Student Debt Incidence: Recent Data and Conceptual Issues*

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Abstract

In recent years, rising levels of student debt has led to calls for assistance in the form of student debt cancellation. In this *Commentary*, we use the 2019 Survey of Consumer Finances (SCF) to study both the incidence of student debt and cancellation benefits along the dimensions of household income, net worth, and our estimate of lifetime wealth. Last, we illustrate several challenges in using such statistics to draw conclusions about the progressivity or regressivity of cancellation schemes, and highlight open questions for future research.

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Introduction

Education debt in the United States has risen sharply in the past decade and now stands at roughly $1.6 trillion, constituting the second-largest category of consumer debt behind mortgages.[1] This growth has led to calls for increased government assistance, in the form of partial or full cancellation and to a subsequent debate about the efficacy and distributional impact of such assistance.[2] In this *Commentary*, we estimate both the distribution of student debt and the distributional impacts of cancellation proposals using the 2019 wave of the Survey of Consumer Finances (SCF), the primary source of information concerning household balance sheets in the United States. We highlight how these estimates depend on assumptions regarding the value of future income, and we then discuss the extent to which such proposals may be considered progressive or regressive.

The debate over whether student debt cancellation is progressive reflects the desire to determine whether or not it primarily benefits those who are finding it the most difficult to pay their debts. However, since households differ along multiple dimensions, such as age, education, income, and net worth, there is no single, observable quantity that represents this ability to pay student debt. To illustrate this point more concretely, consider two hypothetical individuals: the first, a recent graduate from medical school with low net worth but expectations of high future earnings; the second, a middle-aged individual who has some college but no degree, and some accumulated wealth but poor prospects for future earnings. Which of these individuals is likely to have greater difficulty in paying down student loan debt? The answer to this question depends crucially on the growth of income over the lifecycle, a quantity that is likely unknown to both the household and to the economists studying their responses.

For this reason, we first use the SCF to calculate the distribution of student debt under a variety of different assumptions on the value that households attach to net worth, income and expected future income. At one extreme, when we ignore income and focus solely on net worth to define our quintiles, we find that student debt is concentrated primarily within the lowest quintile of households. In contrast, if we define quintiles by income, the distribution of student debt is hump-shaped, first rising and then falling as we move from the lowest to the highest quintiles. To address the hypothetical example given above, we then provide estimates of *lifetime wealth*, the sum of net worth and the present value expected future income. We find that even when households attached relatively low value to expected future income, the distribution of student debt by lifetime wealth looks qualitatively different than

[1] See the Federal Reserve Bank of New York's Quarterly Report on Household Debt and Credit for 2021 Q3 at https://www.newyorkfed.org/medialibrary/interactives/householdcredit/data/pdf/HHDC_2021Q3.pdf.

[2] See, for instance, Catherine and Yannelis (2020), and articles published by the Roosevelt Institute at https://rooseveltinstitute.org/2021/06/08/student-debt-cancellation-is-progressive/ and The Brookings Institute at https://www.brookings.edu/blog/up-front/2019/04/24/how-progressive-is-senator-elizabeth-warrens-loan-forgiveness-proposal/.

by net worth, and in particular is no longer concentrated among the lowest quintile.

After presenting our estimates of both lifetime wealth and the associated distribution of the benefits of student debt cancellation, we discuss two difficulties with proceeding directly from these estimates to claims regarding progressivity. First, one must specify the source of funding for cancellation proposals when assessing progressivity. To the extent that cancellation proposals negatively impact the government's budget, they may necessitate an increase in future taxes, which could have separate distributional effects that ought not be ignored. Second, focusing solely on average benefits by income or net worth quantiles obscures the fact that households with identical income and net worth in general differ in their amount of student debt outstanding. The average amount of benefits within any group of households may be a poor guide to the impact of a proposal if these benefits are experienced by a minority of the group. This point is particularly relevant for the case of student debt; we show that within each quintile of income or lifetime wealth, the majority of household hold no debt, and so would not benefit from cancellation proposals.

