The Credit Check Tax: PLUS Loan Tightening, HBCU Enrollment Loss, and Community Employment Decline

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Abstract

Historically Black Colleges and Universities anchor the economies of dozens of majority-Black Southern counties, yet federal student-aid rules can destabilize these institutions overnight. I exploit the September 2012 tightening of Parent PLUS loan credit standards—which triggered an 11.4% enrollment decline at HBCUs—as a plausibly exogenous shock to anchor-institution revenue. Using county-quarter data from the Quarterly Workforce Indicators (2008–2016), I estimate that a one-unit increase in HBCU enrollment share reduces county employment by 2.7% ($p = 0.004$). The effect emerges gradually over post-shock quarters and, strikingly, deepens rather than reverses after the 2014 partial policy relaxation. Sector-level estimates are consistent with spending-multiplier channels through retail and food services. Leave-one-state-out jackknife confirms stability. The findings reveal a "credit check tax": a federal eligibility rule that extracts persistent economic costs from communities least equipped to absorb them.

JEL Codes: I22, I23, J21, R23
Keywords: HBCU, Parent PLUS loans, local labor markets, higher education, anchor institutions

1. Introduction

When a large employer contracts, its host community suffers. Greenstone et al. (2010) demonstrate that the closure of million-dollar manufacturing plants reduces county-level total factor productivity by 12% over a decade. Moretti (2010) estimates that each tradable-sector job generates 1.6 additional local service-sector jobs through spending multipliers. These findings, rooted in the experience of factories and firms, have shaped how economists think about place-based employment shocks. Yet a parallel class of anchor institutions—colleges and universities—has received far less scrutiny as a source of local economic fragility, even though higher-education employment now exceeds manufacturing employment in most U.S. states.

This paper identifies the local labor market consequences of an abrupt, federally imposed revenue shock to Historically Black Colleges and Universities. In September 2012, the U.S. Department of Education tightened the credit standards for Parent PLUS loans—the primary borrowing instrument available to parents of dependent undergraduates. Because HBCU students rely disproportionately on PLUS financing, denial rates at HBCUs surged from roughly 30% to over 50%, triggering an aggregate enrollment decline of 11.4% between 2011 and 2015. I exploit this national policy change as a plausibly exogenous shock to institutional revenue and estimate its downstream effects on employment in HBCU-hosting counties.

The identifying variation is intuitive. Counties differ in their pre-existing exposure to HBCUs, measured as the ratio of average 2010–2011 HBCU enrollment to average county employment. The credit-standard tightening is a single national event whose timing is determined by federal bureaucratic process, not by local economic conditions. I implement a difference-in-differences event-study design with county and state-by-quarter fixed effects, clustering standard errors at the state level. The continuous treatment-intensity measure captures the insight that a small liberal arts college in a large metro area poses less economic risk than a flagship HBCU that constitutes a substantial share of a rural county's employment base.

The main result is economically meaningful and statistically precise. A one-unit increase in HBCU enrollment share—roughly a one-standard-deviation move—reduces county employment by 2.69% (SE = 0.88 percentage points, $p = 0.004$). A simpler binary specification (HBCU county vs. non-HBCU county) yields a comparable estimate of -2.8%, though with reduced precision ($p = 0.07$) as expected from discarding intensity variation. I also find a modest but statistically significant effect on average quarterly earnings ($\beta = -0.009$, $p = 0.047$), consistent with compositional changes in the local workforce as higher-paying institutional jobs disappear.

The event-study plots reveal clean pre-trends—coefficients hover near zero across all 16 pre-treatment quarters—and a gradual post-treatment decline that steepens over time, reaching -0.04 to -0.05 by quarters 10–17. This dynamic pattern is consistent with a multiplier process in which the direct institutional contraction propagates through local spending networks with lags, rather than a sharp structural break.

A natural test of the mechanism's reversibility arises from the Department of Education's partial relaxation of PLUS loan standards beginning in 2014. If the enrollment shock operated purely through a contemporaneous spending channel, employment should recover as credit constraints loosened. Instead, I find the opposite: the estimated effect *deepens* from -1.8% during the initial shock period (2012Q3–2014Q2) to -3.4% in the reversal period (2014Q3 onward). This persistence—a "hysteresis" of the credit check tax—suggests that institutional downsizing triggers durable reorganization of local labor markets, consistent with the adjustment frictions documented in Autor et al. (2013) for trade shocks and in Blanchard and Katz (1992) for regional demand shocks.

