

The Effect of Large-Scale Merit Scholarships on State Sponsored Need-based Aid¹

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ABSTRACT

Since the 1990's states have implemented large merit-based scholarships at unprecedented levels. These programs have been criticized because they may be particularly detrimental to low-income and minority students. A frequently cited criticism is that the large scale merit-based state scholarships directly crowd out and reduce state funding on need-based scholarship. To identify this relationship we utilize state-level panel data from 1988 to 2003 on higher education finance. We include state and year fixed effects that control for unobserved differences across states and time. The results indicate that states that institute merit programs are not systematically different from non-adopting states with respect to need aid. Furthermore, states that adopt large-scale merit aid programs experience no economically or statistically significant reduction in need aid funding. Even disaggregating the merit programs into those that have dedicated and general funding sources still provides no evidence that large-scale merit programs reduce need aid. The recent decrease in need aid reflects a secular reduction in need aid that affects merit and non merit states similarly, rather than a result of the rapid growth of merit programs.

1. Introduction

During the 1960s and 1970s, state aid for college students was based largely on student need. Generally, a student could qualify for aid only if his family income was below a designated threshold. Need-based aid is designed to assist those who face financial barriers to higher education, especially minority students who disproportionately tend to be families with lower income and wealth. According to NASSGAP's most recent annual report on state sponsored financial aid, need-based grants still represents 68% of total undergraduate aid expenditures.

However, since the 1990s large scale merit-based scholarship programs have expanded rapidly, the most prominent of which is Georgia's HOPE Scholarship, which by 2005, had awarded \$2.7 billion to over 850,000 students. By 2003, thirteen additional states adopted such large scale merit programs. In contrast to need aid, the purpose of merit aid is to induce high quality students to enroll in a specific institution or set of institutions. Although low-income students receive merit aid, academic achievement is highly correlated with family income and wealth, and therefore, merit aid is distributed disproportionately to middle and upper income students. [CITE?]

This unprecedented growth of merit scholarships has generated concern that funds may be diverted from need-based aid, and consequently, that low-income students will be made worse off in terms of both access and choice. Marin (2002, p. 113) claims that "because of the definitions of 'merit' employed, as well as the logistics of these programs, many of the students who have the greatest financial need are passed over, effectively increasing existing disparities in college participation for minority and low-income students." Heller (2003, p. 21) asserts that large-scale merit-based programs "are

likely to exacerbate existing gaps in college participation, causing poor and minority students to fall further behind their wealthier and white peers”. The substitution of merit for need aid ultimately results in “crowd[ing] out students who would have had a shot” (Kronholz 2003), and may be exacerbated because the value of the largest form of need-based aid, the federal Pell grant, has not kept track with inflation (Li 1999). Among critics it is obvious that new merit programs must reduce need aid. Kirwan (2004) asserts that “aid based only on merit is now crowding out funding for meritorious students who have real need for scholarships.” These distributional concerns are further heightened because many of the large state merit programs are funded through lotteries, which are disproportionately played by lower-income families (Cornwell and Mustard 2004).

Critics contend that starting a large scale state merit program will reduce need aid because financial aid is scarce, and merit-based aid will crowd out need-based aid. The state legislature may treat the two different types of aid as substitutes, in which case need-based aid will be reduced to provide for the more politically popular merit-based scholarship. This process could reflect an explicit reduction in need aid to fund merit aid, or it could be more subtle. Given the vast growth in merit-based aid, need-based aid may simply be less politically attractive and its growth may be reduced as a consequence of new merit programs. This concern is particularly acute because there is a perception that in recent years states have become increasingly budget constrained.

However, the claim that merit-based aid harms the needy is not unanimous. Being low-income does not directly disqualify a student from earning a merit award, and need-based scholarships are generally added to merit-based aid for which the student is already

eligible.² Singell et al. (2006), which uses panel data on Pell awards to examine the influence of the HOPE Program on enrollment of financially needy students contends that the program improves the college access of such students and that Pell students are not crowded out of the most selective schools. Moreover, most states with large merit programs have not eliminated their need-based scholarships; many have increased them.

