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How to pay for public education

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Abstract

For years now, public education, and especially public higher education, has been under attack. Funding has been drastically reduced, fees increased, and the seemingly irresistible political force of ever-tightening austerity budgets threatens to cut it even more. But I am not going to take the standard line that government financial support for public higher education should be increased. I view that battle as already lost. What I am going to propose is that we stop arguing about the allocation or reallocation of ever more scarce public resources and think of another way to fund public higher education. It is time for a new approach, one that satisfies the left's claim that higher education should be affordable for all, yet one that does not involve increasing the expenditure of public funds or committing the government to entitlement programs that it cannot now or at least cannot long afford. What we need is a new proposal that is acceptable to both sides if we are to bring public education into the twenty-first century. And this is what this article is devoted to providing.

Keywords

Education securities, equity interests in human capital, graduate tax, higher education finance, income-contingent loans, risk pooling, risk sharing, securitization, student loans

Education has long been seen as a principal source of economic mobility (see, for example, Berger and Fisher, 2013). Economic mobility, in turn, has long been seen as an important cure not only for poverty but also for exploitation, for exploitation tends to decrease as one moves up in economic class (see Reiff, 2013). But for years now, public education, and especially public higher education, has been under attack. In my own state of California, for example, we have gone from having one of the best systems of public education in the country – indeed, one that was the envy of the entire world – to one that is among the worst systems in the 50 states and sinking. California was ranked 46th among the 50 US states in K-12 spending per student in 2010–2011, 47th in

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education spending as a share of personal income, and 50th (i.e. dead last) with respect to the number of students per teacher (California Budget Project, 2011). More than 50% of students entering the California State University system cannot meet basic requirements in English and in Math (Lewin and Markoff, 2013). But while the lack of public financial support for public education first began gutting programs at the primary and secondary levels, California's system of public higher education, like state support for higher education everywhere, is now well on its way to being gutted too (see State Higher Education Executive Officers, 2012). Throughout the nation, state support of public universities is at its lowest level in 25 years, and state budget cuts as high as 20%–30% threaten 'to cripple [what were] many of the nation's leading state universities and erode their world-class quality' (Courant et al., 2010). States now spend one-fifth less per public college student than they did a decade ago, and 'state funding per-student in the University of California system has been cut in half over the past 10 years, from approximately $18,000 in 2002 to $9,000 per student [in 2012]' (Block, 2012).[1] As a result, despite the fact that fees for tuition, room, and board have been rising faster than inflation for the last 20 years, public universities have been forced to make deep cuts to make up for this hole in their budgets (see Leonhardt, 2013a). The cuts in California and in other states are so deep that rather than making a special effort to target low-income students, for whom access to public institutions of higher education is essential, many admissions directors at public universities are being forced to increase their efforts to attract 'full pay' students, and are still finding themselves unable to make up the difference (see Freedman, 2013; Peña, 2013).

Not surprisingly, this gutting of the higher public education system in the United States has seriously eroded the standing of the US system relative to the rest of the world:

> As recently as the mid-1970s, the U.S. was the clear frontrunner in the percentage of 25-34 year olds with some level of college attainment – whether two years, four years, or beyond. Based on the most recent data from the Organization for Economic Cooperation and Development, the U.S. (with 41 percent) now ranks 16th among 36 developed countries in college attainment, behind South Korea (63 percent), Canada and Japan (56 percent), and many other countries including Russia, Norway, New Zealand, Sweden, Australia, France and the United Kingdom. (Block, 2012)[2]

As a result,

> the upwardly mobile American is becoming a statistical oddity . . . Only 58% of Americans born into the bottom fifth of income earners move out of that category, and just 6% born into the bottom fifth move into the top. Economic mobility in the United States is lower than in most of Europe and lower than all of Scandinavia. (Stiglitz, 2013)

Of course, the decline in support for public education is disturbing not only because education is a way of escaping poverty and economic exploitation but also because education is an end in itself – as J. S. Mill said,

> No intelligent human being would consent to be a fool, no instructed person would be an ignoramus, no person of feeling and conscience would be selfish and base, even though they

> should be persuaded that the fool, the dunce, or the rascal is better satisfied with his lot than they are with theirs. (Mill, 1998: 57 (ch. 2, para. 6, lines 6–10))

Indeed, most people would agree with Mill that 'it is better to be a human being dissatisfied than a pig satisfied; better to be Socrates dissatisfied than a fool satisfied' (Mill, 1998: 57 (ch. 2, para. 6, lines 40–42)). We therefore have reason to be concerned that government is not fulfilling its moral obligations to its citizens regarding providing them an education, quite apart from the bad effects this failure might be having on our common life.

But even someone who rejects the intrinsic importance of education and its instrumental use as a way of escaping poverty and exploitation has other overwhelming instrumental reasons for concern. As President Obama recently noted, the current lack of financial support for public education is going to have wide-ranging economic effects not only on the currently economically disadvantaged but on everyone else too: 'countries that out-educate us today will out-compete us tomorrow' (see Shear, 2010). And even in the absence of foreign competition, more and more of the kinds of jobs that can support what has come to be thought of as a middle-class lifestyle are requiring a higher education, for the manufacturing jobs that used to support such a lifestyle with merely a high-school diploma have largely disappeared.[3] If the lack of support for public education today will make all our lives worse off later, then this is something on which not merely economists but also political theorists and moral philosophers should have a say.

The attack that has produced this appalling decline in support for public education has consisted of a series of incremental but nevertheless relentless reductions in public funding, so that fees are now greater (with regard to access to higher education) and the educational services provided lesser (both in terms of quantity and, given the size of the relevant budget cuts, necessarily in terms of quality too, at all levels of public education) than would otherwise be the case.[4] The reasons for these reductions are varied and complex – they are in part the result of America's long history of anti-intellectualism being carried forward and indeed intensifying, in part the result of increasing popular opposition to taxes of any sort, and in part the result of what can only be described as a deliberate effort by those on the extreme right since the 1980s to make the masses more amenable to political and economic exploitation, but I shall not focus on the actual motivations of those who have led or participated in this attack on public education in this article.[5] Instead, I shall assume that these cutbacks are simply a good faith response to real and rising economic pressure – that when public entities have less money, or greater obligations, cuts have to be made somewhere, and probably everywhere to some extent, and this has led to the relentless incremental defunding of all public schools but especially public institutions of higher education for some time.[6] Because a democracy cannot function without an informed electorate, one that is capable of thinking for itself and that cannot easily be fooled by demagogues intent on misleading the public regarding the nature and causes of its domestic and international problems and their possible solutions, the threat this decline in support represents is not limited to the reduction in educational opportunities for the less fortunate among us – it threatens the very existence of democracy itself.

Indeed, our most enlightened leaders have long recognized this, even though our actions have often not lived up to their rhetoric:

> From the beginning American statesmen had insisted on the necessity of education to a republic. George Washington, in his Farewell Address, urged the people to promote 'institutions for the general diffusion of knowledge'. To the degree that the form of government gave force to public opinion, Washington argued, 'it is essential that public opinion should be enlightened'. The aging Jefferson warned in 1816: 'If a nation expects to be ignorant and free in a state of civilization, it expects what never was and never will be'. The young Lincoln, making his first appeal to a constituency, told the voters of Sangamon County in 1832 that education 'was the most important subject which we as a people could be engaged in'. (Hofstadter, 1963: 299–300 (quoting Jefferson, 1899: 4; Lincoln, 1953: 8; Washington, 1897: 212))

And it was not so long ago that the Supreme Court reminded us that:

> Education is perhaps the most important function of state and local governments [given] the importance of education to our democratic society. It is required in the performance of our most basic public responsibilities, even service in the armed forces. It is the very foundation of good citizenship.[7]

Whatever the current economic situation, then, there is good reason to try to come up with a solution to the problem of financing public education if a solution is indeed available. It is time to stop arguing about the allocation or reallocation of ever more scarce public resources, and think of another way to fund public higher education. Now don't get me wrong – I am not suggesting that government should get out of the education business – there are a great many things that government can do that can help public (and private) education prosper, even if providing money is not going to be one of them. I am just suggesting that it is time for a new approach, one that satisfies the left's claim that higher education should be affordable for all, yet one that does not involve increasing expenditure of public funds or commit the government to entitlement programs that it cannot now or at least cannot long afford. We need a new proposal that is acceptable to both sides if we are to bring public education into the twenty-first century. And that is what this article is devoted to providing.

The proposal

What I am going to propose, then, is that public higher education be absolutely free at the point of entry. Not means tested, not cheap, not subsidized, but *free*. For *everybody*. Rather than an up-front payment, what would be required is a promise, a promise to pay a certain amount of one's federal adjusted gross income (AGI) – say 6% – for one's prime earning years, which in the United States are from 35–54, to the university that provides one's undergraduate degree.[8] (I shall not discuss graduate education in this article, but do not take this to suggest that I think graduate education should be paid for in some other fashion; it is just that the way in which my proposal can be extended to cover this should be obvious.[9]) I propose 6%, but this is only an example, figured on the basis of the University of California system, which is the system I know best. The actual percentage will need to be calculated for each public institution or group of institutions separately, and accordingly could be slightly more or less than this. The calculation requires determining the current average total cost of education per student for

the relevant student cohort at the time, the current average income of the institution's graduates in their prime earning years, the amount of return required to attract the reasonable investor to a largely risk-free long-term investment, the real rate of interest and the target and expected rate of inflation, and certain other factors that I shall get to in a moment. But for now, all I want to do is sketch out the rough outlines of my proposal and what can be said in favor of it.