Student debt in the Survey of Consumer Finances

The Federal Reserve Board's SCF is a triennial survey, designed to provide an overview of the balance sheets of a representative sample of US households.[3] The survey contains different variables that influence income and wealth. Households are asked about salaries, wages, interest income, government assistance received, self-employment income, and debts and assets. Since we are interested in estimating how the burden of student debt is distributed among student debt borrowers, we focus on the variables that best represent the ability of households to pay this debt today and in the future. We first compare the income and net worth distributions of borrowers with those of the whole population and then estimate the distribution of student debt within each population. We then use income and net worth and the cross-sectional distribution of income by age to arrive at an estimate for lifetime wealth, and record the benefits of student debt cancellation broken down by this last quantity.

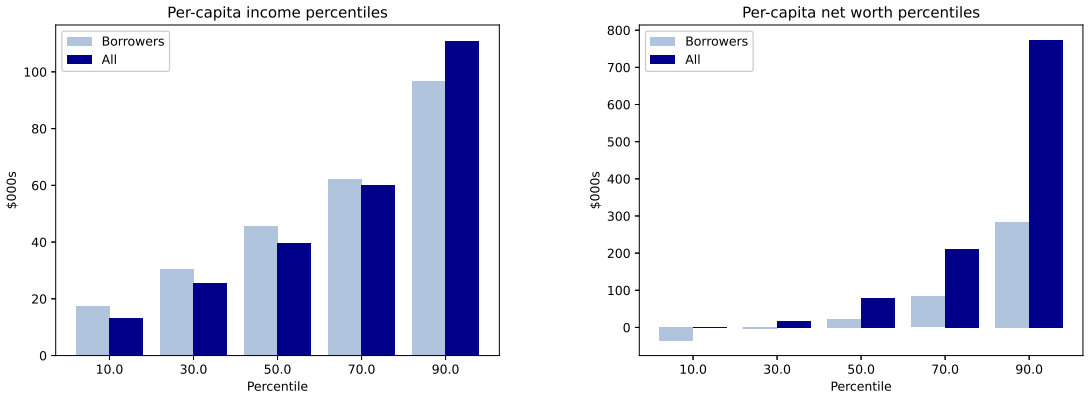
Income, net worth, and age

The simplest measures of the ability to pay debt are current income and net worth (assets minus liabilities). Figure 1 provides us with a first look at how the population of student loan borrowers differs from the general population, recording a selection of percentiles of per-capita income and net worth across the two groups of households.[4]

[3]For a more comprehensive analysis of the 2019 wave of the SCF, see Bhutta et al. (2020).

[4]Throughout this *Commentary*, we define per-capita quantities by dividing household quantities by two if the household head is married or lives with their partner.

Figure 1: Percentiles of Per-capita Income and Net Worth. Source: 2019 SCF and authors' calculations.

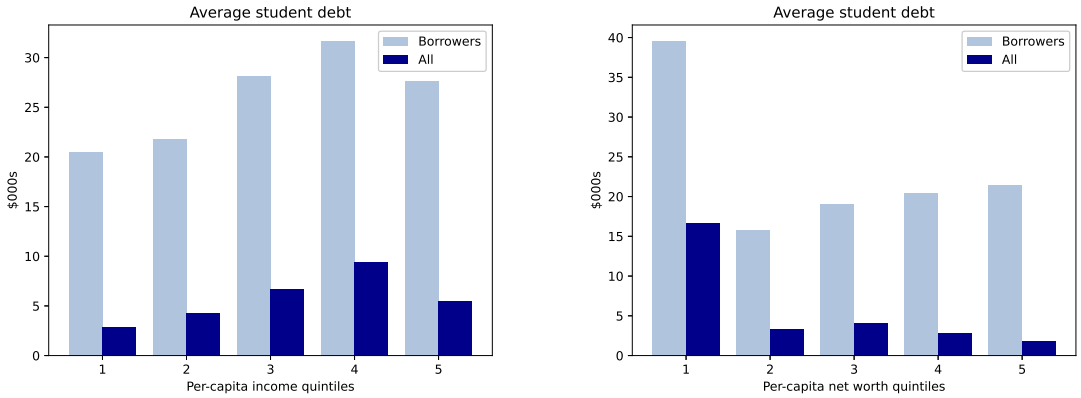


Households with student debt have a higher median income than the general population, while the mean and median net worth of borrowers is much lower than that of the general population. Further, the distribution of net worth is far more unequal than that of income for both populations. The difference between the two charts in Figure 1 illustrates the difficulty alluded to in the introduction in quantifying the burden of student debt. If we were to focus solely on income, we would conclude that borrowers are typically richer than the general population, while the reverse would be true if we were to focus solely on net worth.