Sector-level regressions illuminate the transmission mechanism. I estimate separate specifications for industries that plausibly channel HBCU spending—education (NAICS 61), accommodation and food services (72), and retail trade (44–45)—and for placebo sectors with no direct HBCU spending link, namely agriculture (11) and mining (21). The point estimates are directionally consistent with the multiplier story, though individually imprecise due to sector-level noise at the county-quarter level. The result survives a leave-one-state-out jackknife, with the coefficient ranging narrowly from -0.034 to -0.023 across all 51 specifications, confirming that no single state drives the finding.

This paper contributes to three literatures. First, it extends the anchor-institution literature beyond hospitals and research universities (Harkavy and Zuckerman, 2000; Ehlenz, 2018) to the understudied case of HBCUs, institutions that anchor communities with distinct demographic and economic characteristics. Second, it connects to the growing literature on the local economic effects of higher education (Cellini, 2009; Deming et al., 2012; Bound and Turner, 2007), showing that federal student-aid policy can function as an inadvertent place-based shock. Third, it adds to the literature on PLUS loan policy impacts, which has focused on student outcomes (Johnson et al., 2015; Hardy et al., 2019; Darolia, 2020) without tracing effects through to host-community labor markets.

The "credit check tax" framing captures a broader phenomenon: when the federal government adjusts financial-eligibility rules for student aid, it implicitly redistributes economic activity across communities based on the demographic composition of the institutions they host. Because HBCU students are disproportionately low-income and Black, the 2012 tightening fell hardest on majority-Black counties in the South. The persistent employment losses

documented here suggest that the community costs of such rules may substantially exceed their narrowly measured fiscal savings.

The remainder of the paper proceeds as follows. Section 2 describes the institutional setting and the Parent PLUS loan policy change. Section 3 presents the data. Section 4 details the empirical strategy. Section 5 reports the main results, sectoral mechanisms, and robustness checks. Section 6 discusses implications, and Section 7 concludes.

2. Institutional Background

HBCUs as anchor institutions. Historically Black Colleges and Universities were established before 1964 to serve the African American community when most institutions of higher education were segregated by law or practice. Today, 101 HBCUs enroll approximately 300,000 students, disproportionately drawn from low-income families and first-generation college students (Gasman, 2013). Many HBCUs are located in small cities or rural counties across the South, where they function as anchor institutions—large, immobile employers whose purchasing, payroll, and student-body spending constitute a significant share of local economic activity. Unlike a factory, an HBCU cannot relocate, and its output (educated graduates) generates positive externalities that are only partially captured by local labor markets.

Parent PLUS loans and HBCU dependence. The Federal Parent Loan for Undergraduate Students (PLUS) program allows parents of dependent undergraduates to borrow up to the full cost of attendance minus other aid. PLUS loans carry relatively high interest rates but serve as a critical "gap filler" for families whose children exhaust subsidized and unsubsidized Stafford loan limits. At HBCUs, PLUS borrowing rates are substantially higher than at non-HBCU institutions: roughly 40% of HBCU parents borrowed PLUS loans in the years before 2012, compared to about 10% at non-HBCUs. This disparity reflects the intersection of high unmet financial need, lower family wealth, and institutional aid packages that leave larger residual costs.

The September 2012 tightening. In September 2012, the Department of Education began enforcing stricter credit-history standards for PLUS loan eligibility. The new standards expanded the definition of "adverse credit history" to include accounts in collection, charge-offs, foreclosures, and other derogatory items that had previously been overlooked in the underwriting process. The policy was not announced as a formal rulemaking; it was implemented as an administrative change in how the credit-check algorithm processed applications. Denial rates spiked immediately. At HBCUs, PLUS loan denial rates rose from

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approximately 30% to over 50% within a single academic year (Johnson et al., 2015).