Right. So the first thing to notice about my proposal is that it does not require anyone to agree to pay a specified sum at or over a specified amount of time. The promise that is required to obtain an education does not create a debt in the traditional sense. What the promise does create is an equity interest in one's earning power.[10] People who are dead by the time their prime earning years roll around, or otherwise have no income at all at the time their obligation to begin making payments actually comes due, would pay nothing. People who earned more would pay more, people who earned less would pay less, but everyone who was working or otherwise earning income during their prime earning years would pay the requisite percentage of their income. Because most people would agree (as indeed countless empirical surveys have shown) that one's ultimate earnings are significantly influenced by the amount of education one receives in the vast majority of cases,[11] the amount paid will bear some relation to the utility of the education received, which is often not the case now. While those with high earnings would pay more, they should pay more, for they received a greater economic benefit, but since the payment is calculated on a percentage basis, the relative pain of these payments should be no greater for the rich than for the poor.[12] And no one needs to worry about the slavery of the talented – no one is required to earn anything – it is a percentage of your *actual* earnings, not your *potential* earnings, that determines how much you have to pay. If you want to avoid making any payments by simply refusing to work during your prime earning years, you are absolutely free to do so. But since those are your prime earning years, and 94% of the money goes to you, I expect few people would be petty enough to take this route. Most people will pay and be happy to do so. Yet if you want to write novels rather than be an investment banker, you are completely free to do this too – unlike promising to repay a debt, having made the promise contemplated by my proposal is designed to have no influence at all on which occupation you ultimately choose to pursue. Indeed, people who make such a promise are much more free to pursue their preferred occupations than those who have borrowed money to pay for their education up front and now have to pay it back. So any libertarian concerns here should be more than satisfied. And yet the egalitarian ethos of political liberalism is also satisfied, for higher education is available to everyone on an equal basis, and no one is required to engage in shameful revelation (i.e. prove that they are in need and deserving of the help of others) in order to pay less or nothing at all if one's life doesn't work out as one expected.[13] In this sense, the amount promised is not to be seen as an individual commitment but simply as a share of the joint commitment made by each incoming cohort or class (as in 'the Class of 2018'). What this amounts to is a promise to pay one's share of a community benefit, not a promise to pay for an individual benefit that exists separate and apart from what the community receives.

Well fine, you say, this all sounds great, but there is an obvious problem here. Things will be fine in 15 years or so when the first cohort's prime earning years arrive and all the

money starts rolling in, but where are the funds needed to pay for operations until then going to come from? Can we really expect government to underwrite the full cost of public higher education for 15 years until the cash starts flowing? Under my proposal, however, this is not something that government would have to do. Remember, what we have here is a large number of promises to pay money in the future. Just like promises to repay a loan, these promises can be securitized. That is, they can be stacked together into large bundles, divided into slices, and then interests in these slices sold as securities on the market now (see generally Reiff, 2013: 240–241). Those who purchased the top slices (those in what is usually collectively referred to as 'the senior tranche', the word 'tranche' being French for 'slice') would be paid first, those who purchased the middle slices (those in 'the mezzanine tranche') would be paid next, and those who purchased the lowest slices (those in 'the equity tranche') would be paid last. Owning the lowest slices (those in the equity tranche) would accordingly carry the largest amount of risk, while those at the top (and in this case the middle too) should be almost risk free. But this can be accounted for either by varying the amount of return on equity (the dividend) paid by the securities in each tranche or by varying the reserve amount at which the securities in each tranche would sell. The riskier the tranche from which each particular security comes, the greater the return or the lower the price or some combination of the two.

But wait, you say, this sounds just like a mortgage-backed security, and we all know how those turned out. Indeed, before the financial crisis, student loans were often packaged with mortgages to create what are now worthless or nearly worthless securities. As part of the lending frenzy triggered by the massive demand for more and more of these securities, 'many lenders actually lowered their underwriting standards so that they could originate and then sell off more [student] loans, even if the loans were based on terms the borrowers could not possibly fulfill' (Rampell, 2012d).[14] As a result, the cumulative amount in default on outstanding private student loans now exceeds US$8b, representing over 850,000 distinct defaults, and defaults have become even more inevitable since the recession slashed graduates' job possibilities. So isn't my proposal simply a recipe for yet another financial disaster?

No, it is not, for several reasons. First, although the securities I am proposing are constructed in much the same way as mortgage-backed securities,[15] we are not securitizing debt here – under this proposal, no one will be agreeing to pay a set dollar amount; they will be agreeing to pay a set percentage of their income, and that percentage will be calculated to ensure that it is affordable no matter what amount of income the student ultimately earns. Add to this the fact that payments need not begin until the student reaches his or her prime earning years (15 years after graduation in most cases), so each student has a significant amount of time to get financially settled (even those who go on to graduate school) before a portion of his or her income begins to get diverted, which makes a failure to pay even less likely (currently, repayments must begin on most student loans only months after graduation, and one in six student loans ends up in default) (see Martin, 2012a). So we need not be concerned that some people may be entering into obligations they cannot keep. Affordability is built into the promise; the only risk is that some people may not pay even though they *can* afford to do so.[16]

But this is where the government comes in. While both the state and federal government will be out of the business of funding public education by guaranteeing student loans or

giving grants to students under my proposal, the federal government will still have something very constructive and important left to do.[17] And this is to lend the offerors of these securities the massive and highly developed collection and enforcement infrastructure it has already established with regard to the payment of taxes. For part of my proposal is to use the federal government to monitor, enforce, collect, and process these payments. Payments would be calculated on the same forms people use to calculate their taxes (after all, the amount due is calculated based on one's AGI anyway), and be paid by separate check (or electronic transfer), which the government would then deposit and forward to the registered holder of the security less (perhaps) an appropriate fee for its administrative services, which again would be figured into the price of the securities, so it need not be borne by taxpayers. Those whose income was so low that they are not required to file a tax return would not have any payments to make under my proposal anyway (the percentage due would kick in only after the amount of income that could be earned tax free was reached), so there would be no problem arising from that. Also, because all US citizens with sufficient income are required to file federal tax returns no matter where they might live, even if they are living in another country, we need not worry that students would be encouraged not to pay if they ended up living somewhere else at the time of payment than the state in which they actually received their education. (This is why state enforcement through their respective taxing authorities would by itself not be enough)[18]. True, there might be some leakage due to emigration by those willing to give up their US citizenship, but this can be solved through collection treaties with the taxing authorities in other nations, and so it seems unlikely that large amounts from high-wage earners could go uncaptured. Foreign students would have to be excluded from the program and would have to pay up front, as they do now, unless they come from a country that enters into a mutual enforcement treaty with us and the political risk of this treaty still being in force in 15 years were minimal, but this can be decided on a case-by-case basis. In any event, the threat of enforcement action by the Internal Revenue Service (IRS) should keep those US citizens who decide not to pay despite being able to afford to do so to a minimum.[19] We can also enlist the Securities Exchange Commission (SEC) to lend a hand here by requiring that all corporations subject to its jurisdiction certify that their highly compensated officers and directors (say anyone in the top 1% of the income distribution) are not in default on their education promises or risk being subject to treble fines or similar enforcement mechanisms, making it even more unlikely that those with high incomes would not pay their share. Whatever the number of defaulters would be in these circumstances, however, this number should be fairly predictable, given our past experience calculating the percentage of the population that engages in tax evasion, meaning we could design even the bottom slices of these educational securities to offer a stream of payments that would be unlikely to be affected by these minimal rates of default. People might even change their view of the IRS if this institution was not merely collecting taxes but also helping to finance the cost of their children's education. In any event, investors in these securities – unlike those who invested in mortgage-backed securities in the past – would have no reason to fear that large unanticipated increases in rates of default might occur and consequently wipe them out.

A second reason to distinguish these educational securities from their similarly constructed mortgage-backed cousins is that the payments here are inflation protected – indeed, because no one is promising to pay a set amount, but rather a percentage of one's

earnings, these amounts should track any increases in inflation rather well. It is this feature which makes my proposal significantly different from other income-contingent repayment schemes, which treat the amount advanced as a loan. With a loan, the stated amount of interest is supposed to compensate for inflation, plus provide some degree of profit, but it may or may not do so, and it certainly will not do so if payments are capped or forgiven by the income-contingent repayment feature. These capped or forgiven payments also create deficiencies or losses that someone has to bear, and with student loans, this usually means the taxpayer. With the securities contemplated by my proposal, in contrast, investors get much more assured inflation protection because even though each individual's payment is pegged to his or her income, the investor receives a share of the average income for the entire cohort, and this largely wipes out any individual problems out. There is no deficiency and therefore no loss for anyone to bear, for the possibility that any particular individual may not have sufficient income to pay is figured into the original design of the security. Of course, there is a risk that increases in that the average wage of a particular cohort may lag behind inflation, but this risk is minimal. Indeed, it is far more likely that increases in the average wage will *outpace* inflation, as they almost always have in the past, making these securities attractive even if they were not designed to include a real rate of return (i.e. a rate of return above inflation). To make these securities even more attractive, however, we can design them so they *do* include a real rate of return, so that investors will profit even if increases in average income merely match inflation (I will say more about this later). In any event, an investment that is this risk free and offers an inflation-protected rate of return is available almost nowhere else in the economy today (indeed, most equivalently risk-free investments today are offering an effective *negative* real rate of return),[20] so the returns these educational securities offer should be highly attractive to investors and, as far as defaults go, the taxpayer is completely off the hook.

