Leveraging Shared Savings to Promote High-Quality, Cost-Effective Higher Education

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Higher education in the United States is undergoing a rapid transformation, with funding and demographics among the areas facing the most significant changes. The economic downturn has exacerbated a trend toward budget cuts for higher education at both the state and federal levels. While institutions have reduced per-student instructional spending over the past decade, these reductions have not kept pace with reductions in government subsidies (Desrochers and Kirshtein, 2013), and the additional costs have largely been borne by students who face increased tuition and fees. Between 1969–1970 and 2012–2013, the average annual tuition and required fees at all institutions rose from $3,954 to $10,683, an increase of approximately 275 percent (National Center for Education Statistics [NCES], 2014). While grant aid often covers the lion’s share of student tuition and fees, students at public institutions also incur substantial room and board costs. For example, in 2014, grant aid covered approximately 70 percent of the average student’s tuition and fees at public four-year institutions, but students also incurred an average room and board charge of approximately $9,800. This left the average student attending a public four-year institution with a net total cost of attendance of $12,830. Students have increasingly financed these costs in the form of student loans, so that the average college-related debt incurred by 2012 graduates of four-year colleges was $29,400 (Institute for College Access and Success, 2014). With continued cost growth and a fiscal climate that points to further state and federal budget reductions, it is likely that students will continue to see larger student loans and increases in out-of-pocket college expenses.

At the same time, enrollment has increased, driven in part by shifts in the demographic makeup of our nation’s college students. The NCES has projected that by 2021, college enrollment by historically underserved Hispanics and African Americans will increase by 42 percent and 25 percent, respectively, compared with an expected 4-percent increase in white college student enrollment (NCES, 2013). Stronger growth is also expected for college students who are “nontraditional,” defined as those who have some combination of part-time attendance, are above 24 years of age, or are working (NCES, 2013). Underserved and nontraditional
students often lack access to information and other resources to help them efficiently navigate through traditional college programs, and they often have competing priorities, such as jobs and family (Scott-Clayton, 2011b). These factors have contributed to college completion rates that have remained largely stagnant over the past decade. As student populations grow and demographics and needs shift, higher education systems must learn to adapt to those shifts and attempt to ensure that all students complete credentials and benefit from college.

More and more, these trends in higher education—rising costs, changing demographics, and stagnant completion rates—have prompted institutions, policymakers, and philanthropic organizations to work together in developing innovative approaches to improving student outcomes and experiences, serving nontraditional students, and containing costs. These include policies and programs aimed at helping students choose appropriate courses and navigate through college; new and innovative modalities, such as technology-driven hybrid and blended education and competency-based education programs; and policies explicitly linking student financial aid to academic performance and/or time to degree. While existing research on the effectiveness of these approaches is limited or even nonexistent in many cases, it is crucial to begin the process of planning for how various stakeholders might collaborate to scale these approaches.

Primary Barriers to Scaling Promising Approaches
A key challenge to scaling innovative approaches aimed at reducing cost or time to degree while maintaining or improving educational quality is finding ways to incentivize use of these innovations in public higher education. Unfortunately, the current state of higher-education finance poses a significant obstacle to successful scaling for two reasons: funding tied solely to service volume and heavily subsidized and delayed student expenses.

Funding Tied Solely to Service Volume
In most states, public higher education is still using a funding model that is primarily based on the volume of service provided to students, i.e., total college enrollments. This dominant funding model—typically referred to as the “semester credit hour [SCH]–based funding model”—is driven by the number of semester credit hours of instruction delivered to students. Under the SCH-based funding model, state appropriations to institutions are tied directly to the number of SCHs delivered to students. More often than not, students also pay tuition on an SCH basis, and the federal government allocates financial aid to students based on their tuition bill. This means that, by and large, state appropriations, tuition, and federal aid—all of which have a direct link to SCHs, and hence service volume—account for the greatest share of revenue at public institutions. For example, according to the College Board, net

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tuition and state and local appropriations account for approximately 65 percent of the total revenue at public doctoral universities, and for 83 to 86 percent of the total revenue at public bachelor’s degree- and master’s degree–granting universities and public community colleges (College Board, 2013).

**Student Expenses Are Heavily Subsidized and Delayed**

Given the recent increases in tuition and fees and the proportionally larger share of costs being passed on to “consumers” (students and, in some cases, their parents) as state and federal appropriations decrease, one might think that consumers could serve as a potential check on increased higher education costs. But while students typically shoulder a large share of college costs, they are also heavily subsidized. In fact, recent statistics from the College Board show that after accounting for federal, state, and institutional grant aid that covers all tuition charges, students at public two-year colleges receive a net subsidy of $1,550 per year on average that can be used for such expenses as room and board (College Board, 2013). For students at public four-year colleges, the average tuition and fee charges are $8,890 per student; after accounting for grant aid, students generally owe only $3,120 (College Board, 2013). Tuition subsidies play a key role in providing access to higher education and equalizing student opportunity. However, by covering all or a significant portion of tuition costs, these subsidies also serve to reduce student and parent incentives to navigate efficiently through college and seek out better value for money.

In addition to large subsidies, students do not bear the full cost of attendance at the time of service delivery. In 2011–2012, more than 41 percent of all students received some type of student loan as a part of their financial aid package (NCES, 2014). The fact that many students significantly delay paying for their out-of-pocket college expenses may reduce the salience of those costs, leading to additional price insensitivity on the part of students (Lavecchia, Liu, and Oreopoulos, 2014).

