Relief Beliefs: Effects of Anticipated Student Loan Forgiveness

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Abstract

Political support for student loan forgiveness has been growing, particularly on the left, but evidence regarding its effects remains limited. We evaluate the immediate consumption response to President Biden's 2022 loan forgiveness announcement which promised debt relief of $10,000 to $20,000 for approximately 42 million borrowers. We find that retail stores located in counties with a 1 percentage point higher share of eligible student loan borrowers saw a persistent 0.1% increase in weekly sales. The positive spending response was absent in counties with high shares of financially delinquent households, consistent with delinquent borrowers being liquidity constrained and unable to smooth consumption. Novel data on debt relief eligibility and applications suggest that student loan borrowers anticipated relief they ultimately did not receive and adjusted their spending in response.

Keywords: student loans; debt relief; household finance; expectations

JEL Classification: D12, G51, H31, I22, I28

*Researchers' own analyses calculated (or derived) based in part on data from Nielsen Consumer LLC and marketing databases provided through the NielsenIQ Datasets at the Kilts Center for Marketing Data Center at The University of Chicago Booth School of Business. The conclusions drawn from the NielsenIQ data are those of the researchers and do not reflect the views of NielsenIQ. NielsenIQ is not responsible for, had no role in, and was not involved in analyzing and preparing the results reported herein.

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Student loan forgiveness has been a subject of considerable debate in recent years.[1] Despite growing political support, particularly among those on the left, empirical evidence on the effects of student loan relief is limited. More broadly, whether and to what degree debt relief programs have benefits for debtors through for example stimulating consumption are open questions, especially relative to policies that provide short-term liquidity relief.

In this paper, we evaluate the immediate consumption response to President Biden's August 2022 loan forgiveness announcement which promised debt relief of $10,000 to $20,000 for approximately 42 million borrowers through an executive order. The policy announcement represented a meaningful, yet uncertain, wealth shock of 10-20% of median household wealth (Dinerstein, Yannelis and Chen, 2024). In theory, rational consumers would immediately incorporate news about changes in their permanent income. However, if many student loan borrowers were liquidity constrained or hand-to-mouth, they would have been unable to smooth consumption from the wealth shock. Moreover, given the legal challenges to the policy, many borrowers may have disbelieved in the likelihood of actually receiving a reduction in their student debt balances. The Supreme Court eventually blocked the debt relief plan in June 2023.

Although borrowers' liabilities were ultimately unaffected under the plan, we argue that the announcement itself is of independent interest given its scope and the attention it received at the time. Figure 1 presents normalized search volume from Google Trends for 'student loan' and 'student loan forgiveness'. Biden's announcement stands out as the most noteworthy event, with the latter two spikes occurring when the debt relief application website launched and when the Supreme Court blocked the plan. In contrast, the student loan payment moratorium of March 2020 barely registers despite borrowers having received immediate liquidity relief.

Compared to other studies on the relative merits of debt relief, our setting enables us to isolate the impact of a change in wealth, as the moratorium remained in place until October 2023. This stands in contrast to most other debt relief interventions, such as consumer bankruptcy protection, which typically involve simultaneous payment reductions. Furthermore, unlike other wealth shocks—such as fluctuations in housing or stock market wealth, which may have both permanent and transitory components—student loan forgiveness is entirely permanent, simplifying its interpretation (Dinerstein et al., 2024).

Using an exposure research design, exploiting the geographical variation of student loan borrowers, we show that retail stores located in counties with a 1 percentage point higher share of

[1] See, for example, Harris, K. and Trump, D. 2024, 'Presidential debate', ABC, 10 September.

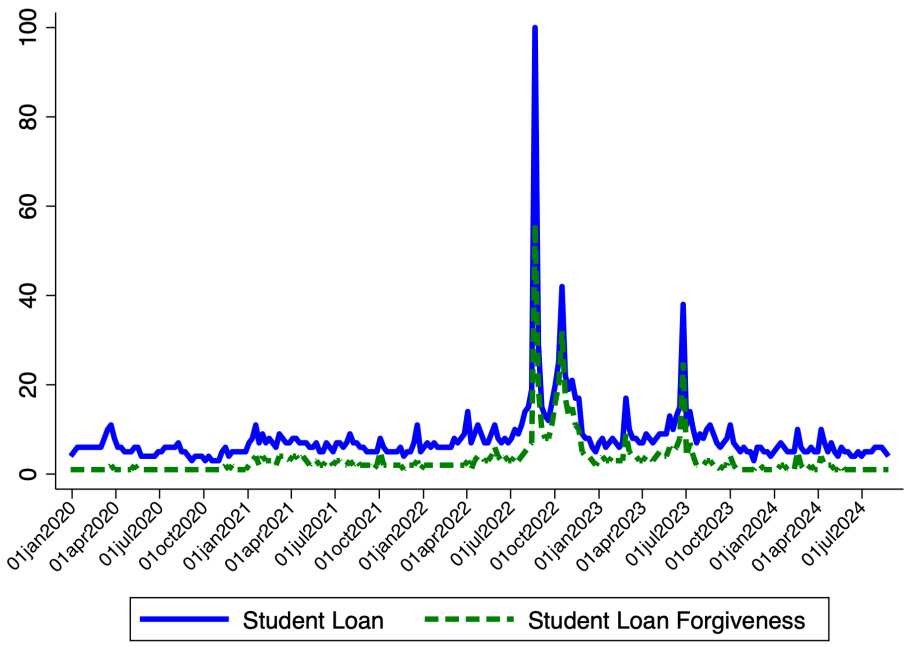


Figure 1: Google Trends. This figure plots weekly aggregate Google searches for 'student loan' and 'student loan forgiveness'. The data cover the weeks of December 29, 2019 to August 25, 2024. The counts are normalized and presented on a scale from 0-100, where 100 is the maximum search interest.

student loan borrowers, who were eligible for debt relief, saw a persistent 0.1% increase in weekly sales following the announcement. We find that the spending response was absent in counties with high shares of financially delinquent households. Our results indicate that student loan borrowers, who were not liquidity constrained, increased spending immediately upon receiving news about an upcoming, large principal reduction.

Despite the announced debt relief being a small fraction of lifetime permanent income, we find that borrowers were strongly responsive to it. The implied average quarterly marginal propensity to consume (MPC) is 4.5%, which is of the same order of magnitude but larger than typical estimates in the literature for MPCs derived from increases in illiquid wealth (Kaplan and Violante, 2022). Consistent with Baugh et al. (2021), an asymmetric consumption pattern, wherein the response to changes in net worth driven by liability reduction differs from those driven by asset appreciation, suggests a behavioral explanation. Relatedly, the economic magnitude of our estimate may reflect a specific aversion individuals have toward student debt (Gopalan et al., 2024).

To study the effects of student loan forgiveness, we obtained comprehensive data on the number of borrowers eligible for debt relief and their subsequent applications from the Department of Ed-

ucation via Freedom of Information Act (FOIA) requests. We combined this zip code-level dataset with retail scanner data from NielsenIQ to compute each store's differential exposure to President Biden's loan forgiveness announcement. The high-frequency and granular nature of the scanner data allows us to control for location-specific economic trends by employing high-dimensional fixed effects. Effectively, we compare stores belonging to the same chain located in the same metropolitan area at the same time but in different counties with varying levels of exposure to eligible student loan borrowers. Moreover, given the granularity of the scanner data, we document heterogeneous effects at the product level, showing positive treatment effects among a wide variety of goods.