Third, should these investments produce unexpectedly high returns (called alpha returns), it need not be the case that only private investors and not the educational institutions that provided these especially successful cohorts with their education would benefit. The alpha return that goes exclusively to investors could be capped and returns above this shared between the originating institution and investors rather than going to investors alone. In other words, if returns were exceptionally high, both the relevant educational institution *and* the investors in that institution's students would share in any windfall.

Finally, even if there was an unanticipated high rate of default or inflation outpaced increases in average AGI for the relevant cohort to such an extent that it wiped out the built-in real rate of return and some investors ended up losing money, this would only be in the equity tranche, and even here, the losses should be minimal. Absent some worldwide cataclysm, it seems almost impossible for any investor to suffer a catastrophic loss, for unlike the housing market, the average price of the labor of college graduates rarely goes down, at least not significantly and for long periods. And even those who do experience losses could still feel they had contributed to something worthwhile – not a house that now stands abandoned and decaying because its buyers could not afford their mortgage, but the education of people. Education once received cannot be lost or repossessed, and everybody benefits from having a better educated populace no matter what.[21]

Look at what this does. It satisfies the concerns of the left, for everyone would be able to get a high-quality higher education no matter what economic resources they or their families currently enjoy, which should at least go some way to combating what is increasingly coming to be seen as the 'inheritability of poverty' as a socioeconomic characteristic.[22] Indeed, the current trend is for an ever greater amount of the financial aid available at public institutions to be distributed on the basis of prior academic accomplishment rather than need. Because students from financially stable families tend to have better academic records than students from more financially stressed ones, this effectively means less and less aid is being made available to those who need it most, while more and more financial aid is going to the rich (see Rampell, 2013b). That would stop under my proposal, for all students would now have access to public higher education at no up-front cost. No longer would poor students have to choose between working long hours at menial low-wage jobs in order to finance their education, thereby jeopardizing their ability to perform well in or even complete their courses,[23] and taking on large debts they cannot begin to pay, or (in some cases) risking both these catastrophes.[24] Rather than subjecting students to market risk, as the current US Senate proposal to tie interest rates on student loans to market rates does (see Peters, 2013),[25] my proposal allows the market to work for them and allows them to access private equity capital for the first time. And it would also eliminate the need for parents who wished to spare their children from having to deal with this dilemma from taking on crushing debt themselves (see Lewin, 2012).

This greater access to education is reason enough to opt for my proposed method of financing as a matter of public policy, but there is an important additional economic benefit as well. While other forms of consumer debt have gone down, student debt has continued to rise throughout the Great Recession and has now begun to reach alarming proportions.[26] Indeed, it is now second in total size only to mortgage debt (see Lee, 2013).[27] Obviously, the potential repayment problem associated with this amount of debt not only threatens the financial security of the individual debtors involved, it also has ramifications for the entire economy, as those with high levels of student debt will have trouble accessing other forms of credit and therefore will have difficulty contributing as they otherwise might to effective demand and therefore the growth of the rest of the economy. And of course, if large amounts of this debt end up in default, which is a growing danger if the job market does not improve and these heavily indebted students are unable to find jobs that are sufficiently well-paid, we could have a replay of the subprime mortgage crisis in miniature. Indeed, the danger of allowing this highly risky kind of debt to continue to grow is reason enough to want to move toward a new method of financing higher public education.

Another important benefit of this plan is that it would help re-orient people's attitude toward paying for their higher education. No longer would we be trying to convince people that everyone, even those who don't take advantage of public education, should share the burden of funding it. Not that I disagree with this proposition – in fact, I wholeheartedly support it. But I think the evidence is now irrefutable that we can rely on hammering this idea home to take us only so far, and there is obviously a lot farther still to go. Under my proposal, while some government money would still go to institutions of higher learning, this would be for activities of theirs that do truly and directly benefit

everyone. The specific costs of educating particular people, on the other hand, will be paid for by those people themselves, through their ability to attract investors in their income-earning abilities. Because people will now be paying for their own education (when they begin to pay) rather than the education of others, they should experience less psychological aversion to making these payments than they experience now to paying equivalent amounts of taxes to cover the defaults of those who are unable to pay for their education themselves, even though the net effect of all this may be similar (see McCaffrey and Slemrod, 2006: 7–8).[28] And this also means that the finances of public institutions of higher learning should be less susceptible to the potentially violent budgetary swings in state support caused by natural movements in the business cycle.

But most importantly, with the burden of paying for public higher education lifted from public entities (approximately US$9.6b in state funds went to public higher education in California in 2011–2012, for example (Lederman, 2012)), taxes could go down and there would still be plenty of public money left over to redirect toward research and development at institutions of higher learning, the acquisition of new buildings and equipment, and various outreach programs that are designed to have benefits beyond the mere provision of education. For universities do more than simply produce educated students: they are centers of research and development and technological innovation; they provide health services to large segments of the population; they provide economic, political, and scientific advice to government and to the public on a wide range of important issues; they are repositories of important historical and cultural information; and so on. These are all public goods that are consumed by everyone, not just those who receive degrees from these universities, and it is therefore just and proper for taxpayers to pay for them. There are accordingly strong reasons for state and federal governments to continue to provide financial support to public institutions of higher learning even if the actual cost of the education services they provide is itself fully covered through the sale of education securities to domestic and international investors. And, of course, states also have an incentive to continue to underwrite the living expenses of those consuming educational services, for my proposal does not contemplate paying for these costs through the sale of education securities (I will explain why in a moment) and there is accordingly reason to be concerned that some students may be so poor that they cannot cover these costs themselves. Even assuming continued government contributions for all these activities, however, and even assuming that some of the taxpayer money that had been used to cover higher education services was returned to the taxpayers in the form of tax cuts, there would still be funds left over to redirect to K-12 education, enough at least to bring these basic programs back up to a much higher standard.[29] My proposal therefore not only solves the problem of financing public higher education, by releasing resources that had been committed to funding higher education in the past, it also allows government to redirect its attention and some of its current resources to fulfilling its obligation to provide all citizens with a basic education.

Perhaps the most significant advantage of my proposed method of financing, however, is that it provides a way for the giant pool of investment capital out there in the world, including foreign capital, capital which will obviously be drawn to those educational systems that are the most developed such as those in the United States, to invest in public higher education.[30] Essentially, it takes the funding of public higher education

private – who on the right could fail to support that? And it provides a very attractive investment opportunity especially in times of economic distress, when public education is otherwise bound to suffer. Indeed, in the absence of some sort of fresh approach, tuition fees are likely to go up substantially in times of economic distress, and this can be a significant factor when it comes to determining inflation (at 4-year public universities, tuition and other costs have risen 68% over the last 10 years), putting even more pressure on the economy and often leading to further reductions in government spending (Blow, 2013; Castle, 2012). The financial markets are capable of creating all sorts of exotic financial instruments, most of which do nothing to assist in the production of anything and can be downright destructive (take the now-infamous credit default swap as an example); why not use this expertise to design financial instruments that actually do something socially constructive? Indeed, it seems like financing public education in the way I propose presents one of those very rare kinds of political and economic policies – a policy that is a win-win for everybody. The only grounds for anyone to oppose it would seem to be that he or she wanted to decrease opportunities for education, and no one currently admits to wanting that.

Note also that my proposal offers benefits far beyond what is available under current law. First, relief is available under current law only for certain kinds of federal direct student loans, not for all loans, and only when the required payments exceed 15% of 'discretionary income', not 6% of AGI as in my proposal, although the existing 15% cap will drop to 10% for loans taken out after 2012 (Indiviglio, 2011). In contrast, the program envisioned in my proposal would apply to everyone who attends public institutions of higher learning. Second, under the current program, those who qualify receive an income-based cap on loan repayments and forgiveness of any loan balance remaining after these reduced payments are made in full, leaving a deficiency that must be covered by the taxpayers (see U.S. Department of Education, 2011).[31] Australia has a similar although more all-encompassing income-contingent student loan scheme, but again, this leaves the taxpayer footing the bill for continuing interest subsidies, deficiencies, and defaults, estimated at about 20% of all new lending (Norton, 2013).[32] Under my proposal, rather than look to taxpayers to cover any of these costs, those who are especially successful subsidize those who are not; no deficiencies or unpaid costs would remain. Indeed, because of the way the promises are packaged, the money actually used to pay for each student's education comes from investors, not lenders or taxpayers, and therefore is not counted as debt on anybody's financial statement. Finally, and most importantly, while current law allows for the forgiveness of debt in some cases, forgiveness of debt is a taxable event under both federal and state income tax law, and the taxes that become immediately due upon such forgiveness may be equivalent to as much as 3 to 5 to 10 years of payments on these loans, depending on the borrower's tax bracket at the time (see Lieber, 2012a).[33] In other words, while my proposal guarantees that no one will ever have to pay more than they can afford, the current 'cap and forgive' program guarantees only temporary relief followed by a big tax bill in the future.[34]

Of course, the devil is in the details, and there are important details in my proposal that I have not yet mentioned. For example, individual institutions cannot be allowed to float such securities themselves, or to allow those who are most likely to earn high incomes to opt out. The arguments for this are both pragmatic – the proposal will not

work if individuals and universities are allowed to do this – and driven by principles of justice. In any event, it is these and other limitations that the rest of this article shall be dedicated to illuminating. Now that I have sketched an outline of my proposal, I will go back over each of its elements and explain in further detail how each element would work, and why the various pragmatic rules necessary to make it work are just, and not ones to which anyone can reasonably object.

