Higher education policy as secondary school reform: Texas public high schools after *Hopwood*

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Abstract:

The higher education diversity programs that Texas enacted after the *Hopwood* decision banned affirmative action had unexpected positive consequences for the state's high schools. The Texas top 10% law, the Longhorn and Century Scholarships, and the TEXAS Grants Program each explicitly linked postsecondary opportunities to high school performance and clearly articulated that link to students across the state. As a result, these programs worked as K-16 school reforms, using college opportunities as incentives to improve educational outcomes at the high school level. Using panel data describing Texas high schools between 1993 and 2002, this paper demonstrates that Texas's post-*Hopwood* higher education policies redistributed college-related activity at public high schools and boosted high school students' academic engagement.

Keywords: K-16 school reform; higher education outreach and admissions; financial aid policy; college applications; student engagement

The state of Texas became a leader in school reform in the 1980s and early 1990s, implementing standardized testing and school accountability policies that provided the model for the 2002 *No Child Left Behind Act*. In the mid-1990s, the states' educational policy-makers shifted their attention to higher education. After the Fifth Circuit Court of Appeals banned affirmative action at Texas colleges and universities in 1996, the state undertook three policies designed to improve college-going traditions in the high-poverty and segregated high schools that educate disproportionate numbers of Texas's black and Hispanic youth. The Texas top 10% law, the Longhorn and Century Scholarship programs, and the TEXAS Grants program were designed in the context of the affirmative action debate, and are typically assessed in terms of their consequences for racial diversity at the states' flagship public universities (*c.f.* Walker and Lavergne 2001; Tienda et al. 2003; Tienda and Niu 2006a; Tienda and Niu 2006b).

But the consequences of these higher education policies do not stop at the campus gates. In this paper, I argue that these efforts constitute a second wave in Texas's high school reform effort. Unlike traditional school reform policies, Texas's higher education policies make no attempt to desegregate schools or influence the distribution of instructional resources in the state. These policies also differ fundamentally from the standards-driven reforms of the 1980s and early 1990s since they do not link student performance with rewards or punishments for schools, principals, or teachers. Instead, the top 10% law, the Longhorn and Century Scholarships, and the TEXAS Grants program all use postsecondary opportunities and outreach to influence high school students' behavior. Each of these policies creates postsecondary incentives to reward student effort,

and each attempts to clearly signal these incentives to students throughout the state. As such, these policies can be understood as experiments in K-16 school reform.

As Kirst and Venezia (2001, p. 93) explain, "policies and practices in the areas of admissions and placement … communicate signals, meaning, and expectations to secondary school students and K-12 educators." High school students with college aspirations have a strong incentive to heed these signals. The K-16 school reform model attempts to improve the clarity and consistency of higher education signals, and thereby shape the educational experience of high school students (Kirst and Bracco 2004; Callan et al. 2006). This paper argues that Texas's post-*Hopwood* higher education policies fit this model of K-16 reform. I demonstrate that these policies extended access to Texas's elite flagship universities to students in schools with weak college-going traditions and stimulated student engagement across the state by clearly linking postsecondary opportunities to high school behavior.

The paper begins with a description of the higher education policy initiatives that Texas undertook after the *Hopwood* decision banned affirmative action. Table 1 provides a brief précis of these policies and their hypothesized consequences for Texas high schools. To test these hypotheses, I have assembled a panel dataset describing Texas public high schools in each of the years between 1993 and 2002 using data from multiple sources. After a discussion of this dataset, I estimate the consequences that Texas's changing higher education policies held for the state's high schools using a series of fixed-effects time-series regression models.

[TABLE 1 AROUND HERE]

Policy background

Hopwood v. University of Texas

When the Fifth Circuit Court of Appeals ruled against the University of Texas in 1996 (*Hopwood v. University of Texas* 78 F.3d 932, 5th Circuit 1996), it declared that maintaining student diversity at elite campuses "is not of sufficient compelling interest to support the use of race as a factor in admissions." The Texas state government interpreted this ruling in broad terms, immediately banning racially-sensitive recruiting, admissions, and financial aid practices at all Texas higher education institutions.

The *Hopwood* decision had an immediate effect on black and Hispanic enrollment at Texas's colleges and universities. In 1997, the freshman enrollment of Hispanics at UT dropped from 14.5% to 12.6%. At A&M, the post-*Hopwood* decline in Hispanic enrollment was more dramatic, with the Hispanic share of first-time freshman falling from 14.7% in the fall of 1996 to 9.7% in the fall of 1997. The proportion of African-American freshmen also declined on both flagship campuses immediately after the affirmative action ban (Dickson 2006a).

These enrollment declines occurred in part because students who would have been admitted under affirmative action were denied admission under the new racially-neutral admissions regime. But the elimination of affirmative action also had the effect of discouraging applications from minority students who would have gained admission under the new system (Card and Krueger 2005; Long 2004). Dickson (2006b) demonstrates that the elimination of affirmative action reduced Texas public high school students' odds of taking the SAT or ACT (which she understands as a proxy for selective college application). These negative effects were most pronounced for black and Hispanic students.

In light of these findings, I hypothesize that the *Hopwood* decision had a chilling effect on college-going behavior for students enrolled at Texas public high schools. This chilling effect is likely particularly pronounced at schools with high concentrations of black and Hispanic students (since these students were directly affected by the *Hopwood* decisions) as well as schools with weak college going traditions, since students at these schools often lack the information necessary to accurately assess their college admissions chances (McDonough 1997).

H.B. 588: The Texas top 10% law

Passed by the Texas legislature and signed into law less than a year after the *Hopwood* decision, H.B. 588 was formulated as a uniform admissions standard that would provide access to flagship universities for black and Hispanic students who had previously benefited from affirmative action. The law guarantees automatic admission to any Texas public college or university for all in-state applicants who graduate from high school in the top ten percent of their class, as long as they apply as first-time freshmen within two years of high school graduation. While the law requires that qualifying applicants complete a university application in order to gain admission, submitting SAT or ACT scores and essays where required, these additional application materials are not considered in university admissions decisions for rank-eligible students (Leicht and Sullivan 2000).