To examine this point, Figure 2 depicts average student debt per quintile of the income and net worth distributions, for both borrowers and the population as a whole.[5] For both populations, average student debt exhibits a hump-shaped pattern as a function of income, rising through most of the distribution before declining for the highes quintile. However, among the population of student debt borrowers, average debt does not vary greatly by quintile, with the average debt lying between $20,000 and $33,000 in every quintile. Further, the average student debt among borrowers in the highest income quintile is less than 50 percent higher than that in the lowest quintile. In contrast, the distribution of average student debt by net worth varies substantially by quintile, and for both the whole population and the population of borrowers, a plurality of debt is held by households in the lowest quintile.

[5]In Figure 2, the quintiles are defined using the entire population.

Figure 2: Average Student Debt by Income and Net Worth Quintile. Source: 2019 SCF and authors' calculations.



Figures 1 and 2 show that focusing exclusively on either net worth or income materially changes our assessment of the burden of student debt. So which to choose? Both are relevant when assessing the ability of households to service their debts, but what we really desire is some measure for the lifetime wealth of households, the sum of their current net worth and the value of their potential future income. However, in contrast with both income and wealth, the value that households attach to future income cannot simply be directly observed in the data, and so we must make further assumptions in order to produce our estimate.

To motivate our choice of estimate, we first explore how income and net worth differ by age. Since students typically attend college when young, prior to having accumulated much savings, Figures 1 and 2 may simply reflect the dependence of net worth on the age of the household head. To investigate this point, Figure 3 plots the breakdown of ages across the populations with and without student debt and shows that student borrowers typically belong to households headed by younger adults compared to the average age of household heads.

Figure 3: Population Shares by Age. Source: 2019 SCF and authors' calculations.

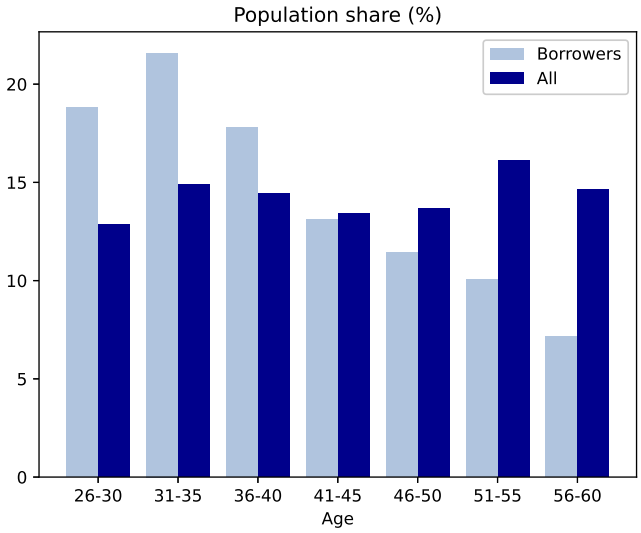


Figure 4 depicts the mean and median of net worth and income by age group. Both mean and median net worth increase by more than ten times over the working life, while the corresponding mean and median for income increase by less than three times and exhibit a more hump-shaped pattern.

Figure 4: Lifecycle of Net Worth and Income. Source: 2019 SCF and authors' calculations.

