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A STUDY OF THE WORK/LOAN EXPECTATIONS
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MINNESOTA STATE GRANTS AND SCHOLARSHIPS

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JANUARY, 1979

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Acknowledgements

This project was made possible in part from a grant from the Washington Office of the College Entrance Examination Board.

Staff of the Washington Office of CEEB, the Minnesota Higher Education Coordinating Board, and the State Planning Agency provided valuable comments on various drafts of this paper. However, the views reflected herein do not necessarily represent the official position of any of the agencies whose staff provided assistance.

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Summary and Recommendations

This study of financial aids going to Minnesota State Grant and Scholarship recipients has focused on the concept "implied work/loan expectation". This is simply the dollar amount of work or loans a student must raise after grant aid from all sources and an estimated parental contribution are subtracted from the expenses students will incur while in school. Symbollically this may be expressed as:

$$\text{Implied Work/Loan Expectation} = \text{Budget} - \text{Parent Contr.} - \text{All Grant/Schol. Aid}$$

In examining the amount of grant/scholarship aid from all sources going to Minnesota Grant and Scholarship recipients, the study found two problems that result from the type of award formula used to determine award amounts:

- 1) For recipients attending the same post-secondary system, there is an inverse relationship between implied work/loan expectations and estimated family contributions. In other words, grant recipients from less well-to-do families are facing larger work/loan expectations than are grant recipients from families that are more affluent.
- 2) Compared with objectively derived criteria for deciding what a reasonable amount of work/loan expectation should be, implied work/loan expectations were found to be low for many groups of students.

Criteria for deciding what a tolerable or reasonable work/loan expectation should be were based on research conducted by financial aid officers. This research focused on the impact of part-time work on a full-time student's scholastic performance. These criteria were used in designing several alternative policies on the role of work/loans in student financial aid packages. Estimates of the costs of a state grant/scholarship program based on these alternatives are presented in the report.

While this study will make no specific recommendations regarding the dollar amounts of maximum awards, work/loan expectations, or student budgets, the findings do suggest that policy-makers should give serious consideration to changing the current award formula. The following changes would eliminate many of the problems inherent in that formula:

- 1) Place a limit on the amount of tuition and fees allowed in the budgets for private institutions. This limit should be set at some estimate of average direct and indirect costs per student in public institutions judged by policy-makers to have similar missions.
- 2) In place of the current 50% or 75% of need rule, build into the award formula a reasonable absolute dollar work/loan expectation that would be the same for all same year-in-school grant recipients at all institutions.
- 3) Begin coordinating receipt of all other grant aid funded from state sources (including Indian Scholarships, Private College Contract payments, University of Minnesota Tuition Grants, etc.) with the amount of aid received by the student from the Minnesota State Grant and Scholarship Program.

Symbolically, the proposed formula would be:

Award= Budget -Work/Loan Expectation -Parent Contr.- BEOG- Other State Grants

Simulations of several variations on this general formula reveal that many of those variations could result in substantial savings of state general fund revenue. Some of this savings could be used to provide additional work-study funds for institutions in communities not having adequate part-time private sector employment opportunities for students. Or, it could be used to finance in part various other modifications in the state grant program, including:

- 1) elimination of the application deadline;
- 2) allowing students to apply for first-time awards in their junior or senior years; or
- 3) allowing greater-than-9-month budgets for those students (primarily vocational) whose courses of study require more than 9 months a year of full-time classroom work (but not including paid internships).

Such modifications, if combined with the general recommendation for a formula change, could utilize the same amount of dollars currently committed to these programs while at the same time allowing state policy to move closer to assuring greater access and choice, as these concepts have been operationally defined in this paper. Those operational definitions embody the notions that: any capable student will be able to study in any post-secondary institution that will admit him if he is willing to assume a tolerable and reasonable work/loan burden.

I. Introduction

In the biennial budget message delivered in January 1977 Governor Perpich raised several questions about the direction of Minnesota's programs of financial aid for students in post-secondary education. Concern was expressed about the degree of coordination of all the various types of state, federal, and institutional programs providing financial assistance to students. In particular, there was interest in determining how much emphasis was being placed on work and loans in putting together student aid packages. Was the emphasis being placed on work and loans unrealistically high or was it unrealistically low?

To find answers to these questions, and to gather information that would allow policy makers to decide if any changes were necessary in the state's policy of coordinating the several types of financial assistance available to students, the Governor called for a study of student financial assistance in Minnesota.

The following analysis which focuses only on Minnesota Grant and Scholarship recipients is a response to the Governor's request. While it will present no policy recommendations on award amounts or work/loan expectations, it will:

- 1) suggest several questions that policy-makers should consider in reaching decisions about work/loan expectations for grant recipients;
- 2) suggest methods policy-makers could use in deciding what is an appropriate or tolerable amount of work/loan expectation;
- 3) present data estimating the implied work/loan expectations faced by Minnesota Grant/Scholarship recipients after grant aid from all state, federal, and institutional sources has been taken into consideration;
- 4) recommend a general change in the award formula used for the MSG/Sch program;
- 5) propose alternative grant award formulas, each based on different assumptions about appropriate work/loan expectations; and
- 6) provide estimates of the costs of a state grant policy based on each alternative formula.

II. The Minnesota Grant and Scholarship Program

A. Description

To be eligible for consideration for a Minnesota grant or scholarship, students must:

- 1) be a United States citizen or a permanent resident of the United States and a legal resident of Minnesota at the time of the closing date for filing application; and
- 2) be a graduate of a secondary school or its equivalent and have met or be able to meet all requirements for admission as a full-time student to an eligible institution. This includes:
 - a) applicants with no previous post-secondary education who will enter an eligible institution as beginning first year students;
 - b) applicants who have completed at least one academic year of study at an eligible community college at the time of transfer to an eligible senior college or university;
 - c) applicants who will attend an eligible institution as full-time second year students who did not receive a state scholarship or grant-in-aid for their first year of post-secondary education; and
 - d) applicants who will be enrolled full-time in an eligible institution in a nursing education program leading to licensure as a registered nurse or a licensed practical nurse.

A holder of a Minnesota scholarship or grant may request renewal of his or her award annually until a total of eight semesters or twelve quarters or their equivalent has been covered, or a baccalaureate degree obtained, whichever occurs first.

A holder of an honorary scholarship (no monetary award) may, at the annual renewal date, request consideration for a monetary award.

To be eligible for renewal of a monetary scholarship or a grant-in-aid, the student must:

- 1) show a continuing need for financial assistance;
- 2) continue to be a United States citizen or a permanent resident of the United States and a legal resident of the State of Minnesota;
- 3) have successfully completed the academic work of the preceding year at an eligible institution; and
- 4) attend an eligible institution in the succeeding year.

Though the scholarship program and the grant program are separately funded, and a pre-requisite for receiving aid from the former is graduation in the top 25% of one's high school class, the size of the pool for both programs

is based on the student's financial need. Financial need, for the purpose of these programs, is defined as the dollar difference between the budget* the student will face at the institution he chooses to attend and an estimated amount of his family's contribution.**

Financial Need = Budget - Estimated Family Contribution

The amount of the award in the 1976-77 school year was 50% of financial need up to a maximum of \$1100 provided the student was not receiving a Basic Educational Opportunity Grant (BEOG). If the student was receiving a BEOG, and if the sum of the BEOG and the Minnesota State Grant/Scholarship (henceforth, MSG/Sch) exceeded 100% of need, the MSG/Sch was reduced so that the sum of the two was equal to the student's estimated need.

Some modifications were made in the award formula used in the 1977-78 school year. The formula remained the same for students not eligible for a BEOG; but, for those students who were eligible for a BEOG, the amount of the MSG/Sch was the smaller of

- 1) 50% of need;
- 2) \$1100; or
- 3) the difference between 75% of need and the amount of the BEOG for which the student was eligible.

B. Analysis of the Award Formula

1) Implied Work/Loan Expectations

One of the concerns expressed by the Governor was whether the emphasis placed on the role of work or loans in assisting financially needy students was appropriate. A later section will specifically address the matter of how policy-makers might approach the problem of deciding what an appropriate or

*The budgets used to determine the awards include only: 1) tuition and fees; 2) charges for room and board in a dormitory if the student is living in a dormitory, or \$1,100 if he is not; and 3) \$400 for miscellaneous expenses.

**The family contribution is estimated using a system jointly developed by the American College Testing Service (ACTS) and the College Entrance Examination Board (CEEB).

It includes an estimate of the parent's expected contribution from income and assets as well as a contribution from any realized assets of the students.

The procedures for estimating parental contributions from assets and income are based on a complicated combination of information about how families actually behave and value judgments about how they should behave. If the legitimacy of these is questioned, they could and should be dealt with separately in the process of policy formulation. The basic points made in this analysis would apply regardless of the methods used to estimate parental contributions.

tolerable work/loan expectation might be. But, before this is done, an analysis of the work/loan expectations implied by the current MSG/Sch award formula is in order.

a. Definition

The implied work/loan expectation is the amount of a student's budget remaining after subtracting the estimated family contribution* and the amount of the grant award.

b. Size of Implied Work/Loan Expectations for MSG/Sch Recipients

What size work/loan expectations are implied by the current rules used to determine the amount of the MSG/Sch award? A few simple examples will be used to clarify how these amounts are calculated, then a table will be introduced that more thoroughly describes the relationships among budget level, family contribution, and implied work/loan expectation.

Let's begin with two students, both attending the University of Minnesota (Minneapolis). The budget used by the Higher Education Coordinating Board for determining amounts of MSG/Sch awards in the 1977-78 school year for a University of Minnesota student living in a university dormitory was \$2,895. Suppose the estimated family contributions and the BEOG awards these students are eligible for are as shown below. Using this information, both the amount of the MSG/Sch and the implied work/loan expectation can be calculated.

	UM Student A	UM Student B
1) Budget	\$ 2,895	\$ 2,895
2) Estimated Family Contribution	0	600
3) BEOG	1,400	800
4) Need (1-2)	2,895	2,295
5) MSG/Sch	771	921
6) Implied Work/Loan Expectation (1-2-3-5)	724	574

*Without a summer savings expectation, since subtraction of an estimated family contribution with a summer savings expectation would underestimate the amount of the total implied work/loan expectation.