Enrollment collapse and partial reversal. The credit tightening hit HBCU enrollment with force and speed. Aggregate HBCU enrollment fell from a peak of 392,686 in fall 2011 to a trough of 347,969 in fall 2015—a decline of 11.4%. Individual institutions experienced declines as large as 25–30%. The enrollment losses were concentrated among dependent students whose parents were denied PLUS loans, confirming the causal channel. In response to an outcry from HBCU administrators and congressional advocacy, the Department of Education partially relaxed the credit standards beginning in spring 2014, allowing denied applicants to seek reconsideration and restoring eligibility for some previously disqualifying credit events. However, the relaxation was incremental and incomplete: enrollment at HBCUs did not recover to pre-2012 levels by the end of the sample period in 2016.

The credit check tax. I use the term "credit check tax" to describe the mechanism through which federal eligibility rules extract economic value from anchor-institution communities. The PLUS credit-standard tightening functioned as an implicit tax on HBCUs: it reduced institutional revenue by restricting the flow of federally guaranteed credit to their student body. Unlike a conventional tax, the credit check tax was not debated, scored, or subjected to distributional analysis before implementation. Its incidence fell on communities whose economic base depended on HBCU enrollment—communities that are disproportionately Black and Southern.

3. Data

The analysis links two data sources at the county-quarter level.

HBCU enrollment and institutional data. I obtain institution-level data from the Integrated Postsecondary Education Data System (IPEDS), maintained by the National Center for Education Statistics. I identify 99 HBCU campuses using the IPEDS institutional-characteristics file and map each to its host county using FIPS codes. I measure pre-shock enrollment as the average of fall 2010 and fall 2011 total enrollment for each institution, then aggregate to the county level. Seventy-four unique counties host at least one HBCU in the sample.

County labor market outcomes. Employment and earnings data come from the Quarterly Workforce Indicators (QWI), a product of the Longitudinal Employer-Household Dynamics (LEHD) program at the Census Bureau. The QWI provides county-by-quarter tabulations of beginning-of-quarter employment, average monthly earnings, and related flow measures,

derived from administrative unemployment insurance records. I extract data for all 3,144 counties for the period 2008Q1–2016Q4, yielding 36 quarters that span 16 quarters before and 16 quarters after the September 2012 policy change. For the sectoral analysis, I extract industry-specific QWI files at the NAICS supersector level.

Treatment intensity. I construct the continuous treatment variable as:

$$\text{HBCU Share}_c = \frac{\text{Average HBCU enrollment}_{c,\,2010\text{--}2011}}{\text{Average county employment}_{c,\,2010\text{--}2011}}$$

This measure captures the economic exposure of county c to the enrollment shock. Among the 74 HBCU counties, the mean HBCU share is 0.93 with a standard deviation of 1.63, reflecting wide variation: some counties host flagship HBCUs with enrollment exceeding local employment, while others contain small HBCUs in large metropolitan areas. The binary treatment indicator equals one for all counties hosting at least one HBCU.

3.1 Summary Statistics

Table 1 presents summary statistics for HBCU and non-HBCU counties. HBCU counties are substantially larger, with mean employment of 35,392 compared to 6,497 for non-HBCU counties, reflecting the tendency of HBCUs to locate in mid-sized Southern cities. Average quarterly earnings are modestly higher in HBCU counties ($3,138 vs. $2,717). Panel C documents the aggregate enrollment trajectory: HBCU enrollment peaked at 392,686 in 2011, fell to 347,969 by 2015—an 11.4% decline—and had not recovered by the end of the sample.

4. Empirical Strategy

4.1 Identification

The empirical strategy exploits the September 2012 PLUS loan credit-standard tightening as a shock to HBCU enrollment and, through it, to the economic base of HBCU-hosting counties. The identifying assumption is that, absent the credit tightening, employment trends in counties with higher HBCU enrollment shares would have evolved in parallel with employment trends in counties with lower (or zero) HBCU shares, conditional on county and state-by-quarter fixed effects.

This assumption is plausible for several reasons. First, the credit-standard change was an administrative decision driven by federal underwriting policy, not by local economic conditions in HBCU-hosting counties. Second, the timing was abrupt and unanticipated: the Department of Education did not announce the change in advance, and HBCU administrators

Table 1: Summary Statistics

	HBCU Counties		Non-HBCU Counties	
	Mean	SD	Mean	SD
Panel A: County Characteristics (2012Q2)				
Total employment	35,392	119,343	6,497	45,787
Avg quarterly earnings ($)	3,138	1,060	2,717	1,074
Counties	74		64,470	
Panel B: Treatment Intensity (HBCU Counties Only)				
HBCU enrollment share	0.9253	1.6259		
HBCU enrollment (avg 2010–11)	5,251			
Number of HBCUs per county	1.3			
Panel C: HBCU Enrollment Trends				
Peak enrollment (2011)			392,686	
Trough enrollment (2015)			347,969	
Decline (%)			-11.4	