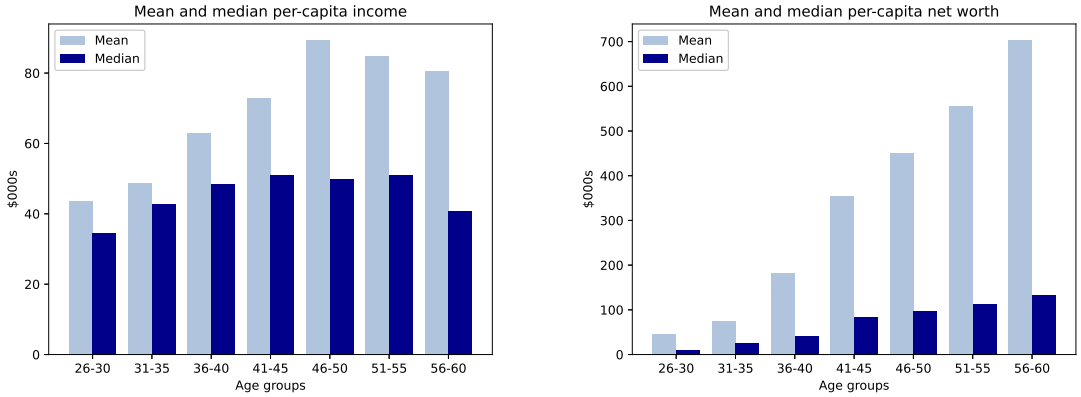


Figure 4 shows that the relationship between income and wealth varies systematically by age. These findings suggest that to estimate a household's ability to pay their debt, we ought to account for the fact that younger households can expect a different pattern of future income than older households. The precise manner in which we do this is described in the following section.

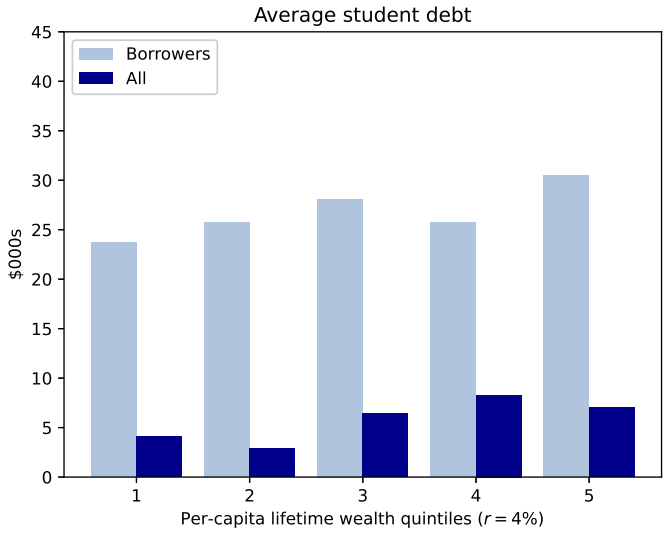
Estimation of lifetime wealth

There are many ways in which one could use survey data to approximate the lifetime wealth of households. For simplicity, we will suppose that the income growth experienced by households over the next few decades is consistent with the cross-sectional evidence in the 2019 SCF in the following sense. We group households into eight different brackets based on the age of the household head. The bracket length is five years, and begins with age 26 (thus 26 through 30) and ends at age 60 (56 through 60). We begin at age 26 to ensure that the majority of borrowers have left school and entered the workforce, and we end at age 60 in order to encompass the majority of one's working life. We then estimate future income by assuming that the growth of household income is consistent with the cross-sectional distribution of income across ages. Specifically, we compute median income in each bracket and assume that the difference in income in consecutive brackets represents the growth that members of that bracket will experience in the next five years.[6] For a given interest rate, we then define lifetime wealth as the sum of the discounted value of future income and the net worth of the household. This approach has its limitations, since the distribution of income across age groups may change in the future and because borrowing costs vary across both time and households. However, this method allows us to combine net worth and current income with the lifecycle aspect of income growth to produce an estimate of ability to pay.

For our main estimates, we follow the Congressional Budget Office (CBO) in Appendix A of CBO (2020), which assumes an interest rate of $r = 4$ percent. Figure 5 plots average student debt broken down by lifetime wealth quintiles. In contrast with the corresponding breakdown by net worth in Figure 2, the average student debt by lifetime wealth is not concentrated in the lowest quintile, for either the whole population or the population of student borrowers.

[6] For example, if the median income of households in the 31-35 age bracket is 10 percent higher than those in the 26-30 age bracket, then we assume that the income of a household headed by a 26-year-old grows by 10 percent over the next five years. Further details are provided in the appendix.

Figure 5: Student Debt by Lifetime Wealth. Source: 2019 SCF and authors' calculations.