The details

Let me begin by noting the similarities and differences between my proposal and two other kinds of proposals for funding public higher education that have been floating around for a number of years. The first is the income-contingent student loan ('income-contingent loan' or 'ICL'). Proposals to finance public higher education through ICLs provide for loans to be issued to students directly by the government or perhaps by private banks, but in that case fully insured against default by the government. Rather than obligate each borrower to repay what he or she has borrowed, however, as in a traditional loan, the amount of the loan to be repaid is dependent upon the ultimate income of the borrower. Although the exact cutoffs vary, students with low incomes pay little or nothing, students with moderate incomes repay most of what they have borrowed, and students above a certain income repay their entire loan.[35] My proposal differs from these programs in that with ICLs, the government (and therefore the taxpayer) is on the hook for any principal forgiven and whatever amount of interest ends up being waived or subsidized, and the cost of this can be extensive.[36] Bridge financing (the financing that covers the transition period between when the ICL program starts and when the loans begin to be repaid) is also provided by the taxpayer. In contrast, under my proposal, students who end up earning low incomes do not have to pay any more than they would under an ICL program, the progressivity of the program is more extensive than the typical ICL (students end up having to repay the full amount that they borrowed very quickly under most ICLs), and the maximum to be paid is not limited to the amount of each individual's student loan, for there is no loan. Instead, the amount is set as a percentage of income, which means that what the student ultimately pays can be more or less than what the individual might have borrowed under an ICL program. Instead of treating each student as an individual borrowing a specific amount according to his or her particular financial needs, we treat the cost of education as a cost of the student's cohort as a whole. Money is raised to pay for this by allowing investors to take an equity interest in that cohort's earning ability as a whole. Bridge financing is provided entirely by the market, not by the taxpayer, and students who end up earning more pay more, and students who end up earning less pay less, but no liability falls on the taxpayer to bring the total amount paid by the cohort up to some preset amount. Rather than specify the amount each student has to pay, as in a loan, all that is specified is a percentage, like an equity investment with a set dividend rate, and the market takes the risk that the total amount ultimately paid will be less than expected, and the market also gets the benefit if expectations are exceeded.[37]

Note that one feature of my proposal – the idea that we attack the funding problem on a cohort-wide rather than on an individual basis – makes the program I have in mind

slightly more similar to what is called a 'risk-pooling' ICL than the more common 'risk-sharing' ICL. But this is where the similarity ends. Under risk pooling, each member of the debtor cohort is responsible for the total loan made to the cohort, and therefore payments can go up and seemingly continue on forever if necessary to make up for other students' defaults (see generally Rey and Racionero, 2013). The only risk-pooling ICL ever to be tried, however, was the risk-pooling ICL plan designed by James Tobin and offered as a financing option to Yale students from about 1971 to 1978, and this program was widely regarded as a failure (Ladine, 2001; Nerlove, 1975). Because it was merely a financing option, students who saw themselves as heading for high incomes simply selected other financing options, thereby leaving the remaining cohort below-average-income heavy. Moreover, students had the option to buy themselves out of the plan in later years by paying 150% of what they still owed, which wealthier students mostly did, leaving the remaining cohort even more below-average-income heavy. Finally, the plan was very complex and therefore difficult to understand, a feature that by itself no doubt discouraged some students from joining it. The obligations of those joining were also uncertain and therefore off-putting in a way the obligations to be assumed under my program are not. While the percentage of income due was fixed under the Yale program, the number of years that students would have to pay was not – this depended on how many defaults there were and the corresponding extent of losses the remaining members of the cohort would have to make up (West, 1976). Although 35 years was the outside maximum specified for the number of years of repayment, it eventually became apparent that, in practice, this would turn out to be the minimum too, and Yale had to ultimately cancel the remaining debt of each cohort to avoid forcing non-defaulting poor students to continue paying for the full 35 years, most wealthier students having earlier bought themselves out (*The New York Times*, 1999).

Under my plan, in contrast, students who expected to earn higher-than-average incomes would not be allowed to opt out, and therefore the direct adverse selection problem would be eliminated. Of course, students under my plan could still choose to go to private institutions and borrow funds to pay up front, but this is a far less attractive option than it was for students who opted out of the Yale plan. Alternative private institutions are likely going to be more expensive, so the amount borrowed if the student elects to go this route is likely to exceed and perhaps even greatly exceed the real (i.e. inflation-adjusted) amount an average income-earning student would eventually pay under my plan. Remember also that under my plan the amount each student is to pay (in terms of the rate and the number of years) is fixed up front, one cannot buy oneself out, nobody is forced to bail anybody else out, and the amounts paid are not framed as loan repayments so students have no reason to compare some initial amount borrowed to what they eventually pay as a way of evaluating the fairness of the program.[38] Most importantly, even students who expect to earn more than the average cannot be *sure* they will earn more, so their natural loss aversion should combine to make even indirect adverse selection in favor of private universities minimal. (Loss aversion is the tendency of most people to give twice the decision weight to avoiding fixed losses, which is what they would incur by taking out a loan because they would then have to repay the specified amount, than they assign to obtaining contingent gains, which is what they do if they merely agree to give up a small percentage of their future income.)[39]

In any event, the supposed threat of adverse selection here seems greatly exaggerated. Do we really think that a significant percentage of students who today choose to attend public rather than private universities because the current fees are cheaper would instead switch to private universities when the current up-front fees charged by public universities are eliminated altogether? Even if my program would make private universities somewhat cheaper if you added everything up at the end of 35 years and adjusted for inflation (and no student could be certain of this in advance), a student would have to have both a remarkable amount of confidence in his or her own income-earning capacity and a surprising ability to avoid future discounting in his or her current decision-making in order to find going to a private university and paying up front more attractive.[40] Given that very few mature adults, much less teenagers, are inclined to think like this, significant losses through adverse selection seem unlikely.

The final ICL-type proposal I want to mention is one that was released just weeks before this article was accepted for publication. This proposal, issued by the Hamilton Project, bears some similarities to mine but has important differences as well (see Dynarski and Kreisman, 2013). Like all ICL proposals, it limits the amount of each loan payment to a percentage of the student borrower's income – in this case, between 3% and 10%, depending on the amount of income earned. Although the proposal recognizes that one problem with debt repayment is that it begins too soon, when students are still struggling to get on their financial feet, it merely reduces the payments due during this period; it does not eliminate them. Payments would continue until the loan is paid in full, with interest, or for 25 years, whichever is longer.[41] At that point, any remaining balance would be written off and paid by the taxpayer. As in my proposal, payments would be processed and enforced via the tax system and deducted from earnings like social security and withholding tax. Those who could not afford to keep making their payments despite the payment cap would be allowed to discharge their loans in bankruptcy much more easily than they can do so now; but again, it is the taxpayers who would ultimately be making up the difference.

While I view this proposal as probably the best of the ICL proposals out there, I still have some serious misgivings. First, as the authors note, the total amount of student debt being taken out today is reaching alarming proportions, but their proposal would do nothing to deal with this. Indeed, the authors actually deny we have a debt problem; they claim all we have is a repayment problem. What the authors mean by this is that 98% of students currently borrow US$50,000 or less, an amount they see as currently manageable. But US$50,000 seems like a lot to me, especially if a student then wants to go on to graduate school, and in any case, I don't see how this makes the total level of student indebtedness in our economy unproblematic in the macro sense. Moreover, the authors concede that tuition fees and therefore the amount of indebtedness each student will be required to incur is rising rapidly, so even if the current level of indebtedness for most students is as unproblematic as the authors think it is on a micro level, more and more people will be incurring higher and higher levels of indebtedness and therefore moving out of the manageable category. While the Hamilton Project proposal might bring some relief for some current student debtors, it is going to provide less and less relief for the student debtors of the future. And while some effort is made to give heavy borrowers some relief too, this is mostly through the bankruptcy laws, which hardly seems

satisfactory. Do we really think that telling a student, 'Hey, go to college – you can always file for bankruptcy later', is the way to open higher education to everybody? At best then, this latest ICL proposal is really more of a short-term relief act for some and not a long-term solution to the problem of financing public higher education for everyone.

Second, many students now simply cannot afford to take out loans and therefore do not even apply to college, and nothing in the Hamilton Project proposal suggests that the modest relief it will provide will be enough to give these students a realistic opportunity at higher education. The proposal also does nothing to help parents who borrow or otherwise impoverish themselves in order to pay for their children's education; relief is only available for students who take out loans themselves. And it still treats public higher education as a largely individual endeavor, with each student responsible for the costs of his or her own personal education; no real effort is made to make those who financially benefit more from their education subsidize those who financially benefit less, even though everybody benefits from living in a community with diverse interests and abilities. Perhaps some might see this is an advantage of their proposal, but in light of the enormous amount of inequality now present in the United States and indeed present and growing throughout the world I would disagree. And most importantly, like all ICL proposals, this proposal does not provide a mechanism for private capital to be used to finance education; it still relies primarily on the public purse. So while I do think this ICL proposal is an improvement on previous versions of ICLs, it does not really demonstrate a rethinking of the problem.