The combination of volume-driven funding models, heavy tuition subsidies, and the delayed cost relevance poses considerable challenges for scaling quality-enhancing and cost-effective approaches for higher education delivery. Quite simply, institutions have little incentive to adopt policies and practices that are likely to reduce seat time for students because this is what generates the largest share of their tuition revenue and state appropriations. Moreover, students’ reliance on subsidies and loans reinforces upward cost pressure by disentangling cost from the price borne by the student at the time of enrollment.

**Shared-Savings Model**

To address these concerns, we propose the Shared-Savings Model (SSM), a new funding concept for higher education. The SSM leverages the fact that when institutions increase productivity, they also create considerable savings. The traditional SCH-based model returns all of these savings to taxpayers and students, leaving little

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incentive for institutions to produce them. The key innovation of the SSM is to quantify the cost savings from increased productivity and return a portion to the institutions that generate them as a means to promote productivity-enhancing activities and processes. To ensure that institutions also pursue activities to improve quality, and do not improve productivity by lowering quality or increasing student selectivity, incentive payments should be made contingent upon performance according to a set of quality metrics.

The SSM is a performance-based contract (PBC) between a state’s legislature or funding agency and an institution or group of institutional partners that operates in conjunction with the traditional SCH-based funding model. Institutions or partnerships that enter into PBCs continue to be funded as usual through the SCH-based funding model. However, they are also eligible to receive “shared-savings payments” that are tied to productivity gains and performance along a set of quality metrics.

The shared-savings payments are designed so that the sum of an institution or partnership’s funding allocation derived from the SCH-based model and the shared-savings payment under the SSM is less than or equal to the SCH-based funding allocation that the institution or partnership would have received had it not improved productivity and produced shared savings. While this represents a decline in the total level of state funding that the institution or partnership generates from its graduates, it also represents a true decline in total instructional and support costs incurred by the institution or partnership to produce those graduates. From the institution or partnership’s perspective, the shared-savings payment can be viewed as an improved margin on instruction for students who successfully graduate. Moreover, the institution may be able to leverage the excess capacity generated from increased productivity to increase the total number of students served, thereby more than recouping the lost revenue from students that complete degrees in a timely manner.³

The central element of the SSM is a simple productivity metric, specifically SCH to degree.⁴ When institutions reduce SCHs to degree for students who complete degrees, the state contributes fewer funds to produce the same number of graduates. For example, if an institution reduces average SCHs to degree from 150 to 140, and the SCH funding rate is $200 per SCH, then the state saves $2,000 on each degree produced—savings that can then be shared with the institution (Figure 1).

The SCH-to-degree metric, which policymakers can use to calculate the average cost of producing a degree for diverse student populations at each institution, serves as the cornerstone for the five primary components of the SSM (Figure 2), as we now describe in detail.

**Component 1: SCH-to-Degree Benchmarks**

The SSM requires policymakers to set SCH-to-degree target benchmarks for each participating institution. When institutions reduce SCH to degree relative to their benchmarks, policymakers
Figure 1. If an institution reduces its average SCH to degree, the state saves on each degree produced.

\[
\text{State Savings per Degree} = \text{SCH Funding Rate} \times (\text{SCH-to-Degree Benchmark} - \text{SCH-to-Degree Achieved})
\]

\[
\$200 \times (150 - 140) = \$2K
\]

*per SCH

Figure 2. Components of the Shared-Savings Model
The simplest way to set an SCH-to-degree benchmark is to use the performance of past cohorts; shared savings would result when an institution or partnership reduces SCH to degree relative to the performance of past cohorts.

can calculate the savings generated from the increased productivity. This shared savings is simply the cost borne by the state to produce the same number of graduates if the institution exactly met the SCH-to-degree benchmark minus the cost actually incurred.

The simplest way to set an SCH-to-degree benchmark is to use the performance of past cohorts; shared savings would result when an institution or partnership reduces SCH to degree relative to the performance of past cohorts, creating an actual reduction in the cost of producing those degrees over time. For example, if the benchmark is 150 SCHs at a state reimbursement rate of $200 per SCH, and an institution produces 1,500 degreed graduates at an average of 140 SCHs, then the shared savings is $3 million (Figure 3).

To account for differences in student characteristics (and to ensure that institutions do not increase productivity at the expense of either quality or increased student selectivity), policymakers can set different benchmarks for students with different characteristics. As before, cell-specific benchmarks can be set based on past experience for students within that cell in past cohorts. For example, if past cohorts of Pell-eligible students with low SAT scores completed their degrees with 160 SCHs while Pell-ineligible students with high SAT scores completed degrees with 140 SCHs, policymakers could set SCH benchmarks accordingly. Important student characteristics for two-year institutions include part-time status and developmental education requirements.

Figure 3. The total shared savings is the state savings per degree multiplied by the number of students completing a degree.

\[
\text{\# of Students Completing Degree} \times \text{SCH Funding Rate}^* \times (\text{SCH-to-Degree Benchmark} - \text{SCH-to-Degree Achieved}) = \text{Shared Savings}
\]

\[
1,500 \times \$200 \times (150 - 140) = \$3M
\]

*per SCH
Component 2: Quality Benchmarks

Policymakers should make shared-savings payments conditional upon meeting a set of quality benchmarks, to incentivize both productivity and quality. The specific metrics used to develop the quality benchmarks (and their relationship to shared-savings payments) should be developed through a collaborative process that involves the institutions and other key stakeholders in order to ensure maximum buy-in. The collaborative processes that such states as Tennessee, Ohio, and others have gone through in developing a set of metrics for their performance-based funding (PBF) systems could serve as models to states interested in developing quality benchmarks for an SSM. Historically, PBF systems have primarily focused upon incentivizing productivity, but some states have also included quality metrics and benchmarks in their systems. Miller (forthcoming) presents a guide for policymakers and institutions interested in including quality metrics within PBF systems. Although this paper does not focus on the development of these quality benchmarks, their inclusion is a critical check that ensures that increased productivity does not take place at the expense of either academic rigor or student opportunity.