Since debt relief eligibility may correlate with unobservable differences between individuals that independently affect spending behavior, we conduct placebo tests using counterfactual debt relief announcements. We do not find statistically significant differential spending responses among retail stores more exposed to eligible borrowers following placebo announcements in the same calendar week of different years. These results suggest that the August 2022 announcement was a pivotal event that shifted borrowers' spending behavior.

Next, we evaluate the immediate consumption response to the Supreme Court decision striking down the Biden administration's debt relief plan in June 2023. In contrast to the previous policy announcement, the Court's decision represented a negative shock to borrowers' net worth, attenuated by the degree to which borrowers expected the Supreme Court justices to rule the plan unconstitutional. We find evidence that borrowers reduced spending immediately following the Supreme Court reversal.

Our results align with a beliefs channel. If borrowers did not expect to eventually receive loan forgiveness—perhaps because they accurately anticipated the Supreme Court's decision—they would not have reacted to the plan's announcement or reversal, nor would they have submitted debt relief applications. However, we find that application counts strongly correlate with student loan forgiveness eligibility. Furthermore, we show that debt relief take-up rates were higher among women, high-income households, and in zip codes that lean more toward the Democratic Party.

Our results are robust to using an alternative measure of student loan borrowers. Leveraging representative credit bureau data on student loan debt, we repeat our empirical methodology and find similar point estimates. In these specifications, we estimate retail stores' exposure to all borrowers with outstanding student loan debt, not just those eligible for the debt relief program. Additionally, our findings remain strongly robust to more stringent cuts of the scanner data, which exclude stores that do not report sales consistently each week.

We add to a literature examining the effects of debt relief interventions. There is an ongoing debate about the merits of balance reduction policies relative to those providing liquidity relief. For instance, Ganong and Noel (2020) document that short-term payment reductions with no change in long-term obligations have significant effects while principal reductions without changes in payments have no effect. Indarte (2023) finds similar evidence for liquidity effects being stronger in consumer bankruptcy filings. Dobbie and Song (2020) find the opposite in terms of positive effects for interest write-downs but not for immediate payment reductions. Cespedes, Parra and Sialm (2024) argue that large principal reductions on mortgage loans have substantial effects even in the short run. We contribute to this literature by showing that balance reductions have non-trivial effects for households that are not liquidity constrained. Relative to the aforementioned papers, our results pertain to government debt relief interventions for which there is a paucity of evidence.

More directly, our findings contribute to the growing literature on student loans.[2] Closely associated to our paper, Dinerstein, Yannelis and Chen (2024) show that student loan borrowers—mainly those without prior delinquencies—increased borrowing on mortgages, auto loans, and credit cards following the student loan payment moratorium, not finding effects of Biden's 2022 announcement on borrowers' credit use.[3] We highlight three key differences from Dinerstein, Yannelis and Chen (2024). First, our main outcome of interest is nondurable retail spending, not debt-financed consumption on durable goods for which credit market imperfections or other frictions may play a larger role. Second, we capture the universe of eligible student loan borrowers including younger cohorts who stood to benefit more from debt relief; the identification strategy in Dinerstein, Yannelis and Chen (2024) necessarily involves older borrowers.[4] Third, we rely on more high-frequency spending data.

Finally, we show that consumer spending is responsive to news releases. In this regard, our work is most similar to Garmaise, Levi and Lustig (2024) who demonstrate that household consumption displays excess sensitivity to macroeconomic news. Focusing on political news instead, we document that presidential announcements can shift households' behavior even amid legal uncertainty surrounding forthcoming executive actions. By tracking how spending evolves around both the initial loan forgiveness announcement and the Supreme Court decision, our findings also contribute to the broader literature on economic policy uncertainty and underscore the role of policymakers in

[2]See Yannelis and Tracey (2022) and Looney and Yannelis (2024) for recent overviews.

[3]Dinerstein et al. (2024) also study loan forgiveness among 3 million borrowers (holding 7.8% of the total outstanding student loan debt), finding similar increases in credit demand.

[4]The Department of Education estimated that 65% of eligible borrowers were under 40 years old (White House, 2022).

shaping expectations (Baker, Bloom and Davis, 2016).

The remainder of this paper is structured as follows. In Section I, we discuss the student loan market and the debt relief plan. Section II describes the data that we use in our analysis. Section III presents our empirical strategy and the main findings. Finally, Section IV concludes.

I Institutional Background

The student loan market has experienced tremendous growth over the past few decades. Looney and Yannelis (2024) document that since 2000 total debt balances have more than quadrupled and the number of borrowers has more than doubled. They show that as of 2023, approximately 46 million borrowers held $1.6 trillion in outstanding student loans which represents the largest source of household debt after mortgages. Federal student loans, that is loans that are disbursed or guaranteed by the federal government, compose the vast majority of outstanding student loan debt. As of August 2023, the share of individuals with a credit bureau record who have any student loan debt is 15%; these borrowers have a median balance of $20,625 and a median payment of $166 (Urban Institute, 2024).

In recent years, several policy and legal changes have impacted the student loans market. We summarize these in Figure 2. In this paper, we focus on President Biden's August 2022 loan forgiveness announcement which promised debt relief of $20,000 to borrowers who received a Pell Grant in college with loans held by the Department of Education and $10,000 in debt cancellation to non-Pell Grant recipients.

Eligibility under the program was based on 2020 or 2021 income: less than $125,000 for individuals and less than $250,000 for households.[5] As Pell Grant recipients formed more than 60% of the borrower population, the Department of Education estimated that around 27 million borrowers would be eligible for the full $20,000 in debt relief (White House, 2022). Moreover, the Department estimated that the president's policy would cancel the full remaining balance for roughly 20 million borrowers.

The announcement itself took place during the pandemic-era debt moratorium which froze required student loan payments. The Department of Education launched a website for processing debt relief applications and began verifying individual borrowers' eligibility in October 2022. However, the plan faced immediate political opposition and legal challenges, cumulating with the Supreme

[5]Dependent students' eligibility was based on parental income.



Figure 2: Timeline. This figure plots key events impacting the student loan market between March 2020 and October 2023.

Court blocking the Biden-Harris Administration from implementing the debt relief measures. Student loan payments resumed in October 2023.

II Data

This section describes the data used in this paper. We construct our main dataset by aggregating the universe of eligible student loan borrowers to the county level and merging it with NielsenIQ's Retail Scanner data. Parts of the analysis use credit bureau data via the Urban Institute. We also construct demographic covariates from a variety sources outlined below.

II.1 Department of Education

The U.S. Department of Education maintained zip code-level counts of eligible student loan borrowers under the proposed Biden-Harris debt relief plan, which we obtained through a Freedom of Information Act (FOIA) request. These counts are rounded, and zip codes with fewer than 10 borrowers are excluded. In total, the data represent about 42 million borrowers, 99% of whom are associated with specific zip codes. The Department did not include data on Pell Grant recipients in its analysis of eligible borrowers. Therefore, we cannot distinguish between those eligible for $10,000 or $20,000 in debt forgiveness at the zip code level.