Student A, who attends the University of Minnesota, faces a zero estimated parental contribution, so his need is determined to be \$2,895 - 0 = \$2,895. Half of this is \$1,448, an amount which exceeds the maximum \$1100 grant. Therefore, \$1100 would be the amount of MSG/Sch Student A would receive if the sum of the MSG/Sch and BEOG he was eligible for did not exceed 75% of need. Suppose that Student A is eligible for a \$1,400 BEOG. The sum of this, plus the \$1,100 MSG/Sch is \$2,500. Since this sum is more than 75% of \$2,895, the MSG/Sch received by the student will be \$771.

Now, in the absence of any other grant or scholarship aid going to Student A, it seems safe to assume that what the student cannot obtain from his family or from either the MSG/Sch or BEOG programs, he will have to raise through either work or loans. The implied work/loan expectation facing Student A will thus be:

$$\begin{aligned} \text{Implied Work/Loan Expectation} &= (\text{Budget} - \text{Estimated Family Contribution}) \\ &\quad - \text{MSG/Sch} - \text{BEOG} \\ &= \$2,895 - \$0 - \$771 - \$1,400 \\ &= \$724 \end{aligned}$$

Student A will have to raise \$724 on his own through either work or loans.

Consider next Student B who also faces a \$2,895 budget. Since his estimated family contribution is \$600, his need will be \$2,895 - \$600 = \$2,295. Half of this is \$1,143 an amount which exceeds the maximum \$1,100 grant. Therefore, \$1,100 would be the amount of his MSG/Sch if he was not eligible for a BEOG. But, he is eligible for an \$800 BEOG; and, since the sum of the BEOG and the MSG/Sch may not exceed 75% of need (in this case, 75% of \$2,295 = \$1,721), the MSG/Sch will only be \$921 (i.e., \$1,721 - \$800 = \$921). The implied work/loan expectation for this student will be:

$$\begin{aligned} \text{Implied Work/Loan Expectation} &= (\text{Budget} - \text{Estimated Family Contribution}) \\ &\quad - \text{MSG/Sch} - \text{BEOG} \\ &= \$2,895 - \$600 - \$921 - \$800 \\ &= \$574 \end{aligned}$$

Student B will have to, in the absence of any other grant aid, raise \$574 on his own through either work or loans.

Table 1 provides several more estimates of implied work/loan expectations for students facing different levels of budgets and various sizes of estimated family contribution. This table, in particular, calculates implied work/loan expectations facing MSG/Sch recipients under the current BEOG and MSG/Sch coordination strategy. These observations may be made about the relationships seen in this Table:

- For students at any of the lower levels of budget (\$2800 or lower), the implied work/loan expectation in general * is greater for the grant recipient with the smaller estimated family contribution than for the grant recipient coming from the more affluent family.
- For any of the higher level budgets (\$3500 or higher), the implied work/loan expectation is constant over much of the range of family contributions, but does show a decrease in that part of the table representing recipients from the most affluent families. The reasons the work/loan expectations for these budgets is constant over a large part of the family contribution range are due to the facts that a) most of these students are receiving the maximum MSG/Sch award, and b) the BEOG award formula works in such a way that a one dollar increase in estimated family contribution yields a one dollar decrease in the BEOG. (It should be noted here that proposals to raise the maximum MSG/Sch award amount, while keeping the current MSG/Sch and BEOG coordination policy will change the relationship between family contribution and implied work/loan expectations for the "lower" high levels of budget. The relationship would no longer be one of a constant implied work/loan expectation over much of the family contribution range, but rather the inverse relationship described above).
- For a particular level of estimated family contribution, there is a positive relationship between the implied work/loan expectation and the budget faced by the student.

* Some exceptions to this general rule may be observed for the \$2400 and \$2800 budgets. For the former budget, the current MSG/Sch and BEOG coordination rules will yield a work/loan expectation that steadily decreases over the \$0 -1000 range of family contribution, increases slightly between \$1100 -1500 and then decreases. The same basic trend is seen for the \$2800 budget.

These observations suggest three policy questions:

- If, for a given level of budget, the implied work/loan expectation facing a grant recipient with \$0 estimated family contribution is \$X, should the implied work/loan expectation for a grant recipient with a larger family contribution be less than \$X? The qualification that this question is being asked only about the work/loan expectations of grant recipients is very important and must be kept in mind constantly by readers. The question would be ridiculous if applied to all students across the whole range of possible family contributions because some estimated family contributions will be larger than the budget, implying no work/loan expectation and no grant.
- For a given level of family contribution, is it appropriate that there be a positive relationship between the size of the budget faced by the student and the implied work/loan expectation? Is such a relationship appropriate if the actual costs of producing the education are nearly the same for all institutions but student budgets vary only because of differences in government policies regarding institutional subsidies? Would this relationship be appropriate if differences among budgets in fact truly reflected differences among institutions in the cost of producing the education? Does this policy provide incentives for students to choose institutions that are low priced, but not necessarily low cost? Are such incentives good?
- Given the great range of implied work/loan expectations shown in the table (from \$75 to 3000), one is led to ask: "What is an appropriate or tolerable level of work/loan expectation? How can one decide what is appropriate or tolerable?"

While this summary will not dwell on reasons why the formulas used to determine grant awards yield the results noted in observations 1 and 2, it will later suggest changes in the formulas that could be made if policy makers' answers to questions 1-3 suggest that continuation of the current policy is not appropriate.

2) Incentives on Institutions to Raise Charges

One might suggest that any student subsidy formula that includes tuition charges, and makes the amount of the subsidy a positive function of those charges will create an incentive for institutions to raise tuition. This possibility certainly should not be discounted in analyzing a subsidy

Table 1: Implied Work/Loan Expectations Facing Minnesota Grant/Scholarship Recipients Who Receive BEOGs*

Budget Faced By Student	Estimated Family Contribution															
	\$ 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	2000	
\$1500	\$ 375	350	325	300	275	250	225	200	175	150	125	100	75		-	
\$2000	\$ 500	475	450	425	400	375	350	325	300	275	250	225	200		-	
\$2400	\$ 600	575	550	525	500	475	450	425	400	375	350	350	400		200	
\$2800	\$ 700	675	650	625	600	575	550	525	500	475	500	550	600		400	
\$3500	\$1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000		750	
\$4000	\$1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500		1000	
\$4500	\$2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500		1400	
\$5000	\$3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000		1900	

*Assumes that: 1) BEOG = 1400 - Estimated Family Contribution
 2) MSG + BEOG will not exceed 75% of need
 3) MSG will not exceed 50% of need
 4) MSG will not exceed \$1100

formula. However, a blanket statement that such incentives will obtain for all institutions whose students are eligible to receive the MSG/Sch is not appropriate. More specifically, these incentives will not exist for public institutions because tuition charges in public post-secondary systems in Minnesota are treated as a deduct from the systems' expenditure authorizations that emerge from the appropriations process. Thus, we need focus only on private institutions.

Table 2 provides information which is useful in discussing the formula incentives for raising tuition. This table shows how the amount of the MSG/Sch varies for several different levels of family contribution and for four different budgets representative of the range of budgets in Minnesota's private post-secondary institutions. Observe how the spread of maximum awards increases with progressively higher budgets. One may surmise from this observation that, given the maximum of \$1100 placed on the grant award, an incentive for an institution at budget level X to raise tuition will exist only if a substantial number of its students have estimated family contributions that currently yield less than the maximum award. For instance, for an institution at which the student budget is \$4,500, there will be an incentive to raise tuition if a substantial number of students have family contributions greater than \$2,300*.

Table 3 shows the distribution of MSG/Sch recipients attending Minnesota private colleges in 1976-77 by estimated family contribution and institutional cost category. It focuses just on students who are financially dependent on their parents, single, and full-time students for nine months. The distribution of students within each of the three cost categories is seen to be just about the same. An interesting observation from this information is that only about 11% of the sample from all three cost categories have estimated family contributions equal to or greater than \$1,950. Relating this back to the information in Table 2, one might conclude that the incentive to further raise tuition will not be very great if the current \$1,100 maximum is maintained, since 89% of the recipients are already receiving the maximum award. This does not, however, suggest that an incentive to raise these charges was not more significant in the early years of the program.

Table 2: Minnesota Grants/Scholarships by Budget and Family Contribution Assuming No Eligibility for a BEOG

Budget	Estimated Family Contribution										
	\$ 0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000
\$3500	1100	1100	1100	1000	750	500	250	0	0	0	0
\$4000	1100	1100	1100	1100	1000	750	500	250	0	0	0
\$4500	1100	1100	1100	1100	1100	1000	750	500	250	0	0
\$5000	1100	1100	1100	1100	1100	1100	1000	750	500	250	0

*Assume there are at a hypothetical institution with a \$4,500 budget a lot of students with \$2,500, \$3,000, and \$3,500 estimated family contributions. If the institution raises the budget to \$5,000, grant recipients with the \$2,500 family contribution would in fact pay 80% of the \$500 increase, while the grant recipients with the \$3,000 and \$3,500 family contributions would pay only 50% of the increase.

Table 3 : Distribution of Minnesota Grant/Scholarship Recipients*
Attending Private Colleges in 1976-77 by Estimated
Family Contribution and Cost Category

Estimated Family Contribution	Budget Categories						Total	
	\$3,795 - 4,075		\$4,250 - 4,590		\$5,100 - 5,300			
	N	%	N	%	N	%		
\$ 0 - 449	912	35%	866	39%	131	41%	1909	37%
450 - 949	557	21%	511	23%	57	18%	1125	22%
950 - 1449	541	21%	370	17%	56	17%	967	19%
1450 - 1949	297	11%	236	11%	28	9%	561	11%
1950 - 2449	122	5%	92	4%	17	5%	231	4%
2450 - 2949	111	4%	128	6%	16	5%	255	5%
2950 +	76	3%	30	1%	16	5%	122	2%
Total	2616	100%	2233	101%	321	100%	5170	100%

* Includes only those recipients who were dependent on their parents, single, and full-time students for 9 months.

How might these future incentives be eliminated? A possibility is suggested by the table. Policy could mandate that tuition above a certain level, say \$X, simply be recognized as only \$X. The level, X, could be set at the average per student direct and indirect instructional costs of educating a student in a public post-secondary system (or unit thereof) with a similar educational mission*. Need would be determined using this amount as a tuition base, and the responsibility of meeting any need resulting from an institution's charges to students being greater than this amount would rest with the institution**.