Component 3: Shared-Savings Rate

When an institution produces shared savings and the state returns a portion of those savings back as a productivity-enhancing incentive, the percentage of total shared savings returned to the institutions is the “shared-savings rate.” For example, using the example already described, if policymakers chose to evenly split shared savings with the institutions that produced them, the institution would receive a shared-savings payment of $1.5 million. The higher the shared-savings rate, the larger the incentive for institutions to develop activities that increase productivity and, hence, shared savings.

Component 4: Shared-Savings Format

A shared-savings format (SSF) specifies the institution or partnership, the credential or credentials the institution or partnership is addressing through the SSM, and the benchmarks used to measure shared savings. It is important for all institutions to have the opportunity to benefit from the SSM, but institutions vary considerably in their missions and student populations. An SSM must recognize this diversity of missions. We thus propose four SSFs, aligned to four general classes of institution, each of which specifies the contractual arrangements for an SSM. We chose these specific SSFs to broadly capture the missions and goals of most institutions, but we recognize there may be exceptions. In practice, institutions and partnerships can work with policymakers and other stakeholders to develop SSFs that more appropriately reflect their missions and goals. The four SSFs are detailed in Table 1.
Table 1. Shared-Savings Formats: Four Options

<table>
<thead>
<tr>
<th>Single Four-Year Institution</th>
<th>Partnership Between Two-Year and Four-Year Institution</th>
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<tbody>
<tr>
<td><strong>Focus:</strong> Improve Baccalaureate Completions of First-Time-In-College (FTIC) Students</td>
<td><strong>Focus:</strong> Improve Baccalaureate Completions of FTIC Students Who Begin at the Two-Year Institution</td>
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<tr>
<td>A key goal of four-year institutions is to support those FTIC students seeking bachelor’s degrees through degree attainment. For institutions focusing on baccalaureate completions, the SCH-to-degree benchmarks may be set according to actual data on SCH to degree for past cohorts, so that improvement reflects actual cost reductions relative to past experience. The SSF must specify a time window for completing a bachelor’s degree, for example, six years. To ensure that the institution does not purposely choose students more likely to complete degrees in a timely manner, the SSF may set benchmarks for students with specific characteristics that are observable in state administrative data, such as SAT scores and Pell eligibility.</td>
<td>A key goal of both two- and four-year institutions is to support FTIC students seeking bachelor’s degrees and attending two-year institutions to achieve that goal at four-year institutions. To address this key goal, two- and four-year institutions may choose to form a partnership focused on completions of bachelor’s degrees at the four-year partner by FTIC students from the two-year partner. The SCH-to-degree benchmarks may be set according to actual data on SCH to degree for past cohorts of graduates of the four-year partner who started their careers at the two-year partner so that improvement reflects actual cost reductions relative to past experience. To ensure that the institution does not purposely choose students more likely to complete degrees in a timely manner, the SSF may set benchmarks for students with specific characteristics that are observable in state administrative data, such as college readiness, intent at entry, and Pell eligibility. Studies show that SCH to degree is particularly high for transfer students due to a number of factors—including, but not limited to, transfer credit loss and inefficient course-taking at two-year institutions, so this form of SSF has potential to generate significant shared savings.</td>
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Single Two-Year Institution

Focus: Improve Credential Completions of FTIC Students

A key goal of two-year institutions is to support FTIC students’ completion of appropriate credentials—such as associate’s degrees and certificates—within the institution. For institutions focusing on completions of these types of credentials, the SCH-to-degree benchmarks may be set according to actual data on SCH to credential for past cohorts, so that improvement reflects actual cost reductions relative to past experience. The SSF must specify a time window for completing a credential, for example, three years. Separate benchmarks must be set for each type of credential offered at the institution. To ensure that the institution does not purposely choose students who are more likely to complete degrees in a timely manner, the SSF may set benchmarks for students with specific characteristics that are observable in state administrative data, such as college readiness, intent at entry, and Pell eligibility.

It is important to note that many FTIC students at two-year colleges are not seeking a degree or credential at the time of enrollment. While it might be possible for institutions and policymakers to work together to develop an SSF targeted at these students, we do not outline a specific example here.

Two-Year or Four-Year Institution

Focus: Improve Credential Completions of Adult Learners

Adult learners come to college with a wide range of existing knowledge, experience, skills, and college coursework from multiple sources. Institutions may thus create considerable shared savings by successfully leveraging those skills and knowledge to place adult learners in appropriate courses and degree plans that build upon their background and meet their needs. For adult learners, SCH-to-degree benchmarks could begin by focusing on the total length in SCHs of the degree plan for which they enroll. If students can leverage their existing knowledge, skills, and coursework to complete their credentials with fewer SCHs than are required for an FTIC student, then the institution would be eligible for shared-savings payments. For example, if students enter a bachelor’s degree program that requires 120 SCHs for an FTIC student to complete, an SCH-to-degree benchmark could be set at 120 SCHs for adult learners. This would incentivize institutions to better leverage the existing knowledge, skills, and academic credit of transfer students.
Component 5: “Set-Aside”
Under the SSM, institutions and partnerships continue to be funded via the SCH-based model with the shared-savings payment functioning as a productivity and quality incentive. After cohorts have had sufficient time to reach their milestones (e.g., six years for bachelor’s degrees among FTIC students), eligible institutions and partnerships receive payments that reflect the shared savings they generated relative to their SCH-to-degree benchmarks. Because shared-savings funds operate outside the traditional SCH-based model, it is necessary for a state’s legislature or funding agency to separately allocate these funds as a “set-aside,” which ensures that the state commits to shared-savings payments and that institutions and partnerships may expect to receive them. The set-aside should be sufficiently large to ensure that an institution or partnership could draw from it the maximum possible shared-savings payment. Next, we describe potential approaches to establishing the set-aside.