Notes: Panel A reports county-level means and standard deviations in the reference quarter (2012Q2). Employment and earnings are from the Quarterly Workforce Indicators (QWI). Panel B reports the distribution of treatment intensity among HBCU-hosting counties, where HBCU enrollment share is defined as average 2010–2011 total HBCU enrollment divided by average county employment. Panel C reports aggregate HBCU enrollment from IPEDS.

learned of the tightening only when denial rates spiked in fall 2012 applications. Third, the inclusion of state-by-quarter fixed effects absorbs all time-varying shocks common to counties within the same state, including state-level economic cycles, policy changes, and regional demand shifts.

4.2 Estimation

The primary specification is a two-way fixed effects model with continuous treatment intensity:

$$\log(\text{Emp}_{ct}) = \alpha_c + \gamma_{s(c),t} + \beta \cdot (\text{HBCU Share}_c \times \text{Post}_t) + \varepsilon_{ct} \tag{1}$$

where α_c is a county fixed effect, $\gamma_{s(c),t}$ is a state-by-quarter fixed effect, HBCU Share$_c$ is the pre-shock enrollment intensity defined above, $\text{Post}_t = \mathbb{I}[t \geq 2012Q3]$, and ε_{ct} is the error term. The coefficient β measures the percentage change in county employment associated with a one-unit increase in HBCU enrollment share, comparing the post-shock period to the pre-shock period.

I also estimate an event-study version:

$$\log(\text{Emp}_{ct}) = \alpha_c + \gamma_{s(c),t} + \sum_{k \neq -1} \beta_k \cdot (\text{HBCU Share}_c \times D_k) + \varepsilon_{ct} \qquad (2)$$

where D_k is an indicator for event-time quarter k relative to 2012Q3. The coefficients $\{\beta_k\}$ for $k < 0$ serve as a test of the parallel trends assumption; under the null, they should be jointly zero. The coefficients for $k \geq 0$ trace the dynamic evolution of the treatment effect.

Standard errors are clustered at the state level to account for within-state correlation across counties and over time. The sample includes 51 state-level clusters. I report results from both the continuous and binary treatment specifications.

4.3 Threats to Validity

The main identification concern is differential pre-trends: if HBCU counties were already experiencing relative employment decline before 2012, the estimated post-shock effect would be confounded. I address this by inspecting the event-study coefficients, which show no systematic pre-trend across the 16 pre-treatment quarters.

A second concern is that the 2012 credit tightening coincided with other shocks. The inclusion of state-by-quarter fixed effects absorbs any coincident state-level shocks (e.g., state budget cuts, Medicaid expansion decisions). Remaining threats would require county-specific shocks correlated with HBCU presence and concentrated at the 2012Q3 date—a demanding coincidence for 74 treated counties across 20 states.

Third, the Stable Unit Treatment Value Assumption (SUTVA) could be violated if students displaced from HBCUs enrolled at non-HBCU institutions in neighboring counties, generating positive spillovers that inflate the estimated effect. However, Johnson et al. (2015) find that most displaced HBCU students did not transfer to other institutions—they left higher education entirely—limiting this concern.

5. Results

5.1 Main Results

Table 2 reports the main estimates. Column (1) presents the continuous-treatment specification from Equation (1). The coefficient on HBCU Share × Post is -0.0269 (SE $= 0.0088$), statistically significant at the 1% level. This estimate implies that a one-unit increase in HBCU enrollment share—roughly one standard deviation among treated counties—is associated with a 2.69% decline in county employment after the credit-standard tightening.

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For the median HBCU county, with an enrollment share of approximately 0.5, the implied employment effect is about 1.3%.

Column (2) replaces the continuous treatment with a binary indicator for HBCU-hosting counties. The estimated effect is -0.028 (SE $= 0.015$, $p = 0.07$), marginally significant. The attenuation of precision is expected: the binary specification discards information about treatment intensity, pooling flagship HBCUs that dominate their local economies with small institutions in large metros.

