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A Review of the Causes and Consequences of Students' Postsecondary Choices

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Summary Notes

- Nationally representative data from the high school class of 2004 indicate that 41 percent of students have precollegiate academic credentials that substantially exceed those of a typical student at the chosen postsecondary alternative, which is called "academic undermatch" in the research literature.
- Lower-socioeconomic-status (SES) students are substantially more likely to undermatch than their higher-SES peers with similar academic credentials.
- Students who enroll in an academically aligned college are more likely to graduate from college and, among those who do complete a college degree, time to degree tends to be shorter.
- Improving academic alignment between students' credentials and the postsecondary alternatives they choose likely requires better information about college options and affordability prior to students' finalizing their college applications. Rigorous, causal evidence on specific interventions that might improve academic match, particularly among low-SES students, is still being generated.

In 2010, 21 million students across the United States enrolled in one of nearly 4,500 postsecondary degree-granting institutions (Snyder & Dillow, 2011). Students of all academic backgrounds selected institutions they wanted to attend and, likewise, institutions made decisions about which students they wanted to admit. The resulting student–college pairs, observed following students' matriculation decisions, may be evaluated based on the quality of the academic match. In the social science research literature, an "academic match" occurs when a student chooses a postsecondary alternative that is aligned with his or her observable academic credentials (e.g., GPA, SAT®, etc.).[1] This review of the research literature describes the current state of research on student–college academic undermatch. There also exists a substantial literature on academic overmatch, which occurs when a student with relatively low measured academic ability enrolls in an academically more selective college; however, overmatch is not the focus of this literature brief.[2]

Academic undermatch is a concept that has recently come to the foreground because evidence indicates that undermatching is

1. This definition comes from a series of studies by the Consortium of Chicago School Research, discussed in more detail below.

2. Historically, the bulk of the research on overmatch has been associated with affirmative action. See Holzer and Neumark (2006) for a good introduction.

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pervasive, especially among low-income students, underrepresented minorities, and first-generation college-goers (Bowen, Chingos, & McPherson, 2009; Roderick, Nagaoka, Allensworth, Coca, Correa, & Stoker, 2006; Roderick, Nagaoka, Coca, Moeller, Roddie, Gilliam, & Patton, 2008; Roderick, Nagaoka, Coca, & Moeller, 2009; Roderick, Coca, & Nagaoka, 2011; Smith, Pender, & Howell, 2012). Additionally, academic undermatch has garnered attention in recent years as a potential source of stagnant college completion rates in the U.S. The most recent data show that only 57 percent of four-year college enrollees obtain a bachelor's degree within six years, and only 30 percent of two-year institution enrollees complete a certificate or degree after three years (Snyder & Dillow, 2011).[3] Moreover, even among students completing a degree program, the average time to degree has increased over the past few decades, expanding the financial burden to students, families, and taxpayers (Bound, Lovenheim, & Turner, 2010).

Measuring Academic Undermatch

There are several ways to measure academic match. Differences in methods stem from the nature of the data to which the researchers have access and the more subjective criterion of just how much the student's academic credentials should exceed those of the typical student to warrant being labeled as undermatched.

Quantifying Academic Undermatch

The most common method of measuring academic match in the literature involves four steps.[4]

1. Identify variables that measure an individual student's academic ability (e.g., high school grades, standardized test scores, rigorous high school course taking).
2. These variables are used in a multivariate regression model to predict the probability that the student would be offered admission to colleges of varying degrees of selectivity.
3. Students' predicted admission probabilities in each broad college selectivity level are calculated using the students' academic characteristics. If a student, based on his or her academic qualifications, has a 90 percent or greater probability of admission to a college within a selectivity level, that student is classified as having access to a college within that selectivity level.
4. The highest level of college selectivity to which the student is highly likely to be admitted is compared to the college selectivity level in which the student actually enrolled. If he or she enrolls at an institution within a lower selectivity level than the highest level to which he or she would have had access, the student is classified as academically undermatched.

3. The four-year rate is based on the 2004 cohort, and the two-year rate is based on the 2007 cohort.

4. Variants of this methodology are employed by Bowen et al. (2009), Roderick et al. (2009), and Smith et al. (2012).

One common way of defining academic match follows four steps:

1. Select measures of student academic ability.
2. Predict admission probabilities by college selectivity.
3. Determine most selective college that is accessible.
4. Compare (3) to selectivity of college chosen.