Set-asides for SSFs focused upon improving the rate of credential completion by FTIC students at the institution or partnership: When the SSF emphasizes completion of a specific type of credential by FTIC students at an institution, it is straightforward to calculate a maximum shared-savings payment. This is because degree plans require a minimum number of credits to complete, thereby placing a floor on SCHs to degree. An institution would maximize the value of its shared-savings payment when all entering FTIC students complete a credential at the minimum number of SCHs required by their degree plan. Using this insight, we can calculate the minimum amount required to ensure that the state can cover any possible shared-savings payment out of the set-aside. For example, if the SCH funding rate is $200 per SCH and the shared-savings rate is 50 percent, then a four-year institution with bachelor’s degrees requiring 120 SCHs, an SCH-to-degree benchmark of 150 SCH, and an entering cohort of 2,500 FTIC students would require a set-aside of $7.5 million (Figure 4).

While this is a large set-aside, it represents the maximum shared-savings payment for which the institution or partnership could be eligible. If, for example, the institution reduces SCH to degree to 140 and achieves a completion rate of 60 percent of a possible 2,500 students (i.e., 1,500 students), then it would receive a shared-savings payment of $1.5 million (Figure 5).
Set-asides for SSFs focused on improving the rate of credential completion by returning adults: Establishing a set-aside for adult learners may not be as straightforward as it is for FTIC students because institutions could choose to provide adult learners with credits for job experience and other knowledge and skills that may reduce the amount of coursework they need to graduate. Thus, there may be no minimum SCH-to-degree number for returning adults. In practice, the institution or partnership will need to negotiate with the state to establish a reasonable SCH-to-degree floor that suits their particular program. With such a floor established, it is straightforward to calculate the necessary set-aside as described above.
Key Drivers of the Model

There are two key ways by which institutions or partnerships may leverage the SSM to generate shared-savings payments. The first and most obvious is to reduce SCH to degree for graduates.

The second mechanism is to increase the total number of graduates, either by improving completion rates or by increasing the total number of students served. This is perhaps less obvious, but happens because shared-savings payments are calculated by multiplying the number of graduates by the shared-savings rate and the average savings generated by each graduate. For example, with a shared-savings rate of 50 percent, if the SCH-based funding rate is $200 per SCH and the institution reduced SCH to degree from 150 to 140, and increased its total number of graduates from 1,000 to 1,250, then its shared-savings payment would increase from

\[50 \text{ percent} \times 200 \times (150–140) \times 1,000 = \$1 \text{ million}\]

to

\[50 \text{ percent} \times 200 \times (150–140) \times 1,250 = \$1.25 \text{ million}.\]

Because shared-savings payments are tied directly to the number of graduates and the completion rate, the SSM gives institutions a direct incentive to improve productivity and completion rates. Institutions can also leverage excess capacity generated by increased productivity to increase the total number of students served—which should translate to increased numbers of graduates eligible for shared-savings payments.8

SSM Could Be a Win-Win

The attractive feature of the SSM is that it has the potential to produce a “win-win” outcome, with meaningful benefits for the state, institutions, and students. On the one hand, the state is able to increase the overall productivity of higher education and reduce the average cost of producing graduates at participating institutions and partnerships while also holding institutions accountable for achieving quality benchmarks. On the other hand, institutions are able to improve their overall margins on instructional and support services, and can use shared-savings payments both to improve instructional quality and to subsidize other activities that are consistent with their broader mission. Institutions also might be able to take advantage of additional capacity generated by increased productivity to increase enrollment rates.

To illustrate this, consider an institution that would produce 1,500 graduates at an average of 150 SCH to degree under status quo. In this case, if the SCH funding rate were $200 per SCH, the state would pay $45 million to produce the 1,500 graduates. Now, consider an alternative scenario where the institution participated in an SSM with a shared-savings benchmark of 150 and a shared-savings rate of 50 percent. If the institution were able to leverage productivity to reduce SCH to degree to 140, then it would receive just $42 million \((1,500 \times 140 \times \$200)\) via the SCH-based funding model for producing the 1,500 graduates. However, the institution would also receive a shared-savings payment of $1.5 million \((50 \text{ percent} \times \$200 \times 1,500 \times [150–140])\). Thus, the institution could realize a net saving of $3 million under SSM.
would receive $43.5 million in total state payments for producing the 1,500 graduates. This is $1.5 million less than under the SCH-based model alone; however, this represents a true cost savings to the state.\(^9\) While the institution receives less in total state revenue for producing the 1,500 graduates, it effectively receives a higher SCH-based funding rate on those graduates. Specifically, under the SSM model, the institution received $43.5 million for delivering a total of 210,000 SCHs of instruction (1,500 × 140). Thus, the institution received $207.14 per SCH of instruction delivered to its graduates (43,500,000/210,000), an increase of 3.57 percent over the SCH-based funding rate of $200 per SCH. The additional $7.14 per SCH represents an improved margin on instructional and support services for the institution’s graduates. Moreover, the institution also reduced its total volume of SCHs delivered, thereby creating capacity to serve additional students with the same level of resources. If the institution can increase its total enrollment to soak up the additional capacity, it can generate the same level of total state funding while also receiving the shared-savings payment.\(^10\)