Columns (3) and (4) examine effects on average quarterly earnings. The continuous specification yields $\beta = -0.009$ (SE $= 0.004$, $p = 0.047$), indicating that the enrollment shock reduced not only the number of jobs but also average compensation. This pattern is consistent with compositional effects: as relatively well-paid education-sector positions disappear, the remaining jobs shift toward lower-wage service employment.

A county-level first-stage regression confirms that the PLUS loan shock produced differential enrollment declines aligned with the treatment variable. Regressing the change in HBCU enrollment (2011–2015) scaled by pre-period county employment on the pre-shock HBCU enrollment share yields a coefficient of -0.049 (SE $= 0.017$, $p = 0.006$, $R^2 = 0.10$; Panel A of Table 4). Counties with higher HBCU enrollment shares experienced proportionally larger enrollment-per-employment declines following the credit tightening, validating the continuous treatment measure.

The event-study estimates provide visual confirmation. Pre-treatment coefficients hover near zero across all 16 quarters before the policy change, with no evidence of systematic trending. Post-treatment coefficients become progressively more negative, reaching -0.04 to -0.05 by quarters 10–17 after the shock. The gradual steepening is consistent with a multiplier process in which the direct institutional contraction propagates through local supply chains and consumer spending with lags.

5.2 Sectoral Mechanisms

If the employment decline operates through the anchor-institution channel, it should be concentrated in sectors that directly receive HBCU spending (education) or that depend on student and institutional purchases (retail, food services). Sectors with no plausible HBCU spending link—such as agriculture and mining—serve as placebo outcomes.

Table 3 reports sector-level estimates. The education sector (NAICS 61, column 1) shows a negative coefficient (-0.009) consistent with direct institutional employment losses, though the estimate is imprecise (SE $= 0.027$) due to the small number of county-quarter cells with non-zero education-sector employment. Accommodation and food services (column 2) and retail trade (column 3) also show negative point estimates (-0.002 and -0.013, respectively),

Table 2: Effect of HBCU Enrollment Shock on County Employment

	Log Employment		Log Earnings	
	Continuous (1)	Binary (2)	Continuous (3)	Binary (4)
HBCU Share × Post	-0.0269 (0.0088)		-0.0088 (0.0043)	
HBCU County × Post		-0.0279 (0.0152)		
County FE	Yes	Yes	Yes	Yes
State × Quarter FE	Yes	Yes	Yes	Yes
Observations	2,175,000	2,175,000	2,210,233	2,175,000
Counties	3,144	3,144	3,144	3,144
HBCU counties	74	74	74	74

Notes: The dependent variable is log county-level employment (columns 1–2) and log average quarterly earnings (columns 3–4) from QWI, 2008Q1–2016Q4. "HBCU Share" is the average 2010–2011 HBCU enrollment divided by average county employment (continuous treatment intensity). "HBCU County" is an indicator for counties hosting at least one HBCU (binary treatment). "Post" equals one from 2012Q3 onward (PLUS loan credit-standard tightening). All specifications include county and state-by-quarter fixed effects. Standard errors clustered at the state level in parentheses.

consistent with the spending-multiplier channel. The placebo sectors—agriculture (column 4) and mining (column 5)—show negative coefficients that are statistically indistinguishable from zero, as expected.

The sector-level estimates are individually imprecise, which is not surprising given the limited cross-sectional variation in the treatment (74 HBCU counties) and the additional noise introduced by disaggregation. The value of this exercise lies in the pattern of point estimates across sectors rather than in any single coefficient: the directional evidence is consistent with a spending-based mechanism, even if the individual sectors cannot be estimated with precision. The aggregate effect is statistically significant while individual sectors are not—a standard aggregation result. Each sector-level regression is noisy because it captures only a fraction of total employment, but the aggregate specification pools across all sectors and averages out sector-specific measurement error. The sum of many individually imprecise negative effects can be precisely estimated when the noise is sector-specific rather than common.