Repeating this exercise for the higher discount rates of 7 percent and 10 percent, as we do in the appendix, we find that the qualitative features of the plots are unchanged. Even for such high discount rates (or equivalently, low values attached to future income), it is not the case that average debt levels are highest in the lowest quintile.

Distribution of cancellation benefits

We want to estimate how cancellation benefits are distributed over the distributions income, net worth and lifetime wealth. To this end, we will consider proposals that cancel up to a fixed amount of student debt per borrower and document per-capita benefits across households. We first focus on income and net worth, before turning to our estimates of lifetime wealth. Figure 6 plots average per-capita cancellation benefits by quintiles of income and net worth when up to $10,000 is cancelled per borrower. Figure 7 produces an analogous figure when up to $50,000 is cancelled per borrower.

Figure 6: Per Capita Cancellation Benefits, up to $10,000 Forgiven. Source: 2019 SCF and authors' calculations.

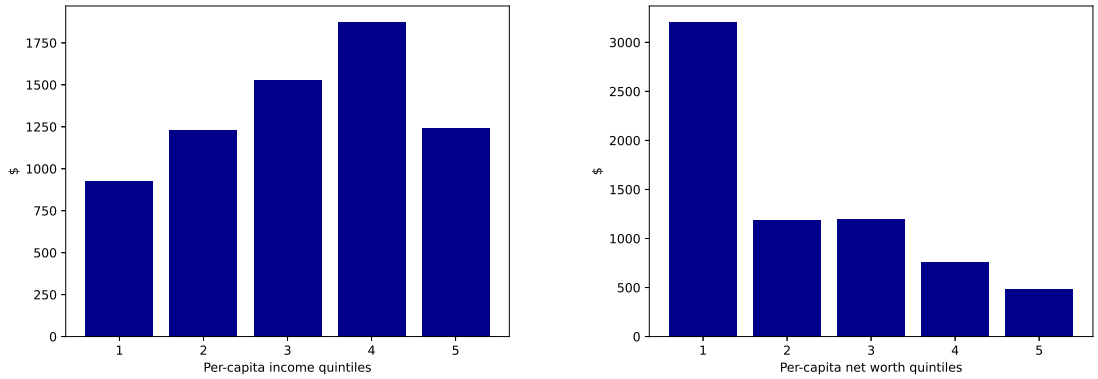


Figure 7: Per Capita Cancellation Benefits, up to $50,000 Forgiven. Source: 2019 SCF and authors' calculations.

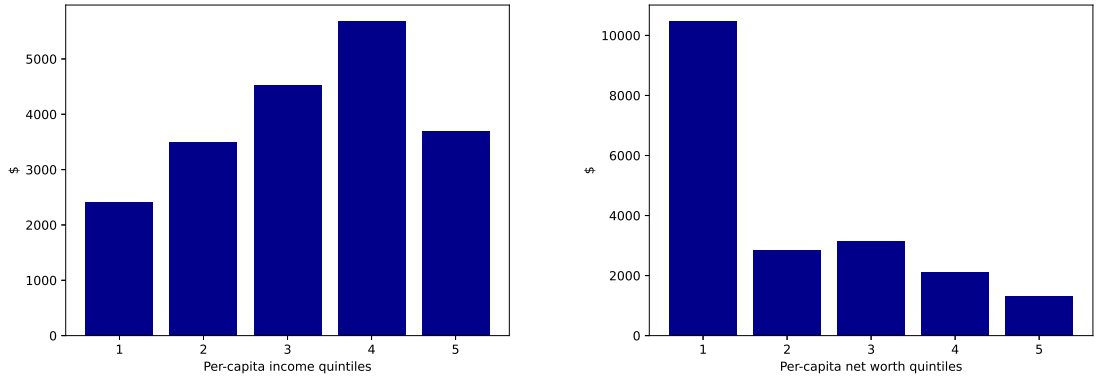
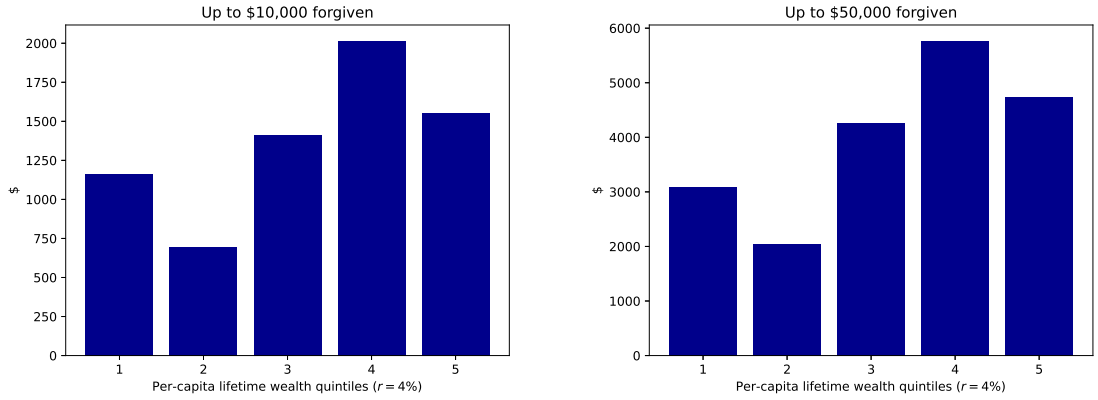