**Approaches for Increasing Productivity**

With the shift in incentives toward lower SCH to degree, institutions are able to focus on implementing a range of innovative approaches that support high-quality, cost-effective education. As mentioned above, there are a number of promising practices that institutions can pursue to successfully address one of the SSFs.\(^11\)

**Policies and Programs to Help Students Choose Courses and Successfully Navigate Through College**

**Intrusive advising and coaching.** To successfully navigate through college, students must choose a program of study that will most effectively help them achieve their life goals. They must choose appropriate courses that both contribute to their academic...
and career goals and propel them toward an appropriate academic credential. These are difficult and cognitively intense decisions that many students struggle with. Research increasingly suggests that the traditional advising structures that institutions have in place to assist students with these decisions are inadequate, particularly for nontraditional students who tend to lack outside support from those with close knowledge about and experience with the higher education system (Bailey, Jaggers, and Jenkins, 2015; Miller and Kosiewicz, 2015).

To address these concerns, a number of institutions have developed intrusive advising and coaching programs that provide a strong internal support structure to help students access and process information and effectively navigate through college. In some cases, these programs are supplemented with predictive analytics that draw on comprehensive student data systems to attempt to pinpoint problems and issues before they arise and provide supplemental information to advisers and coaches. While the cost of such programs should be considered, the research on intensive advising and coaching has been generally promising, suggesting that it can improve completion rates and time to degree (Bahr, 2008; Bettinger and Baker, 2011; Angrist, Lang, and Oreopoulos, 2009; Visher, Butcher, and Cerna, 2011; Bloom and Sommo, 2005; Carrell and Sacerdote, 2013).

**Policies addressing transfer issues.** Navigating through college toward an appropriate academic credential is particularly complex for students who choose to transfer from one institution to another. Historically, academic programs have not been well aligned across institutions, so that credits earned at one institution do not always transfer to another. Even when credits do transfer, the receiving institution may refuse to count them toward the major. Advisers at one institution also tend to lack sufficient information about academic programs at other institutions to provide effective guidance to students who seek to take courses that will advance them toward a desired credential at another institution. These problematic issues are exacerbated by the fact that nontraditional students, who are typically least prepared to navigate the transfer process, are also most likely to transfer (Scott-Clayton, 2011b).

One common approach to address transfer issues is for institutions to work together to develop articulation agreements that specify course equivalencies and credit-transfer policies across institutions. In some cases, states have mandated statewide articulation agreements that require institutions to accept certain academic credits from any institution in the state. Despite initial optimism about articulation agreements, the research on their effectiveness toward improving student outcomes and time to degree has been discouraging (Anderson, Alfonso, and Sun, 2006; Anderson, Sun, and Alfonso, 2006; Falconetti, 2009; Roksa and Keith, 2008; Roksa, 2009; Zinser and Hanssen, 2006). In practice, there has been strong opposition from many institutions and faculty, arguing that the courses offered at other institutions are not adequate substitutes for their own. If institutions accept transfer credit but refuse to apply it toward the degree, students may be required
to retake many courses. To address these issues, many states and institutions have engaged in “tuning” processes, whereby the content covered in key courses is aligned across institutions. The hope is that this process will help to improve the rate of acceptance of transfer credit and smooth the transfer process for students.

Unfortunately, articulation agreements and/or tuning alone do not address the concern that advisers at feeder institutions often lack adequate information about academic programs at transfer institutions to effectively help students navigate toward desired credentials at the transfer institution. As a response, institutions have begun to experiment with “guided degree pathways,” where institutions partner to provide a degree program explicitly for transfer students that begins at one institution and completes at another. Partner institutions collectively design the degree pathway and set agreed course content that the transfer institution is comfortable accepting for credit. This explicit mapping of the degree pathway helps advisers at the feeder institution effectively support students’ successful navigation toward the credential. While research on guided pathways is only beginning to emerge, the approach has considerable potential to improve student success and time to degree (Bailey, Jaggers, and Jenkins, 2015; Bragg, 2014).

Policies and Programs that Support Alternative Paths to Earning Academic Credit

Another approach to helping students reduce SCH to degree is to provide opportunities for capable and motivated students to earn academic credit outside the confines of—and at a significantly lower cost than—the traditional college classroom. These include:

**Advanced Placement and dual credit.** For years, institutions have offered students the opportunity to earn academic credit through the College Board’s Advanced Placement (AP) Program. The AP Program allows students to take academically rigorous classes with college-level content during high school and earn college credit by achieving a certain score on nationally recognized AP Exams. While the College Board makes recommendations for awarding college credit based on AP Exam scores, institutions vary considerably in their policies for accepting AP credits and the scores they require. Similarly, many high schools offer students the opportunity to participate in dual credit programs, whereby students enroll in actual college classes that fulfill requirements for their high school degree. Students can transfer the college credits earned by dual credit to the college they attend, subject to the institution’s policies for accepting transfer credit. Research suggests that students who earn AP and dual credit during high school have improved college outcomes in addition to reduced time to degree (Evans, 2013; Bailey, Hughes, and Karp, 2002; Allen and Dadgar, 2012; Morrison, 2007; Klopfenstein and Thomas, 2009; Speroni, 2011).