There are at least two reasons why merit and need funding may be unrelated in a given state. First, in some states large increases in need-based aid may not be politically feasible, and therefore, merit aid may be the only politically viable way to increase higher education funding. Therefore, a state's realistic choice may not be between need and merit aid but between merit aid and expenditures that are not used for higher education. In this context, by increasing the total amount of financial aid available merit programs may increase opportunities for both high and low income students, instead of reducing aid for financially needy students.

Second, the revenue sources of merit and need aid may be sufficiently different and the funding of aid may be sufficiently tied to their respective revenue sources that growth in one award may have little impact on the funding of the other. Some states have secured funding for merit programs by tapping new sources of revenue rather than using general funds. In states that use video gambling revenue or lottery funds, it may be less likely that those funds would have been allocated to need-based aid had the merit-based program not been established.

If merit and need aid share a funding source, then the likelihood of substitution is higher. In these cases, the budgetary rivalry between need- and merit aid is more direct

² This was not initially true in Georgia. In the early years of HOPE students who earned both need aid and the HOPE Scholarship had their aid reduced dollar for dollar. However, students graduating from high school after 2000 could stack their merit and need awards.

because there is no new funding source dedicated specifically to merit aid. We will empirically test whether the degree of substitution between need and merit differs by source of funding.

In spite of the substantial amount of concern expressed by academics and policy makers that large scale merit programs reduce need aid, there has been no empirical estimate of this relationship. This paper is the first and only paper to examine how establishing a large state merit program affects that state's commitment to need aid.

To identify this relationship we utilize state-level panel data from 1988 to 2003 on higher education finance. We include state and year fixed effects that control for unobserved differences across states and time. The results indicate that states that institute merit programs are not systematically different from non-adopting states with respect to need aid. Furthermore, states that adopt large-scale merit aid programs experience no reduction in need aid funding. There is no statistically significant difference in need aid for three years before and after the merit program is passed.

Section 2 provides some trends in merit and need aid and reviews which states adopted large scale merit programs. Section 3 discusses the data and empirical strategies we use. Section 4 presents the results and Section 5 concludes.

2. Merit Aid Programs

2.1 The Hope Scholarship

In 1993 Georgia created the HOPE Scholarship that pays for public-college tuition, mandatory fees, and a book allowance for any student graduating from a Georgia high school with a 3.0 grade point average, and continues paying as long as the student maintains that same average in college. There is no income cap.³ The scholarship also provides a \$3,000 voucher towards tuition at a private in-state university for students meeting this criterion.

This program remains the largest such program in the country, and is the main example for other states seeking to adopt similar programs. There are three stated purposes of the HOPE scholarship and its imitators. The first is to increase access to college by giving students an opportunity to attend college who would otherwise not be able to do so. Although students with significant financial need can and do benefit from such programs, they are not necessarily the primary target of this aid since merit aid tends to be awarded primarily to students from non-minority, middle class families (Heller 2001, p. 18). The second purpose is to affect college choice by retaining the brightest and most promising students in state. The third is to promote and reward academic achievement.

2.2 Large State-based Merit-based Scholarships

Although there are many state merit programs we focus our attention on those we designate as “large-scale”. These large-scale programs have grown quickly in the last fifteen years, allocate a substantial amount of dollars to higher education, and are the focus of the contention that state merit programs reduce need aid. Cornwell, Leidner, and

³ When it was passed in 1993, the scholarship had a family income cap of \$66,000. Due to the exceptional success of the lottery and growing political pressure, the cap was increased to \$100,000 in 1994. The following year the income cap was removed.