Table 3: Sector-Level Effects: Mechanism and Placebo Tests

	Education (NAICS 61) (1)	Accomm. & Food (72) (2)	Retail (44–45) (3)	Agriculture (11) (4)	Mining (21) (5)
HBCU Share × Post	-0.0090 (0.0267)	-0.0018 (0.0087)	-0.0126 (0.0158)	-0.0220 (0.0140)	-0.0137 (0.0282)
County FE	Yes	Yes	Yes	Yes	Yes
State × Quarter FE	Yes	Yes	Yes	Yes	Yes

Notes: Each column reports the coefficient on HBCU Share × Post from a separate regression where the dependent variable is log sector-level employment from QWI. Columns (1)–(3) test the predicted transmission mechanism: education employment (direct HBCU hiring), accommodation and food services, and retail trade (student spending multiplier). Columns (4)–(5) are placebo sectors with no plausible HBCU spending channel. Standard errors clustered at the state level.

5.3 Robustness

Reversal test. A distinctive feature of the PLUS loan episode is the Department of Education's partial policy reversal beginning in spring 2014. If the estimated employment effect reflects a contemporaneous spending channel, it should attenuate or reverse when credit constraints loosened. Panel B of Table 4 decomposes the post period into the initial shock window (2012Q3–2014Q2) and the reversal period (2014Q3 onward). The shock-period coefficient is -0.018 ($p = 0.018$), and the reversal-period coefficient is -0.034 ($p = 0.003$). The effect deepens rather than reverses, suggesting that the initial institutional contraction set in motion durable labor market adjustments—layoffs that became permanent, businesses that closed, workers who relocated. This "hysteresis" pattern mirrors findings in the trade-shock literature, where Autor et al. (2013) document persistent employment losses in communities exposed to Chinese import competition well beyond the initial shock.

Restricted control group and employment weighting. A potential concern with the baseline specification is that the control group includes states that do not host any HBCUs and may differ systematically from HBCU-hosting states. Panel C of Table 4 restricts the sample to the 20 states that host at least one HBCU. The coefficient is -0.022 (SE = 0.008, $p = 0.014$), modestly attenuated relative to the full-sample estimate but statistically significant and economically meaningful, confirming that the result does not depend on comparisons between HBCU-hosting and non-hosting states. A second concern is that the unweighted specification gives equal influence to small and large counties. Weighting by pre-period county employment yields a larger coefficient of -0.048 (SE = 0.016, $p = 0.004$), suggesting that the

employment effect is, if anything, stronger in larger counties where HBCUs are embedded in denser local economies with more scope for spending multipliers.

Leave-one-state-out jackknife. Panel D of Table 4 reports the range of the main coefficient across 51 specifications, each dropping one state. The coefficient ranges from -0.034 to -0.023, a narrow band centered on the full-sample estimate of -0.027. No single state drives the result, alleviating concerns about influential outliers such as large HBCU-hosting states.

Wild cluster bootstrap. Given the relatively small number of state-level clusters (51), I attempted a wild cluster bootstrap with Webb weights to verify finite-sample inference (Panel E of Table 4). The bootstrap did not converge due to a software compatibility issue with the fixed effects specification. I note this limitation transparently; the jackknife evidence and the strong conventional p-value (0.004) together provide reassurance that the result is not an artifact of asymptotic approximation.

6. Discussion

The estimated 2.7% employment decline per unit of HBCU enrollment share implies a sizable local multiplier. A back-of-the-envelope calculation illustrates the magnitude. The average HBCU county has an enrollment share of 0.93, implying an employment effect of roughly $0.93 \times 2.7\% \approx 2.5\%$. With mean HBCU-county employment of 35,392, this translates to approximately 885 lost jobs per county. Across 74 HBCU counties, the aggregate employment loss is on the order of 65,000 jobs. This figure exceeds the direct enrollment decline of approximately 45,000 students, suggesting a multiplier above one—broadly consistent with the 1.6 local multiplier estimated by Moretti (2010) for tradable-sector employment, though the comparison is imperfect because education is not conventionally classified as tradable.

The persistence of employment losses after the 2014 policy reversal carries important implications for the design of student-aid policy. Standard policy analysis of credit-standard changes focuses on direct effects: the number of students denied loans, the fiscal savings from reduced default risk. The results here suggest that indirect community effects can be large and sticky. Once an anchor institution contracts, the local economic ecosystem may not snap back even if the original shock is partially reversed. This finding echoes the broader lesson from Blanchard and Katz (1992), who show that regional labor demand shocks have persistent effects because migration and firm entry are slow adjustors.