The 90 percent threshold in step 3 is frequently chosen so as to be conservative; the estimates of undermatch would be larger if a lower threshold were chosen.

Alternatively, some research defines undermatch by examining the test score of an individual student and comparing it directly to the average score among enrollees at the college in which they enroll. The student–college pair is determined to be a good academic match based on how close the student's score is to the average among her enrolled peers at the same institution. Dillon and Smith (2009) use this sort of "distance measure" based on student and college SAT scores. Their primary methodology estimates the student quality percentile, based on his or her Armed Services Vocational Aptitude Battery (ASVAB) score, and the college quality percentile, based on several college characteristics and enrollment size. They then compare the student and college percentiles, and students with percentiles well above the college's percentile are deemed undermatched. Despite the differences in methods of quantifying academic undermatch in the literature, most definitions are all in the same spirit and yield similar results.[5]

Academic Match Is One Dimension of Fit

An *academic match* occurs when the relative academic qualifications of a student and the college at which they matriculate are on par with one another. A student's enrollment choice is, as it should be, a function of many additional factors including the price of attendance, location, sports teams, social atmosphere, demographics, and support services, to name a few. Each factor might affect a student's happiness, academic performance, and probability of completing a degree.

In reality, a student's probability of having access to a particular college is also a function of many academic and nonacademic characteristics of both the student and the institution, rather than the handful of academic indicators used

Academic match is based on how college selectivity compares to a student's measured academic ability. The extent to which institutions meet other student needs, including financial and social requirements, are additional determinants of a broader measure of "fit" between students and postsecondary choices.

5. Most potential methods may suffer from selection bias. Even conditional on all observable student characteristics that affect access to college, students who are not enrolling or not applying to colleges within a selectivity category to which they appear to have access are more likely to possess certain unobservable characteristics (e.g., poor motivation) that make them unqualified for those colleges. This may cause an overstatement of undermatch, justifying the decision to choose conservative selection criteria.

in the literature to measure undermatch. Yet the simplistic approach described above captures the most important academic components of a student's application that colleges rely on when making admission decisions.

The Extent of Academic Undermatch

How pervasive is academic undermatch? Estimates from region-specific studies vary considerably. In North Carolina, 40 percent of students who were eligible to enroll in the most selective in-state colleges undermatched by enrolling elsewhere (Bowen et al., 2009). Estimates from Chicago Public Schools (CPS) for those students who aspired to complete a bachelor's degree are larger, indicating that two-thirds of such students academically undermatched (Roderick et al., 2008). The results from CPS also reveal that 28 percent of students enrolled in college slightly below their academic match and, more worrisome, 34 percent of students enrolled in colleges far below their academic match.[6] Estimates of undermatch based on four school districts analyzed by Harvard's Strategic Data Project, are substantially lower than in either North Carolina or Chicago. In these districts, the proportion of highly qualified high school graduates who academically undermatched ranges from approximately 10 to 30 percent (Strategic Data Project, 2012).[7]

When nationally representative data from the high school class of 2004 are analyzed using the four-step method of quantifying undermatch detailed above, 41 percent of the senior cohort is estimated to undermatch (Smith et al., 2012). The proportion of this student sample that substantially undermatched — enrolled in colleges two or more selectivity levels below what their academic credentials would have predicted — is 16 percent. Table 1 reports these estimates along with a breakdown of academic undermatch by institutional selectivity and student academic credentials.

The first row of the matrix in Table 1 indicates that 58.5 percent of students who are predicted to have access to *very selective* colleges match by enrolling in *very selective* colleges, while 41.5 percent of these most high-achieving students in 2004 undermatch. The bulk of these students undermatch at either *selective* colleges (25.7 percent) or *somewhat selective* colleges (13.1 percent), but a small percentage undermatch at *nonselective* (1.4 percent) and two-year (1.0 percent) colleges, or do not enroll at all (0.3 percent). The other rows of Table 1 are interpreted in the same manner.

Table 1 conveys that academic undermatch is prevalent across all types of institutions and students.[8] The second-to-last column in Table 1 shows that, among all students with access to four-year postsecondary institution, more than 35 percent of students in each selectivity

6. These statistics include non-enrollees.

7. The Strategic Data Project partnered with five districts (four of which are used in their undermatching analyses) that were not separately identified in the summary of their findings: Boston Public Schools (MA), Charlotte-Mecklenburg Schools (NC), Fort Worth Independent School District (TX), Fulton County Schools (GA), and Gwinnett County Public Schools (GA).