Mustard (2006) establish three criteria to identify large scale or HOPE-like programs. Fourteen states meet these criteria. The first criterion is that anyone eligible for the award who applies is guaranteed to receive it. Second, there must not be a cap on number of students who receive the award in any year. Last, aid must be available over a number of years, as long as eligibility requirements are maintained. This last criterion excludes one-time grants, like the Michigan Merit Award. The programs that meet these guidelines are University of Alaska Scholars Program (first awarded in 1999), Arkansas Academic Challenge (1991), Florida Bright Futures (1997), Georgia Helping Outstanding Pupils Educationally (HOPE, 1993), Kentucky Educational Excellence Scholarship (KEES, 1999), Louisiana Tuition Opportunity Program for Students (TOPS, 1998), Maryland HOPE (2000), Mississippi Resident Tuition Assistance Grant (2000), Nevada Millennium Scholarship (2000), New Mexico Lottery Success Scholarship (LSS, 1997), New Mexico Scholars Award (1997), South Carolina (LIFE, 1998), Tennessee (HOPE, 2004), Washington Promise (1999)⁴, and the West Virginia Providing Real Opportunities for Maximizing In-state Student Excellence (PROMISE, 2002).

Figure 1 plots the relationship between the number of states with HOPE-like programs and need aid awarded per full-time equivalent (FTE) student, which increased 381.8% between 1988 and 2003. Although need aid per FTE grew dramatically during this period, its growth was fastest when merit aid programs experienced little growth, and grew much more slowly when merit programs expanded quickly. Between 1988 and 1996 when the number of large state merit programs went from 0 to 3, need aid grew 269%. In contrast, between 1997 and 2002 when the number of large scale programs

⁴ Washington recently eliminated its PROMISE Scholarship.

increased from 5 to 13, FTE need aid grew only 20.5%. These types of trends have led people to infer that large merit programs suppress need aid.

3. Empirical Strategy

To identify this relationship we utilize state-level panel data from 1988 to 2003 on higher education finance.

3.1 The Data

The National Association of State Student Grant and Aid Programs (NASSGAP) provided data on state-funded expenditures on post-secondary student financial aid. These data range from 1988 until 2003 for every state and Washington D.C., and provide information on the number of full-time-enrolled (FTE) students, the amount of grant money per FTE student, the amount of need-based aid per FTE student, total expenditure on higher education, and the total expenditure on grants. These data differentiate between need-based aid, which has an income cap, and non-need-based aid, where income is not a determinant in the distribution of the aid. The non-need-based aid category includes merit-based aid, but also includes many types of aid that are based on neither income nor merit.⁵ Non-need aid is broader than merit aid and includes all aid that is allocated without family income as a criterion.⁶ The Bureau of Economic Analysis, a division of the U.S. Department of Commerce, provided data on per capita personal income, and the

⁵ Unfortunately, NASSGAP reports merit aid as a separate category only for the last few years of our sample.

⁶ The HOPE Grant, which is an entitlement for non-degree programs and is targeted towards low-income students, is an example of non-need-aid that is not merit aid.

Bureau of Labor Statistics provided data on the demographics characteristics of the workforce, unemployment, and the Consumer Price Index.

We combine these variables with the McLendon-Hearn (2003) data set that includes state data on political, demographic, and higher education characteristics. Political variables include political control of the governorship, house, and senate. In addition, we used measures of government ideology (Berry et al., 2001). Because party principles have greater variance at the state than national level, this uniform measure of ideology may capture more subtle political preferences in a state. We also included public and private enrollment figures from the National Center for Education Statistics Digest of Education Statistics and the Southern Regional Education Board. Table 1 provides the summary statistics for the data.

3.2 The Empirical Model

To determine the effect merit-based programs have on need-based aid, we use a fixed effects regression controlling for various time varying state characteristics. The basic model specification is

$$Y_{it} = \beta \cdot merit_{it} + \alpha' X_{it} + \delta_1 T_t + \delta_2 S_i + \varepsilon_{it} \quad (1)$$

Y_{it} , the dependent variable, is defined as the amount of need-based aid awarded per full-time-enrolled student by state i in year t adjusted for inflation. NASSGAP provides these data, and CPI deflators from the Bureau of Labor Statistics are used to normalize them in real 2003 dollars. The presence of a merit-based program is determined by the Cornwell, Leidner, and Mustard (2006) criteria and is coded to begin in the first year of funding in each respective state. The coefficient estimate β on the merit variable is

interpreted as the average effect of the law after it is adopted. It tests whether the dependent variable is lower on average after the implementation of the law than before, controlling for various factors. X_{it} designates a vector of control variables specific to each state i for each time period t . Included are real per capita income, the political variables specifying Democratic control of the executive and legislative houses of each state (where applicable), and a measure of government and citizen ideology. We also include state (S_i) and year (T_t) fixed effects that control for unobserved differences across states and time, respectively. We allow correlation within states over time to obtain, robust standard errors.