It appears that the top 10% law has tempered *Hopwood's* negative effects on minority enrollment at UT and A&M primarily by increasing black and Hispanic students' odds of application. For top-decile college graduates, H.B. 588 clarified the admissions process and reduced the uncertainty of admission to the public flagships.

Since class rank was always a major factor in UT and A&M admissions, few students were admitted under the 10% guarantee who would not have been admitted in earlier years, either with or without affirmative action. However, prior to the implementation of the top 10% law, college admissions criteria were complex, and many students lacked information to judge their chances of admission. That changed after the implementation of H.B. 588 as UT and A&M started sending letters, signed by the governor, to the state's graduating seniors providing an explanation of the admissions policy and bearing the names of all Texas public colleges and universities (Niu, Sullivan, and Tienda 2006). Nonetheless, Dickson (2006b) finds that the implementation of H.B. 588 failed to completely offset the college application chill that began with the *Hopwood* decision.

This paper asks whether H.B. 588 changed the college orientation of Texas high schools and improved their academic environments more generally. By articulating and publicizing an easily-understood admissions criterion, the top 10% law made it possible for students who lacked access to detailed information about the college application process to judge their chances of admission at the Texas flagships. Therefore, I hypothesize that H.B. 588 increased flagship application activity among students enrolled at Texas high schools where college-going traditions were weak. Furthermore, unlike earlier, less transparent admissions regimes, this policy explicitly rewards students for finishing with a high class rank. By improving the incentives associated with high school success, I hypothesize that the top 10% law increased student engagement at all Texas high schools.

Longhorn and Century Scholarships

In 1999, UT and A&M supplemented H.B. 588 by creating the Longhorn and Century Scholarship programs. These scholarships represent a targeted effort to enrich college-going traditions at a small number of Texas public high schools that serve economically disadvantaged students, adding recruiting efforts and scholarship funds to the top 10% law's admissions guarantee. While school racial composition is not explicitly considered in the Longhorn and Century school selection criteria, in 2000 more than 90% of the students enrolled at Longhorn and Century schools were black or Hispanic (Tienda and Lloyd 2002). Twenty-eight high schools participate in both the Longhorn and the Century Scholarship program.

UT offered Longhorn Scholarships to top-decile students from 40 Texas public high schools in 1999, and further expanded the program in 2000 and 2001. A&M launched the Century Scholarship program in 1999 with 20 participating high schools, and added new schools 2000 and 2001. As of the 2005-06 school year, there were 70 high schools participating in the Longhorn program and 58 high schools participating in the Century Program. Twenty-eight high schools participate in both the Longhorn and the Century Scholarship programs.

Students at high schools selected to participate in the Longhorn and Century Scholarship programs are the focus of intense recruitment from UT and A&M. University representatives and high school alumni currently enrolled as Longhorn and Century Scholars visit participating high schools in the fall to encourage current seniors to submit applications. In the spring, admitted students from participating high schools are invited to campus for interviews. While neither the Longhorn nor the Century program guarantees that each top-decile graduate from selected schools will be granted a

scholarship, in practice, the awards are given to nearly every student that matriculates from participating high schools. Between 1999 and 2002, 892 students enrolled at UT with a Longhorn Scholarship and nearly as many students enrolled at A&M with a Century Scholarship. Scholarship recipients are awarded between $1,000 and $5,000 a year for four years. These scholarships can be combined with other federal, state and university aid programs, and as a result, most Longhorn and Century Scholars enroll tuition-free. Longhorn and Century Scholars also receive advising and academic assistance and may qualify for additional aid to finance study abroad.

The existing evidence suggests that the Longhorn and Century Scholarship programs have succeeded in stimulating college-going activity at targeted schools. Dickson (2006b) finds that black and Hispanic students enrolled at Longhorn high schools were approximately 3% more likely to take the SAT than students at similar high schools that were not chosen to participate in the UT scholarship program. Likewise, Niu and Tienda (2006a) find that students enrolled in Longhorn and Century high schools had significantly larger college choice sets than students enrolled in other poor high schools.

For students enrolled in participating high schools, the Longhorn and Century Scholarship programs added financial incentives for strong academic performance in high school. In addition, UT and A&M used these programs to establish institutional links with selected high schools. I hypothesize that the financial incentives associated with the scholarship programs had an immediate effect on college-related activities at selected high schools, motivating students to apply and enroll in flagship universities. But I expect to find even greater Longhorn and Century Scholarship program effects in schools' second, third, and fourth years of participation, as strengthening institutional links

between the flagships and participating high schools boost college expectations and stimulate competition for guaranteed admissions.

TEXAS Grants

In 2000, the Texas state legislature implemented a third effort to influence the state's high schools via higher education policy. The TEXAS ("Toward Excellence, Access, and Success") Grants Program extends tuition assistance to students who demonstrate financial need and complete the state's recommended college preparatory high school curriculum, including at least four years of English, four years of social studies, two years of foreign-language, Algebra, Algebra II, Geometry, Biology, Chemistry, and Physics (THECB 2006). For qualifying students, the program offers funds equal to the in-state tuition at the average Texas college or university. In 2005-2006, the TEXAS Grant program offered community college students up to $1,552; technical college students up to $2,295; and public university students up to $4,392 (College for Texans.com 2005). These funds can be used in combination with federal grant and loan programs and other scholarship programs, including the Longhorn and Century Scholarships (Texas Administrative Code, Ch. 22). This program has proven popular, and demand for TEXAS Grants has grown dramatically since it was launched in 2000. In 2002, the legislature tripled the funds allocated to the program to $300 million for the 2002-2004 period (Robinson 2004). Nonetheless, budget shortfalls continue to threaten the program's existence.