* Direct and indirect instructional costs per full-time equivalent student in various systems or units-within-systems for FY77 were estimated to be:

System or Unit	Sum of Direct and Indirect Costs
AVTIs (1)	\$ 2,803
Community Colleges (2)	1,825
State University System (2)	2,100
UM-Morris (3)	2,931
UM-Undergrad Liberal Arts (Twin Cities) (3)	2,112

- Sources: 1. 1979-81 Biennial Budget, Area Vocational-Technical Institutes (with estimate of state contribution for retirement)
2. "A Review of Tuition Alternatives for Minnesota Post-Secondary Education: A Staff Technical Paper- Appendix", MHECB, June 8, 1978, pp. 16-17.
3. Management Planning and Information Services, University of Minnesota

** Such an approach would also help assure against the possibility of a student at a private institution being subsidized more heavily from public funds than a student in a similar-mission public institution.

III. What Is An Appropriate Amount of Work/Loan Expectation?

This section will discuss two methods that policy-makers could use to decide what amount of work/loan expectation is appropriate. After policy-makers decide what this amount should be, they could use that amount as an assessment criterion for evaluating the extent to which the current array of state and federal subsidy programs is resulting in reasonable work/loan expectations being placed on students.

Daniere* suggests two methods for deciding the amount of the work/loan expectation. One method, which will be called the "hours of work" method, would focus on the number of hours of outside work a student could tolerate without adversely affecting his school performance. Students of financial aid policy have been interested in this question for a long time. The research they have produced in attempting to find an answer (see Appendix A for an annotated bibliography) suggests that a student's working up to 15 hours a week during the time he is enrolled in a full-time program has no adverse effect on his academic performance. In fact, some research even suggests that such work could be beneficial insofar as it forces a student to more carefully budget his time (Augsburger, p. 30-39).

If 15 hours of work a week during the time a student is enrolled full-time is accepted as reasonable, translation to a dollar amount may be made after specifying an expected wage rate. For instance, using the 1978 federal minimum wage rate of \$2.65/hour at 15 hours a week for 48 weeks translates into:
 $(\$2.65/\text{hour}) \times (15 \text{ hours/week}) \times (48 \text{ weeks/year}) = \$1,908.00$ before taxes. After non-refundable taxes are subtracted, this amount is reduced to approximately \$1,793. The dollar implications of other wage, hour and week assumptions are shown in Table 4.

A second method that could be used for deciding an appropriate or tolerable amount of work/loan expectation might combine information on monthly loan repayments with information on the expected earnings of graduates. The task of policy makers would be to decide what a tolerable monthly loan repayment would be for a student whose expected monthly earnings after graduation will be \$X. Once the policy maker has decided this he can use information like that in Table 5 to determine the amount of a loan that can be purchased with those monthly payments. This table shows the

* Daniere, Andre, "The Benefits and Costs of Alternative Federal Programs of Financial Aid to College Students", in The Economics and Financing of Higher Education in the United States, Joint Economic Committee of Congress, U.S. Government Printing Office, Washington, 1969, pp. 556-698.

Table 4: Income Under Various Wage, Hour, and Week Assumptions

Hours-Weeks Combinations	Hourly Wage Assumptions											
	\$2.00/Hour		\$2.15/Hour		\$2.30/Hour		\$2.65/Hour		\$2.75/Hour		\$3.00/Hour	
	Before Taxes	After Taxes*	Before Taxes	After Taxes*	Before Taxes	After Taxes*	Before Taxes	After Taxes*	Before Taxes	After Taxes*	Before Taxes	After Taxes*
1. 15 hours/week for 48 weeks (= 720 hours)	1,440.00	1,352.88	1,548.00	1,454.35	1,656.00	1,555.81	1,908.00	1,792.57	1,980.00	1,860.21	2,160.00	2,025.30
2. 15 hours/week for 36 weeks and 40 hours/week for 12 weeks (=1020 hours)	2,040.00	1,916.58	2,193.00	2,060.32	2,346.00	2,195.07	2,703.00	2,516.47	2,805.00	2,635.30	3,060.00	2,818.07
3. 12 hours/week for 48 weeks (=576 hours)	1,152.00	1,082.30	1,238.40	1,163.48	1,324.80	1,244.65	1,526.40	1,341.70	1,584.00	1,488.17	1,728.00	1,623.40
4. 12 hours/week for 36 weeks (=432 hours)	1,824.00	1,713.65	1,960.80	1,842.17	2,097.60	1,969.70	2,416.80	2,257.58	2,508.00	2,356.27	2,736.00	2,547.47
5. 10 hours/week for 48 weeks (=480 hours)	960.00	401.92	1,032.00	969.56	1,104.00	1,037.21	1,272.00	1,195.04	1,320.00	1,240.14	1,440.00	1,352.20
6. 10 hours/week for 36 weeks and 40 hours/week for 12 weeks (=840 hours)	1,680.00	1,578.36	1,806.00	1,696.74	1,932.00	1,815.11	2,226.00	2,085.33	2,310.00	2,170.25	2,520.00	2,351.57

*Taxes were computed using: 1) FICA Contribution of 6.05%
2) 1977 Tax Table for Federal Income Tax, Single Person with adjustments for personal credits
3) 1977 Tax Table for Federal Income Tax, Single Person, 1 exemption

Table 5: Monthly Repayments for Various Repayment Periods and Program Lengths*

Amount Borrowed Each Year of Program	Five Year Repayment				Eight Year Repayment				Ten Year Repayment			
	One Year	Two Year	Four Year	Program	One Year	Two Year	Four Year	Program	One Year	Two Year	Four Year	Program
	\$	\$	\$		\$	\$	\$		\$	\$	\$	
\$1,000	19.81	39.62	79.24		13.64	27.28	54.56		11.62	23.64	46.48	
1,200	23.77	47.54	95.09		16.37	32.74	65.47		13.94	28.37	55.78	
1,300	29.72	59.43	118.86		20.46	40.92	81.84		17.43	35.46	69.72	
1,600	35.66	71.32	142.63		24.55	49.10	98.21		20.92	42.55	83.66	
2,000	39.62	79.24	158.48		27.28	54.56	109.12		23.24	47.28	92.96	

* Repayment estimates based on interest and time guidelines used by Minnesota State Loan Program.

monthly repayments required for various amounts borrowed by the student during each year of his program. The monthly repayments are shown under an assumed 7% simple interest rate for three repayment periods - five years, eight years, and ten years. As an example of how use of the second method might proceed, consider the information in Table 6 which provides estimates of monthly starting salaries of baccalaureate graduates by field. One observes from this table that the lowest average monthly salary, \$950, is found among liberal arts graduates. Understanding that these are just averages, one may in reaching a decision, prefer to use a smaller value than this average, say an estimate of the monthly salary exceeded by 90% of the liberal arts graduates. Suppose this is \$800. For a monthly starting salary of this size, the decision maker might reason that a monthly loan repayment of \$50 for 10 years would not be unreasonable or intollerable. As one can see from Table 5, under the rules governing the current Minnesota State Loan Program, this size monthly repayment would purchase a loan of approximately \$1100 a year for a four year program. This amount, \$1100, could therefore be set as the amount of the work/loan expectation built into the subsidy award formula.

In setting the amount of the work/loan expectation, policy-makers would not have to choose only the first method or the second method. They could use a combination of the two that would yield separate work and loan expectations. However, whatever combination is chosen should be accompanied with some recognition that additional bonding authority for the loan program or additional funding of work-study opportunities for students attending institutions in communities with few part-time private sector job opportunities may be necessary. It is, though, the opinion of Department of Finance staff that HECB's proposed increase in the bonding authority for the State Loan Program would probably be adequate to cover any increased draw on that program resulting from implementation of any of the alternatives proposed later in this paper.

IV. What Size Work/Loan Expectations Do MSG/Sch Recipients Face?

In thinking about the specific problems suggested by the three questions that emerged from analysis of the award formula used by the MSG/Sch program, the reader must keep in mind that the distribution of subsidies to students in Minnesota is by far much more complex. It is made more complex by the existence of several other state, federal and institutional grant aid programs. The biggest of these is the Federal

Table 6
Estimated Monthly Starting Salaries of Baccalaureate Graduates by Field,
1976-1978 (Endicott Survey)

	Computer Science	Engineering	Accounting	Sales	General Business	Other Business	Liberal Arts	Chemistry	Mathematics Statistics	Economics- Finance
1976	-	1165	1033	943	852	985	835	1032	994	887
1977	1099	1303	1088	1007	963	1123	917	1174	1063	952
1978	1180	1390	1122	1053	1004	1154	950	1225	1136	1006

Basic Education Opportunity Grant Program. But, in addition, nearly every institution has some grant aid available for distribution to students at its discretion. In many cases this includes only money from the federal Supplemental Educational Opportunity Grant Program; but, in the case of the University of Minnesota, it also includes a special appropriation from the state legislature for a tuition grant program. For the private colleges, funds are available from the Private College Contract Program (though use of these is not restricted to student financial aids operations) as well as numerous private endowments. Other federal and state grant programs also have been established for minorities, nurses, veterans, etc.

MSG/Sch recipients do receive grant aid from these other sources. If grant aid from all sources going to MSG/Sch recipients is considered, what will be the size of the resulting implied work/loan expectations faced by those students and what will be the relationship between the implied work/loan expectations and estimated family contribution?

The preceding section described two methods that could be used by policy makers to decide what a tolerable amount of work/loan expectation is. This section will use the "hours of work" method to establish a criterion for assessing whether the current array of subsidy programs is resulting in "reasonable" implied work/loan expectations for MSG/Sch recipients. To determine the position of MSG/Sch recipients relative to this criterion, information will then be presented describing the estimated* size of the implied work/loan expectations that would have faced MSG/Sch recipients in 1976-77 if the 1977-78 coordination strategy had been in effect then. In addition, this section will examine the relationship between the implied work/loan expectations and estimated family contribution.

A. Assessment Criterion

Since, as noted earlier, research by financial aid officers is in general agreement that up to 15 hours of work a week has no significant adverse effect on a student's scholastic performance, fifteen hours will be accepted

as a reasonable and tolerable weekly commitment to expect of students. From Table 4 one observes that a 1976-77 student who worked an average of 15 hours a week for 48 weeks at an hourly wage between \$2.15 and \$2.75** would have realized an after tax income ranging from approximately \$1,450 to \$1,850 a year.

*The estimates of implied work/loan expectations presented in this section are based on data gathered during the Fall of 1977 by the Department of Finance. The data consisted of information on the components of the aid package of nearly 5,600 financially needy students in 95 Minnesota institutions of postsecondary education during the 1976-77 school year.

**The federal minimum wage in 1976 was \$2.20/hour; \$2.30/hour in 1977; and \$2.65/hour in 1978.

B. The Position of MSG/Sch Recipients Relative to the Assessment Criterion

How many MSG/Sch recipients are facing yearly work/loan expectations in the \$1450-1850 range? Before presenting information that will answer this question, some observations about the complexity of estimating expected family contributions and student budgets are in order.

