Proposal Summary.

Title

The Varying Impacts of Merit-Aid Policy Design on College Enrollment, Retention, and Graduation

Abstract

Merit-based aid has become increasingly popular in recent years. This study examines whether and which aspects of state-funded merit-aid programs influence student outcomes. Initial analyses focused on merit-aid adoption provide evidence of increases in White students' college enrollment and completion without providing similar evidence for changes among students of color.

Proposal Text

Purpose

Over the past few decades, states have been moving away from using need-based eligibility criteria toward using merit-based aid criteria to award financial aid (NASSGAP, 2019). The criteria designed to measure "merit," such as students' standardized test scores and class ranks, are often highly correlated with parental income and parental education, which influences students' prior schooling and college preparation (Guinier, 2015; Liu, 2011; Stevens, 2020). As of 2019, nearly 20% of state financial aid was awarded to undergraduate students based solely on merit criteria, with another 22% awarded on the combination of merit and need. In some states (e.g., Arkansas, Louisiana, South Dakota), state grants and scholarships are awarded almost entirely by merit criteria (NASSGAP, 2019). To date, several studies have examined the influence of merit-based aid policies on student outcomes. Research shows that merit-aid programs are associated with positive outcomes, such as increased academic performance (Curs, 2008; Henry et al., 2004), college enrollment (Birth & Rosenman, 2019; Leeds & DesJardins, 2015; Zhang et al., 2016), retention and completion (Cohodes & Goodman, 2014; Zhang et al., 2016), and in-state employment after college graduation (Fitzpatrick & Jones, 2016; Harrington et al., 2016; Sjoquist & Winters, 2014).

Previous literature on merit aid has not accounted for the complex variation in the design of state-funded financial aid policies (Custer et al., 2021; Perna & Leigh, 2018). Prior studies indicated that need-based aid, in general, is positively associated with recipients' college access, persistence, and completion (Bettinger, 2015; Castleman & Long, 2016; Goldrick-Rab et al., 2016), but the impact of variations in the design of different need-based aid programs should be a major consideration (Nguyen et al., 2019). Additionally, given structural inequities, different types of financial aid policies usually have a varying influence on academic outcomes based on students' sociodemographic characteristics, such as race and income (Gurantz & Odle, 2021; Hadavand, 2018; Griffith, 2011; Lowry, 2019; Ness & Tucker, 2008; Zhang et al., 2016).

As states increasingly rely on merit-based aid, this paper, which leverages novel data,

is the first to examine both whether and which aspects of state-funded merit-aid programs influence postsecondary outcomes (i.e., college enrollment, retention, degree attainment). The research questions are:
1. To what extent does merit-aid policy adoption (and variation in merit-aid policies) influence students' enrollment and completion outcomes?
2. Does the effect of merit-aid policy on each academic outcome vary by students' sociodemographic characteristics (e.g., race, income)?

Brief Literature Review

The rationale behind merit-aid is that providing financial support to students who may not be eligible for need-based aid encourages high school academic performance and retains high-performing students to study and work in their home state (Cohen-Vogel et al., 2008; Ness & Mistretta, 2010). While some low-income, high-performing students benefit from merit aid, low-income students are generally less responsive to—or even negatively affected by—merit-aid programs relative to high-income students (Gurantz & Odle, 2021; Zhang et al., 2016). Racially minoritized and low-income students tend to see themselves as having a higher likelihood of going to college when they learn they are eligible for merit aid, but their actual likelihood of enrollment is negatively associated with merit-aid programs, particularly at more selective institutions (Griffith, 2011; Ness & Tucker, 2008). Lowry (2019) noted that state spending on merit aid has a smaller positive effect on college access for low-income students, when compared with state spending on need-based aid grants. Similarly, the positive influence of merit aid on institutional graduation rates is mainly due to the changing student profile given that merit aid attracts high-performing students who were already likely to graduate prior to aid receipt (Singell & Stater, 2006). With respect to wage distribution, need-based aid reduces graduates' wage inequality more than merit-based aid. In sum, the positive influence of merit aid varies by student subgroups. Because merit aid rewards relatively high-performing students who did not demonstrate financial need (Brown, 2007, p. 39), it is often considered to be a regressive tool to increase overall student success while further marginalizing certain student populations (Dynarski, 2000; Heller & Rasmussen, 2001; Kash & Lasley, 2011).

Postsecondary success in terms of access, retention, and completion has been highly stratified due to structural inequities (Astin & Oseguera, 2004; Bastedo & Jaquette, 2011; Berg, 2016; Chetty et al., 2020; Engle & Tinto, 2008; Ford et al., 2021). In the U.S. context, students' sociodemographic characteristics (e.g., race, income) are often structurally intertwined, a large group of minoritized students (e.g., students of color, low-income) are detrimentally affected by the systemic inequities (e.g., racism, classism) in higher education (Berg, 2016; Carbonaro et al., 2011; Chetty et al., 2020; Posselt et al., 2012). Because merit-aid policies vary greatly by eligibility criteria (e.g., academic performance, income level, in-state residence) and treatment dosage (e.g., number of recipients, amount of award, percentage of total state financial aid expenditure), it is important to unpack state-funded merit-aid policies and examine the institutional capability of enrolling, retaining, and graduating students with a focus on low-income and racially minoritized students.

Conceptual Framework

We first draw on the concept of peer effects, which suggests that if an institution is enrolling more meritorious students, then that affects the educational experience of the entire student body (Winston, 1999). Each student who enrolls at a college or university experiences a peer effect from being in proximity to, and interacting with, other students. When able, colleges and universities may strategically admit relatively more academically prepared students (i.e., fewer students who are at risk of not graduating) through merit-aid programs, so that all enrolled students would be expected to have a higher-quality educational experience, which would enable improved completion and occupational outcomes. The concept of peer effects motivates the logical rationale of the treatment to be discussed in the following section, but additional factors, such as the paradox of the provision of merit aid in higher education, motivate our analyses considering varying impacts by race and socioeconomic status.