Figure 6 and Figure 7 both exhibit similar qualitative features as Figure 2, which documents average student debt by income and net worth. For both $10,000 and $50,000, the benefits of cancellation are hump-shaped in the distribution of income but concentrated among the lowest quintile in net worth. Figure 8 depicts the distribution of cancellation benefits by lifetime wealth under the assumptions that up to $10,000 and $50,000 are cancelled per borrower, respectively.

Figure 8: Per Capita Benefits by Lifetime Wealth. Source: 2019 SCF and authors' calculations.



In contrast with the breakdowns by net worth depicted in Figure 6 and Figure 7, for both cancellation levels, the distribution of benefits is not concentrated in the lowest quintile. This pattern of average cancellation benefits across lifetime wealth quintiles is similar to that of average debt depicted in Figure 5.

Progressive or regressive?

There has recently been much debate in policy circles as to whether or not student cancellation is a progressive or regressive policy. This debate reflects the desire to understand whether or not a policy primarily benefits those with the fewest resources. There are two difficulties in proceeding directly from the above to assessments of the progressivity of cancellation.

The first is that the definition of a "progressive" transfer scheme is ambiguous when the source of funding is not specified. Economic progressivity is usually discussed in the context of a single tax, which is deemed progressive if the ratio of taxes paid to pretax income rises with income. Implicit in this definition is that the tax incorporates all the transfers between the government and the household (or individual). However, in a tax system such as the one in place in the United States, in which individuals are subject to multiple forms of taxation and entitled to various separate transfers (such as social security benefits), things are not as simple and the appropriate analogue of this definition of progressivity is unclear. In a discussion of the meaning of progressivity, Slemrod (1993) highlights the importance of understanding the interdependence of different tax and transfer schemes when assessing their distributional impacts:

> The progressivity of the tax structure cannot be judged by looking at only one component of taxes. ... In recent years the fastest-growing component of federal

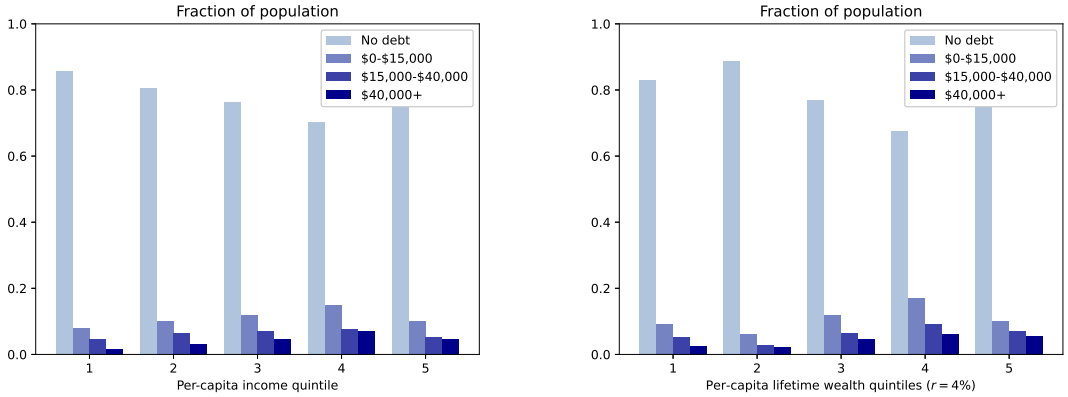
> taxes has been the payroll tax, which is regressive (the opposite of progressive) in its impact, because it taxes at a flat rate only on wages below $63,400 (in 1991). The Social Security system, however, is progressive because it pays higher benefits — relative to taxes paid in — to lower-income workers.