The Department of Education launched a website on October 14$^{\text{th}}$, 2022 and received approximately 25 million debt relief applications until the website closed down under legal pressure on November 11$^{\text{th}}$, 2022.[6] By this time, the Department had approved two-thirds of the applications, sending them to loan servicers for further processing. From a second FOIA request, we obtained

[6]Borrowers submitted a short online application on https://studentaid.gov/debt-relief/application, by inputting their names, contact information, and Social Security Numbers and by affirming that they satisfied the plan's income eligibility thresholds.

zip code-level counts of the debt relief applications. These counts are rounded, and zip codes with fewer than 100 borrowers are excluded. We observe all 25 million applications, 94% of whom are associated with specific zip codes.

The choropleth maps in Figure 3 plot eligible borrowers (Figure 3a) and debt relief applications (Figure 3b) as a share of the total adult population in each county. The maps convey a high degree of cross-sectional variation. In particular, counties in the South, Appalachia, and parts of the Midwest tend to have high shares of eligible student loan borrowers and applicants. In contrast, much of the Western United States and certain parts of the Northeast exhibit lower shares. Importantly, there is substantial within state variation in the shares.

II.2 Retail Scanner

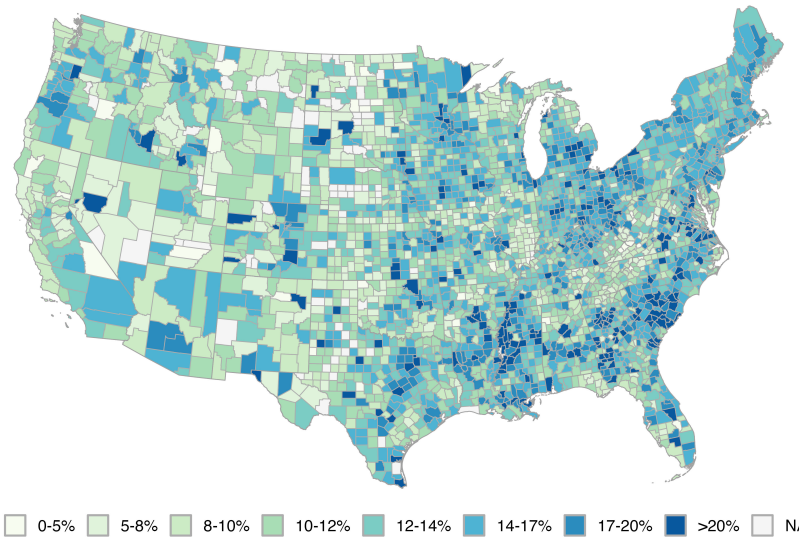
We measure weekly consumer spending using the NielsenIQ Retail Scanner dataset.[7] It captures a substantial part of retail consumption in the United States and has been used extensively in the economics and marketing literatures with growing use in finance (Dubois, Griffith and O'Connell, 2022).

The scanner data are at the store level. We observe more than 50,000 de-identified retail stores in various categories (food, drug, mass merchandiser, convenience, and liquor) with collective sales of greater than $500 billion in 2022. Appendix Table A.1 reports summary statistics on weekly spending in each retail channel. The dataset contains each store's county of location which we use to link to the counts of eligible student loan borrowers.

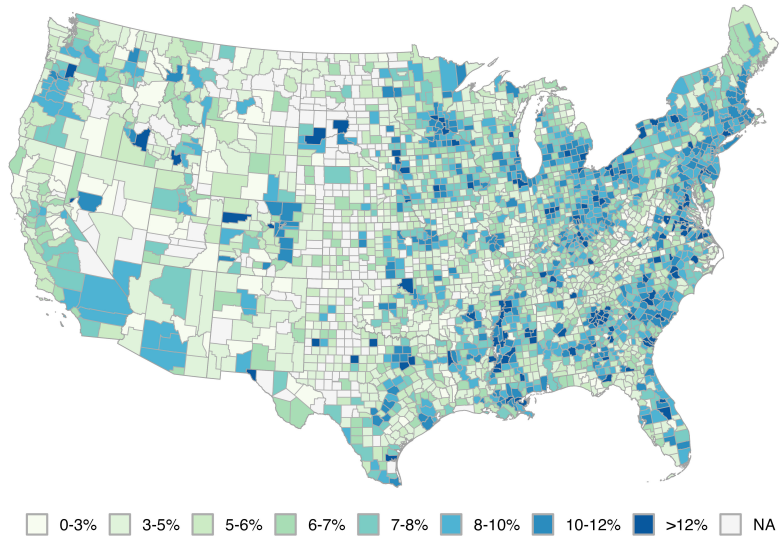
II.3 Credit Bureau

We source aggregated, representative data on household debt from the Urban Institute.[8] We use a county-level snapshot as of February 2022, 6 months before President Biden's debt relief announcement. Nationally, the share of people with a credit bureau record who have any student loan debt is 15% while their median balance is $20,108 and their median payment is $160. Approximately, one-quarter of individuals with a credit bureau record are financially delinquent in the sense that they have some debt (including student loans and other liabilities like mortgage and credit card debt) in collections.

[7]The data is provided by the Kilts Center at the University of Chicago Booth School of Business.
[8]The latest data can be obtained from https://apps.urban.org/features/debt-interactive-map/.



(a) Eligible Share



(b) Application Share

Figure 3: Distribution of Student Loan Forgiveness. This figure plots the county-level distribution of eligible borrowers and their debt relief applications. Panel (a) shows the share of adults in each county who were eligible for forgiveness under the plan. Panel (b) shows the number of applications as a share of total adults in each county. Darker colors correspond to higher shares.

II.4 Demographics

Finally, we supplement our FOIA data with demographic characteristics at the zip code and county level from the American Community Survey 5-Year estimates. We extract college enrollment data from the Integrated Postsecondary Education Data System (IPEDS). We also obtain partisanship information from the MIT Election Lab and the Federal Election Commission (FEC) to identify

blue counties and individual campaign donations to the Democratic Party respectively during the 2020 election cycle.[9]

III Results

III.1 Consumer Spending

Leveraging geographical variation in eligibility for the debt relief program, we first study the effect of President Biden's loan forgiveness announcement on consumer spending by estimating the following equation:

$$Y_{ikt} = \beta_{DiD} \textit{Eligible Share}_k \times Post_t + \mu_i + \tau_t + \epsilon_{ikt}. \tag{1}$$

The outcome is ln(total sales) for store i in county k in week t. We define $\textit{Eligible Share}_k$ as the share of adults in county k who were eligible for forgiveness under the plan, while $Post_t$ is an indicator for whether a week falls around or after August 24, 2022, the date of the announcement. μ_i and τ_t are store and week fixed effects respectively. We cluster standard errors at the county level.

Eligible Shares are equilibrium objects; therefore, we cannot assume that they are uncorrelated with the levels of the outcome. However, identification rests on differential *changes* in the outcomes. For β_{DiD} to receive causal interpretation, as in standard difference-in-differences, it has to be the case that no other shock or time-varying unobservable, correlated with the shares, is driving the changes in the outcome.