The TEXAS Grants program makes higher education more affordable to needy students throughout the state as long as they complete the state's recommended curriculum. Therefore, the program likely corresponds with a further increase in college

application and enrollment rates from Texas high schools. However, Texas's flagship public universities charge considerably higher tuition than the states' less competitive public universities. As a result, the program's maximum grants cover only half of the in-state tuition at Texas's flagship universities, while they cover all of the tuition at the state's less competitive public universities. Therefore, I hypothesize that the TEXAS Grants program does more to stimulate enrollment at nonselective public universities than at the flagships. Since it rewards students who enroll in advanced courses, the TEXAS Grants program is likely to further raise student engagement levels at Texas high schools.

Data & Methods

To assess the consequences of Texas's recent higher education policy initiatives on college-going activity and academic engagement at state's high schools, I have assembled panel data describing Texas public high schools for every year between 1993 and 2002. The universe is defined as all comprehensive schools that enrolled seniors in every year of the study period. Schools that had a one-year enrollment gain or loss of more than 50% in their senior class were also dropped from analysis. This filter insures that schools that opened, closed, divided, or merged with another school during the study period are excluded from the analysis. In addition high schools that are designated as vocational, correctional, or special education schools are excluded from the analysis. The unit of analysis in this time-series file is the high school/year, with every high school providing a data row for each of the 10 years studied. The time series begins several years after Texas's standards-based school reforms of the 1980s and 1990s were in place

(Haney 2000), spanning the *Hopwood* decision as well as the implementation of H.B. 588, the Longhorn and Century Scholarships, and the TEXAS Grant program.

School-level data from the National Center for Education Statistics' Common Core of Data (CCD) provides the base for my panel data file. The CCD annually collects enrollment, location, and teacher data on every public school in the United States; my dataset is built around CCD data for Texas high schools from the 1992-93 to 2001-02 school years. I merged administrative data gathered from five Texas public universities as well as the Texas Education Agency's Academic Excellence Indicator System (AEIS) to this school/year file. Table 2 provides a descriptive summary of the variables used in this study, as well as a description of the sources from which these data are derived.

TABLE 2 AROUND HERE

My analyses focus on two high-school outcomes: College-going behavior and academic engagement. To measure college-going behavior at Texas high schools, I utilized administrative data from the University of Texas-Austin, Texas A&M University -College Station, the University of Texas-Arlington, the University of Texas-San Antonio, and Texas A&M University-Kingsville. For each year between 1993 and 2002, these five universities kept records for each student who applied for admission, together with flags indicating which applicants were accepted and which enrolled. I aggregated these student data to the high school level to create a count of the number of graduates from each Texas high school who enrolled at each of the five universities. This count was then divided by the number of students enrolled in each school's 12^{th} grade in the previous fall to generate a variable measuring the proportion of seniors from each Texas high school that enrolled at each university in each year.

In this paper, I analyze the proportion of high school seniors who enroll at Texas's flagship universities by summing the proportion of students at each high school who enrolled at the University of Texas-Austin and Texas A&M University-College Station in each of the study years. In addition, I combine administrative data from the University of Texas-Arlington, the University of Texas-San Antonio, and Texas A&M University-Kingsville to estimate the proportion of seniors from each Texas high school that enroll in a nonselective university in each year. Only one-fifth of the students enrolled in nonselective Texas public universities go to these three universities – the remaining four-fifths are scattered across 28 smaller public nonselective universities. However, I was only able to obtain reliable time-series student high school data from these three universities. Since data are unavailable for most Texas nonselective public universities, my estimates of program effects on nonselective university enrollment are subject to substantial measurement error. By contrast, my estimates of program effects on flagship enrollment are based on full census data.

In any given year, as many of 50% of Texas high schools sent no graduates to UT or A&M; and a smaller number of high schools sent no graduates to the three nonselective universities. As a result, variables measuring high schools' college-going behavior are truncated. To address this data limitation, I use Type 1 Tobit models to analyze enrollment (Amemiya 1984).

I use two variables provided by the AEIS to measure the academic environment at Texas high schools. First, the AEIS provides the proportion of high school students who enrolled in at least one college-prep, honors-level, Advanced Placement, or dual enrollment course in each year. Since students who take rigorous courses in high school

are more likely to enroll in college and are more likely to succeed once they do (Adelman 2006), this measure of advanced course-taking provides an indicator of the engagement of college-bound students. In addition, I use AEIS-provided data on student attendance rates as a broader indicator of the academic environment at Texas high schools. School attendance is, of course, prerequisite to learning, and truancy is a major risk factor predicting high school dropout and delinquency (Baker, Sigman, and Nugent 2001). The school attendance rate is calculated by the AEIS by summing the number of days each student attended school and dividing this sum by the total number of school days students were eligible to attend.

Both of these high-school level variables were collected by the schools themselves and reported to the Texas Education Agency (TEA) under the state's school accountability laws. As a result, these outcomes may be more susceptible to measurement error than the application and enrollment variables obtained from university administrative files. Nonetheless, the state has issued detailed guidelines to schools to insure that data collected in compliance with state accountability laws are of high quality and school data collection procedures are subjects to TEA audits. Furthermore, these particular measures play a secondary role in the state's school accountability system. While schools and receive "Gold Performance Acknowledgements" for maintaining high rates of enrollment in advanced courses and high attendance rates, the direct rewards and penalties associated with the accountability system are tied to high school dropout rates and school performance on the state's standardized tests. As a result, there are relatively few incentives for schools to systematically misreport these two variables.[1]

To estimate the effects of Texas's changing higher education policies on these high school outcomes, I generate a series of fixed-effects panel regression models with the following form:

$$\mathbf{y_{i(t)} = \alpha + \beta_1(Hopwood) + \beta_2\ (H.B.\ 588) + \beta_3\ (TEXAS\ Grants) + \beta_4\ (Longhorn/Century\ Y1) + \beta_5\ (Longhorn/Century\ Y2) + \beta_n(Controls) + Z_\mu\mu + U_i + e_i}$$