1. Estimates of Family Contribution

The estimates of expected family contribution used in the analysis that follows are based on a methodology jointly derived by the American College Testing Service (ACTS) and the College Entrance Examination Board (CEEB). This system, in brief, uses information on a family's income and assets, taxes, parent's age, number of children, and any unusual-unescapable expenses (like medical bills) to assess the family's financial ability to contribute to a student's education. Considering all these matters in deriving an estimate of family contribution seems to be fair and just. But, the process of taking each of these bits of information on an individual family and entering them into a system which outputs a number called "an estimated family contribution" is an exceedingly complicated process that some families will claim is not "fair" for their individual circumstances. While this paper will not include an exhaustive discussion of the methods ACTS or CEEB use in deriving family contribution estimates, suffice it to say now that the process is based on both value judgments about how families should allocate their resources and on rigorously conducted studies of how families have traditionally actually allocated those resources. It is a process that, for better or worse, tends to be geared to the average family at each different level of financial strength. Given this, one could reasonably expect that half the families will probably complain that the expectations are too high, while the other half will accept the estimates as reasonable or too small. For the purposes of public policy, the latter group is not a problem. The former group, however, is a problem and should probably be divided into two subgroups: 1) those who have legitimate reasons for complaining; and 2) those who could afford the contribution but place less value on education than on some nonessential

item of expenditure. Changes in the needs analysis system that could make it more equitable for those in the first subgroup should be examined. But, how to satisfy the second subgroup, while at the same time maintaining in the system commitment to certain traditional values is indeed perplexing.

For the analysis that follows, it will be assumed that the estimates of family contribution that emerge from the ACTS-CEEB needs analysis system are, for the average family at any particular level of estimated contribution, realistic estimates of what a family can in fact contribute. For families who either cannot contribute these amounts or do not want to, this paper can only point out that the analytic scheme proposed here-in suggests basing an assessment criterion only on the amount that could be earned from a reasonable number of hours of work. It does not propose basing the size of the assessment criterion on both 1) the amount that could be earned from a reasonable number of hours of work and 2) an amount which if borrowed would yield loan repayments that are reasonable in relation to the student's post-graduation expected income. This was purposely done so as to provide some flexibility for those students whose parents contributed less than the estimated amount and who would thus likely have to rely on both work and loans in order to meet their college expenses.

2. Estimates of Student Budgets

Currently, the budgets used by the Higher Education Coordinating Board in determining the size of grant awards include the following items:

- a. Tuition and fees;
- b. A miscellaneous expense allowance of \$400; and
- c. For students who are living in college or university housing, the amount of the room and board charges; or for students who are not living in college or university housing, a room and board allowance of \$1,100.

Some financial aids officers and HECB staff have indicated to the author of this paper the opinion that both the off-campus room and board allowance and the miscellaneous expense allowance used by HECB are too small.

With regard to the level of the miscellaneous expense allowance, figures from the CEEB indicate that the average miscellaneous expense allowance for the 1978-79 school year was around \$800*. However, it should be pointed out that this average was not computed for a fixed "market-basket" of expense items considered minimally necessary for student maintenance. Policy makers, therefore, should be cautious in accepting this figure as an estimate of minimal student needs for these expenses and should, in arriving at the amount of this allowance, not simply focus on what average student expenditures in this category are. Instead, they should first decide what minimum "market basket" of services or items should comprise this category, then estimate their costs. Such an endeavor is not, however, considered to be within the scope of this paper. So, the approach used below will be to present analyses with three alternative levels of miscellaneous expense allowance: 1) the current \$400 allowance; 2) CEEB's estimate of the national average, \$800, and 3) a value between these two, \$600.

Estimates of room and board allowances for off-campus students in the analysis that follows were derived in the following manner:

- a. For students attending institutions with dormitories, the room and board allowance for all students was set equal to the dormitory room and board charges; and
- b. For students attending institutions without student housing, the room and board allowance was set equal to the approximate average dormitory room and board charge for those institutions having dormitories. This was about \$1,300 for the 1976-77 school year and will be about \$1,400 for the 1978-79 school year.

3. Implied Work/Loan Expectations Facing MSG/Sch Recipients

Having discussed two caveats significant in any consideration of implied work/loan expectations, the paper will now address the main question of this section, that is, "how many MSG/Sch recipients are facing implied work/loan expectations less than or greater than the previously derived assessment criterion range of \$1450 to \$1850 a year?

Table 7 shows the estimated distribution of implied work/loan expectations that would have faced MSG/Sch recipients in 1976-77 if the 1977-78 award formula had been in effect then. Recall that implied work/loan expectation is defined as:

$$\text{Implied W/L Expec} = \text{Budget} - \text{F.C.} - \text{Total Grant Aid}$$

*Information obtained from telephone conversation with staff of Washington Office of CEEB.

Estimates of the distribution of implied work/loan expectations are presented by system under three alternative assumptions about the level of the miscellaneous expense allowance. The distribution is shown for three size categories of implied work/loan expectations: 1) less than \$1,451; 2) \$1,451 to \$1,850; and 3) greater than or equal to \$1,851.

Now, what does the information in Table 7 tell us. To make the discussion brief, attention will be given only to the distribution implied by the high level of budget (i.e., that with an \$800 miscellaneous expense allowance). This appears on Table 7 under the heading "Low Budget Plus \$400**.

The information in this table suggests that if the 1977-78 coordination strategy had been in effect in 1976-77:

- 1) 91.3% of the MSG/Sch recipients in the State's Community Colleges would have faced work/loan expectations smaller than the established assessment criterion. 7% would have faced "appropriate" levels of work/loan expectation; and about 1.7% may have faced work/loan expectations that were too large relative to the assessment criterion.
- 2) for the State Universities, 93.5% of the MSG/Sch recipients would have faced work/loan expectations smaller than the established assessment criterion; 4.4% would have faced "appropriate" levels of work/loan expectation and about 2.1% would have faced work/loan expectations that were too large relative to the assessment criterion.
- 3) for the University of Minnesota, 72.4% of the MSG/Sch recipients would have faced work/loan expectations smaller than the established assessment criterion; 17.4% would have faced "appropriate" levels of work/loan expectation; and about 10.2% would have faced work/loan expectations that were too large relative to the assessment criterion.

**The actual values of the low budget are shown at the top of the column each system, just below the system name.

Table 7: Estimated Distribution of Implied Work/Loan Expectations of MSG/Sch Recipients* by Institution Under Alternative Budget Assumptions

Implied Work/Loan Expectations	Community Colleges Low Bud. = \$2200	State Universities Low Bud. = \$7100	University of Minnesota Low Bud. = \$7200	AVTIs (9 months) Low Bud. = \$1700	Private Low Cost Low Bud. = \$4000	Colleges and Universities	
						Medium Low Bud. = \$4400	High Cost Low Bud. = \$5500
Under Low Budget							
< \$1451	98.3%	97.9%	89.8%	100.0%	63.2%	50.0%	41.8%
1451-1850	1.7%	2.1%	7.8%	0.0%	27.2%	27.4%	28.3%
≥ 1851	0.0%	0.0%	2.4%	0.0%	9.6%	22.6%	29.9%
Under Low Budget + \$200							
< \$1451	96.6%	94.5%	84.7%	99.3%	47.9%	34.8%	19.1%
1451-1850	3.0%	5.5%	12.3%	.7%	29.9%	27.7%	40.6%
≥ 1851	.4%	0.0%	3.0%	0.0%	22.2%	37.5%	40.3%
Under Low Budget + \$400							
< \$1451	91.3%	93.5%	72.4%	97.7%	39.3%	22.4%	15.4%
1451-1850	7.0%	4.4%	17.4%	2.3%	23.9%	27.6%	26.4%
≥ 1851	1.7%	2.1%	10.2%	0.0%	36.8%	50.0%	58.2%

*These estimates are estimates of what the 1976-77 distribution would have been if the 1977-78 coordination strategy had been in effect then. The sample on which these estimates are based includes only MSG/Sch recipients who were financially dependent on their parents and full-time students for 9 months.

- 4) for the Area Vocational-Technical Institutes, 97.7% of the MSG/Sch recipients would have faced work/loan expectations smaller than the established assessment criterion; 2.3% would have faced "appropriate" levels of work/loan expectation; and none would have faced work/loan expectations that were too large relative to the assessment criterion.
- 5) for low cost private colleges and universities, 39.3% of the MSG/Sch recipients would have faced work/loan expectations smaller than the established assessment criterion; 23.9% would have faced "appropriate" levels of work/loan expectations; and 36.8% would have faced work/loan expectations that were too large relative to the assessment criterion.
- 6) for medium cost private colleges and universities, 22.4% of the MSG/Sch recipients would have faced work/loan expectations smaller than the established assessment criterion; 27.6% would have faced "appropriate" levels of work/loan expectation; and 50.0% would have faced work/loan expectations that were too large relative to the assessment criterion.
- 7) for high cost private colleges and universities, 15.4% of the MSG/Sch recipients would have faced work/loan expectations smaller than the assessment criterion; 26.4% would have faced "appropriate" levels of work/loan expectations; and 58.2% would have faced work/loan expectations that were too large relative to the assessment criterion.

So, in summary, what one finds from examination of Table 7 is that even under the high budget assumption a substantial proportion of MSG/Sch recipients in the publicly sponsored institutions of post-secondary education are facing work/loan expectations smaller than the assessment criterion. For MSG/Sch recipients in the private colleges and universities, the proportion facing work/loan expectations smaller than the assessment criterion is significantly less than the proportion of students in public institutions facing the same level of work/loan expectations.

C. The Relationship Between Estimated Family Contributions and Implied Work/Loan Expectation.

The preceding section provided information on the distribution of implied work/loan expectations facing all MSG/Sch recipients regardless of the level of their estimated family contribution. Table 8 provides estimates of the average implied work/loan expectations facing MSG/Sch with various levels of estimated family contribution. The numbers in this table are estimates of what the implied work/loan expectations would have been in 1976-77 if the 1977-78 coordination strategy had been in effect then. They are provided only for MSG/Sch recipients who were financially dependent on their parents and were full-time students. These recipients are grouped in the table by system of post-secondary education, year-in-school, and whether they are living in their parent's or elsewhere.