Given this identifying assumption, Table 1 presents the results of the exposure research design. Column (1) shows that total sales were 0.2% greater among retail stores located in counties with a 1 percentage point higher share of student loan borrowers eligible for debt relief. In column (2), we incorporate designated market area-week fixed effects, absorbing variation in local conditions. In column (3), we further include parent company and retail channel fixed effects, each interacted with week dummies. Effectively with our high-dimensional fixed effects, we are comparing stores belonging to the same chain located in the same metropolitan area at the same time but in different counties with varying levels of exposure to eligible student loan borrowers.[10] We find that these coefficients are similar to those in column (1).

[9] We follow and update Meeuwis et al. (2022) in creating our zip code-level partisanship measure.

[10] The NielsenIQ Retail Scanner data is anonymized, and we make no attempt to infer actual store names.

	(1)	(2)	(3)	(4)
Eligible Share x Post	0.24***	0.22***	0.23***	0.10***
	(0.034)	(0.045)	(0.044)	(0.038)
Store FE	YES	YES	YES	YES
Week FE	YES	NO	NO	NO
Market-Week FE	NO	YES	YES	YES
Parent-Week FE	NO	NO	YES	YES
Channel-Week FE	NO	NO	YES	YES
Demographics-Week FE	NO	NO	NO	YES
Adj. R-squared	0.99	0.99	0.99	0.99
Observations	798240	798030	798015	798015

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 1: Spending at Retail Stores Post-Announcement. This table reports the results of regression 1. The data are at the store-week level and cover the weeks of July 10, 2022 to October 16, 2022. The outcome variable is $ln(sales)$. Eligible Share is the share of adults in a county who were eligible for loan forgiveness, and Post is an indicator for whether a week falls around or after August 24, 2022. The demographic controls include: median household income, total population, partisanship, under-18 and college enrollment shares of the population. Standard errors are clustered at the county level.

In column (4), we introduce county-level demographic controls, each interacted with week fixed effects to allow their effects to vary over time. These include median household income, total population, and the under-18 and college enrollment shares of the population. The latter two measures alleviate concerns related to back-to-school spending which arguably coincides with the announcement. We also include a dummy for blue counties, those who gave Biden a majority of the vote in the 2020 presidential election, to distinguish our estimates from a partisan sentiment effect. Thus, our final point estimate indicates that retail stores located in counties with a 1 percentage point higher share of eligible student loan borrowers experienced a 0.1% increase in weekly sales following the announcement.

Our results are robust to using an alternative measure of student loan borrowers. Defining retail stores' exposure instead to all borrowers holding any student loan debt based on representative credit bureau data, we reestimate equation 1 and find similar results. We recover an identical point estimate in column (1) of Appendix Table A.2 relative to that in our baseline table. With additional fixed effects, the point estimates are somewhat stronger using the broader measure of student loan borrowers, suggesting that more borrowers anticipated relief than were actually eligible for forgiveness as calculated by the Department of Education. Our results are also strongly robust

to a more stringent cut of the scanner data, where we omit stores that do not report sales each week (Appendix Table A.3).

Next, we calculate the implied MPC from the spending response to place our findings in context of the broader literature on MPCs out of illiquid wealth, such as housing or stock market equity (Kaplan and Violante, 2022). We start with personal consumption expenditure on nondurable goods of $3.9 trillion among 131.2 million households in 2022.[11] Using the coefficient in column (4) of Table 1, we estimate the change in nondurable consumption for the average household as $742 over a quarter. Given that the Department of Education estimated that roughly 27 million borrowers are Pell Grant recipients, eligible for the full $20,000 in loan forgiveness, we calculate an average increase in wealth of $16,429 (White House, 2022). Therefore, normalizing the change in consumption by the change in wealth, our estimate of the average quarterly MPC is 4.5%.[12]

Relative to typical estimates in the literature, which rely on appreciations in asset valuations, our estimate based instead on a reduction in a financial liability is similar but larger. An asymmetric consumption response to different types of changes in net worth suggests a behavioral explanation (Baugh et al., 2021) or a specific aversion to student debt (Gopalan et al., 2024). Permanent liability reductions may boost confidence in a way that asset gains, which may be prone to reversal, do not.

III.2 Dynamics of Consumer Spending

To get a better sense of how average treatment effects evolve over time, we employ a dynamic difference-in-differences methodology within the following event study specification:

$$Y_{ikt} = \mu_i + \sum_{t=1}^{T} \beta_t \left(\text{Eligible Share}_k \times \text{week}_t\right) + \sum_{t=1}^{T} \delta_t' \left(X_i \times \text{week}_t\right) + \varepsilon_{ikt}. \tag{2}$$

Y_{ikt}, *Eligible Share*$_k$, and μ_i are defined as before. $X_i \times \text{week}_t$ reflects all of our fixed effects from the last specification in Table 1. We include data for the week of July 10 as $t = 0$, but omit a coefficient for this reference time period. Figure 4 shows that estimated treatment effects are near zero in the pre-period and that they are positive and statistically significant following the announcement, staying elevated around 0.1-0.2%.

Relative to estimates from July, the point estimates for the weeks of August 7 and August 14 suggest anticipation or policy leakage. A closer look at Google Trends in the days and weeks

[11] See U.S. Bureau of Economic Analysis and Census Bureau series on https://fred.stlouisfed.org/series/PCND and https://fred.stlouisfed.org/series/TTLHH

[12] We abstract away from legal uncertainty and a potential fiscal multiplier for this exercise.

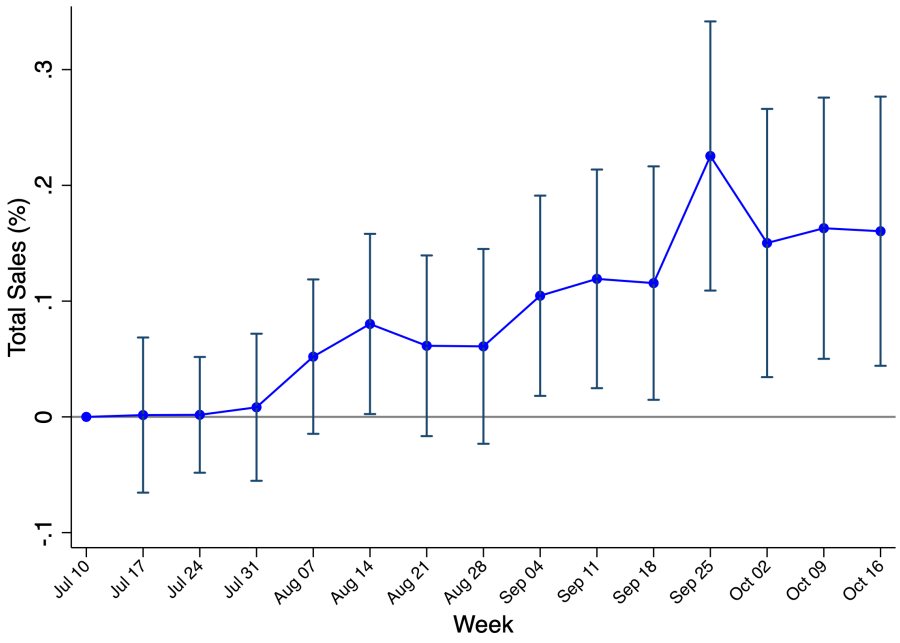


Figure 4: Dynamics of Spending Response. This figure reports estimated coefficients and 95% confidence intervals from regression 2. The data are at the store-week level and cover the weeks of July 10, 2022 to October 16, 2022. The specification includes fixed effects for the following groups, interacted with dummies for each week: designated market area, parent company, retail channel, median household income, total population, partisanship, under-18 and college enrollment shares of the population. Standard errors are clustered at the county level.

leading up to the announcement reveals clear spikes in search activity (Appendix Figure A.1). At the same time, news articles speculated about upcoming student debt relief, a key promise of President Biden's election campaign.[13] Notably, the spike in searches on August 16 coincides with the Department of Education discharging debt for approximately 200 thousand students of ITT Technical Institute which may have signaled the much broader executive action we study that involved debt cancellation for over 42 million borrowers.[14]

A concern with the previous tests is that eligibility may be correlated with unobservable differences between individuals that independently affect spending behavior following the announcement. For example, types of consumers may not be uniformly distributed across counties even within metropolitan area, with more urban counties, having higher exposure to eligible borrowers, exhibiting different seasonal spending patterns. Indeed, while high and low exposure counties are similar

[13]Ann Carrns, "What to Know as the Pause on Student Loans Is Set to Expire," *New York Times*, August 12, 2022.