The other major group of proposals that bears some resemblance to the proposal I am making here rejects the idea of funding education through contemporaneous loans and replaces this source of funding with some sort of flat or perhaps even a progressive 'Graduate Tax' or 'GT' for university graduates on top of the regular income tax. Under these proposals (never really under serious consideration in the United States but popular in Europe), education would be free at the point of entry to those enrolling in public institutions, as it would be under my proposal, and those graduates who earn more would pay more; but in most cases, the funds would go into the general fund rather than being earmarked for higher education exclusively, much less earmarked for any particular institution. Strictly speaking, there would be few or no defaults under this system, because people can be generally expected to pay their taxes (that would be similar to my proposal), but funding for public higher education would be handled centrally, and distribution and disbursement would therefore be subject to the normal political pressures that apply to the use of all public funds. Education funding would remain a part of the public budget, and usually a very big part, and would therefore be subject to all the usual complaints about the level of taxation and the need for debt reduction. The budgets of the public institutions themselves would also remain liable to the ebb and flow of tax revenues according to fluctuations in the business cycle (see, for example, Glennerster et al., 1968, 2003; Lincoln and Walker, 1993).[42]

In contrast, under my proposal, the government gets largely out of the business of funding education. The amounts needed to finance education are, as under the GT, expressed as a percentage of earnings, but those do not go into a giant pool to be redistributed to the various institutions involved according to some formula to be determined

later. Instead, they go to the actual institution that provided the education to that individual, and percentages would vary to some degree according to the institution attended. People who did not attend one of these public institutions would not have to pay for those that did. So under this program, while it is true that wealthier students subsidize poorer ones, both groups are part of a single community and therefore should feel less aggrieved by having to pay differing absolute amounts. Since the amount paid bears a strong relation to the amount of benefit received, the apparently irrepressible aversion of all citizens to paying funds into what they see as a giant government financial black hole would not apply. The rich pay more but more painlessly than under the GT, and the problem of redistribution of these funds and the central planning that entails is eliminated. Yet government is not completely out of the business of supporting institutions of higher education. To the extent these institutions produce public goods, funding for this would still come out of general taxation, as it should. But with regard to actual higher education services, government support switches from providing funding to providing enforcement services to be sure everyone pays whatever amounts are due and administrative services to process the payments made. Defaults (or rather failures to pay as agreed) should be miniscule, and so no one need be concerned that they are paying for free riders. And all these factors taken together, in my view, make my proposal superior to either ICL or GT programs.

So let us now focus on how we would arrive at the actual amounts each student would promise to pay under my proposal. To do this, we need to know the average total cost per year per student at a particular public university or group of universities. Remember, the law of large numbers will be doing a lot of work here – it allows us not to worry about the future earnings of any particular individual but only the current average earnings of the existing graduates for the relevant university or university system as a whole, a number that is readily determinable. This avoids all the problems that might otherwise apply to taking an equity interest in the human capital of a particular individual (see, for example, Lattman and Eder, 2013). We accordingly want each issue of the relevant securities to cover a reasonably large number of students.[43] But we also need to be sure that the cost of education provided and the average earnings of the students in this group are roughly equivalent across the linked institutions so that no one institution is taking advantage of the lower costs or better average income figures earned by the graduates of another. California, for example, has a three-tier public higher education system: the University of California system, which has a total of 10 semi-autonomous campuses; the California State University system, which has 23; and the Community College system, which has over 100. The cost and quality of the education provided and the future income-earning power of the graduates of these systems vary dramatically, so we would not want to lump all the students in all three systems together. On the other hand, we need not focus on a single campus within each system – although there are differences in cost and in projected student earnings among the campuses, these differences are relatively modest, and while each campus is semi-autonomous, they can still respond to incentives as a whole, for a great deal of budgeting and educational policy is set system-wide. Again, we want to use the power of the law of large numbers, and we also want the efficiencies that come from having to design a smaller number of very inclusive investment vehicles rather than a larger number of more individually tailored ones, so we want to focus on the largest

group of similarly situated students as possible. So while we could focus on a single campus, and in some states the variation between campuses might be such that we would want to do this,[44] in California it should be possible to focus on each system as a whole. From here on, therefore, I will focus on the University of California system in illustrating how the details of my proposal would be cashed out.

The average total cost of educating a student in the University of California system is currently about US$20,000 a year.[45] The first question to ask, then, is whether average total cost is what we want to know. We could, for example, use marginal cost – the cost of educating one more student – as the relevant figure. If we decide that the government or private donors should cover the provision, replenishment, and upgrade of fixed costs like plant (i.e. new buildings) and equipment and the payment of interest on existing and future anticipated university debt, then using marginal cost is indeed what we should do. But I am going to assume that we want to shift as much of the burden of the cost of providing public higher education as possible away from taxpayers and, therefore, the figure we want is average total costs, which allocates a share of fixed costs to each student.[46] If we decide that taxpayers or private donors rather than students should be the source of funds to cover some fixed costs, this would mean that the figures I am about to use would need to be recalculated. But if securities can be constructed that are attractive to both students and investors using the higher figure of average total costs, then my proposal has even more power, so that is the approach I shall follow here.

Now we could design our securities so that they covered only 1 year at a time, in which case we would begin our calculation of how our securities should be structured with this US$20,000 figure. But it seems unwieldy to have do a securities offering for each class every year – it would be much more convenient to do an offering for each class that covers the cost of their education for 4 years, given that an undergraduate education theoretically takes 4 years to complete. In this case, our base figure would not be the current average total cost for 1 year, but the current expected average total cost for 4 years, or US$80,000 plus some amount to cover the expected rate of inflation over the relevant 4-year period. If we assume a 2% rate of inflation per year, which is currently the target rate aimed at by the Federal Reserve and most other Central Banks around the world (see, for example, Federal Open Market Committee, 2012), this would mean the total base figure per student would be US$82,432.[47] Of course, there are many variations in this 'straight-through-in-four-years' model – some students drop out or take longer than 4 years to complete their degree or skip years for various reasons, some students will transfer in only in their junior year, and so on. But these complications can be dealt with by the law of large numbers. For given the size of each student cohort, we should be able to predict these fluctuations with a great deal of accuracy. We simply account for these expected fluctuations actuarially and design our securities so that we come up with a figure that represents the average total cost of educating each incoming class (taking account of the usual delays and transfers in and transfers out) to graduation. Students who drop out get their promise to pay proportionally reduced, and students who transfer in make only a proportional promise to pay, so some of these adjustments would actually cancel each other out.

So let us assume here for simplicity's sake that we expect the number and timing of drop outs to at least roughly match the number and timing of transfers in. Any errors in

these calculations would be absorbed by the equity tranche anyway, but if we feel uncomfortable about this, we can always go back to issuing these securities on a yearly basis. In any event, assuming we do issue these securities by cohort rather than by year, this means that the University of California system would need to raise US$82,432 times the number of students admitted to each cohort to cover the current average total cost of providing them the promised undergraduate education. How can we construct a security that can be sold today in the marketplace for this amount?

If these were loans in which people were buying a share, as they would be if each student had promised to repay a set amount, then at the very least the principal amount of the loan would have to be subject to interest to cover not only the time value of money but also the expected rate of inflation until all of the principal and accumulated interest would be repaid. But remember, this is not the kind of promise that is being made here. Rather than promising to pay a set amount at some future date plus interest to cover the effect of inflation and the opportunity cost of the capital involved, the promises at issue here are to pay a set percentage of each individual's AGI. Because average income rises with inflation, no separate amount of interest need be included to cover inflation. The index from which the amount of payment is calculated already has compensation for inflation built into it. Whether payment begins in 1 year or 20, the amount paid should roughly equal the inflation-adjusted value of the original US$82,432 on an average basis. There could be some degree of departure from this, of course, one way or the other, for it is possible that average income will either outpace or fall behind the rate of inflation. But this is simply one of the risks the investor takes. In any case, the chances of a mismatch here are small – since 1913, average income has generally increased *more* than the rate of inflation (see Piketty and Saez, 2006; Saez, 2009, 2012).[48] Indeed, considering that the return on principal will be paid out over a 20-year period after a 15-year delay, these is no period within the last 100 years when the amount ultimately received by an investor would have failed to cover the initial inflation-adjusted price of a similarly designed security.[49] There is also lots of evidence suggesting that higher levels of education within a state lead to greater productivity and higher average wages within that state, which in turn suggests that implementation of my proposal would lead average wages to rise faster than inflation even more than they have in the past (see Berger and Fisher, 2013). So even if we assume investor loss aversion, the upside here sufficiently outweighs the downside that this particular risk should not be a major factor in the investment decision (see Levy, 2012: 316–323).