3.3 Endogeneity

To properly identify the effect of merit programs on need aid the states that adopt merit programs cannot be systematically different in need aid compared to non-adopting states. If there is a pattern in the level or change in need-based funding among these states before the programs are implemented, then these states may be fundamentally different, and other states cannot serve as valid controls. If true, endogeneity would then be a direct concern, because our dependent variable affect the merit variable that we treat as exogenous. We pursue two strategies to formally test for potential endogeneity. First, we regress FTE need aid on the start of a merit program and a set of control variables that includes three lead and three year lags on the merit start variable. Because each year is measured separately, there is no implied imposition of a specific trend model. The second strategy is to use a reverse regression, which measures the effect of the level of need-

based aid on the presence of a merit program. The results from both of these strategies are shown later and indicate that endogeneity is not a concern.

4. Results

4.1 Base Regression

Column 1 of Table 2 presents the basic regression estimates from Equation (1). The result in the first row indicates that a merit aid program reduces need-based aid per full-time-enrolled student by \$3.14, an estimate with a T-statistic of 0.14. This result is neither economically nor statistically significant. As expected, an increase of \$1,000 in real per capita income is associated with an increase in need aid per FTE student of \$24.65. The year fixed effects start off positive and are largest (\$15.71) in 1989. However, over time there is a substantial and nearly monotonic decrease in the magnitude of the coefficient estimates until -\$297.94 in 2002. These estimates on the time fixed effects help reconcile the inferences that need aid has been decreasing or growing more slowly while merit programs grow rapidly (see Figure 1) and the regression results in this table that show no such effect. The year fixed effects indicate that there is a secular reduction in need aid that affects merit and non-merit states similarly.

Column 2 of Table 1 reports the results for the same model except that year fixed effects are omitted, and shows that the existence of a merit program reduces FTE need aid by \$27.45. However, even when the time effects are eliminated the effect of merit aid is still imprecisely estimated with a T-stat of only 1.2, and is therefore, not

statistically significant. For every thousand-dollar increase in real per capita income, need-based aid increases by \$9.64 per FTE student.

4.2 Endogeneity

To test whether these results are biased by endogeneity we compare the level of need-based grant funding per FTE student the year before each state began its merit-based program. Table 3 shows that the states that adopted HOPE-like merit programs exhibit no pattern in the amount or rank of need aid they distribute. To put these numbers in perspective, the state's rank relative to other states' funding that year is included. In terms of FTE need-based aid the year before the state implemented its program, states that implemented merit programs ranged between tenth (Florida) and thirty-seventh (Georgia). These numbers suggest that states that implemented merit-based programs were neither particularly generous nor especially miserly with need aid.

To test this more formally Table 4 reports the results of a regression of FTE need aid on a set of three-year merit leads and lags. The coefficient estimates imply that three years before states implemented merit aid programs, they awarded \$13.67 more of need aid than states that did not adopt such a program. The corresponding estimates for the second and first-year leads are \$6.76 and \$3.90, respectively. In the first two years after the large-scale merit program starts these states award \$15.25 and \$12.77 less than non-adopting states, and award \$9.25 more than non-adopting states in the third year after implementation. None of the effect sizes are precisely estimated—the largest T-stat among the six leads and lags is only 0.70. These results are consistent with those from Table 2 that show relatively small effect sizes and no measures of statistical significance.