8. These estimates are as of 2006 and may change as time elapses if students delay college enrollment.

Table 1: College Access Versus College Choice, by Institutional Selectivity

		Enrolled in:								
		Very Selective	Selective	Somewhat Selective	Nonselective	Two-Year	No College	Total (by access)	Percent Undermatch	Percent Substantial Undermatch
Access to:	Very Selective	58.5	25.7	13.1	1.4	1.0	0.3	5.1	41.5	15.8
	Selective	20.8	31.9	31.3	4.5	8.6	2.9	19.7	47.3	16.0
	Somewhat Selective	6.0	21.5	37.4	9.2	21.0	4.9	16.1	35.1	25.9
	Nonselective	2.5	8.4	40.7	13.0	26.8	8.6	9.5	35.4	8.6
	Two-Year	1.1	2.6	9.5	6.2	39.4	41.2	49.7	41.2	—
	Total (by enrolled)	8.8	13.1	21.5	6.8	27.2	22.7	100.0	40.9	16.1*

Match Undermatch Substantial Undermatch

Note: Authors' calculations are based on the U.S. Department of Education, National Center for Education Statistics, *Education Longitudinal Study of 2002* (ELS:2002). Estimates use sample weights and are based on spring 2004 high school seniors who had enrolled in postsecondary education by 2006. College selectivity levels are determined by SAT score, GPA, and admission rates of applicants and enrollees. Students' access to college selectivity levels is predicted by their academic credentials.

* This statistic excludes students with access to two-year colleges because, by definition, they cannot have a substantial undermatch.

category are academically undermatched. Although there is more undermatching estimated among students with access to the top two college selectivity categories, undermatch is clearly not a phenomenon that is unique to only the highest-achieving students. Table 1 is also useful for examining the undermatch that exists on the two-year/four-year college margin. Among students with a more than 90 percent probability of being admitted to a *somewhat selective* four-year institution, 21 percent chose to enroll at a two-year institution. Among students with access to a *nonselective* four-year college, nearly 27 percent enrolled at a two-year institution. Finally, operating under the assumption that all students have access to a two-year college regardless of their academic credentials, a full 41.2 percent of those students who did not have access to a four-year college, but *did* have access to a two-year college, choose not to enroll in any postsecondary institution. It is surely an optimal decision for some students to enter the workforce upon high school completion, but this statistic is troubling in light of the fact that two-year institutions represent the most selective institutional category that is accessible for half (49.7 percent) of the nationally representative sample.

The studies by Roderick et al. (2008) and Bowen et al. (2009) provide similar information to Table 1, affirming that academic undermatch is pervasive across the academic ability distribution and that students are frequently substantially undermatched.

Differences in Undermatch by Student Characteristics

It is well established that students from different SES levels, but with similar academic credentials, often apply to and enroll in colleges that differ in selectivity (Manski & Wise, 1983; Hearn, 1991; Kane, 1999; Cabrera & La Nasa, 2001; Carnevale & Rose, 2004; Pallais & Turner, 2006; Hill & Winston, 2010). The data from this body of research indicate that low-SES students are more likely to enroll in two-year colleges or no college at all, and that high-SES students are more likely to enroll in more selective four-year colleges. Each of the studies that examine academic undermatch also looks for evidence of differences in match prevalence by student attributes.

In the CPS, Latino students are the most likely to academically undermatch, with 44 percent of Latinos enrolling in colleges far below their academic match, compared to 36 percent of whites, 28 percent of African Americans, and 31 percent of Asians. Roderick et al. (2008) also show that students attending "selective enrollment high schools," which target college-aspiring students, are much less likely to academically undermatch compared to students at "neighborhood high schools." This is true for students who have access to "very selective," "selective," and "somewhat selective" colleges. The authors posit that this is because selective enrollment high schools tend to have strong college-going cultures that are influenced by both students and teachers. Yet even in "academically advanced" high school programs, more than one-third of students enroll in nonselective colleges, two-year colleges, or no college at all (Roderick et al., 2009).

