving Mercedes. Perhaps the time for readjustment is close at hand when a national newsmagazine reports the president of a selective private university conceding, "we have more kids on financial aid from families earning more than \$75,000 than from families earning less than \$15,000" (Ostling, 1992, p. 61).

Raise public-sector tuitions. Another way to try to induce parents to contribute what they are capable of paying is to remove low-cost alternatives which permit them to pay less. In this sample, students whose parents reported paying less than their expected contributions are disproportionately enrolled in public sector institutions. Raising public-sector tuitions is a strategy rife with controversy. It is by no

"Public confidence in the integrity of aid programs wanes in the face of apocryphal stories of students aid recipients driving Mercedes."

means clear that this strategy would result in larger actual contributions by parents, who might find new ways to shift their expected burden onto their children or others. Many parents may be unwilling to enroll their children in higher education at all when there is no low-cost alternative, regardless of financial aid availability. Despite its risks, this strategy is one with proponents even within the public sector itself (Wallace, 1992, 1993).

The equity issue is whether non-users and low-income participants of higher education should subsidize high-income public sector enrollees by permitting them costs well below their ability to pay (Fischer, 1990; McPherson and Shapiro, 1991). Several concerns with this approach focus upon access: whether financial aid awareness among low-income families is sufficiently strong to override concerns of affordability; whether federal and state governments will appropriate the funds necessary to assure access to low-income families; whether other segments of enrollees (self-supporting students and part-timers) will be harmed (Lopez, 1993). Notwithstanding these issues, the strategy is, logically, one way to get those with ability-to-pay to contribute more.

Exercise 'professional judgment' in need analysis by the financial aid administrator. While all the aforementioned options presume some degree of consensus-building enabling political action, this option does not. On the other hand, this option presents formidable personal and professional challenges to the financial aid administrator (Martin, 1988). Using professional judgment, the financial aid administrator may raise or lower the expected family contribution where exceptional circumstances indicate that true ability to pay is not reflected in the standard expectation. Raising expected parent contributions reduces financial aid eligibility and awards, perhaps inducing larger actual parent contributions. However, using this strategy, not only does the aid administrator then abandon the refuge to be found in the certitude of law, but also she confronts the prospect of saying "No" to awards for some students her employing institution might dearly wish to enroll. As some evidence suggests, it's not the poor who think that they are paying too much. In one study of parental contribution preferences (as opposed to formula-driven or actual contributions), parents with incomes over \$35,000 expressed the desire for the *largest* reductions from their actual contributions, in both relative and absolute terms, compared to families below \$35,000 (Minnesota Private College Research Foundation, 1992). In the face of intense competition for student enrollments, it takes courage and conviction to tell a family of financial means unsatisfied by its student award letter that the mission of the financial aid office is to address unmet *needs*, not unmet *wants*. Thus, professional judgment presents itself to the aid administrator as a two-edged sword capable of wounding the very families it should be intended to help. Here then is the last temptation of the financial aid administrator: to play Robin-Hood-in-reverse, using professional judgment to take from low-income families, whose willingness to pay exceeds their ability, to subsidize awards for those high-income families whose ability to pay exceeds their willingness.

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