[14]Stacy Cowley, "Education Department wipes out $4 billion in ITT Tech student loans," *New York Times*, August 16, 2022.

along a number of dimensions, they also differ in terms of median household income, education, and partisanship (Appendix Table A.4).

To address this concern, we conduct placebo tests which convey differential spending responses to counterfactual debt relief announcements. We repeat the difference-in-differences methodology specified in equation 2, with the event window now reflecting announcements in the same calendar week but in different years. Appendix Figure A.2 presents analogous estimates to those in Figure 4. The placebo tests generally do not yield a similar pattern nor statistically significant estimates, suggesting that the August 2022 announcement was a pivotal event that shifted borrowers' spending behavior.

III.3 Liquidity Constraints

For debt relief expectations to affect households' decision-making, it is crucial that borrowers have sufficient financial flexibility to smooth consumption across time. To investigate the role of liquidity constraints, we conduct a triple difference-in-differences exercise, estimating specifications of the form:

$$\begin{aligned} Y_{ikt} = \beta_{DDD} &\textit{Eligible Share}_k \times \textit{Post}_t \times \textit{High Delinquency}_k \\ &+ \beta_2 \textit{High Delinquency}_k \times \textit{Post}_t \\ &+ \beta_3 \textit{Eligible Share}_k \times \textit{Post}_t + \mu_i + \tau_t + \epsilon_{ikt}. \end{aligned} \tag{3}$$

We introduce $\textit{High Delinquency}_k$ which is an indicator for whether counties have a share with any debt in collections greater than 26%, the national share. Our hypothesis is that due to liquidity constraints, financially delinquent households would be less able to smooth consumption following President Biden's debt relief announcement. Therefore, our parameter of interest is β_{DDD} which captures the differential effect of exposure to eligible borrowers on retail stores in high delinquency counties relative to those in low delinquency counties following Biden's loan forgiveness announcement.

In line with our interpretation, column (3) of Table 2 shows that the positive spending response is absent in high delinquency counties as β_{DDD} completely offsets β_3. For retail stores located in low delinquency counties, we estimate that a 1 percentage point higher share of eligible student loan

	(1)	(2)	(3)
Eligible Share x Post	0.17***	0.075	0.32***
	(0.050)	(0.046)	(0.085)
High SL Debt x Post	0.022*		
	(0.013)		
Eligible Share x High SL Debt x Post	-0.12*		
	(0.068)		
High SL Payment x Post		-0.021	
		(0.016)	
Eligible Share x High SL Payment x Post		0.100	
		(0.087)	
High Delinquency x Post			0.057***
			(0.016)
Eligible Share x High Delinquency x Post			-0.33***
			(0.088)
Store FE	YES	YES	YES
Week FE	NO	NO	NO
Market-Week FE	YES	YES	YES
Parent-Week FE	YES	YES	YES
Channel-Week FE	YES	YES	YES
Demographics-Week FE	YES	YES	YES
Adj. R-squared	0.99	0.99	0.99
Observations	781447	770410	797893

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2: Triple Differences. This table reports the results of regression 3. The data are at the store-week level and cover the weeks of July 10, 2022 to October 16, 2022. The outcome variable is $ln(sales)$. Eligible Share is the share of adults in a county who were eligible for loan forgiveness, and Post is an indicator for whether a week falls around or after August 24, 2022. High Delinquency is an indicator for whether the share with any debt in collections in a county is greater than 26%. High SL Debt is an indicator for whether the median student loan debt balance in a county is greater than $20,108. High SL Payment is an indicator for whether the median student loan debt payment in a county is greater than $160. The demographic controls include: median household income, total population, partisanship, under-18 and college enrollment shares of the population. Standard errors are clustered at the county level.

borrowers led to a 0.3% increase in weekly sales following the announcement.[15] For comparison purposes, we conduct similar exercises for high student loan debt and high student loan payment counties in columns (1) and (2), where the thresholds are defined relative to national medians. We

[15]We also observe a small but statistically significant time trend among high delinquency counties relative to low delinquency ones. This could be due to different seasonal spending patterns between the two groups.

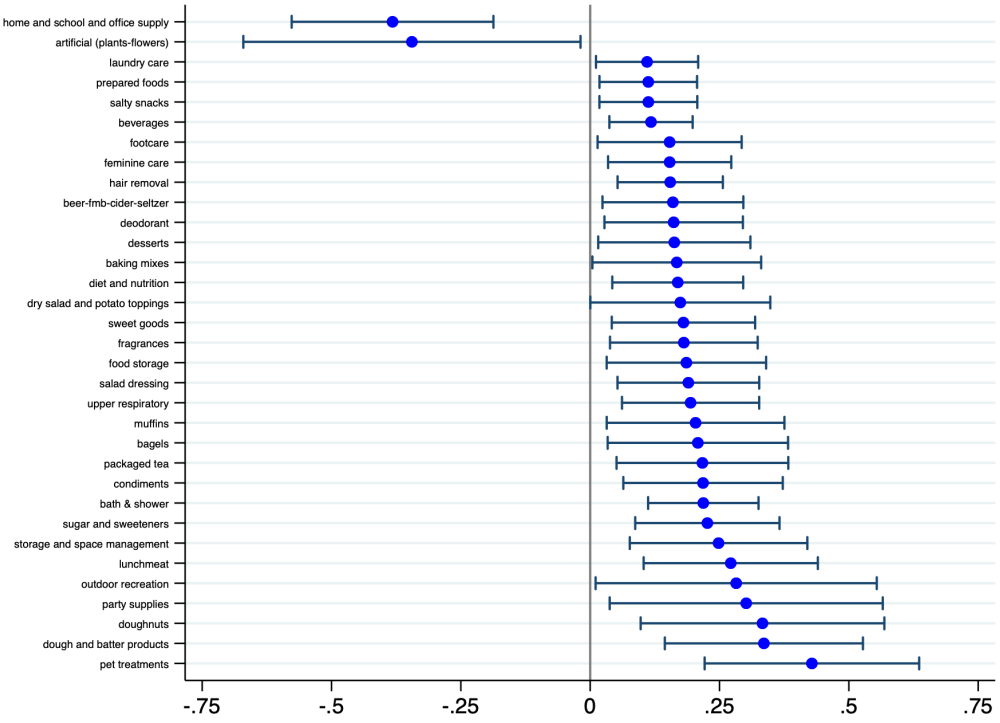


Figure 5: Heterogeneous Effects by Spending Category. This figure plots estimated coefficients and 95% confidence intervals from regression 1, estimated separately for each product type. The data are at the store-week level and cover the weeks of July 10, 2022 to October 16, 2022. The outcome variable is $ln(sales)$. The specification includes fixed effects for the following groups, interacted with dummies for each week: designated market area, parent company, retail channel, median household income, total population, partisanship, under-18 and college enrollment shares of the population. Standard errors are clustered at the county level.

find that the spending response was higher in counties with relatively lower outstanding student loan balances, where a greater number of borrowers would have expected cancellation of their entire debt balances. In contrast, we do not observe statistically significant, differential spending responses between counties with higher rather than lower student loan payment amounts, consistent with the policy offering only debt not liquidity relief.