**College-Level Examination Program and credit by exam.** Institutions can also allow students to earn academic credit by passing an exam to demonstrate mastery of course content. For years,
many institutions have participated in the College Board’s College-Level Examination Program (CLEP), which offers nationally recognized exams that cover key content for a wide range of common college courses. The College Board publishes information about content covered on CLEP tests, and provides students with access to background materials and study guides to prepare for the exams. Similarly, many institutions operate their own credit-by-exam programs that offer students the opportunity to sit for an exam and demonstrate mastery of course content. Research on the outcomes of students involved in CLEP or other credit-by-exam programs is limited but suggests that students who receive academic credit in this manner do well, on average, in follow-on courses and have reduced times to degree (Barry, 2013).

Credit for prior knowledge and skills. Many students, particularly adult learners, may come to college with significant knowledge, skills, and life experiences that might substitute for college-level coursework. Institutions and organizations are developing methods to measure student background knowledge and skills appropriately to aid in course placement and award appropriate college credit. Institutions have experimented with prior-learning assessments (PLAs) to measure students’ knowledge and skills and make credit recommendations where appropriate. Furthermore, organizations like the American Council on Education (ACE) are working to map the content covered in large job-training classes and make appropriate recommendations for academic credit. For example, ACE offers a nationally recognized college transcript with explicit credit recommendations based on military and other federal job-training programs. Currently, PLAs are offered at a number of public, independent, and for-profit institutions, however their utilization is not consistent. Additionally, institutions vary considerably in their policies toward accepting ACE and other job-training-based credits and applying them toward students’ majors. Research on the outcomes of students who receive credits through these programs is only beginning to emerge, but these programs show promise for helping students advance toward desired credentials (Klein-Collins, 2010; Brigham and Klein-Collins, 2010; Freed and Mollick, 2009).

Policies Explicitly Tying Financial Aid to Academic Performance and/or Time to Degree
While institutions can develop programs and support structures that help students navigate and complete their education, it is ultimately up to the students themselves to take advantage of those supports and progress toward their goals. One set of policies seeks to incentivize students directly so they successfully complete appropriate coursework and efficiently progress toward key milestones and degrees by tying financial aid to academic performance and/or time to degree. Research suggests that performance-based student financial aid can increase total credits earned and the likelihood to complete degrees, as well as improve grade point averages (Scott-Clayton, 2011a; Barrow, et al., 2012; Patel et al., 2013). However, these policies may not be appropriate for all students, particularly given the evidence we have cited throughout, which highlights the issues that students face in efficiently and effectively navigating through college to quality degrees and credentials that meet their needs. Further research is needed to assess potential differential effects of financial aid-based approaches on students with different characteristics—particularly nontraditional and first-generation college students. Moreover, financial aid–based policies may be more effective when used in conjunction with additional supports, such as those highlighted above, to help students navigate efficiently through college.
New and Innovative Models of Delivery

Institutions are also developing and implementing new and innovative modes of delivery aimed at improving quality and/or the pace of student learning. Some examples include:

**Hybrid/blended learning.** Institutions are working to integrate technology into the classroom effectively and improve academic quality and student success. While institutions are still experimenting in this area, a systematic review of rigorous research on online education suggested that hybrid/blended approaches that combine online instruction with traditional face-to-face instruction can improve student performance (Means, 2009; Twigg 2003). Institutions also might be able to leverage hybrid course formats to
improve productivity if such formats can be used to increase teaching loads for faculty while maintaining or enhancing quality. For example, a faculty member might be able to teach two sections of the same course simultaneously in a hybrid format with 50 percent of instruction delivered online and 50 percent delivered face to face.

**Massively Open Online Courses (MOOCs).** Institutions have also been developing MOOCs that make courses widely available to the population via the Internet. Emerging research suggests that most students who enroll in MOOCs are unlikely to complete them. However, this is not a particularly unexpected finding given the low entry cost to students of taking a MOOC and the lack of payoff for completing one. To leverage the full potential of MOOCs, institutions must find ways to recognize the learning that students achieve through them by awarding appropriate academic credit. The key problem for institutions is the need to verify that students who complete MOOCs do, in fact, learn the course content. One promising approach could be for institutions to link MOOCs to existing CLEP and/or credit-by-exam programs by recommending MOOCs that students can take to learn the course content covered by a particular CLEP test or credit-granting exam. If institutions are comfortable with the course content covered in a MOOC and can effectively verify that students learn the material by testing them on the back end, then motivated students might be able to benefit from the wealth of high-quality, low-cost academic content being developed by institutions and other organizations. More research is needed to better understand the full potential of MOOCs and their impacts on students and institutions.

**Competency-based education.** More recently, a growing number of colleges and universities across the nation are experimenting with the development of competency-based education programs. These programs are usually designed for returning adult students or first-time adult learners. By focusing on student mastery rather than seat time, students are often able to accelerate through the program by leveraging their existing knowledge and skills base. Students then focus their attention on mastering the knowledge, abilities, and skills that they do not already possess. The end result can be decreased time and/or SCH to degree. While competency-based education is only in a nascent stage and the research on its effectiveness for different types of students is only beginning to emerge, it shows promise as a strategy for improving student success and time to degree, particularly for highly motivated students and/or adult learners.

**Conclusion and Considerations for Implementation**

The SSM offers a new funding concept for higher education that leverages shared savings to provide institutions incentives to contain costs. The savings translate to better value for state dollars spent, greater productivity (and potentially effectiveness) for institutions, and cost savings for students who progress through higher education programs more efficiently. When effectively implemented in concert with systems that ensure quality, we believe the SSM holds promise for the following reasons:
- **It integrates well with the traditional SCH-based model.** States continue to fund higher-education institutions based on the number of SCHs delivered, but institutions also receive shared-savings payments based on their ability to improve productivity.