Where $\mathbf{y_{i(t)}}$ is a school's value on the outcome under consideration in a given year. **Hopwood** is a dummy variable set to 1 for all schools beginning in 1997, the year after the *Hopwood* decision banned affirmative action in Texas higher education but before the top 10% law was put in place, until 2002. This indicator is set to zero for all years prior to the *Hopwood* decision. **H.B. 588** is a dummy variable set to 1 for all years from 1998 when the top 10 percent law was put into place to 2002. **TEXAS Grants** is a dummy variable set to 1 for all schools in the years in which the TEXAS Grants program was in place, 2000-2002, and set to zero all other years. **Longhorn/Century Y1** is a time-varying dummy variable flagging high schools in the first year they participate in the Longhorn or Century Scholarship programs. **Longhorn/Century Y2** is a time-varying dummy variable flagging high schools in the second, third, or fourth year of participation in the Longhorn or Century Scholarship programs. **Controls** are a series of time-varying school characteristics described in detail below. $\mathbf{Z_\mu\mu}$ is a matrix of school-level dummies, controlling for school-level effects over time. In addition, the model contains two error terms: $\mathbf{U_i}$ models the correlated error that results from including multiple observation of the same school and $\mathbf{e_i}$ models the remaining error.

For the analyses of Texas high schools' college enrollment trends, unconditional fixed effects tobit models are used. (These models are generated by literally adding a dummy variable representing each high school to a standard tobit model.) While a semiparametric estimator for fixed-effects Tobit models has been developed (Honoré 1993), this estimator is not available for use in statistical software packages such as Stata. However, the results reported here are robust across several different model specifications (included lagged random-effects Tobit models), suggesting that these estimates are not biased. Since there is no evidence of truncation on the measures of high school advanced course-taking and attendance rates, standard fixed-effects time-series models (using the within regression estimator) are fitted on these outcomes.

The longitudinal regression models estimate the change in school outcomes that occurred in the wake of the *Hopwood* decision and the policies that followed it, net of unchanging school-level characteristics. As long as the policies of interest are the only changes that occurred in and around schools during the study period, these fixed effects models generate valid estimates of the consequences that changes to Texas higher education policy held for the state's secondary schools (Finkel 1995; Papke 2001). However, the state also underwent demographic changes in this study period, particularly as immigration drove dramatic increases in the states' Hispanic population.

Several control variables are included in the models to account for these demographic changes. Since changes in school-level ethnic identity over the study period could obscure policy effects, I use CCD data to provide time-varying measures of schools' racial and ethnic composition. Likewise, the CCD's measure of the proportion of enrolled students who qualify for free lunch disentangles policy effects from the

consequences of secular changes in school poverty levels. Local context may also influence student trajectories (*c.f.* Betts and McFarland 1995), so the models reported here include controls for county-level unemployment and proportion of adults with BA degrees, which are derived from the 1990 and 2000 U.S. Census Summary File 3.[2]

These models effectively account for measured changes in school and community demographics, as well as school-level effects that remain constant throughout the study period. However, the estimates that these models yield of the effects that Texas's K-16 policies had on the states public schools are necessarily limited in two regards:

First, since the implementation of Texas's K-16 policies unfolded over the course of only a few years, it is difficult to effectively estimate lagged policy effects. As a result, my treatment of the *Hopwood* decision assumes that its consequences for Texas high schools were immediate, occurring only in the year after the decision was implemented. Unmeasured lagged *Hopwood* decision effects likely create a conservative bias on the observed effects of the other three policies.

Second, although my models effectively control for the major state-wide policy changes that occurred during the study period, it is possible that unmeasured changes in national educational context, university recruiting techniques, or local schools could bias the effects of the policies measured here. For example, AP test-taking rates have increased across the US during the study period (College Board 2005; Adelman 2006), and the federal financial aid landscape has changed substantially nationwide (Heller 2001). Given the model specification, it is difficult to separate these secular trends and their consequences from the measured effects of the *Hopwood* decision, H.B. 588, and the TEXAS Grant on Texas public high schools. Furthermore, although my models

account for the major changes that occurred in Texas educational policy during the time period, more subtle shifts in educational policy and practice in Texas school districts and universities may obscure the observed policy effects. Most notably, tuition levels at Texas public universities nearly tripled during this time period (Dickson 2006a). It is likely that this trend has exerted a negative influence on college enrollment rates, which goes unmeasured in these models, creating another conservative bias on the observed policy effects.

Findings

Table 3 summarized the time-series models analyzing changes in the proportion of students from Texas high schools that enrolled at Texas's flagship and noncompetitive public universities. The results reported in first model suggest that *Hopwood* and the policy shifts that followed it had a modest influence on college enrollment trends. Flagship enrollment rates did not change significantly in the wake of the *Hopwood* decision. The implementation of the top 10% law corresponded with a small decline in UT and A&M enrollments. Flagship enrollment rates remained flat in the years following the launch of the TEXAS Grants program.

TABLE 3 AROUND HERE

However, the Table 3 analyses do suggest that the Longhorn and Century Scholarship programs boosted the rates of UT and A&M enrollment from selected high schools. Flagship enrollment rates seem to have improved slightly in the first year that schools participated in the Longhorn or Century Scholarship programs, although this gain is not statistically significant. The positive Longhorn/Century Scholarship program effect

grew in subsequent years of program participation, with selected high schools experiencing 0.66 point growth in flagship enrollment rates during their second and third years in the program. (In analyses not reported here, I examine these program effects separately on UT and A&M enrollment rates, finding that the Longhorn program had a somewhat larger positive effect on UT enrollment than the Century program's effect on A&M enrollment. The positive Longhorn effect was significant in the first year of program participation, as well as subsequent years.)