But this just means that people who bought a US$82,432 interest in our securities would get the current inflation-adjusted value of this amount back no matter when payments start coming in. That might be enough in today's market, for investors are willing to accept negative real rates of return for very safe investments. Indeed, Treasury Inflation Protected Securities, or TIPS, are currently offering negative rates of return, and the government has no trouble selling them. Because the upper tranches of our securities would also be very safe, it is probable that no further adjustment to this amount would be necessary for our securities to sell at auction for their face amount. But let us assume we want to be sure about this, and therefore want to make our securities even more attractive, so we want investors to be pretty certain they will enjoy the equivalent of a real rate of return, that is, an amount that exceeds the actual amount of inflation. Indeed, let us say

we want to offer a real rate of return of 3%. This is a very good rate of return; few investments offer this kind of return on a near-guaranteed basis, especially under current financial conditions. My sense is that 3% is probably unnecessarily high, and that the securities would probably sell well at auction even if they provided for a lesser return, but we can always adjust this number up or down in future offerings after we have some experience on how the market reacts to this amount.[50] So I will use the 3% figure here because that should be ample and once again, if less will do, then that will simply make my proposal that much more powerful.

So this means that the total return on this security should be US$82,432 in current dollars plus 3% of the outstanding balance over the number of years it takes before that US$82,432 is paid in full once payments begin. In other words, this is like taking a loan for US$82,432 today and then paying it back at 3% interest for 20 years.[51] If we did that, the total amount paid would be US$109,718, and the payments would be US$457.16 per month, or US$5,486 per year, or about what it costs to finance a nicely appointed new car. But the amount to be repaid is not being figured as a dollar amount – rather, it is being figured as a percentage of income. If the current average income of someone with an undergraduate degree from the relevant institution in their prime earning years is approximately US$90,000, as it is at our example, the University of California,[52] this means that someone with that income would today have to pay 6% of their AGI each year for over 20 years to make that payment.[53] Now, of course, we have no idea what the average income of our graduates will be in 15 years when the payments are set to start, but this does not matter. Whatever it will be, it should have the same inflation-adjusted value as those payments would have today because we are not fixing the amount of the payment, only the percentage of income that the payment represents. So it does not matter how many years go by before the repayment begins. As long as the repayment is expressed at a percentage of average income, it is inflation protected. (Interest is usually added to cover inflation, but this is only necessary when the principal is a set amount – when it is a percentage of something that itself raises and falls with the rate of inflation this amount is unnecessary.) The set return (the 3%) we added in before is what covers the real rate of return on the original principal amount. Since we are packaging all these promises together and then slicing them up, we can be pretty confident that the average numbers will indeed represent what gets paid.

But how do we account for the rate of default? Since investors get paid first, and collection and enforcement is handled by the IRS, there should be a very low rate of default, and thus we need not add very much in to cover this. Besides, any failures to pay would be fully absorbed by the equity tranche, because that is the way this kind of securitization works, thus leaving the holders of more senior slices unaffected, and purchasers of securities in the equity tranche get compensated for taking this risk by paying a lower price or getting a slightly higher rate of return. If we want, we can even liquidate the risk of nonpayment for holders of securities in the equity tranche by purchasing insurance and adding the cost of this insurance to the overall price of the securities. In any event, given these safeguards, the securities in the upper tranches should be rated AAA, and those in the equity tranche should be rated very close to this even without insurance. They should accordingly be very attractive to investors, and they should indeed sell for *at least* US$82,432 a promise at auction at the time they are offered, because what the investor

is buying is the right to receive that amount back plus an estimated 3% real rate of return over 20 years starting in 15 years.[54] Since the securities do not represent an interest in a single promise to pay but a slice of all promises, we can slice them up into thinner units so each individual security may be offered for, say, US$100 a share – all that matters is that however thin we slice these promises, they end up totaling US$82,432 a promise times the number of students in each cohort. The offering price of these securities would then be that effective price of US$82,432 a promise, plus whatever marketing, collection, and administrative costs we expected to incur, although some of these could be borne by the government as its contribution to the success of the offering.

Like T-bills and other Treasury-sponsored securities, these educational securities would be sold at auction, with the reserve price (the minimum price one has to pay to get one) set at the face amount of each share, figured as the relevant portion of each US$82,432 promise, the relevant portion depending on how thinly each of the promises was sliced up. Shares in the senior tranche would obviously be the most attractive, and therefore attract the highest bids; shares in the lower tranches would attract somewhat lower bids. Because the equity tranche is the only tranche that really bears any risk, however, and even this risk is slight, the securities in that tranche might be the only ones that have to be priced lower. In any event, in order to maximize the amount bid for each security and to ensure that people actually bid the maximum they were willing to pay, the auction would be conducted on a second-price sealed bid basis. That is, each bidder would not know the bids of anyone else, the securities would be allocated to the highest bidders, but the highest bidders would not pay what they bid, they would pay what the next highest bidder bid. This ensures that people do not bid strategically and offer less than they are willing to pay because they think this is all that will be required to get the number of shares in which they are interested (see Binmore, 2007: 596). And while this method of bidding is not essential, it does ensure that the offering university or university system raises the maximum it can on each offering and that we get an accurate idea of what people actually think these securities are worth.[55]

Once the initial offering is over, the price of the securities would fluctuate in the aftermarket depending on whether the percentage of average income figure looks high or low when compared to inflation, but it would eventually stabilize as we get closer to the payment dates and our uncertainty about this gets reduced. (In this sense, the price of these securities would fluctuate as it does for options.) So the price of these securities might go down or up. They will go up, for example, if graduates from that particular university or group of universities start to increase their average wage relative to inflation. Universities accordingly have an incentive to produce graduates whose average incomes rise faster than inflation, for this makes their securities more attractive. If the university's graduates start doing worse on an inflation-adjusted basis, the value of the securities would go down. But these are risks the investors would bear, not the university, for the university has already received all the money it needs to educate each cohort at the time of the initial offering. The university would only bear the risk of its students' average income lagging behind inflation in the sense that, if this happens, they will have to raise the amount of real interest they add into the price of their new offerings, and these securities would therefore become more expensive. The securities could, however, include an equity kicker, that is, to the extent that the amount repaid exceeds, say, a 6% real rate of

return (or twice the amount projected), the overage is split between the offering institution and its investors. This way, if the securities turn out to be substantially more profitable than the market expected – that is, to the extent that these investments generate alpha returns – both the originating university and the current holders of these securities would benefit.

Note that if this proposal for financing were adopted, one important feature of it would be that no one (i.e. no incoming domestic student) could be allowed to opt out. Because the whole point is to have those who do financially well in later life subsidize the cost of those who do poorly, we can't allow those who intend to enter high-income professions to finance their educations in some other manner. We also don't want to diminish the potential upside on this investment – the profit that it generates if increases in average income exceed increases in inflation – because this is one of the things that make this investment attractive, and to make this average income figure meaningful, it must include everybody. But this is as it should be, because there is nothing unfair in making everyone pay an equal percentage. (In this way, these promises to pay are like a flat tax.) Parents who had sufficient resources to pay for their children's education up front, however, and wanted to relieve their children of the burden of this future obligation to pay could still do so. To do this, they would simply buy the equivalent of one promise in their university's current offering and give this security to their child. The child can then use the income from this security to make her own payments when the time comes. If the student earned the average income when the time for payment came due, her payments out would exactly match the income she receives on the security her parents gave her. If she earns less than the average, she profits. If she earns more, she ends up having to pay something out of her own pocket, but again, for most people, this amount would be relatively modest.[56] Only a few individuals would have to pay substantially more.

To ensure that highly compensated individuals do not use deferred income or other accounting tricks to avoid paying the full 6% on their earnings, that 6% would apply to income when earned regardless of when it was received (in other words, contributions to retirement plans that are otherwise deductable from AGI would have to be added back in for purposes of calculating the amount due). The 6% figure would also apply to any other form of deferred income as long as the origin of that income could be traced in any part to work done during the relevant period covered by the security. Again, since any attempt to hide income here would also subject the individual to tax penalties and potentially even prosecution for tax evasion, the number of people who go to such lengths to try to avoid their obligation to make payments is likely to be a small percentage of this small percentage, or hardly enough people to worry about at all. (The payments that these people were supposed to make but did not would come out of the equity tranche anyway.) Adjustments would also have to be made on joint returns – the 6% provision would only apply to individual adjusted joint income to ensure that everyone's payment was calculated based on the income they personally received, for this is what is tied to the education they received, at least in part, and not to the joint income of the individual and his or her partner. There might also be some other adjustments required before the 6% figure could be applied – any income excluded from AGI under the foreign income exclusion would have to be added back in, for example, as this would also be the product of one's

education.[57] But most other adjustments to income could still stand, so the extra calculations required here should be few and relatively easy to make.

The receipt of payments on these education securities would also be subject to special tax rules in order to ensure they were no less attractive than a loan of money. To the extent each payment received represented the return of inflation-adjusted capital, its receipt would be tax free, just as if it were loan payment. Only that portion of each payment that represents the receipt of real interest would be taxable. If the government wanted to make these securities even more attractive, it could make even this portion of each payment tax free. This would cost the government something in terms of lost revenue, so it might not want to do this, but if not, this would not by any means be fatal. Even if just the return of inflation-adjusted capital is tax free, this puts the investors in these securities in the same position as lenders, so the government would not actually be giving up any tax revenue it would otherwise be receiving if public higher education continued to be funded by government grants and loans and loan guarantees. Payments on these securities could also be tax deductable, at least up to a point, as they would be if they represented the payment of current direct educational expenses.[58] And there are various other actions the government could take here to ensure that the investment in and repayment of these securities received favorable tax treatment if it were so inclined, thereby making the securities even more attractive and thereby reducing even further the amount of real interest the securities would have to offer. In any event, even if all these favorable policies were adopted, the cost to the government would still be far less that the government incurs now as a maker of grants and a guarantor of student loans with a high rate of default.