III.4 Product-level Spending

The preceding analyses document the effects of the debt relief announcement on nondurable consumption as a whole. Taking advantage of the granularity of the scanner data, here we report the heterogeneous effects of the announcement.

Figure 5 shows treatment effects from our baseline specification across different product types.

While we estimate effects for all products, we report only those that are significant at the 95% confidence level for visual purposes.[16] Overall, we observe broad positive spending responses across consumer products, suggesting a general increase in nondurable consumption following the announcement. Increases in product-level spending may reflect both quantity and quality adjustments. In other words, households could be purchasing more items or opting for higher-quality, more expensive goods. The latter is more plausible for household staples. A couple of products exhibit negative treatment effects, likely representing inferior or investment goods, whereas positive effects for items like pet products and fragrances may indicate luxury expenditures.

III.5 Supreme Court Decision

In this subsection, we study the impact of the Supreme Court decision on consumption. In June 2023, the Supreme Court ruled the Biden administration's debt relief plan unconstitutional.[17] Ensuring that no borrowers received loan forgiveness under the plan, the Supreme Court decision represented a negative wealth shock to the extent that legal uncertainty about the plan's future remained. The justices voted 6-3 in *Biden v. Nebraska* holding that the administration overstepped its authority under the Higher Education Relief Opportunities for Students Act of 2003.

Figure 6 documents that retail stores located in counties with a 1 percentage point higher share of eligible student loan borrowers experienced a sharp drop in weekly sales of around 0.05% at the time of the Supreme Court decision. The negative impact is statistically significant at the 10% level. The lower economic magnitude, relative to our main tests, suggests that borrowers had already partially incorporated news about the legality of the debt relief plan and updated their beliefs about forthcoming changes in their permanent income.

III.6 Debt Relief Applications

Finally, we present further evidence that our results align with a beliefs channel and document demographic differences in belief formation. Using zip code-level counts of debt relief applications that borrowers' submitted via https://studentaid.gov/debt-relief/application, we first estimate the following equation:

[16] We also exclude a few product types that are not well-defined such as "miscellaneous deli" and those with exceedingly long names.

[17] For legal details, see Amy Howe, "Supreme Court strikes down Biden student-loan forgiveness program," *SCOTUSblog*, June 30, 2023.

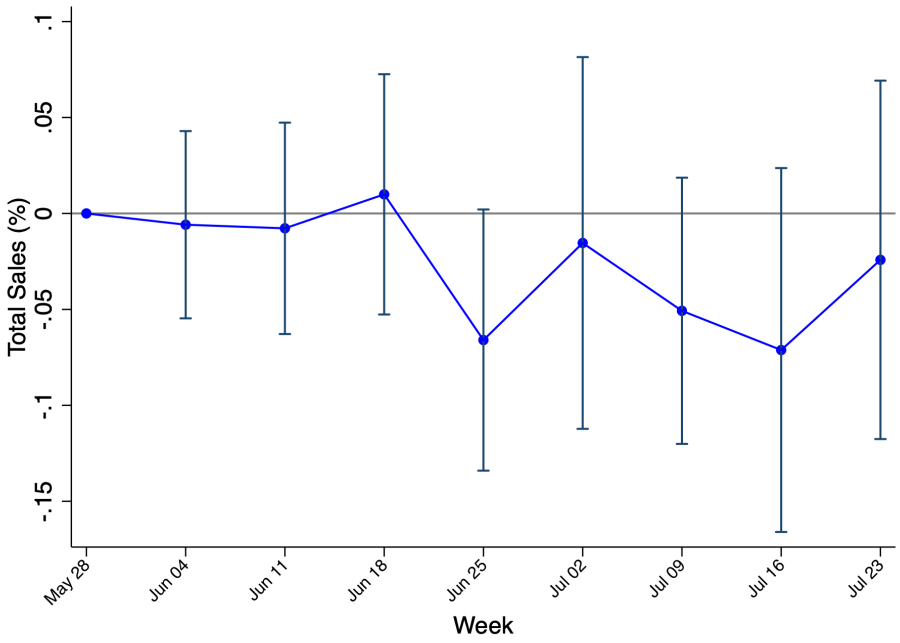


Figure 6: Dynamics of Spending Response. This figure reports estimated coefficients and 95% confidence intervals from regression 2. The data are at the store-week level and cover the weeks of May 28, 2023 to July 23, 2023. The specification includes fixed effects for the following groups, interacted with dummies for each week: designated market area, parent company, retail channel, median household income, total population, partisanship, under-18 and college enrollment shares of the population. Standard errors are clustered at the county level.

$$Application\ Share_k = \beta Eligible\ Share_k + \delta_k' X_k + \epsilon_k, \tag{4}$$

where $Application\ Share_k$ represents the number of debt relief applications in a given zip code as a share of the adult population. The intuition behind this test is straightforward: if eligible borrowers were either unaware of the loan forgiveness plan or assigned a low subjective probability to receiving debt relief, we would expect $\beta = 0$. For instance, student loan borrowers would not have incurred the minimal temporal cost required to complete the application if they accurately anticipated the Supreme Court decision.[18] In contrast, we find that application counts strongly correlate with student loan eligibility (Table 3). Column (3) shows that a 1 percentage point increase in the eligible share within a zip code is associated with a 0.63 percentage point increase in the application share.

We interpret these results primarily through a beliefs channel rather than an attention mecha-

[18]It took one of the authors less than two minutes to complete the application form.

	(1)	(2)	(3)
Eligibile Share	0.60***	0.59***	0.63***
	(0.0045)	(0.0058)	(0.0041)
County FE	NO	YES	YES
Demographics	NO	NO	YES
Adj. R-squared	0.86	0.92	0.96
Observations	18802	18094	15817

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Student Loan Borrowers Anticipated Debt Relief. This table reports the results of regression 4. The outcome variable is debt relief applications as a share of the adults in a zip code. Eligible Share is the share of adults in a zip code who were eligible for loan forgiveness. We control for gender, race, education, income categories, population groups, and partisanship. Standard errors are clustered at the county level.

nism. This is because news about the debt relief plan was widely disseminated, and the Department of Education notified individual borrowers via email. One important caveat is that we cannot account for procrastination. Some borrowers, despite being well-informed and optimistic about the likelihood of loan forgiveness, may have delayed submitting their applications. Since the Department of Education was forced to suspend processing debt relief applications one month into the launch of the website, we do not observe the universe of eventual debt relief applicants.