- **It can preserve current SCH-based funding rates.** Because the funds required to operate the SSM derive from productivity-driven shared savings, institutions only receive shared-savings payments when they reduce SCHs to degree relative to a set of predetermined benchmarks. Depending on the benchmarks and the shared-savings rate, the state can maintain or reduce total budgets for higher-education funding per student while both maintaining historic SCH-based funding rates and covering the shared-savings payments.

- **It is voluntary for institutions.** Institutions can continue to operate under the status quo and receive historic SCH-based funding rates, but if they choose to develop practices to increase productivity and if they concomitantly maintain quality, they might also be eligible for shared-savings payments.

A potential barrier to implementation of the SSM is likely to be the long time horizon that institutions would face before receiving their shared-savings payments. In setting the deadline for determining shared-savings payments, policymakers must balance the need for an adequate period to observe a sufficient number of students completing the incentivized degree or credential within that time versus the need for timely performance feedback and incentives. For example, we suggest a six-year window for observing completion of four-year degrees by FTIC students at four-year institutions. While six years will capture the majority of graduates, some students could take longer to complete a four-year degree. However, six years is a long time for institutions to wait to receive shared-savings payments, which could limit incentives to invest in productivity-enhancing activities. Some institutions might not believe that policymakers will follow through with incentive payments that are delayed six years. In practice, the six-year period might be a formidable barrier to effective implementation of the SSM at four-year institutions.

While it is likely that policymakers and institutions would be attracted to an SSM framework, considerable work remains for implementation, including the following:

**A systematic and inclusive path toward implementation must be developed.** To improve the likelihood of implementing the SSM, it is crucial that the implementation process is viewed as legitimate and inclusive by all stakeholders. Thus, we recommend that states interested in the SSM engage an external, neutral party to coordinate a systematic and inclusive stakeholder engagement process to refine the model to fit the context of the state and build consensus toward implementation. This could include the following steps:

1. **Share the framework with stakeholders and refine the approach based on input.** An external party should convene key stakeholder groups—including policymakers, university
administrators, faculty members, and students to introduce the SSM framework, gain initial reactions, and outline the engagement process. After engaging members of each stakeholder group individually to gather their perceptions and suggestions for improving the model, the external party should identify areas of alignment and misalignment, and distill lessons learned from each group. The external party should then reconvene the stakeholder groups to discuss the lessons learned and work toward an approach that achieves buy-in.

2. **Institute a collaborative process to develop appropriate quality metrics.** While there is a growing research base on defining and measuring quality in higher education, we are far from having a set of rigorous quality metrics that stakeholders agree upon. Since the SSM operates as contracts with individual institutions or partnerships, there is some flexibility for the quality metrics to vary across those contracts. To reduce administrative burden and ensure that all SSM contracts are viewed as fair, we recommend that states develop a large set of potential quality metrics that institutions and partnerships can draw from to establish their SSM contracts. To ensure buy-in, a neutral external party should coordinate a stakeholder engagement process around defining and measuring quality in higher education that draws on the emerging research base on these issues.13

3. **Seek out institutions to engage in pilots.** As with any new policy, we recommend a slow roll-out process, wherein a set of motivated and interested institutions engage in pilots. Ideally, at least one pilot could be conducted for each SSF. The state can engage an external organization to study the SSM’s implementation and impact, and the research can be used to refine implementation in the pilot institutions, as well as to refine the SSM framework more broadly and determine whether the model should be made more widely available. An important consideration during the pilot should be to monitor and ensure against unintended consequences.14

**Research should be conducted to support planning and decisionmaking surrounding productivity, quality, and costs.** The agenda we have outlined provides information to support planning and decisionmaking by institutions and policymakers as they work toward implementing the SSM and fully leveraging the incentives it provides. Unfortunately, the current research base is lacking in many important areas. We thus recommend a program of supporting research in the following areas:

1. **Impact of institutional approaches to improve student success and/or time to degree with a specific focus on SCH to degree.** To develop and implement effective approaches to fully leverage the SSM and generate shared savings, institutions must have accurate information on the impact of promising approaches to improve degree completion and improve productivity. While there is a large and growing research base on the impact of programs aimed at improving student success and degree completion, we know much less about how those programs relate to productivity and SCH to degree. There is also a dearth of innovation in and research on programs and approaches that are specifically designed to help students progress through higher education more efficiently. To support SSM implementation, we recommend further research on both of these topics with an eye toward developing a set of research-based best practices that institutions can draw upon as they develop and implement approaches to produce shared savings.
2. Appropriately defining quality in higher education and developing and testing accurate and practical quality metrics. As stakeholders work to implement SSMs, they must agree upon a rigorous and measurable definition of quality and a set of well-defined metrics to measure quality. These are clearly contentious issues, and the debates over them remain far from settled. While there is a growing research base on these topics, much more needs to be done to support stakeholders as they work toward implementing SSMs that ensure institutions have proper incentives to pursue both quality and productivity.

Additional research should be conducted on the underlying cost drivers for higher education and policies and programs to address them. There is a lack of good research on the underlying cost drivers for higher education in general. As higher-education costs continue to grow, they increasingly become a barrier for students interested in obtaining the necessary knowledge and skills to support their career goals. More research is needed to understand the underlying causes of this cost growth, and to identify, test, and scale effective policies and approaches to reduce it.
Notes

1 Tuition reported in constant 2012–2013 dollars.

2 The National Center for Higher Education Management Systems (NCHEMS) reports that the six-year graduation rate for baccalaureate students was 52.2 percent in 1997 and had only grown to 55.5 percent in 2009.