To further test whether endogeneity biases our results we regress the probability of a state adopting a merit aid program on many control variables, including the real need-aid per FTE. The coefficient estimate for on the need-aid variable (not reported in a separate table) has a T-statistic of only 1.07, which is not nearly statistically significant.

In sum, each of these tests indicates that states that adopt merit aid programs are not systematically different in terms of the amount of need-aid per FTE that they award. Therefore, the adoption of the large-scale merit programs can be taken to be exogenous.

4.3 Results by Funding Type

Table 3 lists the states that adopted large-scale merit programs and their corresponding funding sources. Seven of the states fund their awards through legalized gambling in the form of either lottery or video gambling. Funding differences may affect the degree to which state legislatures could substitute need and merit dollars. If the merit program's funding is drawn from a dedicated source separated from that of the rest of the education budget and, specifically, the source of need-based aid, adopting a new merit program may have little impact on the allocation of need aid. However, when merit programs are funded from a general source, then merit-based aid and need-based aid are more likely to face similar budget constraints and it may be easier to substitute one for the other. To test this hypothesis we estimate the model separately for the states with programs drawing from dedicated sources (such as lottery and gambling) and for states that do not have a dedicated source.

Column 1 of Table 5 reports the results for programs with dedicated funding sources and Column 2 provides the results for programs with general funding. The results

from both regressions are consistent with all of the earlier results. The adoption of a large-scale merit aid program has no economically or statistically significant effect on the amount of FTE need aid offered by a state—regardless of how the merit aid is funded.

4.4 Other Possible Effects

Even if merit aid does not directly reduce need aid, merit aid programs may indirectly make low-income students worse off to the extent that the programs lead to increases in tuition and fees. Typically when consumers in an industry are subsidized, firms have some scope to increase prices to gain some of the subsidy. In this case, if educational institutions substantially increase tuition and fees in response to merit programs, then some low-income students may find it more difficult to attend college. However, the ability of public colleges and universities to raise prices is more limited than what occurs in a typical market, because the Board of Regents or equivalent institutions must approve changes in tuition and fees. For example, when public institutions in Georgia want to increase tuition, the state will bear a large fraction of the increased cost because the HOPE Scholarship pays for the recipients' tuition.

Cornwell, Mustard, and Sridhar (2006) estimate HOPE's effect on 2-year public, 4-year public, and 4-year private tuition prices and found no evidence for such behavior in the public schools and only weak evidence of capitalization in privates. These results are generally consistent with those in Long (2004), who finds that private institutions responded by increasing tuition and decreasing institutional aid, thereby capturing up to 30 percent of the subsidy. So there may be an indirect effect on the ability of low-income

students to enroll in private institutions, but the effect is relatively limited for public institutions.

5. Conclusions

Since the 1990's states have implemented large merit-based scholarships at unprecedented levels. During this unprecedented growth in large-scale merit programs, state-level need aid has experienced very little growth compared to its very rapid growth before the advent of merit programs. These trends have led many critics of merit programs to contend that merit aid crowds out need aid and diverts resources from students who need them most. This paper is the first to empirically examine these claims.

To identify this relationship we utilize state-level panel data from 1988 to 2003 on higher education finance. We include state and year fixed effects that control for unobserved differences across states and time. The results indicate that states that institute merit programs are not systematically different from non-adopting states with respect to need aid. Furthermore, states that adopt large-scale merit aid programs experience no economically or statistically significant reduction in need aid funding. Even disaggregating the merit programs into those that have dedicated and general funding sources still provides no evidence that large-scale merit programs reduce need aid. Although need-based aid may be growing less rapidly or falling in real terms contemporaneously with the growth of merit-based programs, the two trends appear unrelated. The recent decrease in need aid reflects a secular reduction in need aid that

affects merit and non merit states similarly, rather than a result of the rapid growth of merit programs.