Another way in which the government could support the issuance of these securities without putting money out is by protecting the issuers and their lawyers, brokers, accountants, and underwriters from civil liability to purchasers if anything goes wrong. Securities litigation is hugely expensive, as is the purchase of insurance to cover civil securities and associated tort liability, so if such expenses were unnecessary, that would help keep the price of these securities and the corresponding promise to pay that students would have to make as low as possible. Criminal liability, including liability for criminal fines and penalties imposed by public agencies, would of course remain, and the government would have to credibly commit itself to enforce the securities laws vigorously regarding the issuance of these securities. But if it were to do so, the threat of such enforcement action should be enough to deter wrongdoing and reassure investors as much as the threat of civil liability for damages. All offerings would have to be approved by the relevant government agencies before they were made, and even vigorous oversight of these offerings would cost less than government's current commitment to the financial support of public higher education. In other words, rather than contributing money, the government would support public higher education by lending its enforcement structure to remove the risk of nonpayment and the cost of insuring against private civil liability. And as long as the government carried through on its commitment to strict supervision and enforcement, this should be more than sufficient to reassure the market and make these securities as attractive as any other investment, perhaps even more so.[59] Those potential investors who were so risk averse they would be troubled by this would simply have to take their more limited enforcement options into account in deciding

whether they really wanted to invest in such securities. But if this should prove problematic, all it would mean is that this risk would have to be covered by insurance and the cost of this insurance added to the baseline amount to be raised, and the price of the securities recalculated accordingly.

Finally, note that I have not included living expenses in the 6% figure. Help with these expenses for those who required it would accordingly need to be provided to students in some other manner, perhaps by providing government- or university-subsidized housing and meal plans for those unable to pay market rates for such basics themselves and whose parents could not support them. If these expenses were added in and the terms of the securities recalculated, this would cause the percentage of AGI to be paid over to increase to around 10%. While this in my view is still a workable figure, it nevertheless seems best to leave these expenses out. First, because it seems economically more efficient not to engage in the long-term deferral of student payment of these costs, but rather finance them through more short-term methods if they must be financed at all. Second, because these costs are highly variable depending on the lifestyle each particular student chooses to pursue, and so averaging these out merely ensures that some students will receive more than they need or would choose to spend on themselves and some will receive less. And third, because it is always best in my view to ensure that endeavors that require commitment from those who undertake them require some up-front sacrifice, for otherwise people are likely to stop taking their commitment to succeed at these endeavors seriously. If obtaining an education is completely sacrifice free, we are likely to attract the wrong kind of students to our universities and have to spend a great deal of time weeding out those who are only there because they would prefer not to work, for they would otherwise be both a financial and educational drag on those who were there for more appropriate reasons. What we want is students who are there because they genuinely hope to broaden their horizons and make something of themselves, and are therefore willing to incur costs and exert effort now in order to increase the opportunities open to them later on. This, of course, includes those who may have already had careers but now find themselves unemployed and want to retrain, for making further education available to those unable to find work is an important way of attacking our continuing unemployment problem.[60] In any case, for those that need assistance with housing and living expenses too, we can make provision for this in some other fashion; the major hurdle to entering into higher education having already been removed under the terms of my proposal.[61]

Answering some objections

While I cannot anticipate every possible objection to my proposal, there are a few concerns, both ideological and practical, macro and micro, that I can anticipate. In this section, I will accordingly do my best to address them. One is that regardless of whether preventing opt-outs is necessary for my proposal to work, this is an infringement of negative liberty, and therefore is objectionable because it is a violation of the rights of those who prefer to finance their education in some other way. I have several responses to this objection. One is that if a student does not want to use a share of his future AGI to pay for his education, he does not have to, for he or she can always go to a private

university and pay for his education in some other manner. In other words, the no opt-out provision does not prevent those students who feel that encumbering their future income in this way would be an unacceptable infringement of their liberty from getting an education; it merely prevents those students from getting an education at a *public* institution of higher learning. Surely, no one has a right to a public education that is paid for up front. If a student feels that strongly about keeping his future income unencumbered, there should be plenty of quality private institutions out there willing to oblige and take his money on a pay-as-you-go basis. And while the nominal amount paid in the future may greatly exceed the amount charged on a pay-as-you-go basis, the real (i.e. inflation-adjusted) amount should be roughly the same. While some students will, of course, pay more than the average, this is simply compensation for the risk that they might pay less, and I can see no reason why it should be considered an infringement of liberty to require those creating this risk to pay for it, at least as long as the method of payment offers compensating benefits. And in this case, it clearly does, for students pay nothing up front and eventually pay less if they earn less than the average. Insisting that no student be required to transfer a share of his future income no matter what kind of institution he wants to attend when there are a variety of choices available is simply to fetishize consent in a way that is not defensible under any plausible conception of liberty. So this objection fails.

There is a more extreme version of this objection, however, that I suppose I must also address. And this is that even if an agreement to enter into this kind of financing arrangement is truly voluntary, it is still tantamount to slavery, and slavery is considered morally objectionable by most people even if it is entered into voluntarily. Of course, at least some and perhaps all of the moral force of this objection comes from what seem to be irrepressible doubts that one could rationally submit to slavery voluntarily and, therefore the objection is not as independent of the prior one as it might seem. And these doubts may indeed be valid when we think of slavery as transferring the entire package of rights and obligations that constitute self-ownership to another. But this is hardly what is going on here. One is technically selling a small and temporary interest in one's earning capacity to another, but not entering into an obligation to earn anything, and this is substantively even less of an infringement of self-ownership than when one enters into a long-term loan, a long-term requirements contract, or a long-term employment agreement. Besides, the kind of agreement my proposal contemplates is nothing new – it is the common method by which agents get paid, and no one seems to think there is something alarming about that. (Lots of people complain about their agents, of course, and some even accuse them of being parasitic, but I do not think that anyone truly considers the method of calculating payment here a form of slavery.) The slavery objection is therefore overblown, fueled by emotion rather than reason. Even Milton Friedman, who considered himself and was considered by many to be a champion of freedom, dismissed this objection as 'irrational' (Friedman, 1955: 102–104). So this version of the objection also fails.

The next potential objection that I want to address focuses on the possibility that my proposal might provide incentives to covered academic institutions to eliminate departments, especially in the arts and humanities, something that many academic institutions are already feeling pressure to do and something that most educational professionals think is undesirable (see, for example, ~~Hunter~~ and Mohammed, 2013; Lewin, 2013; Schrag, 2012; Stewart, 2013). This is possible because the income-generating potential

of the various undergraduate majors currently on offer differs widely – one recent US study, for example, claims that median incomes range from about US$29,000 per annum for psychology majors without advanced degrees to US$120,000 per annum for petroleum engineers (Carnevale et al., 2013: 9, 24).[62] The top 10 undergraduate majors with regard to earning potential all involve engineering or applied math, while the bottom 10 are all in the humanities and the arts (Carnevale et al., 2013: 27). In order to make their securities more attractive to investors, universities that participate in my financing scheme might accordingly be tempted to eliminate departments that do not produce high-income earners, or at least those departments that consistently produce low-income earners, in order to make their securities more attractive to investors.[63]

But this concern actually arises out of a misunderstanding of what makes the education securities that my proposal contemplates attractive as investments. The greater the average income of the cohort, the smaller the percentage of income each member of the cohort must promise to pay to cover the average total costs of their education. But the lower the average total costs of the education services provided, the smaller the percentage of income each member of the cohort must promise to pay as well, and sciences and engineering have much larger fixed cost than the humanities (the English Department, after all, does not need a cyclotron or other kinds of very expensive buildings and equipment). More importantly, however, what matters *to investors* is not average cohort earnings or average total costs per student but the relation between average cohort earnings and inflation. Thus, the education securities of a university that offers degrees only in engineering is no more attractive to investors than a more well-rounded university offering education to students in all sorts of majors, *even though the average income of its student cohort may be higher*, because in this case, the percentage of income that each student must promise to pay would be correspondingly smaller. What matters to investors is the size of the cohort (it has to be big enough for the law of large numbers to be firmly in control), how diversified the cohort is (for a diverse cohort is subject only to market risk, while a specialized one is subject to unique risk, and that actually makes the investment less attractive), how carefully the costing and percentage figures have been calculated, and how consistent the institution has been in producing cohorts whose average salaries meet or exceed inflation. Moreover, it is important to remember that inequality is now at historic highs not seen for 90 years (Reiff, 2013). It is accordingly much more likely that the spread between the income-generating potential of different occupations will be narrower in the near to mid-future and not wider, and that lower-than-average incomes will outpace inflation at an even higher rate than above-average incomes. So my proposal does not, in fact, give institutions incentives to eliminate departments that offer less lucrative majors in order to make its securities more marketable. Universities might have incentives to do this for other reasons, of course, and I agree that this is undesirable, but whether it is and what to do about it is a debate for another article. All we need note now is that the method of financing I have proposed is at worst neutral with regard to this debate. The most likely effect of my proposal is to encourage public universities to continue providing education services in a diversity of fields, not to encourage them to narrow the current choices they have on offer.