The existence and design of merit-aid policies can adversely impact institutions' capacity for promoting postsecondary success. According to the paradoxical definition of meritocracy in higher education, colleges and universities shape "a positive concept" that educational and occupational outcomes are distributed based on merit (e.g., education, ability) (Liu, 2011). At the same time that college admissions are touted as "an equal opportunity," higher education legitimizes and perhaps exacerbates stratification. Thus, merit aid could serve as a gatekeeper that limits low-performing students, who are disproportionately from minoritized and low-income backgrounds, from gaining the considerable benefits of higher education. The logical rationale of the paradox of meritocracy in higher education is rooted in the acknowledgment of systemic barriers associated with tying pre-college academic indicators to financial aid given how pre-college academic indicators of merit are correlated with social class (Buchmann et al., 2010).

Methods

We created the first dataset capturing a variety of policy features of state-funded merit-aid programs for all adopted states in the U.S. between 2003 and 2020. These features include policy adoption (e.g., year of adoption/discontinuation), eligibility criteria of recipients (e.g., sector, academic performance measures, unmet financial needs), and program dosage (e.g., amount of max award, first-dollar programs, number of recipients, amount of max award). To address inconsistencies in state-funded merit-aid programs in current literature, we systematically analyzed and triangulated existing data from state budget or policy documents and reports, personal communication with higher education policymakers, and occasionally NASSGAP when data were not available. As indicated by Figure 1, 30 states adopted merit aid before 2003 ("early adopters"), 10 states adopted merit aid between 2003 and 2020 ("late adopters"), and 10 states have not adopted merit aid as of 2020. We merged the newly collected data with existing data on enrollment and degree attainment by student subgroups from the Integrated Postsecondary Education Data System (IPEDS). In additional analyses, we account for control variables identified by prior research and obtain additional institution-level data

from IPEDS and state-level data from the National Center for Education Statistics, Bureau of Labor Statistics, Bureau of Economic Analysis, and the National Association of State Budget Officers (see Table 1).
---Insert Figure 1---
---Insert Table 1---

Based on prior research, we define postsecondary success at the institution level as (a) the headcount of first-time undergraduate students (i.e., total, White, students of color); (b) full-time and part-time retention rates; and (c) the headcount of bachelor's degrees awarded to undergraduate students (i.e., total, White, students of color) within 150% normal time.

Estimating the influence of merit-aid programs on postsecondary success requires a quasi-experimental design because public four-year institutions were not randomly assigned to the treatment group (i.e., being subject to merit-aid programs). However, recent advances in econometrics literature have revealed that generalized difference-in-differences approach using two-way fixed effects (GDiD TWFE) may introduce considerable bias when researchers are navigating differential treatment adoption and treatment effect heterogeneity – both of which are directly relevant to the present study.

In response to the issues associated with potentially biased GDiD TWFE estimates and differential treatment timing, we use the Sun and Abraham (2021) event study approach as our primary specification. This approach estimates group-time average treatment effects of merit-aid for treated institutions on each postsecondary success indicator and, importantly, allows for both differential treatment timing and heterogeneous treatment effects. As a robustness check for the conference paper, we will include the traditional GDiD TWFE approach to examine the extent to which bias may exist and additional event study approaches borne out of recent advances in econometrics literature, such as Callaway and Sant'Anna (2020), de Chaisemartin and D'Haultaœuille (2020, 2022), and Goodman-Bacon (2021).

Preliminary Results

As presented in Table 2 and Figure 2, event study analyses estimate the average treatment effects of state-funded merit aid for treated institutions by allowing institutions to adopt a time-varying treatment. Focusing on the headcount of first-time undergraduate student enrollment, no significant relationship is found for the overall enrollment and enrollment among students of color. However, there is evidence that merit-aid adoption is associated with an average increase in the headcount of White student enrollment between 43 ($p < .01$) and 94 ($p < .05$). Similarly, regarding the headcount of graduates within six years, state-funded merit-aid adoption is associated with an increase of 53 graduates on average. Although there are no statistically significant results for the headcount of graduates who were students of color, suggestive evidence indicates that the number of White graduates started to increase within 100% time-to-degree. That is, merit-aid adoption is associated with an average increase in the headcount of White graduates within four years of matriculation by 47 (p

< .05) and within five years by 37 ($p < .05$). For the conference paper, our additional analyses will unpack merit-aid policy variation as the treatment and conduct the robustness checks described previously.
---Insert Table 2---
---Insert Figure 2---

Significance
This study is designed to provide quasi-experimental evidence regarding the effectiveness of different types of merit-aid policies, with a specific focus on varying impacts by race and socioeconomic status. Focusing initially on merit-aid policy adoption, we provide evidence of increases in White student completions without providing similar evidence for statistically significant changes in completions or time to completion among students of color. This finding aligns with prior literature on the regressive nature of merit-aid policy adoption and the paradox of meritocracy in higher education, which was highlighted in the Conceptual Framework section.

Importantly, a major contribution of this work will be the extent to which the design of different types of merit-aid policies impacts students' academic outcomes, and the conference paper will feature these novel results prominently. The lack of evidence on variations in merit-aid policy design is not only a gap in the literature; it represents a major shortfall in policymakers' understanding of what works and for whom when seeking to allocate funds in more equitable and effective ways. To better understand higher education's role in reducing inequality, we must shift beyond only advocating for new funding by also examining ways that funding is allocated and considering how metrics for disbursing money relate to higher education's role in reducing or reproducing inequality.