If a policy institutes a tax to fund a spending program, one cannot assess its progressivity or regressivity without reference to the incidence of both the tax and transfers together. As the above quotation illustrates, the Social Security system (reflecting both the payroll tax and the benefits paid) is progressive because the ratio of net benefits to pretax income is increasing with income. This point illustrates that one difficulty in characterizing student debt cancellation schemes as progressive or regressive is that such an analysis is incomplete until the implications for the government budget constraint are specified. If a policy changes the level of transfers, then to satisfy the government budget constraint either debt must increase, spending must fall, or tax revenue must rise, and each of these possibilities will have distinct distributional effects. For instance, even if aggregate benefits per quintile increase with income, net worth, or lifetime wealth, so, too, may the associated tax receipts, a situation thus leading to an ambiguous effect on the net benefit by quintile.

Our second point concerns the importance of considering differences in student debt incidence among households with the same level of net worth and income. If student debt balances were solely a function of income or net worth, then the standard definition of progressivity could perhaps be applied by considering net (rather than gross) benefits. However, it is not true that households with identical lifetime wealth necessarily have the same debt, and so individuals with the same level of net worth and income will benefit differently from student debt cancellation. Such proposals therefore violate the principle of horizontal equity, the idea that individuals with equal ability to pay ought to be subject to the same burden of taxation and receive the same net benefits from the government.[7] Although departures from horizontal equity are likely unavoidable in any transfer scheme, this problem is particularly acute in the case of student debt. Figure 9 documents the fraction of individuals within each quintile that lie within particular debt bins, and shows that for both income and lifetime wealth, there exists a great deal of heterogeneity within quintiles.

[7] See, for example, Musgrave (1990) and the references therein for the history of this idea and further discussion.

Figure 9: Breakdown of Debt within Quintiles. Source: 2019 SCF and authors' calculations.



In particular, within each quintile of either income or lifetime wealth, the majority of households hold no student debt. Focusing on the average benefits of cancellation in a given quantile is, therefore, potentially misleading because the majority of households in the quantile will receive no direct benefit. The fact that student debt does not depend solely on income or net worth implies that the standard definition of progressivity is not applicable even if the source of the funding were fully specified and lifetime income could somehow be measured without error. This also makes it difficult to proceed directly from the distributions depicted previously to claims about the distributional impact of debt forgiveness proposals.

Conclusion and areas for future work

In this *Commentary*, we have documented several facts regarding the distribution of student debt by income, net worth, and lifetime wealth and explained some challenges in applying the standard notion of progressivity. In particular, we have argued that knowledge of average benefits by quintiles of income or wealth is by itself not sufficient to label student debt cancellation progressive or regressive.

An analysis of the effects of student debt cancellation should incorporate the stylized facts presented in this *Commentary* but also possess the following features: First, the constraints faced by society when considering various proposals ought to be specified. In this context, these constraints are primarily those on public finances, since an increase in transfers must necessitate a reduction in spending, an increase in debt, or an increase in taxes, each of which may have its own distributional implications. Second, the means by which we compare the merits of various proposals ought to be stated explicitly. When analyzing effects of various economic proposals, economists typically assume that the goal is to maximize a weighted average of the welfare of individual citizens. To the extent that an additional dollar is worth less to a rich household than to a poor household, such an objective will lead one to prefer

to provide some form of social insurance via redistribution. By such a metric, the benefits of redistributing from rich to poor households must be weighed against the costs of treating individuals with the same lifetime wealth differently.

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