Keeping this caveat in mind, we compute the application take-up rate within each zip code, as our proxy for beliefs, and document demographic differences via cross-sectional regressions using Census Bureau data. The third column of Table 4 shows that zip codes with a higher proportion of women and high-income households especially have higher debt relief take-up rates. Notably, we also observe a positive relationship between the share of donors to the Democratic Party and take-up rates.

For comparison purposes, we report demographic associations with the eligible share in column (1) and the application share in column (2). We observe that eligibility is increasing in income, which suggests that the debt relief policy was regressive in nature.[19] Interestingly, zip codes with a higher proportion of Asian borrowers and those aged 18-34 are associated with lower eligible and application shares, yet higher take-up rates.

[19]However, many borrowers living in low-income zip codes may have been eligible for the full $20,000 in loan forgiveness.

	Eligible Share	App Share	Take-up Rate
Biden's 2020 donation share	0.019***	0.018***	0.060***
	(0.0035)	(0.0023)	(0.0045)
Female share	0.15***	0.12***	0.25***
	(0.013)	(0.0085)	(0.019)
Bachelor degree or higher share	0.081***	0.070***	0.15***
	(0.0068)	(0.0050)	(0.011)
Population [18-34] years old share	-0.055***	-0.015*	0.061***
	(0.012)	(0.0087)	(0.020)
Population [35-50] years old share	0.026	0.038***	0.052*
	(0.021)	(0.014)	(0.028)
Population 50+ years old share	-0.14***	-0.071***	0.0077
	(0.011)	(0.0076)	(0.016)
Black alone share	0.15***	0.086***	0.023***
	(0.0046)	(0.0027)	(0.0050)
Asian alone share	-0.090***	-0.047***	0.058***
	(0.0082)	(0.0056)	(0.017)
Income <25k share	0.16***	0.090***	-0.014
	(0.013)	(0.0094)	(0.021)
Income [25-50k) share	0.17***	0.11***	0.073***
	(0.013)	(0.0098)	(0.022)
Income [50-100k) share	0.22***	0.16***	0.20***
	(0.013)	(0.0099)	(0.021)
Income [100-200k) share	0.27***	0.21***	0.38***
	(0.011)	(0.0086)	(0.020)
Mean of Outcome	0.15	0.088	0.57
Adj. R-squared	0.48	0.47	0.51
Observations	16660	16660	16660

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Demographic Correlates of Debt Relief. This table reports cross-sectional regressions of debt relief eligibility, applications, and take-up on zip code-level demographic information. The omitted category for age is the fraction of the population that is < 18. The omitted category for income is the fraction of the population with income $>$ \$200k. Eligible Share is the share of adults in a zip code who were eligible for loan forgiveness. App Share is the share of adults in a zip code who applied for student debt relief. Take-up Rate is the number applications as a share of the number of eligible borrowers in a zip code. Standard errors are clustered at the county level.

IV Conclusion

In this paper, we provide empirical evidence on borrowers' consumption response to President Biden's August 2022 announcement, informing the contentious political debate on student loan forgiveness. Using comprehensive data on borrowers eligible for debt relief linked to high-frequency spending data, we find that borrowers reacted positively to the news about an upcoming reduction in their financial liabilities. Moreover, we document a negative reaction to the Supreme Court decision striking down the debt relief plan. Finally, we show that the majority of eligible borrowers submitted debt relief applications, suggesting that they anticipated receiving loan forgiveness.

Although there are a number of advantages to our empirical approach, it is worth repeating a key limitation. As no borrowers received forgiveness under the plan, our estimates do not capture the long-term effects of debt cancellation; rather, they measure initial reactions to the broad-based debt relief announcement and its subsequent reversal. However, these reactions have implications for policymakers, as they highlight the role of public communication in shaping expectations and influencing economic behavior.

While our results indicate that student loan forgiveness can have stimulatory effects, assessing the fiscal cost-effectiveness of such policies lies beyond the scope of this paper. An additional, important avenue for further research is to evaluate the full welfare effects of student loan forgiveness, taking distributional considerations seriously as in Catherine and Yannelis (2023).

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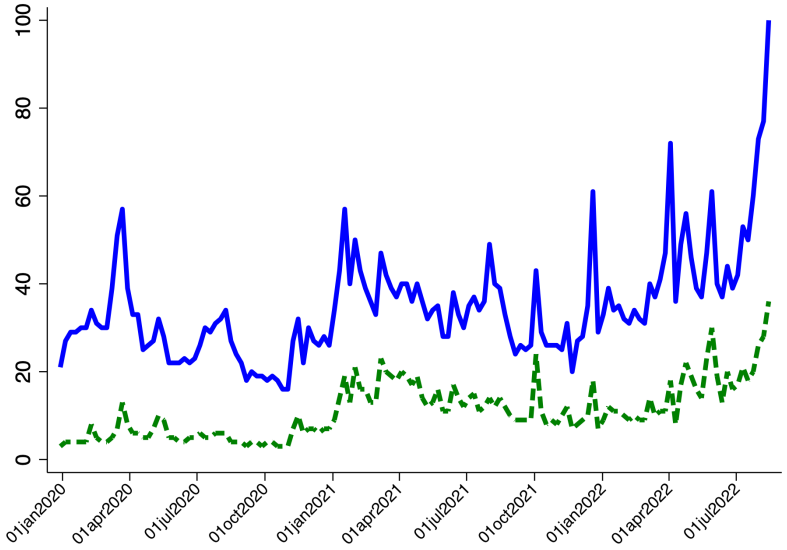
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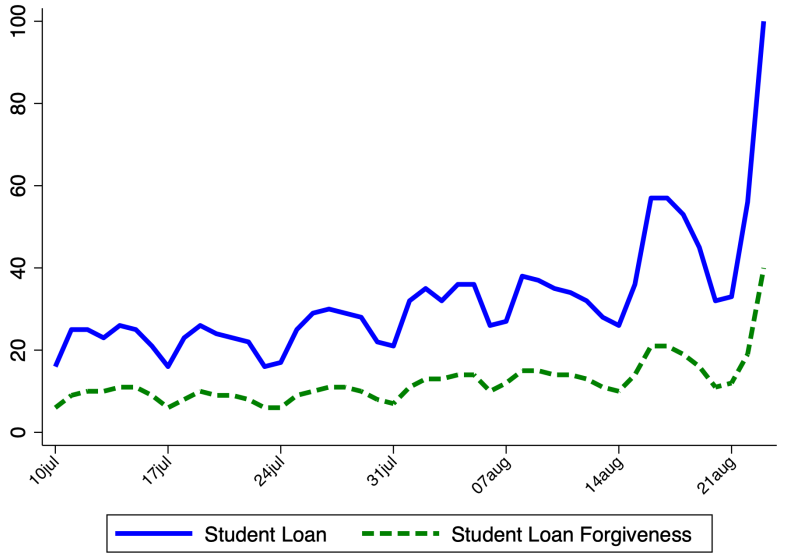
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Appendix A