For any particular level of estimated family contribution, an estimate of the implied work/loan expectation is presented in Table 8 only if 5% or more of the students in a group are at or above that level of estimated family contribution. In addition, readers should keep in mind that all estimates presented in this table are based on the low budget assumption (i.e., a miscellaneous expense allowance of \$400). Estimates of implied work/loan expectations under the middle level budget assumption would be found by simply adding \$200 to each of the figures shown in the table. Similarly, estimates of implied work/loan expectations under the high budget assumption would be found by adding \$400 to each of the figures shown in the table.

While this paper will not discuss the information shown in this table for each group separately, it will consider one group in detail so as to clarify for the reader how the table should be interpreted.

Consider the first group of grant recipients shown in the University of Minnesota section of the table. These grant recipients are freshmen who are living in their parent's home. The sampling and weighting procedures used in analyzing the data yield an estimate of 800 grant recipients in this group for those branches of the University of Minnesota returning useable information. For this group of grant recipients:

- 1) those with estimated family contributions of \$0 faced a work/loan expectation of \$1,159 under the low budget assumption*;
- 2) those with estimated family contributions of \$500 faced a work/loan expectation of \$1,034 under the low budget assumption*;
- 3) those with estimated family contribution of \$1,000 faced a work/loan expectation of \$909 under the low budget assumption*; and
- 4) those with estimated family contributions of \$1,500 faced a work/loan expectation of \$784 under the low budget assumption*.

Readers interested in any other specific category of students should refer to the table. The following general observations, though, apply to most of the groups of students shown in the table:

- 1) After considering grant aid from all sources going to MSG/Sch recipients, the implied work/loan expectation is found to be greater for the grant recipient with the smaller estimated family contribution.
- 2) For a particular level of family contribution, there is a positive relation between the implied work/loan expectation and the budget faced by the student.
- 3) There is no consistent relationship between implied work/loan expectation and either year-in-school or living arrangements.

*The low budget assumption uses a \$400 miscellaneous expense allowance. Under the middle level budget assumption, which uses a \$600 miscellaneous expense allowance, the implied work/loan expectation would be \$200 greater. Under the high level budget assumption, which uses an \$800 miscellaneous expense allowance, the implied work/loan expectation would be \$400 greater.

Table 8 : Estimated Implied Work/Loan Expectations by Family Contributions, Year-In-School, Living Arrangements, And Systems

Minnesota Grant/Scholarship Recipients
Number of Dependents = 1;
Dependent on Parents; Full-Time

Weighted Size = N →	Family Contribution	University of Minnesota Budget = \$2,700 Nine Months									State Universities Budget = \$2100 Nine Months									Community Colleges Budget = \$1995 Nine Months				
		Fresh	Fresh	Soph	Soph	Jun	Jun	Sen	Sen		Fresh	Fresh	Soph	Soph	Jun	Jun	Sen	Sen		Fresh	Fresh	Soph	Soph	
		PH*	NPH**	PH	NPH	PH	NPH	PH	NPH		PH	NPH	PH	NPH	PH	NPH	PH	NPH		PH	NPH	PH	NPH	
		300	1093	-	443	-	504	-	-		95	853	-	422	-	270	-	101		789	510	229	199	
\$ 0		1159	1151		1169		978			1124	722		524		698		377		649	549	513	577		
500		1034	961		1034		858			824	597		529		458		397		509	544	448	422		
1000		909	771		899		738			524	472		534		218		417		369	539	383	267		
1500		784	581		764		618																	

N →	Family Contribution	Private Colleges Ave. Budget = \$3,928 Low Cost (\$3705-4075) Nine Months								Private Colleges Ave. Budge = \$4,419 Middle Cost (\$4250-4590) Nine Months								Private Colleges Ave. Budget = \$5,100 High Cost (\$5100-5300) Nine months									
		Fresh	Fresh	Soph	Soph	Jun	Jun	Sen	Sen		Fresh	Fresh	Soph	Soph	Jun	Jun	Sen	Sen		Fresh	Fresh	Soph	Soph	Jun	Jun	Sen	Sen
		PH	NPH	PH	NPH	PH	NPH	PH	NPH		PH	NPH	PH	NPH	PH	NPH	PH	NPH		PH	NPH	PH	NPH	PH	NPH	PH	NPH
		365	1051	112	290	65	382	52	288		78	822	-	363	77	475	-	373		-	114	-	61	-	77	-	52
\$ 0		1541	1653	1070	1476	1892	1341	1645	1623		1902	1788		1759	2464	1745		1760		1831		1987		1915		1975	
500		1321	1398	985	1121	1562	1171	1395	1393		1637	1578		1539	1924	1590		1710		1671		1787		1875		1778	
1000		1101	1143	900	766	1232	1001	1145	1163		1372	1368		1319	1384	1435		1660		1511		1587		1835		1578	
1500		881	888	815	411	902	831	895	933		1107	1158		1099	844	1280		1610		1351		1387		1795		1378	
2000		661	663				661	645	703		842	948		879	304					1191		1187		1755		1178	
3000		221																		871							

N →	Family Contribution	Area Vocational Technical Ave. Budget = \$1700 Institutes Nine Months				Area Vocational Technical Ave. Budget = \$1900 Institutes Ten Months				Area Vocational Technical Ave. Budget = \$2100 Institutes Eleven Months			
		1yr	1yr	2yr	2yr	1yr	1yr	2yr	2yr	1yr	1yr	2yr	2yr
		PH	NPH	PH	NPH	PH	NPH	PH	NPH	PH	NPH	PH	NPH
		212	406	-	61	149	261			89	185		
\$ 0		568	567		537	949	744			929	901		
500		503	425		299	693	634			844	931		

* PH = Parent's Home
**NPH = Not Parent's Home

VI. The Costs/Savings From Alternative Grant Award Formulas for the MSG/Sch Program

In the preceding analysis, three basic problems were discussed:

- 1) Work/loan expectations for grant recipients with higher estimated family contributions were smaller than the work/loan expectations of grant recipients with lower estimated family contributions.
- 2) Many MSG/Sch recipients in both public and private institutions were facing work/loan expectations that were too low relative to an objectively derived assessment criterion.
- 3) The formulas would, in the past, have provided built-in incentives for private institutions to raise their charges. Such incentives are probably not present now for the MSG/Sch program because the size of the maximum award has not changed since the beginning of the program. But if this maximum is raised, an incentive to raise charges above normal inflationary increases would be present.

The purpose of this section is to present alternative award formulas for the MSG/Sch program that would eliminate these problems. Each alternative will be briefly described and an estimate of its cost will be presented. In the discussion that follows, emphasis will only be on the total costs implied by each alternative. Readers who are specifically interested in how any particular post-secondary system fares under each alternative should refer to Table 10 for this information. Proprietary and health-hospital schools are excluded from the analysis because of inadequate data. The cost figures apply only to the University of Minnesota, the State universities, the Community Colleges, the AVTIs and the private colleges.

A. Alternative Grant Award Policies

This section will provide estimates* of the costs of several alternative grant award policies in F.Y. 78. For each alternative, two cost estimates will be given. One will estimate the cost of the alternative with subtraction from the student's budget of the total amount of the payment made to private colleges under the Private College Contract program for

*These estimates were developed from a sample of MSG/Sch recipients and not all 77-78 act recipients. Therefore, the estimates provided of costs should be viewed only as rough approximations.

MSG/Sch recipients. The other will estimate the cost of the alternative without any reduction in the grant of a student attending an institution eligible to participate in the Private College Contract program (PCC).

1) Alternative 1

Alternative 1 is the formula used in FY78. The dollar amounts shown for this alternative are the preliminary dollars awarded in fiscal year 1978 for the Minnesota State Scholarship Program, the State Grant Program, and the Private College Contract Program payments made for MSG/Sch recipients. The costs for these programs for the five systems shown on the table was \$21,447,472 in F.Y. 78 (of which \$1,885,232 was for Private College Contract Program payments made for MSG/Sch recipients).

2) Alternative 2

In alternative 2, the amount of the award is based only on tuition and fee charges. Specifically, the amount of the award would be determined by subtracting both the estimated family contributions and the amount of the BEOG from tuition and fees. Living expenses and miscellaneous expenses are not included in the budgets used to determine the amount of this award, so, in effect, these expenses represent the work/loan expectation. Not including these expenses could be justified since examination of the estimates of living expenses used by HECB for resident students* shows that they are very similar in amount to many of the work/loan expectations derived by the "Hours of work" method.

Three variations on this general award formula are presented in Table 10. One would set no upper limit on the tuition and fees recognized by the grant award system. The total F.Y. 78 cost of this option for the five post-secondary systems considered would have been approximately \$8.2 million less than the F.Y. 78 commitments for both the current MSG/Sch program and the Private College Contract Program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$6.3 million less than the F.Y. 78 commitments for both programs.

*Dormitory room and board charges ranged between \$1,100 and \$1,650 per year in the 1977-78 school year. So, these charges, plus a miscellaneous expense allowance between \$400 - \$600 would yield an estimate of living expenses ranging between \$1,500 and \$2,250.