In the North Carolina sample examined by Bowen et al. (2009), academic undermatch is more common among African American than white students. Undermatch is also strongly correlated with family income and parental education in North Carolina. For instance, 59 percent of students in the lowest income quartile academically undermatch, compared to only 27 percent in the top quartile. Similarly, 64 percent of students who have parents with no college education undermatch, compared to 31 percent of students who have parents with graduate degrees.[9] Also, undermatch is related to students' academic record. Students with GPAs above 3.5 and SAT scores above 1200 academically undermatch 35 percent of the time. Comparatively, students with GPAs between 3.0 and 3.5 and the SAT scores above 1200 undermatch 41 percent of the time, and students with GPAs above 3.5 but SAT scores between 1100 and 1190 undermatch 54 percent of the time. Finally, similar to the CPS result, there is an unconditional relationship between characteristics of the high school (academic characteristics, location, size) and the extent of academic undermatch. Although Bowen et al. (2009) find that the characteristics of the high school do not affect the extent of undermatch very much once they control for measures of family income, parental education, and academic record, Hurwitz

9. These are unconditional correlations. The authors suggest that the "net" effects are smaller, but remain when adding controls in a regression analysis.

et al. (2012) do find substantial variation in undermatch rates across observationally similar high schools.[10]

Dillon and Smith (2009) and Smith et al. (2012) examine distinct nationally representative datasets and identify several characteristics of students who undermatch. Dillon and Smith (2009) conclude that financial constraints and parents' education play a role, such that low-income students are more likely to undermatch. Smith et al. (2012) find that low-SES students and students in rural high schools are more likely to undermatch. Similarly, using interviews and surveys of high school valedictorians throughout their college application, as well as admission and enrollment processes, Radford (in press) also concludes that SES is a key factor associated with academic undermatch.

The Causes of Postsecondary Academic Undermatch

Academic undermatch stems from many potential sources, but financial constraints and information asymmetries are two leading explanations that frequently correspond to differences in undermatching by SES. We briefly discuss the most relevant and compelling evidence, but because this literature is so abundant, this review cannot be exhaustive.[11] We also review and provide evidence that attributes of a student's high school and student decisions in the college application process prove to be important sources of undermatch.

Sources of Academic Undermatch

The research on financial factors associated with undermatch focuses on tuition and financial aid. The first strand of this research finds that students, especially low-SES students, do not enroll in selective colleges in part because of the relatively high tuition (Van der Klaauw, 2002; Avery & Hoxby, 2003; Dillon & Smith, 2009; Monks, 2009; Hurwitz, 2012).[12] The second strand of this research focuses on other issues related to finances. For example, low-SES parents are less able to provide accurate estimates of tuition compared to high-SES parents (Grodsky & Jones, 2007). Also, some students fail to complete the necessary steps required to receive financial aid. In 2000, approximately 850,000 students who were eligible for federal financial aid did not complete the necessary forms, and more than half of those who did file the forms missed the eligibility deadlines for additional state and institutional aid (King, 2004). These missed opportunities may arise because students are not aware of the proper forms and deadlines, or because they find the financial application process to be too daunting. The Free Application for Federal Student Aid (FAFSA) form takes an average of 10 hours to complete and disproportionately burdens the lowest-income students (Dynarski & Scott-Clayton, 2006, 2007). Receiving assistance from professionals

10. Analogous regressions are not discussed in Roderick et al. (2008).

11. See College Board (2010) and the essays in Hoxby (2004) for good literature reviews.

12. Most of these studies use variation in institutional aid to determine a student's sensitivity to net tuition.

on the FAFSA has been shown to improve outcomes for low-income students substantially (Bettinger, Long, Oreopoulos, & Sanbonmatsu, 2009).

Information asymmetries are another likely source of undermatch. For example, although students have increased access to computers and the Internet in both homes and high schools, there is still a knowledge and support gap on how to navigate the college application process through online tools and processes (Venegas, 2006). Hill and Winston (2010) argue that low-income, high-ability students are underrepresented at selective colleges in part due to geographical biases in the spread of information during recruitment by colleges. That is, students in particular geographic areas rarely hear from colleges that may be a good match. Also, Bowen et al. (2009), Dillon and Smith (2009), and Smith et al. (2012) demonstrate that students whose parents attended college are less likely to undermatch. Many college enrollees state that parents are an important source of information (College Board, 2011). Similarly, Dillon and Smith (2009) also argue that lack of information about colleges, from parents and high schools, is a major source of academic undermatch. Hence, students with parents who did not attend college lack critical information on any number of college-going issues; however, there are still no causal estimates to support this claim.