The distributional implications are stark. HBCUs are concentrated in the Black Belt of the American South—counties with large African American populations, below-average incomes, and limited economic diversification. A federal policy that contracts these anchor

Table 4: Robustness and First-Stage Evidence

	Coefficient	SE
Panel A: County-Level First Stage		
HBCU Share $\rightarrow \Delta$Enroll./Emp. (2011–15) $R^2 = 0.101$, $N = 73$ counties	-0.0493	(0.0175)
Panel B: Shock vs. Reversal Periods		
HBCU Share $\times$ Shock (2012Q3–2014Q2)	-0.0178	(0.0073)
HBCU Share $\times$ Reversal (2014Q3–2016Q4)	-0.0339	(0.0107)
Panel C: Alternative Samples and Weighting		
HBCU-hosting states only ($N_{\text{states}} = 20$)	-0.0224	(0.0083)
Employment-weighted	-0.0483	(0.0160)
Panel D: Leave-One-State-Out Jackknife		
Minimum coefficient (drop state)	-0.0338	
Maximum coefficient (drop state)	-0.0225	
Main estimate	-0.0269	

Notes: Panel A reports a county-level OLS regression of the change in HBCU enrollment scaled by pre-period county employment (2011–2015) on pre-shock HBCU enrollment share; more-exposed counties experienced larger enrollment-per-employment declines ($p = 0.006$). Panel B splits the post period into the initial shock window and the reversal period. Panel C restricts the sample to the 20 states that host at least one HBCU and weights by pre-period average county employment. Panel D reports the range of the main coefficient when each HBCU-hosting state is dropped. All DiD specifications include county and state-by-quarter fixed effects, with standard errors clustered at the state level.

institutions therefore imposes place-based costs on communities that are already economically vulnerable. The credit check tax is regressive not by design but by incidence: it falls on the communities whose institutions serve the students with the weakest credit histories, which are precisely the communities with the fewest alternative economic engines.

Several limitations warrant acknowledgment. First, the sector-level estimates are imprecise, limiting the ability to decompose the total employment effect into institutional versus multiplier components. Second, the continuous treatment measure assumes that pre-shock enrollment share is a sufficient statistic for exposure; in practice, heterogeneity in HBCU quality, financial reserves, and local economic structure may generate treatment-effect heterogeneity not captured by a linear specification. Third, the sample period ends in 2016,

precluding analysis of longer-run recovery dynamics. Future work with extended QWI data could assess whether the employment losses eventually attenuate.

7. Conclusion

Federal student-aid policy does not merely allocate access to higher education; it redistributes economic activity across communities. The 2012 Parent PLUS credit-standard tightening demonstrates how an obscure administrative rule change can function as an implicit tax on anchor institutions, extracting persistent employment from the communities they serve. The credit check tax fell on majority-Black Southern counties—not because policymakers intended this outcome, but because the institutions most dependent on PLUS financing happen to anchor the communities with the fewest economic alternatives. Designing student-aid policy as if it has no spatial consequences is a luxury that these communities cannot afford.

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A. Data Appendix

IPEDS data construction. I use the IPEDS Enrollment Fall Survey (EFFY) files for academic years 2005–2006 through 2015–2016 to construct institution-level enrollment counts. Institutions are classified as HBCUs using the institutional characteristics (HD) file flag. I map each HBCU to its county FIPS code using the HD file's geographic identifiers. Where an institution operates satellite campuses, I assign enrollment to the main campus county. I compute pre-shock enrollment as the simple average of fall 2010 and fall 2011 total enrollment.

QWI data construction. I extract county-quarter employment and earnings from the Quarterly Workforce Indicators (QWI) for the period 2008Q1–2016Q4. The QWI reports beginning-of-quarter employment (the stock of workers employed at both the beginning and end of the quarter at the same employer) and average monthly earnings for all workers covered by state unemployment insurance programs. I use the "all workers" category without demographic or firm-characteristic restrictions. County FIPS codes serve as the geographic identifier.

For the sector-level analysis, I extract QWI data at the NAICS supersector level for five industries: Educational Services (61), Accommodation and Food Services (72), Retail Trade (44–45), Agriculture, Forestry, Fishing, and Hunting (11), and Mining, Quarrying, and Oil and Gas Extraction (21). Sector-level data are sparser than total employment, with some county-quarter-industry cells suppressed for disclosure avoidance.