TABLE 10 - SIMULATED COSTS OF ALTERNATIVE GRANT AWARD FORMULAS

Description of Award Formula	Community Colleges	State Universities	University of Minnesota	AMT's	S U M S F O R T H E F I V E S Y S T E M S											
					Private Colleges and Universities			No Limit on Tuition and Fees			\$2,000 Limit on Tuition and Fees			\$2,400 Limit on Tuition and Fees		
					No Limit on TAF	\$2,000 Limit on TAF	\$2,400 Limit on TAF	Total	Freed Resources with PCC Coord.	Freed Resources w/o PCC Coord.	Total	Freed Resources with PCC Coord.	Freed Resources w/o PCC Coord.	Total	Freed Resources with PCC Coord.	Freed Resources w/o PCC Coord.
1. 1977-78 Formula (Plus Private College Grants for Private)	1,482,145	3,682,380	4,111,740	1,496,375	8,789,600 for MSG/Sch 1,881,232 PCC for MSG/Sch recipients 10,674,832 Total			21,447,472								
2. A-Tuition/Fees -FC-BECC	103,750	220,943	904,583	89,783	11,953,836	7,383,264	10,020,144	13,272,915	8,174,557	6,289,325	8,702,323	12,745,149	10,859,917	11,339,203	10,104,269	4,223,037
3. A-EUD -FC-BECC -1500	222,322	257,767	1,932,518	194,529	12,657,024	8,086,432	10,811,208	15,264,160	6,183,268	4,298,080	10,693,568	10,753,904	8,868,904	13,418,344	8,029,128	6,143,896
4. A-EUD -FC-BECC -1700	107,750	110,471	1,274,639	89,783	10,987,000	6,504,304	9,141,164	12,569,643	8,877,829	6,992,597	8,086,947	13,360,525	11,475,293	10,723,827	10,723,645	8,856,413
5. A-EUD -FC-BECC -SH1	533,372	441,886	2,837,101	718,260	13,360,192	8,701,704	11,426,480	17,891,011	3,556,461	1,671,229	13,232,523	8,214,949	6,329,717	15,957,299	3,460,173	5,604,941
6. A-EUD -FC-BECC -SH2	311,250	257,767	2,261,457	344,266	12,393,336	7,822,744	10,547,320	15,567,976	5,879,496	3,994,264	10,997,384	10,450,088	6,564,856	13,722,160	7,725,312	5,840,080
7. A-EUD -FC-BECC -1500+200	429,822	552,357	2,754,866	418,985	14,327,048	9,668,560	12,393,336	18,463,078	2,964,394	1,079,162	13,824,590	7,622,882	5,737,650	16,549,366	4,898,104	3,012,874
8. A-EUD -FC-BECC -1700+200	222,322	257,767	1,932,518	194,529	12,657,024	8,086,432	10,811,208	15,264,160	6,183,312	4,298,080	10,693,568	10,753,904	8,868,672	13,418,344	8,029,128	6,143,896
9. A-EUD -FC-BECC -SH1+200	889,287	920,595	3,741,683	1,361,701	15,030,216	10,283,832	13,096,504	21,943,482	(496,010)	(2,381,242)	17,197,098	4,250,374	2,365,142	20,069,770	1,437,702	(447,500)
10. A-EUD -FC-BECC -SH2+200	563,215	552,357	3,083,805	748,188	14,063,360	9,404,872	12,129,648	19,010,925	2,436,547	551,315	14,352,437	7,095,035	5,209,803	17,077,213	4,370,259	2,485,027
11. A-EUD -FC-BECC -1500+400	770,713	1,067,490	3,659,449	1,002,571	15,997,072	11,230,688	14,063,360	22,497,697	(1,050,223)	(2,935,457)	17,751,313	3,696,159	1,810,927	20,563,985	843,487	(1,001,740)
12. A-EUD -FC-BECC -1700+400	429,822	552,357	2,754,866	423,949	14,327,048	9,668,560	12,393,336	18,498,042	2,949,430	1,064,198	13,839,554	7,607,918	5,722,686	16,564,330	4,898,104	2,957,910
13. A-EUD -FC-BECC -SH1+400	1,323,931	1,457,071	4,728,301	2,064,998	16,700,240	11,952,856	14,766,528	26,484,741	(5,037,269)	(6,922,501)	21,738,357	(290,665)	(2,176,117)	24,551,029	(3,103,357)	(4,982,786)
14. A-EUD -FC-BECC -SH2+400	953,751	1,104,714	3,988,388	1,391,629	15,821,280	11,074,896	13,887,568	23,259,762	(1,792,200)	(3,477,322)	18,401,378	2,936,094	1,070,862	21,304,050	143,422	(1,741,410)

The second variation would place an upper limit of \$2,000 on the amount of tuition and fees that would be allowed in the award formula. The total F.Y. 78 cost of this alternative would have been approximately \$12.7 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$10.9 million less than the F.Y. 78 commitment for both programs.

The third variation would place an upper limit of \$2,400 on the amount of tuition and fees allowed in the award formula. The total F.Y. 78 cost of this alternative would have been approximately \$10.1 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the Private College Contract program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$8.2 million less than the F.Y. 78 commitment for both programs.

3) Alternatives 3-14

Alternatives 3-14, unlike the preceding award scheme, provide for inclusion of living expenses in the grant determination formula. Fixed absolute dollar work/loan expectations are also built into these alternatives.

The room and board allowances used in these alternatives were set at the dormitory charges for institutions having dormitories. This applied to all students regardless of whether or not they were living in dormitories. For institutions not having dormitories (i.e. AVTIs and community colleges), room and board allowances were set at the average of room and board charges for institutions with dormitories. This was approximately \$1,300 for 1976-77, \$200 greater than the HECB or BEOG room and board allowance for these students in the 1976-77 or 1978-79 school years.

In addition to the room and board allowance, all of these alternatives assume a miscellaneous expense allowance of at least \$400. Some alternatives assume only \$400 for these expenses, while others assume \$600, and still others assume \$800. The specific assumption for each alternative will be described in the discussion of each alternative.

In general, the amount of the award for all of these alternatives is the difference between: 1) a budget composed of tuition and fees, room and board, and a miscellaneous expense allowance; and 2) the sum of the estimated family contribution, the BEOG, and a work/loan expectation. Symbolically, the amount of the award could be expressed as:
Award = Budget - (Family Contribution + BEOG + Work/Loan Expectation)
or

Award = Budget - Family Contribution - BEOG - Work/Loan Expectation.

A. Alternative 3

This alternative assumes a \$400 miscellaneous expense allowance. It also assumes a \$1,500 yearly work/loan expectation for every grant recipient.

- 1) With no upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$6.2 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$4.3 million less than the commitment for both.
- 2) With a \$2,000 upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$10.8 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$8.9 million less than the commitment for both.
- 3) With a \$2,400 upper limit on the amount of tuition and fees, the F.Y. 78 cost of this alternative would have been approximately \$8.0 million less than the F.Y. 78 commitment for both the MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$6.1 million less than the commitment for both.

B. Alternative 4

This alternative assumes a \$400 miscellaneous expense allowance. It also assumes a \$1,700 yearly work/loan expectation for every grant recipient.

- 1) With no upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have

been approximately \$8.9 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$7.0 million less than the commitment for both.

- 2) With a \$2,000 upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$13.4 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$11.5 million less than the commitment for both.
- 3) With a \$2,400 upper limit on the amount of tuition and fees, the F.Y. 78 cost of this alternative would have been approximately \$10.7 million less than the F.Y. 78 commitment for both the MSG/Sch and PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$8.8 million less than the commitment for both.

C. Alternative 5

This alternative assumes a \$400 miscellaneous expense allowance, but the amount of the yearly work/loan expectation varies with the students' year in school. The yearly work/loan expectation for a first year student is \$1,200; for a second year student, it is \$1,400; and for juniors and seniors, it is \$1,700.

- 1) With no upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$3.6 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$1.7 million less than the commitment for both.
- 2) With a \$2,000 upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$8.2 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$6.3 million less than the commitment for both.

- 3) With a \$2,400 upper limit on the amount of tuition and fees allowed in the formula, the F.Y. 78 cost of this alternative would have been approximately \$5.5 million less than the F.Y. 78 commitment for both the MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$3.6 million less than the commitment for both.

D. Alternative 6

This alternative assumes a \$400 miscellaneous expense allowance and work/loan expectations that vary with the students' year in school. But, the amounts of the work/loan expectations are greater than those in alternative 5. For this option, the work/loan expectation for a first year student is \$1,400; for a second year student it is \$1,500; and, for juniors and seniors it is \$1,700.

- 1) With no upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$5.9 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$4.0 million less than the commitment for both.
- 2) With a \$2,000 upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$10.4 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$8.6 million less than the commitment for both.
- 3) With a \$2,400 upper limit on the amount of tuition and fees allowed in the formula, the F.Y. 78 cost of this alternative would have been approximately \$7.7 million less than the F.Y. 78 commitment for both the MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$5.8 million less than the commitment for both.

E. Alternative 7

This alternative assumes a \$600 miscellaneous expense allowance and

a \$1,500 yearly work/loan expectation for every grant recipient.

- 1) With no upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$3.0 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$1.1 million less than the commitment for both.
- 2) With a \$2,000 upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$7.6 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$5.7 million less than the commitment for both.
- 3) With a \$2,400 upper limit on the amount of tuition and fees allowed in the formula, the F.Y. 78 cost of this alternative would have been approximately \$4.9 million less than the F.Y. 78 commitment for both the MSG/Sch program and the PCC program payments for MSG/Sch recipient. Without coordination with the PCC program, the cost would have been \$3.0 million less than the commitment for both.

F. Alternative 8

This alternative assumes a \$600 miscellaneous expense allowance and a \$1,700 yearly work/loan expectation for every grant recipient.

- 1) With no upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$6.2 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$4.3 million less than the commitment for both.
- 2) With a \$2,000 upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$10.8 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$8.9 million less than the commitment for both.

- 3) With a \$2,400 upper limit on the amount of tuition and fees allowed in the formula, the F.Y. 78 cost of this alternative would have been approximately 8.0 million less than F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$6.1 million less than the commitment for both.

G. Alternative 9

This alternative assumes a \$600 miscellaneous expense allowance and work/loan expectations that vary with the students' year in school. The yearly work/loan expectation for a first year student is \$1,200; for a second year student, it is \$1,400; and for juniors and seniors, it is \$1,700.

- 1) With no upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$496,010 more than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$2.4 million more than the commitment for both.
- 2) With a \$2,000 upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$4.3 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$2.4 million less than the commitment for both.
- 3) With a \$2,400 upper limit on the amount of tuition and fees allowed in the formula, the F.Y. 78 cost of this alternative would have been approximately \$1.4 million less than the F.Y. 78 commitment for both the MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$447,500 more than the commitment for both.

H. Alternative 10

This alternative assumes a \$600 miscellaneous expense allowance and work/loan expectations that vary with the student's year in school.

but the amounts of the expectations are greater than those in alternative 9 for first and second year students. The yearly work/loan expectation for a first-year student is \$1,400; for a second year student, it is \$1,500; and for juniors and seniors it is \$1,700.

- 1) With no upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$2.4 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$551,315 less than the commitment for both.
- 2) With a \$2,000 upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$7.1 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payment for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$5.2 million less than the commitment for both.
- 3) With a \$2,400 upper limit on the amount of tuition and fees allowed in the formula, the F.Y. 78 cost of this alternative would have been approximately \$4.4 million less than the F.Y. 78 commitment for both the MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$2.5 million less than the commitment for both.

I. Alternative 11

This alternative assumes an \$800 miscellaneous expense allowance and a \$1,500 yearly work/loan expectation for every grant recipient.

- 1) With no upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$1.1 million more than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$2.9 million more than the commitment for both.
- 2) With a \$2,000 upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would

have been approximately \$3.7 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$1.8 million less than the commitment for both.

- 3) With a \$2,400 upper limit on the amount of tuition and fees allowed in the formula, the F.Y. 78 cost of this alternative would have been approximately \$883,487 less than the F.Y. 78 commitment for both the MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$1.0 million more than the commitment for both.