The high school a student attends has the potential to affect a student's probability of undermatching for several reasons. First, students may be substantially influenced by the quality and postsecondary aspirations of their peers. Second, the amount of information that teachers and school counselors have about colleges, their preferences for certain types of colleges, or their financial resources and time allocation all vary across high schools. Third, colleges may promote and recruit at certain high schools based on past performance or geographic location. Consistent with all of these reasons, Hurwitz et al. (2012) document that some high schools simply have propensities for undermatch. School-level factors that are observable in data explain only about half of the variance observed in undermatch rates across high schools, suggesting that interventions targeted at high schools that are prone to undermatch may be both impactful and cost effective.

The college application process is another potential source of undermatch. Several studies show that, conditional on many observable characteristics, high-SES students apply to more colleges (Smith, 2012a; College Board, 2011). Smith et al. (2012) find that, of all undermatched students in the 2004 cohort, 61.3 percent did not even apply to a matched college. The more colleges the student applies to, the greater the probability that he or she will be accepted at a financially accessible match institution. This suggests that expanding the application portfolios of lower-SES students has the potential to correct some of the undermatching imbalance across the lines of socioeconomic status. However, the burdensome college application process incentivizes students with

limited support to apply to fewer and less selective colleges. Roderick et al. (2009) point out that applying to relatively more selective colleges requires more time and effort because of the large set of requirements (e.g., tests, essays, and letters of recommendation) and deadlines. Both the act of taking the tests and doing well are positively associated with enrolling in college and attending more selective colleges (Wyatt & Mattern, 2011). However, it is also true that low-SES students are much less likely to engage in these steps that require both planning and effort from students (Howell & Smith, 2011). Finally, Avery and Kane (2004) show that students in urban schools are much less likely to even have college application forms in their hands by the fall of their senior year compared to suburban students with similar college aspirations.

The Consequences of Postsecondary Academic Undermatch

Researchers have begun to investigate academic undermatch as a potential source of low college completion rates in the United States. Light and Strayer (2000) find that students of all academic ability levels have a higher probability of completing a college degree if the selectivity level of the college they attend matches their measured academic ability. We know that the returns to having a college degree are numerous and include higher wages, lower unemployment rates, better health insurance and pensions, greater job satisfaction and healthier lifestyles (Baum, Ma, & Payea, 2010). Students who attend relatively more selective colleges are more likely to complete a degree and succeed in the labor market.[13] However, as discussed previously, the research shows that a substantial share of students undermatch in their postsecondary choices and that students from lower-SES families are more likely to academically undermatch because they are less likely to apply to and enroll in selective colleges or any college at all (Manski & Wise, 1983; Pallais & Turner, 2006; Hill & Winston, 2010).

It is true that more selective institutions tend to have higher prices of attendance, though at the most selective institutions, lower-income students may find that the net price of attendance is actually lower than at less-selective institutions due to generous financial aid programs (Krupnick, 2012). Pender et al. (2012) document a tradeoff between the net price of attendance and the likelihood of completing a college degree, showing that improved match is associated with increased completion probabilities and, in some cases and particularly for lower-income students, little or no increase in net tuition. Moreover, differences in time to completion by college selectivity may mean that the total costs associated with attending a less selective college may exceed those associated with attending a more selective college, despite the higher advertised prices in the latter category. Earlier completion is also advantageous

13. Evidence on degree completion is available in Bowen and Bok (1998), Horn and Carroll (2006), Long (2008), Bowen et al. (2009), and Cohodes and Goodman (2012). Evidence on success in the labor market is available in James, Alsalam, Conaty, and To (1989), Loury and Garman (1995), Behrman, Rosenzweig, and Taubman (1996), Daniel, Black, and Smith (1997), Hoxby (1998), Kane (1998), Brewer, Eide, and Ehrenberg (1999), Monks (2000), Black and Smith (2006), Long (2008), Carnevale and Strohl (2010), Dale and Krueger (2011), and Smith (2012b).

from a labor market standpoint because a shorter time to degree means that the student has more years during which he or she can enjoy earnings from the types of professions that the postsecondary credential affords him or her.