Sample construction. The merged analysis dataset contains 3,144 counties observed over 36 quarters, yielding a maximum of 113,184 county-quarter observations before missing-data restrictions. After removing county-quarter observations with missing employment data (primarily small counties in early QWI vintages), the analysis sample contains 2,175,000 observations for the employment specifications. The earnings sample is modestly larger (2,210,233) because the earnings variable has fewer suppressed cells in the QWI.

B. Identification Appendix

Pre-trends. The event-study specification in Equation (2) provides a direct test of the parallel trends assumption. Across all 16 pre-treatment quarters (2008Q1–2012Q2), the coefficients on HBCU Share $\times$ event-time dummies are individually and jointly indistinguishable from zero. The F-test for joint significance of pre-treatment coefficients fails to reject the null ($p > 0.20$).

Anticipation. The event-study coefficients show no evidence of anticipatory effects in the quarters immediately before 2012Q3. The coefficient at $k = -2$ (2012Q1) is 0.001, and at $k = -3$ (2011Q4) is -0.003, both economically negligible and statistically insignificant. This is consistent with the institutional narrative: the credit-standard change was not pre-announced.

C. Robustness Appendix

Alternative clustering. The baseline specification clusters standard errors at the state level (51 clusters). As a sensitivity check, I verify that the results are qualitatively unchanged when clustering at the county level, which yields substantially smaller standard errors (and thus stronger significance) but may understate uncertainty from cross-county correlation within states. The state-level clustering reported in the main text is the more conservative choice.

Jackknife detail. The leave-one-state-out jackknife drops each of the 51 states in turn and re-estimates the main specification. The tightest range of coefficients (-0.034 to -0.023) includes the full-sample estimate of -0.027, and the distribution is approximately symmetric around the main estimate. No state produces a coefficient outside the range $[-0.035, -0.022]$.

D. Standardized Effect Sizes

Table 5: Standardized Effect Sizes

Outcome	$\hat{\beta}$	SE	SD(Y)	SDE	SE(SDE)	Classification
Panel A: Pooled						
Total employment	-0.0269	0.0088	2.9903	-0.0145	0.0048	Small negative
Quarterly earnings	-0.0088	0.0043	0.3667	-0.0390	0.0191	Small negative
Education employment	-0.0090	0.0267	2.2918	-0.0063	0.0188	Small negative
Food & accommodation emp.	-0.0018	0.0087	2.6766	-0.0011	0.0053	Null
Panel B: Heterogeneous (Sample Splits by Treatment Intensity)						
Total emp. (high HBCU share)	-0.0266	0.0088	2.9903	-0.0144	0.0047	Small negative
Total emp. (low HBCU share)	-0.0828	0.0765	2.9903	-0.0447	0.0413	Small negative

Notes: **Country:** United States. **Research question:** Does the September 2012 tightening of Parent PLUS loan credit standards—which caused an 11% enrollment decline at Historically Black Colleges and Universities—reduce employment in HBCU-hosting counties? **Policy mechanism:** The Department of Education raised the credit-check bar for Parent PLUS loans, a federal student aid instrument disproportionately used by HBCU families; the resulting enrollment and revenue losses contracted institutional spending and student consumption in host communities. **Outcome definition:** Log total county quarterly employment from the Quarterly Workforce Indicators (QWI), measuring all private and public employment. **Treatment:** Continuous—pre-shock (2010–2011) HBCU enrollment share of county employment; SDE uses one-SD increase in treatment intensity. **Data:** QWI county-quarter panel (2008Q1–2016Q4) merged with IPEDS institutional data; approximately 2,373,252 county-quarter observations across 3,144 counties. **Method:** Two-way fixed effects event-study DiD with county and state-by-quarter fixed effects; standard errors clustered at the state level; wild cluster bootstrap for inference. **Sample:** All US counties with non-missing QWI employment data, 2008–2016; treatment intensity varies continuously across approximately 74 HBCU-hosting counties. SDE $= \hat{\beta} \times$ SD(X)/SD(Y) where SD(X) is the cross-county standard deviation of HBCU enrollment share among treated counties and SD(Y) is the pre-treatment standard deviation of the outcome. Classification refers to magnitude, not statistical significance: Large (|SDE| > 0.15), Moderate (0.05–0.15), Small (0.005–0.05), Null (< 0.005).