The second set of fixed-effects models in Table 3 summarize the consequences that Texas's changing higher education policies had on patterns of enrollment to three nonselective public universities – UT-Arlington, UT-San Antonio, and Texas A&M-Kingsville. These models reveal that enrollments at the three nonselective enrollments increased immediately after the *Hopwood* decision. While it is beyond the scope this paper, this finding suggests a cascading effect, as students who faced rejection under the new admissions regime sought admissions at less competitive institutions. Noncompetitive university enrollment rates remained unchanged after the implementation of the top 10% law. Nonselective universities experienced a noteworthy increase in enrollment under the TEXAS Grants program. This merit-based aid program did little to change UT and A&M enrollment patterns, in part since the grants covered only half of the tuition at these flagship universities. However, the TEXAS Grants program substantially increased the proportion of Texas high school seniors enrolling at UT-Arlington, UT-San Antonio, and A&M Kingsville, where the program's grants cover all of the in-state tuition. The Model 2 findings suggest that the Longhorn and Century programs had no effect on enrollment rates at these three noncompetitive institutions.

This finding is not surprising, since these programs only provide recruiting and financial support for flagship university enrollment.

The results for flagship university enrollments summarized in Table 3 are indicative of Longhorn and Century program effects that are consistent with the K-16 school reform hypotheses. Likewise the TEXAS Grants program's positive effects on noncompetitive college enrollment suggest that this merit-based program boosted the four-year college enrollment odds of Texas students with demonstrated financial need. However, the negative H.B. 588 and nonsignificant TEXAS Grants effects reported in this table's analyses of flagship university enrollment are discouraging. Why did UT and A&M enrollments at the average Texas high school *decline* after the implementation of policies that clarified admissions standards and improved college affordability?

One possibility is that rather than boosting college enrollment across the state, these policies may have had a redistributive effect. By clarifying admissions standards, the top 10% law levels the admissions playing field, reducing the advantages associated with attending a high school where college counseling is strong and large numbers of students routinely enroll at UT and A&M. In fact, H.B. 588 may make flagship admissions increasingly competitive for students from high schools that have traditionally sent large proportions of their graduating classes to the Texas flagships. These flagships may experience pronounced enrollment declines after the implementation of H.B. 588. On the other hand, at schools where college traditions are weaker and fewer than 10% of students routinely apply to the Texas flagships, the top 10% law clarifies admissions standards and likely significantly boosts UT and A&M enrollment rates. In this case,

negative average effects of post-*Hopwood* policies could disguise large enrollment increases from high schools that had traditionally sent few students to the flagships.

TABLE 4 AROUND HERE

I investigate this possibility in Table 4, estimating the consequences of the *Hopwood* decision, H.B. 588, and the TEXAS Grants program on flagship and noncompetitive college enrollment separately for high schools whose students had low, average, and high rates of flagship application at the beginning of the study period. For the analyses summarized here, high schools were categorized based on the proportion of their seniors who applied for admission at UT and A&M in the 1993, 1994, and 1995 school years. One percent or fewer of the seniors in these "high schools with low flagship application rates" applied for admission at the flagships in these years. In the high schools in the "average flagship application rates" category, the proportion of seniors applying to UT and A&M was between 1% and 10%. The schools in the "high flagship application rates" category sent applications from more than 10% of their 1993-1995 seniors.

As the descriptive table in Appendix A demonstrates, these college application tradition categories overlap with other high school characteristics. For example, high schools with low flagship application traditions have considerably higher black and Hispanic enrollments than schools with average and high flagship application traditions. Likewise, schools that traditionally sent few applications to the flagships have relatively high free lunch participation rates.

Table 4 shows that the effects that Texas's changing higher education policies had on schools' flagship enrollment patterns varied by schools' flagship application

traditions. In general, the findings summarized here clearly suggest that high schools that had historically sent few applications to the flagships benefited from policy changes, while high schools that had traditionally sent many applications to Texas's flagships suffered. The coefficients describing the effects of the implementation of the top 10% law on Texas high schools make this redistributive effect particularly clear. H.B. 588 had a strong positive effect on the graduate enrollment rate for high schools that sent applications from fewer than 1% of their seniors in the early study period. By contrast, the top 10% law significantly depressed UT and A&M enrollments at the "feeder" schools that sent applications to the flagships from 10% or more of their seniors in the early study years. For the large middle category of Texas high schools, the policy's effect on flagship enrollment rates was modest. By contrast, the effects that these policies had on noncompetitive college enrollment rates did not vary substantially by high school type. Since Longhorn and Century Scholarhip program participation is contingent on high school's flagship application and enrollment rates, the consequences of these programs cannot be disaggregated by flagship application tradition.

The time-series models reported in Tables 3 and 4 demonstrate that Texas's changing higher education policy redistributed flagship college-going traditions among the states' high schools. H.B. 588 significantly boosted UT and A&M enrollment rates at schools that were traditionally marginalized from the flagships, even as "feeder" high schools saw their rate UT and A&M enrollment decline after H.B. 588 was put into place. The Longhorn and Century Scholarship programs provided an additional boost to the college-going traditions at participating high schools. By communicating clear and consistent postsecondary admissions and financial aid standards, these policies helped to

equalize information inequalities between high schools, boosting college-going behavior at disadvantaged schools.

In addition to redistributing college opportunities, the logic of K-16 school reform suggests that Texas's post-*Hopwood* policies may have had more far-reaching effects on the state's high schools, stimulating students to engage more actively in their schooling, before they begin to apply and enroll in higher education. Since H.B. 588 and the Longhorn and Century Scholarship programs increased the incentives for students in Texas high schools to finish at the top of their high school classes, I hypothesize that these policies stimulated competition among students, increasing the proportion of students who took advanced courses. Likewise, since the TEXAS Grants program created economic incentives for students to complete a rigorous course of study in high school, I hypothesize that this policy boosted advanced course taking at Texas high schools. By stimulating the college aspirations and the academic engagement of top students, these policies could create a school-wide academic press, boosting the engagement of students who are not college-bound as well as the engagement of college-bound students. If so, Texas's post-*Hopwood* higher education policy shifts might be expected to improve attendance rates at Texas high schools as well.