J. Alternative 12

This alternative assumes an \$800 miscellaneous expense allowance and a \$1,700 yearly work/loan expectation for every grant recipient.

- 1) With no upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$2.9 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$1.1 million less than the commitment for both.
- 2) With a \$2,000 upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$7.6 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$5.7 million less than the commitment for both.
- 3) With a \$2,400 upper limit on the amount of tuition and fees allowed in the formula, the F.Y. 78 cost of this alternative would have been approximately \$4.9 million less than the F.Y. 78 commitment for both the MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$3.0 million less than the commitment for both.

K. Alternative 13

This alternative assumes an \$800 miscellaneous expense allowance and

work/loan expectations that vary with the student's year in school. The yearly work/loan expectation for a first year student is \$1,200; for a second year student, it is \$1,400; and for junior and seniors, it is \$1,700.

- 1) With no upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$5.0 million more than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$6.9 million more than the commitment for both.
- 2) With a \$2,000 upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$290,000 more than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC Program, the cost would have been \$2.2 million more than the commitment for both.
- 3) With a \$2,400 upper limit on the amount of tuition and fees allowed in the formula, the F.Y. 78 cost of this alternative would have been approximately \$3.1 million more than F.Y. 78 commitment for both the MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$5.0 million more than the commitment for both.

L Alternative-14

This alternative assumes an \$800 miscellaneous expense allowance and work/loan expectations that vary with the student's year in school, but the amounts of the expectations are greater than those in alternative 13 for first and second year students. The work/loan expectation for a first year student is \$1,400; for a second year student, it is \$1,500 and for juniors and seniors, it is \$1,700.

- 1) With no upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$1.8 million more than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$3.7 million more than the commitment for both.

- 2) With a \$2,000 upper limit on the amount of tuition and fees allowed in the award formula, the F.Y. 78 cost of this alternative would have been approximately \$3.0 million less than the F.Y. 78 commitment for both the current MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$1.1 million less than the commitment for both.
- 3) With a \$2,400 upper limit on the amount of tuition and fees allowed in the formula, the F.Y. 78 cost of this alternative would have been approximately \$143,000 less than the F.Y. 78 commitment for both the MSG/Sch program and the PCC program payments for MSG/Sch recipients. Without coordination with the PCC program, the cost would have been \$1.7 million more than the commitment for both.

B. Anticipated Criticism

In general, all of the alternatives described above are designed so that grant recipients in the same year of school face the same reasonable or tolerable absolute dollar work/loan expectation regardless of the level of their families' estimated contribution. Critics of this approach will likely focus their arguments on at least two issues: 1) the effects of the policy on access and choice; and 2) adverse incentives on families to not save.

1. Effects on Access and Choice

Since any discussion of the role of work or loans versus grant aid in meeting the financial needs of students inevitably hinges on the beliefs held by policy makers about student access or choice, it seems appropriate to focus on these concepts in greater depth.

[REDACTED]

The goal of access is said to be achieved if an education policy provides any qualified student the option of attending at least one institution of post-secondary education. The goal of providing students with choice is a little more complicated in that the attempt is to give students the option of attending one of at least two (usually differentially priced) institutions or systems. Discussion of both

goals usually emphasizes that societal realization of both goals requires that "financial constraints... within the limits of available resources (should be) minimized" *.

The requirement that "financial constraints ... be minimized... within the limits of available resources" seems laudatory. But; such vaguely stated requirements do not provide much help in deciding what amounts of work/loan expectations could be built into an award formula without creating intollerable burdens for the student or sacrificing other traditional values (like the self-help ethic which recognizes the importance to both the student and society of a student's making some reasonable personal sacrifices to attain his goals)

Some economists have tried to move away from this vagueness by building econometric models that purportedly can help policy makers decide what amount of subsidy is needed for various income-ability groups in order to increase their post-secondary participation rates. Such approaches have two general weaknesses:

- A) Nearly all of them may be severely faulted on both conceptual and methodological grounds: 1) They too often focus only on economic variables, ignoring certain attitudinal or value factors that can be highly significant in explaining a student's matriculation decision. Failure to take account of these other factors is likely to result in estimates of the effect of subsidies on student attendance that are biased; 2) Their results are too often interpreted to imply that a \$100 change in the subsidy amount will have the same impact on entrance rates in a system where a student faces a high budget as in a system where the student faces a low budget; and; 3) They have generally not looked at the relation between net charges (with financial aids) and attendance;
- B) Even if the methodological problems cited above could be overcome, such econometric approaches would be incapable of dealing with such issues as:
 - the importance policy makers may attach to maintenance of a traditional value, like self-help; or
 - the question of what amount of subsidies, which are paid for in part by taxes on those in society who have low incomes, should be

provided to finance the education of students whose incomes after completion of their education will be higher than some of the taxpayers who helped finance their education.

In point of fact, though some may claim some alternatives suggested above may lower the participation rates of some groups of students, we know of no soundly designed studies that provide evidence suggesting with any reasonable degree of accuracy that this will happen. But, even if participation rates could be known in advance to be reduced even though work/loan expectations were set at tolerable amounts, policy makers would have to, in their own minds: 1) weigh the consequences of this reduction against the consequences of sacrificing certain traditional values; or 2) consider whether the change in participation rates is a reflection of the worth attached by the student to the education. Most of the alternatives above implicitly suggest movement toward more operationally defined notions of access and choice. These definitions would embody the ideas that: any capable student will be able to enroll in any post-secondary institution that will admit him if he is willing to assume a tolerable or reasonable work/loan burden.

2. Adverse Incentives for Family Savings Behavior

Some might argue that an award formula of the general type proposed would "provide an incentive for the family to be profligate since the total amount of the estimated family contribution is counted as an offset to the grant" or that such a policy "penalizes, or at least does not reward, families who earn more or save their earnings."

Such statements indicate poor understanding of the financial needs analysis systems used to derive estimates of a family's expected contribution. These statements would only have meaning if the grant award system were such that the amount of the grant decreased by one dollar for an additional dollar of family income or an additional dollar of savings/assets. But, this is not what is being suggested in any of the alternatives, for the concept of estimated family contribution is not synonymous with either the concepts family income or assets/savings, separately or in some combination.

* Hyde, William Jr., "The Effect of Tuition and Financial Aid on Access and Choice in Post-Secondary Education", Education Commission of the States, Denver, 1977, mimeo.

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Estimates of family contribution are derived by applying marginal progressive "tax rates" to a family's income and assets. For the adverse incentive arguments to have much merit, these tax rates would have to be so high as to allow little or no marginal income or wealth gain per additional dollar of income or assets. Examination of these tax rates, however, reveals that they are far from such an intolerable extreme; the maximum marginal taxation rate on an additional dollar of after tax income approaches, but is always less than 45%; similarly, the maximum marginal taxation rate on assets approaches, but is always less than $(12\%) \times (47\%) = 5.64\%$.^{*} This means that for families with only the highest incomes, a one dollar increase in after tax income will imply an increase in the estimate of family contribution that comes close to, but will always be less than 47¢. Similarly, for families well endowed with assets, a one dollar increase in the amount of assets will result in an increase in the estimated family contribution that comes close to, but will always be less than 5.64¢. The individual family will thus always be able to increase its net financial strength by earning an additional dollar or saving an additional dollar.

^{*}The source of these estimates is the ACT Handbook for Financial Aid Administrators, 1976-77 Processing Year, Chapter 2, pp. 9-20.

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VII. How Will Individual Students Fare Under the Proposed Alternatives?

The preceding section presented information on the costs of various grant award policies. This section will use several hypothetical students from families of different characteristics to show how the students will be affected by those alternatives. The reader must keep in mind that the students discussed in this section are only hypothetical cases- they are not intended to be accepted as typical representatives in a strictly proportionate sense of the students actually receiving Minnesota State grants or Scholarships. If a more elaborate analysis is desired showing the distribution of relevant characteristics among those students who actually received MSG/Sch's, this analysis will have to be performed by the HECB. But, in the judgement of the author of this report, the information coming out of analysis of these hypothetical cases can be just as valuable as a more detailed statistical profile of actual recipients for the types of decisions that policy-makers will have to make.

Table 11 provides basic information used in deriving estimates of expected family contributions for each of 21 hypothetical first year students. All of the students in these examples are unmarried and financially dependent on their parents. Both parents are living, married to one another, and age 52. Other basic descriptive information on each student's family provided in the table includes:

- 1) the number of children in the family;
- 2) the number of those children in college;
- 3) the amount of the student's assets;
- 4) the amount of the parent's income;
- 5) the amount of the parent's home equity;
- 6) the net worth of the parent's farm or business; and
- 7) the amount of the parent's cash, checking, and savings accounts.

All of these items enter into determination of the estimated family contributions. These estimates are shown in the middle section of the table. They were all derived by hand using the guidelines set up by the American College Testing Service and the College Entrance Examination Board.

For each of the hypothetical first year students, the total grant award from both the BEOG and MSG/Sch programs is shown for five different MSG/Sch award formulas and for four different budget levels. The five alternative award formulas are:

- 1) the current award formula;

- 2) Formula A, which builds in a \$1500 work/loan expectation:

$$\text{MSG+BEOG} = \text{BEOG} + \text{Max} \left[\begin{array}{c} 0 \\ \text{or} \\ \text{Budget} - \text{F.C.} - \text{BEOG} - \$1500 \end{array} \right]$$

- 3) Formula B, which builds in a \$1700 work/loan expectation:

$$\text{MSG+BEOG} = \text{BEOG} + \text{Max} \left[\begin{array}{c} 0 \\ \text{or} \\ \text{Budget} - \text{F.C.} - \text{BEOG} - \$1700 \end{array} \right]$$

- 4) Formula C, which builds in a \$1200 work/loan expectation for freshmen:

$$\text{MSG+BEOG} = \text{BEOG} + \text{Max} \left[\begin{array}{c} 0 \\ \text{or} \\ \text{Budget} - \text{F.C.} - \text{BEOG} - \$1200 \end{array} \right]$$

- 5) Formula D, which builds in a \$1400 work/loan expectation for freshmen:

$$\text{MSG+BEOG} = \text{BEOG} + \text{Max} \left[\begin{array}{c} 0 \\ \text{or} \\ \text{Budget} - \text{F.C.} - \text{BEOG} - \$1400 \end{array} \right]$$

This section will focus in detail only on one student, Student 6, as an example of how Table 11 should be read and interpreted. Readers interested in any other particular case should consult the table. Suffice it to say here that in general the examples shown in the table reveal that:

1. All of the alternative formulas result in some decrease in the total amount of grant aid from MSG/Sch being received by students attending institutions with budgets less than \$3000.
2. For a private institution with a \$4400 budget, the alternative award formulas will either maintain the total award at the current level or slightly increase it for students from families with incomes less than or equal to \$20,000.
3. For families with incomes greater than \$20,000, all of the alternative award formulas would yield decreases of varying sizes in the amount of grant aid.