3 By delivering fewer SCHs to the average graduate under the SSM, the institution has additional capacity to enroll and graduate more students. While institutions could leverage productivity gains to increase the total number of students served under a traditional SCH-based model, such an approach would be revenue neutral in terms of tuition and state funding. It may also require the institution to invest more in recruitment efforts to expand its total enrollment to maintain the same level of funding. The shared-savings payments provide an additional incentive to institutions to enhance efficiency.

4 Here we mean SCHs actually delivered by the institution. Students may accumulate credits through other means, such as Advanced Placement, dual credit, or College-Level Examination programs, or prior-learning assessments. These credits are not delivered by the institution, and thus do not count toward the SCH-to-degree metric.

5 In practice, a number of additional factors may play a role in setting benchmarks. For example, policymakers may set major-specific benchmarks, owing to the fact that college majors vary considerably in their degree requirements. In choosing additional factors to incorporate into benchmarks, policymakers must balance the need for fairness with the need for simplicity and transparency.

6 Under each SSF, the institution continues to receive funding for all students it serves through the traditional SCH-based funding model, at the same rate.

7 That is, the institution receives the same funding through the SCH-based model as it would otherwise receive if it did not participate in the SSM. The shared-savings payments are thus made over and above funding allocated through the SCH-based model.

8 There may be limitations to institutions’ abilities to leverage excess capacity in course delivery. For example, increased student enrollment may require increases in housing and other student service capacities. Moreover, if institutions cannot fully take up the slack in capacity generated by increased productivity, there may not be enough demand for courses to meet existing faculty loads. However, the majority of institutions rely heavily on adjunct faculty, and could shift away from adjuncts in such cases.

9 Note that this institution would still receive SCH-based funding for all currently enrolled students.

10 In practice, increasing enrollment to take up slack caused by improved productivity may be difficult. For example, many flagships face capacity constraints, and are unable to accept all qualified applicants. It also might entail additional costs, such as additional recruiting costs, which are likely to vary considerably across institutions. Shared-savings payments must be sufficiently large to cover these additional costs to incentivize institutions’ SSM participation.

11 Most of these activities require a substantial investment up front on the institution’s part, and may have additional ongoing costs. The hope is that the additional incentives provided by the SSM payments can help offset or fully cover these costs, thereby helping to scale the most effective practices. Institutions will need to study the costs and benefits of these approaches carefully and determine how they relate to the bottom line.

12 These policies could benefit two-year/four-year partnerships focused on improving the number of qualified FTIC students who begin at the two-year institution and complete bachelor’s degrees.

13 We recommend that the external party begin by coordinating a stakeholder convening to define the state’s mission(s) and key goals for various classes of higher education institutions and propose a set of metrics to measure progress toward those goals. If applicable, this process can draw upon the state’s strategic plan, and ideally the convening can be coordinated with regular strategic planning processes. The external party could then meet individually with each stakeholder group to get further input, to identify areas of alignment and misalignment, and distill lessons learned from each group. The external party should then reconvene the stakeholder group to discuss the lessons learned and work toward a set of quality metrics that achieves buy-in.

14 Experience with implementation of PBF models in various states has demonstrated the potential for institutions to respond in unintended and perverse ways to improve their funding (Lahr et al. 2014; Pheatt et al. 2014). While the quality benchmarks are intended to address this concern and ensure that institutions do not shirk on quality in order to reduce SCH to degree, researchers and policymakers should closely monitor student learning and other objective student outcomes as institutions implement the SSM to ensure that efficiency does not come at the cost of quality.
References


Bailey, Thomas R., Katherine Hughes, and Melinda Karp, What Role Can Dual Enrollment Programs Play in Easing the Transition Between High School and Postsecondary Education? Community College Research Center, 2002.


Barry, Carol, A Comparison of CLEP and Non-CLEP Students with Respect to Postsecondary Outcomes, College Board, 2013.


Bloom, Dan, and Colleen Sommo, Building Learning Communities: Early Results from the Opening Doors Demonstration at Kingsborough Community College, MDRC, 2005.


Evans, B. How Do College Students Use Advanced Placement Credit? working paper, Vanderbilt University, 2013.


NCES —See National Center for Education Statistics.


Speroni, Cecilia, *Determinants of Students’ Success: The Role of Advanced Placement and Dual Enrollment Programs*, working paper, National Center for Postsecondary Research, 2011.


About This Perspective

This Perspective examines the way in which the dominant funding model in higher education, based on semester credit hours (SCHs), can promote cost inefficiencies. We propose a new approach—the Shared Savings Model (SSM)—that provides an alternative incentive structure for providers of higher education. The SSM leverages the fact that when institutions increase productivity, they also create considerable savings. While the traditional SCH-based model returns all of these savings back to taxpayers and students, leaving little incentive for institutions to produce them, the SSM promotes productivity-enhancing activities and processes by quantifying the cost savings from increased productivity and returning a portion back to the institutions that generate them. Institutions may find the SSM more palatable than traditional outcomes based funding approaches because it operates in conjunction with the SCH-based model, can preserve current SCH-based funding rates, and is voluntary for institutions. We lay out a framework for the model and offer recommendations for implementation, including approaches to increase productivity and considerations for ensuring quality, to guide institutions interested in pursuing funding innovations.

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