Table 1
Summary Statistics

Variable	Mean	Standard Deviation	Min	max
Amount of need-based aid per full-time-enrolled student	181.67	203.55	0	986.98
Presence of a HOPE-like merit-based program	0.090	.287	0	1
Income per capita (\$000s)	186.49	207.01	0	1093.54
Presence of a Democratic Governor	0.451	0.498	0	1
Presence of a democratic state senate	0.542	0.499	0	1
Presence of a democratic state lower house	0.590	0.49	0	1
William Berry's measure of state government ideology where higher numbers indicate more liberal	48.70	25.06	0	97.92
Public enrollment in higher education	223,276.9	307,695.1	13218	2,043,182
Private enrollment in higher education	54,844.08	64,022.17	355	336,908

Note: All monetary variables are in real 1993 dollars.
Unit of observation is the state-year.

Table 2
Basic Regression Results with and without Year Fixed Effects

Variable Name	(1)		(2)	
	Coefficient Estimate	T-Stat	Coefficient Estimate	T-Stat
Merit Program	-3.14	0.14	-27.45	1.20
Real Per Capita Income (in Thousands of \$)	24.65	3.66	9.64	6.32
Democratic Governor	0.389	0.02	2.15	0.11
Democratic Senate	-24.08	0.93	-18.18	0.69
Democratic House	-34.13	1.44	-35.56	1.63
Government Ideology	-0.407	0.78	-.528	1.18
Public Enrollment	.010	0.65	-0.0175	1.75
Private Enrollment	-0.065	1.44	0.0961	1.78
1989	15.71	1.61		
1990	-6.92	0.36		
1991	-23.26	0.59		
1992	-25.68	0.93		
1993	-38.81	1.14		
1994	-46.39	1.13		
1995	-82.46	1.60		
1996	-105.74	1.82		
1997	-108.11	1.56		
1998	-143.49	1.82		
1999	-140.68	1.52		
2000	-229.92	2.00		
2001	-256.41	2.17		
2002	-297.94	2.46		
Constant	-130.56	1.68	59.609	1.49
State Fixed Effects	Yes		Yes	
Adjusted R squared	0.8183		0.8322	
N	681		681	

The dependent variable is real need-aid per FTE student.

Table 3
Summary of Level of Need-based Aid the Year Before HOPE-like Programs were
Adopted by Each State

State which has adopted HOPE-like program	Primary Source of funding	Year the program was implemented	Need-based aid per full-time- enrolled student from year before implementation (rounded to the nearest dollar)	Rank of State in terms of need aid per FTE in year before implementation (out of available data, which includes DC)
Alaska	Land lease	1999	NA	NA
Arkansas	General	1991	46.00	34 th (out of 51)
Florida	Lottery	1997	401.00	10 th (out of 51)
Georgia	Lottery	1993	34.00	37 th (out of 51)
Kentucky	Lottery	1999	353.00	23 rd (out of 49)
Louisiana	General	1998	154.00	27 th (out of 49)
Maryland	General	2000	390.00	24 th (out of 49)
Mississippi	General	1997	354.00	16 th (out of 51)
Nevada	Tobacco	2000	253.59	31 st (out of 49)
New Mexico	Lottery	1997	432.00	12 th (out of 51)
South Carolina	Lottery	1998	217.00	22 nd (out of 49)
Tennessee	Lottery	2004	NA	NA
Washington	General	1999	448.00	14 th (out of 49)
West Virginia	Video gambling	2002	318.98	26 th (out of 51)

Table 4
 Regression with Three Year Lead and Lag of the Start of a Merit Program
 (T-statistics reported in parentheses)

Variable	Coefficient Estimate	t-statistic
3-Year Lead	13.67	0.70
2-Year Lead	6.76	0.34
1-Year Lead	3.90	0.16
1-Year Lag	-15.25	-0.59
2-Year Lag	-12.77	-0.43
3-Year Lag	9.25	0.29
Real Per Capita Income (in Thousands of \$)	24.73	3.63
Democratic Governor	-0.166	-0.01
Democratic Senate	-24.45	-0.94
Democratic House	-32.950	-1.43
Government Ideology	-0.404	-0.77
Public Enrollment	.0098	0.64
Private Enrollment	-.068	-1.53
Constant	-131.38	-1.66
Year Fixed Effects	Yes	
State Fixed Effects	Yes	
Adjusted R squared	0.83	
N	681	