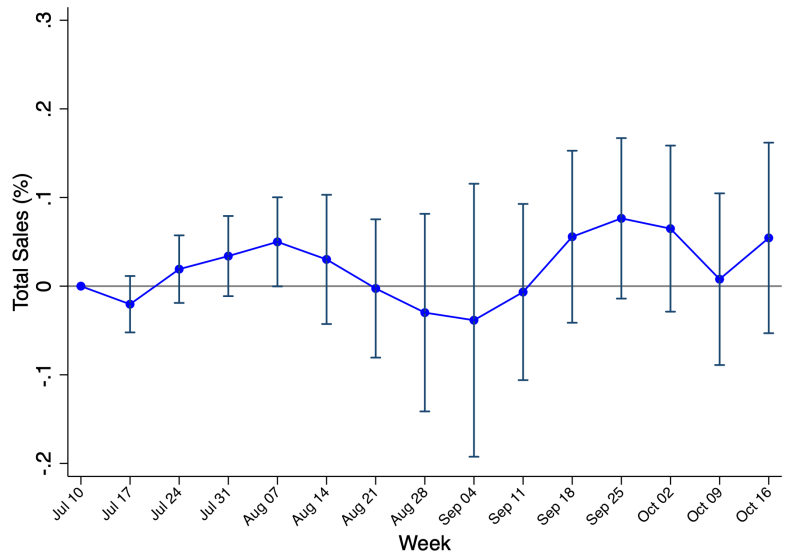


(a)

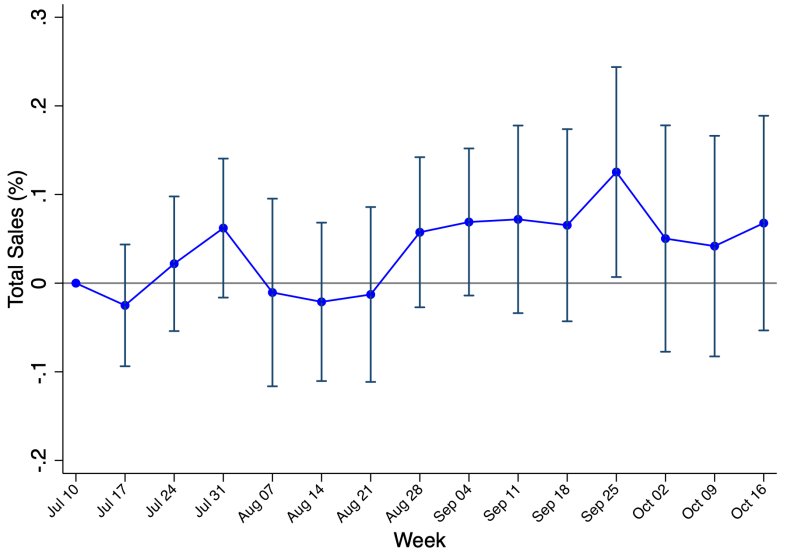


(b)

Figure A.1: Google Trends (before). This figure plots weekly aggregate Google searches for 'student loan' and 'student loan forgiveness'. Panel (a) covers the weeks of December 29, 2019 to August 14, 2022. Panel (b) covers the days of July 10, 2019 to August 23, 2022. The counts are normalized and presented on a scale from 0-100, where 100 is the maximum search interest.



(a) 2021



(b) 2023

Figure A.2: Placebo Tests. This figure reports estimated coefficients and 95% confidence intervals from regression 2. The data are at the store-week level and cover weeks in 2021 (Panel a) and 2023 (Panel b). The specification includes fixed effects for the following groups, interacted with dummies for each week: designated market area, parent company, retail channel, median household income, total population, partisanship, under-18 and college enrollment shares of the population. Standard errors are clustered at the county level.

	Mean	SD	p10	p25	p50	p75	p90	N
Drug	52.71	29.90	22.04	32.79	48.07	65.86	87.49	268,288
Food	603.13	362.51	237.06	353.66	528.25	761.59	1,069.90	166,431
Convenience	41.27	20.21	19.94	27.58	37.68	51.02	67.14	176,768
Liquor	84.05	62.09	22.82	41.37	72.70	103.83	153.40	4,274
Mass Merchandiser	136.41	245.11	15.43	20.98	30.71	91.70	534.10	183,288
Total	184.19	298.36	20.05	30.00	50.23	137.26	613.19	799,049

Table A.1: Summary statistics. This table reports summary statistics on weekly spending by store type. The data are at the store-week level and cover the weeks of July 10, 2022 to October 16, 2022. Sales are reported in thousands of dollars.

	(1)	(2)	(3)	(4)
SL Debt Share x Post	0.24***	0.31***	0.36***	0.24***
	(0.035)	(0.062)	(0.062)	(0.063)
Store FE	YES	YES	YES	YES
Week FE	YES	NO	NO	NO
Market-Week FE	NO	YES	YES	YES
Parent-Week FE	NO	NO	YES	YES
Channel-Week FE	NO	NO	YES	YES
Demographics-Week FE	NO	NO	NO	YES
Adj. R-squared	0.99	0.99	0.99	0.99
Observations	798906	798696	798681	797893

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.2: Spending at Retail Stores Post-Announcement. This table reports the results of regression 1. The data are at the store-week level and cover the weeks of July 10, 2022 to October 16, 2022. The outcome variable is $ln(sales)$. SL Debt Share is the share of people in a county with a credit bureau record who have any student loan debt, and Post is an indicator for whether a week falls around or after August 24, 2022. The demographic controls include: median household income, total population, partisanship, under-18 and college enrollment shares of the population. Standard errors are clustered at the county level.

	(1)	(2)	(3)	(4)
Eligible Share x Post	0.23***	0.22***	0.23***	0.092**
	(0.034)	(0.044)	(0.044)	(0.036)
Store FE	YES	YES	YES	YES
Week FE	YES	NO	NO	NO
Market-Week FE	NO	YES	YES	YES
Parent-Week FE	NO	NO	YES	YES
Channel-Week FE	NO	NO	YES	YES
Demographics-Week FE	NO	NO	NO	YES
Adj. R-squared	0.99	0.99	0.99	0.99
Observations	785550	785340	785325	785325

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.3: Spending at Retail Stores Post-Announcement. This table reports the results of regression 1. The data are at the store-week level and cover the weeks of July 10, 2022 to October 16, 2022. We omit stores that do not report sales information in each week of the year. The outcome variable is $ln(sales)$. Eligible Share is the share of adults in a county who were eligible for loan forgiveness, and Post is an indicator for whether a week falls around or after August 24, 2022. The demographic controls include: median household income, total population, partisanship, under-18 and college enrollment shares of the population. Standard errors are clustered at the county level.

	Low Exposure			High Exposure			
	Mean	SD	Count	Mean	SD	Count	Diff
Female share	0.49	0.03	1616	0.50	0.02	1586	-0.01
Non-adult share	0.22	0.04	1616	0.23	0.03	1586	-0.01
College enrollment share	0.03	0.09	1616	0.09	0.13	1586	-0.07
Democrat	0.10	0.30	1563	0.22	0.41	1533	-0.12
Median household income	52.85	14.08	1615	61.91	17.29	1586	-9.06
Total Population (log)	9.36	1.08	1616	11.21	1.27	1586	-1.85

Table A.4: Covariate balance. This table reports county-level summary statistics. We define counties as high (low) exposure if the share of eligible student loan borrowers is above (below) the median share within their state. Income is reported in thousands of dollars. We classify Democratic counties as those where the Democratic candidate received the majority of votes in the 2020 presidential election.