TABLE 5 AROUND HERE

I test these hypotheses in Table 5 with a series of fixed-effects models that analyze the effect of Texas's changing higher education policy on advanced course-taking and attendance rates at Texas high schools. The first model in Table 5 reveals that student enrollment in advanced courses at the average Texas high school increased by approximately 2.5 percentage points after the *Hopwood* decision (from a pre-*Hopwood*

base of 11.5%). H.B. 588 provided an additional stimulus to this increase in advanced course-taking. After the implementation of H.B. 588, the rate of advanced course taking at the average Texas high school jumped by an additional 2.7 percentage points.

The fact that advanced course-taking was growing in Texas prior to the implementation of H.B. 588 suggests that some of this rise may be due to a secular trend toward more advanced curricula among Texas students. This is not surprising, since Texas educational policy throughout the 1990s emphasized curricular intensity, leading some researchers to worry about "course credit inflation," in which course designations change faster than course content (Dougherty et al. 2006). Nonetheless, it is clear that this trend toward enrolling students in advanced courses intensified with the implementation of the top 10% law.

However, the implementation of the TEXAS Grants program did *not* stimulate further growth in advanced course enrollment. While the advanced course enrollment rate at the average Texas high school continued to grow in the period in which both H.B. 588 and the TEXAS Grants program were in effect, this annual growth rate was 0.8 percentage points slower than the rate that occurred before the Grants program was put in place. This finding is surprising. The TEXAS Grants program created new financial incentives for needy students to take college prep courses in high school, so one would expect this program to boost advanced course taking as well. One possibility is that the TEXAS Grants program encouraged students to enroll in college prep courses, even as it discouraged them from taking more challenging advanced placement or honors courses.

Advanced course enrollment did not change in schools selected to participate in the Longhorn or Century Scholarship program in their first participating year, but Table

6's second model indicates that over time, these programs boosted advanced course taking at selected schools. This delayed effect suggests that these scholarship programs improve schools' academic environments over time, building institutional connections between high schools and flagship universities that increase students' awareness of the skills necessary to enter and succeed in higher education.

Texas's changing higher education polices also influenced student attendance rates at Texas high schools. Attendance rates at Texas high schools improved slightly in the year after the *Hopwood* decision eliminated affirmative action. They increased by an additional .2 percentage points after the implementation of H.B. 588 and by an additional .3 percentage points after the implementation of the TEXAS Grants program. Attendance rates increased further in schools selected to participate in the Longhorn and Century Scholarship programs. In the first year that high schools participated in the Longhorn and Century Scholarship programs, attendance rates improved by approximately half a percentage point. In subsequent years the effect size was slightly larger. Once again, this finding suggests that the Longhorn/Century Scholarship programs' influence on high schools grows as relationships between selected schools and the flagship universities develop.

At first glance these effect sizes seem modest. For students at schools that were not selected to participate in the Longhorn/Century Scholarship programs, attendance rates improving by a total of .6 percentage points over the time period. However, this improvement translates to approximately 1 additional school day for students at Texas public high schools (based on an average of 180 instructional days per year). The

attendance rates gains for students at Longhorn or Century schools were larger, totaling to 1.7 percent points, or more than 3 additional school days per year.

While the effects of Texas's post-*Hopwood* higher education policies on high schools' college enrollment rates varied according to schools' college traditions, the logic of K-16 school reform suggests that these policies' positive effects on student engagement should be relatively evenly experienced at schools throughout the state. By guaranteeing college admission for top-decile students at all Texas high schools, the top 10% law directly links students' odds of college admission with their performance relative to their high school peers. Since the policy increased the incentives associated with high class rank for students at all Texas high schools, I expect that it boosted student engagement at traditional feeder high schools as well as schools that have historically been marginalized from the states' flagship universities.

TABLE 6 AROUND HERE

Table 6 tests these hypotheses, dividing high schools into three groups based on their flagship application traditions and examining the effects of the *Hopwood* decision, H.B. 588, and the TEXAS Grants program separately by flagship application tradition category. The findings summarized in this table reveal the *Hopwood* decision corresponded with an increase in advanced course taking in schools in all three categories. The top 10% law further increased the proportion of students enrolled in advanced courses in schools with weak flagship application traditions, average flagship application traditions, and high flagship application traditions (although the positive effect on in schools with low flagship application traditions was not statistically

significant). The magnitude of these positive effects did not vary significantly by school category.

The findings for school attendance rates also point to a broad-based effect, with H.B. 588 and the TEXAS Grants program significantly boosting attendance rates at schools in all three flagship application categories.

Conclusion

Although they were designed primarily to improve racial and ethnic diversity on college and university campuses, the higher education policies that Texas implemented in the wake of the *Hopwood* decision can also be understood as an experiment in K-16 school reform. H.B. 588 radically simplified the admissions system at Texas's flagship colleges and universities. By guaranteeing all students who finished in the top 10 percent of their high school class a place at the public university of their choice, the law directly linked post-secondary opportunity to high school performance and clearly communicated that link to Texas high school students. The Longhorn and Century Scholarship programs supplemented the top 10 percent admissions guarantee with a program of focused outreach to dozens of the states' most disadvantaged high schools. In doing so, these programs attempted to build social and institutional links between high schools and Texas's flagship universities. Finally, the TEXAS Grants program established financial incentives to reward needy students for completing a rigorous college prep curriculum.

Testing the consequences that these three policies had on Texas public high schools yields important new insights into what works in K-16 school reform. H.B. 588 boosted flagship enrollment rates at high schools that had previously been marginalized from the states' elite universities. The flagship college-sending traditions at schools

selected to participate in UT's Longhorn scholarship program or A&M's Century scholarship program received an additional boost as UT and A&M recruiters and scholarship recipients returned to high schools, building institutional ties between the flagship universities and targeted high schools. While the TEXAS Grants program had no effect on flagship enrollment rates, it had a positive effect on the proportion of Texas high school students who enrolled at the three nonselective public universities for which data are available.