Now for the discussion of Student 6.

Student 6 comes from a family with 2 children, both of whom are in college. Student 6 has accumulated assets of \$500 and his parents' annual income is \$10,000. His parents' have approximately \$15,000 in home equity and \$2,500 in cash, checking and savings accounts. Under ACT needs analysis guidelines,

Student 6 will be expected to contribute during his freshmen year toward his education \$175 from his assets. His parents' will be expected to contribute \$130 from their income and assets.

If Student 6 chooses to attend an institution with a \$2000 student budget he would receive a total of about \$1271 in grant aid from both the BEOG and MSG/Sch programs under the current formula. Under alternative formulas A, B, C, and D, this amount would be decreased by \$271 to approximately \$1000. Now, the reader should be puzzled by this amount. After all, the work/loan expectations built into the alternative MSG/Sch award formulas ranged from \$1200 to \$1700 implying grant awards (after family contribution is considered) ranging from \$0 to \$495. Why is the amount of grant aid shown for this student so much higher, i.e. \$1000? The reason for this is that the \$1000 is all BEOG money. This student, if he (she) attended a \$2000 budget institution would not be receiving any MSG/Sch awards under any of the alternatives and the work/loan expectation (s)he would face would be less than those built into MSG/Sch award formula simply because the State of Minnesota has no control over the amount of BEOG (s)he receives. This same phenomenon will occur if Student 6 chooses to attend a \$2500 budget institution or a \$3000 budget institution (though for the latter, it will not occur under Formula C because this formula makes the lowest work/loan expectation of all the alternatives). But, it will not occur, if (s)he chooses to attend a private institution with a budget of \$4400. At such an institution, Student 6 would receive at least the same amount of grant aid under the alternatives as he receives under the current award formula and for formulas A, C, and D, he will receive respectively approximately \$200, \$500, and \$300 more than under the current formula.

Table 11: Impact of Alternative Formulas on Hypothetical Students

Student*	Family Characteristics					Expected Contributions					
	No. of Children in Family	No. of Children in College	Student's Assets	Parent's Income	Parent's Home Equity	Parent's Net Value of Investments and Other Real Estate	Parent's Net Worth of Farm or Business	Parent's Cash, Checkings Savings Accounts	Expected Student Contrib. from Assets	Expected Parental Contrib.	Total Expected Family Contrib.
1	1	1	\$ 300	\$ 8000		0	0	\$1000	\$105		\$ 105
2	2	1	\$ 300	\$ 8000		0	0	\$1000	\$105		\$ 105
3	2	2	\$ 300	\$ 8000		0	0	\$1000	\$105		\$ 105
4	1	1	\$ 500	\$10000	\$15000	0	0	\$2500	\$175	\$ 510	\$ 685
5	2	1	\$ 500	\$10000	\$15000	0	0	\$2500	\$175	\$ 220	\$ 395
6	2	2	\$ 500	\$10000	\$15000	0	0	\$2500	\$175	\$ 130	\$ 305
7	1	1	\$1000	\$15200	\$20000	0	0	\$2000	\$350	\$1520	\$1870
8	2	1	\$1000	\$15200	\$20000	0	0	\$2000	\$350	\$1150	\$1500
9	2	2	\$1000	\$15200	\$20000	0	0	\$2000	\$350	\$ 690	\$1040
10	1	1	\$1000	\$20500	\$25000	0	0	\$5000	\$350	\$2560	\$2910
11	2	1	\$1000	\$20500	\$25000	0	0	\$5000	\$350	\$2010	\$2360
12	2	2	\$1000	\$20500	\$25000	0	0	\$5000	\$350	\$1200	\$1550
13	1	1	\$1000	\$20500	\$25000	0	\$50000	\$5000	\$350	\$3860	\$4210
14	2	1	\$1000	\$20500	\$25000	0	\$50000	\$5000	\$350	\$3250	\$3600
15	2	2	\$1000	\$20500	\$25000	0	\$50000	\$5000	\$350	\$1950	\$2300
16	1	1	\$1000	\$25500	\$25000	0		\$5000	\$350	\$4082	\$4430
17	2	1	\$1000	\$25500	\$25000	0		\$5000	\$350	\$3480	\$3830
18	2	2	\$1000	\$25500	\$25000	0		\$5000	\$350	\$2090	\$2440
19	1	1	\$1000	\$25500	\$25000	0	\$50000	\$5000	\$350	\$5370	\$5720
20	2	1	\$1000	\$25500	\$25000	0	\$50000	\$5000	\$350	\$4780	\$5130
21	2	2	\$1000	\$25500	\$25000	0	\$50000	\$5000	\$350	\$2860	\$3210

Sum of Grant Aid From BEQ6 and MS6/Sch Under Various Formulas

Student*	Public Institutions										Private Institutions									
	\$1000 Budget					\$2500 Budget					\$3000 Budget					\$4000 Budget				
	Current Formula	Formula A	Formula B	Formula C	Formula D	Current Formula	Formula A	Formula B	Formula C	Formula D	Current Formula	Formula A	Formula B	Formula C	Formula D	Current Formula	Formula A	Formula B	Formula C	Formula D
1	1421	1000	1000	1000	1000	1796	1250	1250	1250	1250	2171	1495	1495	1695	1495	2595**	2795	2595	3095	2895
2	1421	1000	1000	1000	1000	1796	1250	1250	1250	1250	2171	1495	1495	1695	1495	2595	2795	2595	3095	2895
3	1421	1000	1000	1000	1000	1796	1250	1250	1250	1250	2171	1495	1495	1695	1495	2595	2795	2595	3095	2895
4	956	915	915	915	915	1361	915	915	915	915	1736	915	915	1115	915	2015	2215	2015	2515	2315
5	1204	1000	1000	1000	1000	1579	1205	1205	1205	1205	1954	1205	1205	1405	1205	2305	2505	2305	2805	2605
6	1271	1000	1000	1000	1000	1646	1250	1250	1250	1250	2021	1295	1295	1495	1295	2395	2595	2395	2895	2695
7	0	0	0	0	0	315	0	0	0	0	565	0	0	0	0	1100	1030	830	1330	1130
8	350	100	100	100	100	600	100	100	100	100	850	100	100	300	100	1200	1400	1200	1700	1500
9	720	560	560	560	560	1095	560	560	560	560	1470	560	560	760	560	1660	1860	1660	2160	1960
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	745	-	-	290	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1020	540	340	840	640
12	275	50	50	50	50	525	50	50	50	50	775	50	50	250	50	1150	1350	1150	1650	1450
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	400	0	0	0	0
15	0	0	0	0	0	100	0	0	0	0	350	0	0	0	0	1050	600	400	900	700
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	285	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	280	0	0	0	0	980	460	260	760	560
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	595	0	0	0	0

*All Students in these examples are unmarried and financially dependent on their parents.
Both parents are assumed to be living and both are assumed to be the age 52.

**Does not include PGC award to institutions.

Appendix A

A Summary of Research on the Relation of Student Work and Academic Performance

1. Trueblood, D. L., "Effects of employment on academic achievement", Personnel and Guidance Journal, 1957, 36, 112-5.

Major findings: Part-time employment had no positive or negative effect upon the academic performance of students at Indiana University. It was not possible to establish a relationship between the maximum number of hours worked per week and the maintenance of a given grade point average.

2. Hay, J. E., "How part-time work affects academic performance", Journal of College Placement, 1969, 29(4), 104.

Major findings: Academic performance of Pennsylvania State University (University Campus) students who worked 15 hours per week or less was not adversely affected. If, however, the job involved sixteen or more hours per week, grades tended to suffer. The study also found that the academic performance of students working in a job relevant to his major field of study was higher than the academic performance of students working on an unrelated job.

3. Henry, J. E., "Part time employment and academic performance of freshmen", Journal of College Student Personnel, 1967, 8, 257-60.

Major findings: No significant differences in the academic performance of working and non-working freshmen at the University of Missouri-Columbia at any ability level. Study concluded that freshmen who need financial assistance could be employed part-time up to 15 hours per week without sacrificing academic achievement.

4. Budd, W. C., "The effect of outside employment on initial academic adjustment in college", College and University, 1956, 31, 221-3.

Major findings: Study found no significant relationship between employment and academic adjustment of entering freshmen at Western Washington College. The study concluded that employment outside of college class hours should not, in general, be an academic handicap.

5. MacGregor, A., "Part-time work - good or bad?" Journal of College Placement, 1956, 26(3), 127-32.

Major findings: This study focused on the opinions of Brooklyn College undergraduates about the effect of work on their academic performance. Approximately 25% of the working students believed that their grade point had been lowered because of participation in part-time work. On the other hand seventy-five percent of the working students felt that employment had not adversely influenced their academic performance. The study also found that 50% of the students who did not work as undergraduates made this choice because they believed that part-time employment would interfere with their academic or co-curricular work.

6. Baker, H. B., "The working student and his grades", Journal of Educational Research, 1941, 35, 28-35.

Major findings: The academic performance of students at Friends University was not adversely affected if employment did not exceed 27 hours a week. Academic performance did, however, suffer for those students working more than 27 hours per week.

7. Augsburg, J. D., "An Analysis of Academic Performance of Working and Non-Working Students on Academic Probation at Northern Illinois University", Journal of Student Financial Aid, 1974, 35(2) 30-39.

Major findings: No significant difference was found to exist between students not employed, students employed on-campus, and students employed off-campus on the basis of their grade point averages. It was, however, found that a students' grades may suffer if he attempts to work more than 20 hours per week regularly. Additionally the study found that among students on academic probation, those who worked 20 hours or less, whether on-campus or off-campus, achieved higher grades than those students who were not employed.

8. Barnes, John D. and Roland Keene, "A comparison of the limited academic achievement of freshmen award winners who work and those who do not work", The Journal of Student Financial Aid, 1974 4(3), 25-29.

Major findings: Part-time work in an on-campus job does not interfere with the initial academic adjustment of students at that institution.

9. Gaston, Margaret, "A study of the effects of college-imposed work-study programs on grade point averages of selected students at Western Washington State College", Journal of Student Financial Aid, 1973 3(1), 19-26.

Major findings: Students who worked part time performed as well as students who were not required to work part time.