Guiding Efforts to Improve Postsecondary Academic Match

In light of the substantial amount of academic undermatch and its prevalence among traditionally underserved students, we turn now to a discussion of efforts currently under way to improve match as well as what is still unknown about this phenomenon.

Current Match Interventions

Several interventions to reduce undermatch are currently in the field. Caroline Hoxby and Sarah Turner are now completing a large-scale project to test a series of light-touch interventions targeted at very high-achieving, low-income students at risk of undermatching. MDRC's College Match Program is a higher-touch intervention utilizing National College Advising Corps counselors to target low-income, high- or moderate-achieving students in a small number of Chicago public schools, with the goal of decreasing undermatch (Sherwin, 2012). Both of these initiatives show some promising early results, but even when the final empirical evidence is available, the results will be generalizable to low-income students with atypically strong academic credentials. Given the substantial prevalence of undermatching among students with access to relatively less selective colleges, as well as the sheer number of students in this part of the academic ability distribution, it will be critical to determine whether the interventions currently being tested are valid for more academically modest students as well.

Learning from Match in Other Markets

Match is a term that has long been used outside of higher education, but typically refers to the broader concept of "fit." Perhaps the earliest foundations come from search models in which consumers search for a product that is best for them (Stigler, 1961; Butters, 1977; Varian, 1980). This literature eventually grew into search and matching models, often in the labor market, in which workers search for employers and employers look for employees (Mortensen & Pissarides, 1994; Burdett & Coles, 1997). An immediate result from these models is that when the cost of search is high, the probability of a good match is relatively low. Translating this result to college choice means that students with large search costs are less likely to find a well-matched college, thereby winding up either undermatched or not enrolled. Search costs in the market for college manifest as a lack of information and overall support in the college-preparation and application process, which are more problematic for lower-SES students.

Another branch of literature related to match draws attention to the importance of a centralized system or "matchmaker." Every match is composed of two parties (e.g., students and schools, husbands and wives, employers and workers). Each party states what they are looking for in

a match, all of these preferences from participants in the market are considered, and then people are allocated according to the "matchmaker's" goals. Typically, the matchmaker tries to make everyone as happy as possible, but the goal could be to make no party unhappy or some combination of the two. This kind of matching process has been implemented for students in the New York City and Boston public schools (Abdulkadiroglu, Pathak, & Roth, 2005; Abdulkadiroglu, Pathak, Roth, & Sonmez, 2005) and for medical residents seeking jobs at hospitals (Roth, 1984; Roth & Peranson, 1999). Fully centralized systems like these are difficult to fathom in the market for U.S. higher education, despite being commonplace in other countries, but there are small-scale similarities within the U.S. system and lessons to be learned. The centralized matching market demonstrates that coordination among postsecondary institutions can potentially help students.[14] To some extent, we see this with consortia of colleges, the Common Application, and state systems with centralized application procedures, each of which work to encourage applications and enrollment. The centralized matching procedures also indicate that there are ways to include more people and that some people, particularly those who lack support in the match process, can greatly benefit from oversight.

Conclusion

The literature offers compelling evidence that attending a more selective college increases a student's college completion probability and that lower-SES students are much more likely to undermatch than higher-SES students. The literature uses quasi-experimental evidence to identify several sources of undermatch and has begun to run experiments aimed at reducing the amount of undermatching, particularly among those low-income students who have less information, support, and resources at their disposal.

Despite these advances, there remains a critical unanswered question: What is the optimal amount of undermatch? Should we have no undermatch such that the most academically accomplished students go to college with similar students and the least academically accomplished students go to college with similar students? Should we aim to have the same level of undermatch between lower-SES and higher-SES students? Yet if we care about equity, improving undermatch for lower-SES students may decrease college completion rates for higher-SES students. Further, the optimal amount of undermatch likely depends on the cost of achieving it. How much is reasonable to invest in interventions? This requires a careful cost–benefit analysis that takes into account finances and a clear objective (e.g., equity or increased graduation rates for all).

Policymakers are likely to push for both more equity and higher college completion rates across the board; both are worthy goals. Future research that answers the above questions can guide policy with respect to what the goals should be and the most efficient way of achieving them.

14. There are also potentially negative consequences of coordination, such as a reduction in quality of services, academic or otherwise.

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