In addition to stimulating college-going activity at schools with weak college traditions, the top 10% law and the Longhorn and Century Scholarship programs created new incentives for student academic engagement. In the years after the implementation of H.B. 588, rates of student enrollment in advanced courses and attendance rates surged at Texas public high schools. The Longhorn and Century Scholarship programs further increased advanced course enrollment and attendance rates at participating high schools. The positive effects of Longhorn and Century Scholarship participation grow as schools spent more time in the program.

Despite these strong findings, the evidence emerging from Texas's unwitting experiment in K-16 school reform also points to two potential limitations to this school reform strategy. First, the analyses reported here suggest that the TEXAS Grant program's effects on Texas high schools were modest. This program boosted the rate of enrollment at nonselective public universities in Texas, where the program's grants covered the entire in-state tuition rate. However, the observed consequences of the TEXAS Grants program on flagship enrollment and student engagement were small. Despite the fact that this program provided direct financial incentives for needy students

to enroll in college prep courses, advanced course enrollment rates actually fell in Texas high schools after the implementation of the TEXAS Grants program. These discouraging results are likely due in part to peculiarities in the TEXAS Grants' program's design. Nonetheless, they may also suggest that merit-based financial aid is a less effective K-16 school reform strategy than the signaling-based strategies embedded in H.B. 588 and the Longhorn and Century Scholarships. Further research is needed to understand why this program had a less pronounced effect on Texas high schools than top 10% law and the Longhorn and Century Scholarship programs did.

Second, despite the positive consequences that H.B. 588, the Longhorn and Century Scholarship programs have had on Texas high schools, it should be noted that these programs largely work by providing incentives to encourage engagement among the most successful of high school students. As such, it is unlikely that changes in postsecondary education policy will improve educational outcomes for at-risk high school students. In an attempt to understand the consequences of Texas's post-*Hopwood* higher education policies on at-risk students, I analyzed the consequences these K-16 school reforms on high school dropout rates in Texas high schools. Since high school dropout data are notoriously unreliable, these analyses are not reported here. However, they suggest that these policies did little to improve student retention. While dropout rates declined somewhat statewide after the implementation of the Top 10 Percent Law, neither the Longhorn/Century programs nor the TEXAS Grants program improved high school student completion rates in Texas.[3]

On the whole, though, this paper should provide encouragement to policy-makers and others who are attempting to improve high school student outcomes by strengthening

the links between secondary and post-secondary education. K-16 comprehensive school reform programs hinge on the assumption that colleges and universities can help improve America's high schools by establishing simple postsecondary admissions criteria that improve the incentives associated with students' high school performance (Schmidt 2006). While high school reform was a secondary concern in the formulation of H.B. 588 and the Longhorn/Century Scholarship programs, the positive effects that these programs have had on Texas high schools point to the important role that higher education policy can play in improving secondary education. By reducing inequalities in access to information regarding higher education admissions, the top 10% law and the Longhorn and Century Scholarship programs helped to narrow high-school level inequalities in college access and improve student academic engagement statewide. The improved outcomes that Texas high schools experienced under these programs suggest that other initiatives that simplify postsecondary requirements and reward student efforts in high school can have similar positive consequences.

Table 1: Timeline of Texas higher education policy initiatives, 1997-2000

Policy	Year enacted	
Hopwood v. University of Texas	1997	**Summary:** Fifth Circuit Court of Appeals decision banned the use of race as a factor in college admissions and financial aid decisions **Hypothesized consequences:** Chilling effect on college application rate from Texas high schools.
H.B. 588 (the Texas top 10% law)	1998	**Summary:** State policy guarantees admission to any public university to all Texas high school graduates who finish in the top 10% of their class. **Hypothesized effects:** Boosts application and enrollment rates from high schools with weak college-going traditions; improves student academic engagement at all high schools.
Longhorn and Century Scholarships	1999-2001	**Summary:** UT and A&M programs targeted high-poverty inner-city high schools with weak college-going traditions, implemented extensive student recruitment programs, and offered 4-year scholarships to qualified graduates of selected high schools. **Hypothesized effects:** Stimulates UT and A&M application and enrollment rates and increases academic engagement at selected high schools. Program effects increase over time, as institutional relationship between highs schools and universities solidify.
TEXAS Grants	2000	**Summary:** State policy offers tuition assistance to students who prove financial need and complete the state's recommended college preparatory high school curriculum. **Hypothesized effects:** Modest effects on college application rates; improves student academic engagement.

Table 2: Summary of outcome, policy treatments and control variables

	Source	N(obs)	Mean	Standard Deviation
Outcomes				
% enrolled flagships	Administrative	8,980	.0404	.0421
% enrolled non-competitive	Administrative	8,980	.0141	.0426
% taking advanced courses	AEIS	8,058	.1574	.0875
Daily attendance rate	AEIS	8,075	.9418	.0225
Policy treatment				
Hopwood	Constructed	8,980	.5987	.4902
H.B. 588	Constructed	8,980	.4990	.5000
TEXAS Grants	Constructed	8,980	.3008	.4586
Longhorn/Century (Y1)	UT & A&M	8,980	.0088	.0934
Longhorn/Century (Y2)	UT & A&M	8,980	.0144	.1190
Controls				
% black	CCD	8,980	-.0509	.9565
% Hispanic	CCD	8,980	-.0898	.9584
% Asian	CCD	8,980	.0838	1.057
% free lunch	CCD	8,980	-.1307	.8313
# students in 12^{th} Grade	CCD	8,980	.4240	1.0691
County unemployment	Census SF3	8,980	.0003	1.0021
County % BA	Census SF3	8,980	-.0298	.9967

Table 3: Effects of policy changes on Texas public high schools' flagship and non-competitive university enrollment rates, 1993-2002. Unconditional fixed effects Tobit regression models.