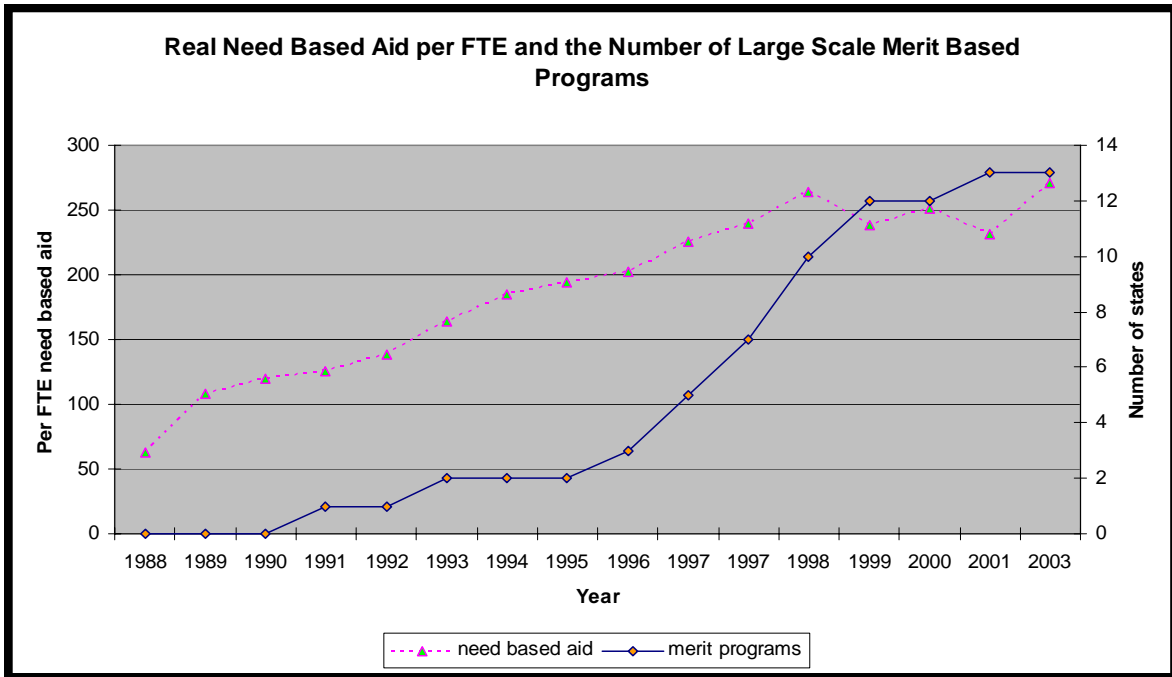
The dependent variable is real need-aid per FTE student.

Table 5
Regression of Merit Programs with
Dedicated Funding and General Funding

Variable Name	(1) Programs with Dedicated Funding		(2) Programs with General Funding	
	Coefficient Estimate	T-Stat	Coefficient Estimate	T-Stat
Merit Program	-5.12	-0.15	3.66	0.13
Real Per Capita Income (in Thousands of \$)	27.26	-3.78	25.93	3.63
Democratic Governor	-28.82	-1.35	-3.01	-0.14
Democratic Senate	-.34.68	0.62	-35.36	-1.34
Democratic House	-52.17	-1.91	-29.65	-1.23
Government Ideology	0.39	.0.78	-0.29	--0.54
Public Enrollment	0.078	0.68	0.01	0.91
Private Enrollment	-0.031	-0.67	-0.06	-1.37
Constant	-173.75	-2.05	-146.40	-1.73
Year Fixed Effects	Yes		Yes	
State Fixed Effects	Yes		Yes	
Adjusted R squared	0.8343		0.8271	
N	681		681	

The dependent variable is real need-aid per FTE student.

Figure 1



Source: NASSGAP. Real aid is based on CPI.

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