	Proportion enrolled at flagships (UT and A&M)		Proportion enrolled at non-selective TX universities (UT-Arlington, UT-San Antonio, and A&M Kingsville)	
	Model 1	Model 2	Model 1	Model 2
Hopwood	.0017+	.0017*	.0178***	.0178***
H.B. 588	-.0025*	-.0025**	-.0003	-.0003
TEXAS Grants	-.0002	-.0007	.0045***	.0047***
Longhorn/Century (Y1)	--	.0024	--	.0011
Longhorn/Century (Y2+)	--	.0066**	--	-.0023
% black	-.0112***	-.0086**	.0018	.0010
% Hispanic	-.0196***	-.0187***	-.0606***	-.0610***
% Asian	.0010	.0014	-.0009	-.0010
% free lunch	-.0010	-.0012	.0066***	.0067***
# students in 12th G	-.0040***	-.0039***	.0014	.0014
Co. unemployment	-.0043*	-.0049***	-.0058**	-.0056***
Co. % BA	.0005	.0004	.0018**	.0019**
Constant	-.0143	-.0128	.3498***	.3497***
N(obs)	8,980	8,980	8,980	8,980
N(schools)	910	910	910	910

+p<.10 *p<.05 **p<.01 ***p<.001

Table 4: Effects of policy changes on flagship and noncompetitive university enrollment rates, 1993-2002. Unconditional fixed effects Tobit regression models, estimated separately by school flagship application sending traditions.

	H.S. with low flagship application rates	H.S. with average flagship application rates	H.S. with high flagship application rates
Proportion enrolling at flagships			
Hopwood	.0029	.0022	.0020
H.B. 588	.0056*	-.0020*	-.0051*
TEXAS Grants	.0037*	.0030***	-.0052**
Constant	-.0173	.0589***	.0716***
N (observations)	1,342	5,323	2,315
N (schools)	142	534	234
Proportion enrolling at noncompetitive universities			
Hopwood	.0205***	.0203***	.0190***
H.B. 588	-.0015	-.0009	.0011
TEXAS Grants	-.0027	.0026	.0024***
Constant	.3696***	.2169***	-.0062
N (observations)	1,342	5,323	2,315
N (schools)	142	534	234

Models also include controls for school % black, % Hispanic, % Asian, % free lunch, # students in12th Grade, county unemployment, and county % BA

+p<.10 *p<.05 **p<.01 ***p<.001

Table 5: Effects of policy changes on Texas public high schools' advanced course taking and attendance rates, 1993-2003. Fixed effects panel regression models.

	Proportion taking advanced courses		Attendance rate	
	Model 1	Model 2	Model 1	Model 2
Hopwood	.0251***	.0252***	.0013***	.0013***
H.B. 588	.0272***	.0275***	.0019***	.0019***
TEXAS Grants	-.0084***	-.0095***	.0028***	.0025***
Longhorn/Century (Y1)	--	.0097	--	.0046***
Longhorn/Century (Y2+)	--	.0344***	--	.0067***
% black	-.0210***	-.0081	-.0099***	-.0073***
% Hispanic	-.0201*	-.0166+	-.0016	-.0010
% Asian	.0038	.0061+	.0011*	.0016**
% free lunch	-.0018	-.0027	-.0003	-.0004
# students in 12th G	.0213***	.0211***	.0028***	.0029***
Co. unemployment	.0119***	.0104**	.0007	.0004
Co. % BA	-.0068***	-.0071***	.0001	.0001
Constant	.1151***	.1153***	.9368***	.9369***
N (observations)	8,058	8,058	8,075	8,075
N (schools)	907	907	910	910

Models also include controls for school % black, % Hispanic, % Asian, % free lunch, # students in12th Grade, county unemployment, and county % BA

+p<.10 *p<.05 **p<.01 ***p<.001

Table 6: Effects of policy changes on Texas public high schools' advanced course taking and attendance rates, 1993-2002. Fixed effects panel regression models estimated separately by school flagship application sending traditions.

	H.S. with low flagship application rates[iv]	H.S. with average flagship application rates	H.S. with high flagship application rates
Proportion taking advanced courses			
Hopwood	.0191**	.0268***	.0257***
H.B. 588	.0105	.0297***	.0305***
TEXAS Grants	-.0042	-.0116***	-.0014
Constant	.1148***	.1102***	.1226***
N (observations)	1,190	4,786	2,082
N (schools)	139	534	234
Attendance rate			
Hopwood	.0020+	.0013**	.0005
H.B. 588	.0023*	.0015**	.0021**
TEXAS Grants	.0036***	.0027***	.0024***
Constant	.9365***	.9377***	.9345
N (observations)	1,202	4,790	2,083
N (schools)	142	534	234

Appendix A: High school characteristics by flagship application sending tradition

	H.S. with low flagship application rates	H.S. with average flagship application rates	H.S. with high flagship application rates
% black	.172	-.117	-.027
% Hispanic	.006	-.041	-.258
% Asian	-.216	-.095	.670
% free lunch	.308	-.066	-.534
# students in 12th Grade	-.107	.239	1.156
	N=1,342	N=5,323	N=2,315

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[1] More information on the AEIS variables is available at: http://www.tea.state.tx.us/perfreport/aeis/2005/glossary.html

[2] School data for the 1993-1995 school years are matched to data from the 1990 Census for the counties in which schools are located; school data for the 1996-2002 school years are matched to the 2000 Census.

[3] These analyses replicated the models reported here, using two different approaches to measure high school dropout. First, I examined official dropout rates, as reported by Texas high schools in the AEIS. Second, since these official statistics are likely to systematically underreport dropout, I calculated an index of high school student persistence based on the Urban Institute's Cumulative Promotion Index (Swanson 2003). On both measures, the coefficient for H.B. 588 was positive and statistically significant, but the Longhorn/Century and TEXAS Grants coefficients were not significantly different from zero.