Another possible objection to my proposal is that this method of financing public higher education might create psychological impediments to charitable giving. Many

universities depend heavily on income from their endowments to finance current operations, and those endowments are created primarily through gifts from alumnae. If alumnae were already paying 6% of their AGI to their university (or to the investors who bought their promise to their university) they might be less inclined to engage in charitable giving. And indeed, there is some evidence that increases in state funding do reduce charitable giving to public institutions (see, for example, Leslie and Ramey, 1988: esp. 120, 127). But under my proposal, state support would actually *decrease*.[64] Although assured private support would increase, and therefore formerly 'public' institutions would have more funds, there is no evidence that a university's overall wealth or income affects charitable giving. Harvard, for instance, which has by far the largest endowment in the world, still has no trouble raising money from its alumnae. Nevertheless, I suppose it is plausible to think that charitable giving from alumnae might be somewhat reduced were my proposal implemented. But prestige is also a major factor driving charitable giving, and nothing in my proposal would change that. Wealthy alumnae would therefore still have an incentive to make large gifts, for they could not achieve the public recognition such gifts attract simply by making payments on their securities as agreed. More importantly, public universities have historically relied far less on their endowments than private universities do. It is only recently, when public funding began to be cut, that most public universities started developing and relying on their endowments more. Because the payments on the securities contemplated by my proposal would cover average total costs, however, and this includes a share of fixed costs, this recently heightened reliance on charitable giving should no longer be necessary. The amount of fund-raising and associated administrative infrastructure required to generate such giving is substantial, and these costs could now be saved. Finally, it seems highly likely that at some point in the near future we will see the federal tax deduction for charitable contributions reduced or even eliminated, for this deduction primarily benefits the rich (those making over US$200,000) and their favored (mostly private) institutions (the rich have up to 40% of their contributions subsidized by the government, while the gifts of those with more modest means end up not being subsidized at all). So to the extent charitable giving is tax motivated, it is likely to become a less reliable and significant source of income in the near future anyway (see Bartlett, 2013b; Shiller, 2012). And to the extent it isn't tax motivated, it seems unlikely that changes to the way public higher education is financed will have much of an impact on charitable giving at all (see Bartlett, 2013a). I therefore see no reason to believe that public universities would ultimately be worse off and every reason to believe they will have increasingly secure funding under this method of financing than they could ever have, no matter how successful they previously were at fund-raising from their alumnae.

Another possible worry created by my proposal is that this method of financing may work well for top public institutions, those whose graduates earn high average incomes, but not well for lesser institutions whose graduates earn less. Although everyone who gets into one of these top institutions would pay nothing up front, it is true that those who are most likely to get in are those who have done best in high school, and since educational performance is tightly correlated with family income, those students are likely to be financially better off than those who get in only to lesser institutions.[65] If those who can obtain entry only to lesser institutions end up having to promise to pay a greater percentage of their future AGI in order to obtain a lesser education than their wealthier

high-school classmates because those who go to lesser schools are from families with a lower income, the effect of all this is to penalize the poor and increase the obstacles they face to economic mobility.

But lesser universities typically have lesser costs too – they have fewer and less expensive facilities, less expensive faculty, and so on, and yet the average income of their graduates can still be relatively high, so there is no reason to assume that students attending less prestigious institutions would actually pay more. And using the California system as our example once again, we can see that they actually would not. Average mid-career median income for California State University (Cal State) graduates is US$79,000, or not that much lower than the average income of University of California (UC) graduates (see California State University, 2013b).[66] Average total cost per student at Cal State is approximately US$12,526 (see California State University, 2013a). We can even round this up to US$15,000 just to be sure everything is covered. In this case, and using the same method of calculation used for the University of California cohort, the percentage of AGI each Cal State graduate would have to pay during their prime earning years is 5.12% of their AGI, which is about 15% less than the percentage University of California graduates would have to pay. But the average income for Cal State graduates is only 12% less than those who graduate from the University of California, so there does not seem to be any obvious unfairness to Cal State graduates there. Students that go to less accomplished state institutions do indeed pay less than students who go to more accomplished institutions. The cost of education Community Colleges provide is even cheaper, and part-time attendance easier (see College Board Advocacy & Policy Center, 2012), so education at these institutions could continue to be financed as it is now. Of course, we would have to run the numbers for each state's institutions, and it is possible that in some states things might come out differently, but it does not appear that there would be any significant hidden penalty that this method of financing effectively works upon the poor.[67]

There is another possible 'fairness' objection here, however, that I also want to address. Almost half of undergraduates in the University of California system currently receive state, federal, or university grants so that they pay no tuition at all to attend the university. Under my proposal, in contrast, the amount ultimately paid by each student will depend on his or her future income and not on the current income of the student's family. Many students who under the current system would be attending the University of California for free would under my proposal ultimately have to pay something for their education, and some would have to pay a great deal, although the amount will depend on their actual eventual income and the payments required would not have to be made until quite some time into the future. In other words, my proposal might be Kaldor–Hicks efficient (meaning the gains for some outweigh the losses to others), but it is not a Pareto improvement (meaning that while others gain, some do lose, and the losers might be students from poor families, even though they end up earning very high incomes themselves). Would this make my proposal unfair to these students or, more generally, unfair to the poor?

I think not. Education, unlike many other goods, gains value as it ages, rather than loses value. Why should the value of what is received be measured synchronically, that is, at one point in time, when it is first received, rather than diachronically, that is, over time, as it pays off? Why should a student who comes from a poor family pay nothing for

her education when she becomes an investment banker and earns millions, while a student from a rich family pays full freight even if she becomes a social worker and ultimately earns only a modest income? Now, I do not mean to suggest that the poor kid has exploited the rich kid in this case; I merely mean to suggest that we are perhaps using a second-best measure to determine who is poor and who is rich under the current system. If an education must be paid for up front, we have little choice but to proceed as we do now if we are to make any progress toward ensuring that educational opportunities are equally available to everyone. But if we follow my proposal, we can tie the amount paid to the actual future wealth of the individual involved. After all, it is the student who is the primary (although certainly not the exclusive) beneficiary of the education she receives, not her family. Is it not better, then, in the sense of being 'more fair', to tie the amount each student pays for her education to that student's future income rather than to the current wealth of her family? Is it not better, in the sense of the egalitarian ethos, which requires us to treat rich and poor families equally, not to require poor families to have to plead poverty in order to obtain an education for their children, when rich families do not have to prove they deserve their wealth in order to obtain an education for theirs? And is it not even more important to move from the current system to the one that I propose when we consider that not everyone receives all the financial grants they need to pursue a higher education, and that many have to borrow substantial sums or work long hours outside of school or even forego higher education for some time in order to raise money first and may perhaps be forced to forego higher education entirely?[68] Is this not even more of a concern when we consider that while this situation may now be beginning to stabilize in California, prior cuts are not likely to be restored and when the next financial downturn arrives things are only going to get worse (see Nagourney, 2013)? For every student who would ultimately be given a free ride through university under the current system, there are no doubt many who will face extreme financial pressure, and the uncertainty this creates is likely to have a chilling effect on the willingness of many students to pursue a higher education at all, something which in itself is objectionable. In these circumstances, I think the burdens and benefits of public higher education are more fairly distributed under my proposal than they are under our current practice.[69] While it is true that some individuals will in some sense end up worse off under my proposal than they would under current practice, these are all individuals who by definition can easily afford to and actually should pay more.

Indeed, my proposal is certainly more fair than those proposals that have been floated recently to charge *more* to those majoring in less lucrative subjects, as Florida is currently proposing to do (see Alvarez, 2012; Weissmann, 2012c). The effect of these proposals is to require the future poor to subsidize the future rich, a form of what Michael Harrington piquantly called 'anti-social socialism', and there is nothing fair or desirable about that. In contrast, my proposal requires the future rich, defined as those who actually receive higher incomes after trading (at least in part) on their undergraduate education, to subsidize the cost of educating the future poor. After all, as I have already noted, education is a joint not an individual enterprise; everybody benefits from living in an educated society where people have a wide range of skills and interests (in other words, having people educated in the humanities and the arts as well as science and engineering creates positive externalities – it is a public as well as a private good), and in conducting

such a joint enterprise there is nothing unjust about requiring the (financially) stronger members to help out the (financially) weaker members. There is no point to the argument that *your* part of *our* boat is sinking. If the boat is sinking, everybody drowns, and so it is in everybody's interest to keep the boat afloat even though everyone may not be equally contributing *financially* to that effort, assuming this is true. Accordingly, this version of the fairness objection to my proposal also fails.

Actually, my proposal not only fails to inflict any element of unfairness, it also helps reduce one element of unfairness that results from embedded racial and gender prejudices in our economy. Not only is there evidence that incomes currently vary significantly by undergraduate major, there is also evidence that incomes vary significantly by race and gender (see Carnevale et al., 2013). In other words, the incomes of members of racial minorities and women are less and in some cases substantially less than the incomes earned by white men with identical educational backgrounds and occupations. By requiring white men to pay the same percentage of their income for their education as women and minorities, my proposal automatically partially corrects for the unearned race and gender benefit that white men currently enjoy. (Of course, we might want to do something to correct this injustice more completely and directly, but that is not a job for my principle of financing.) If this unearned benefit ever goes away, however, this effect of my proposal automatically adjusts, and everyone with the same educational background and occupation will have the same median income and therefore will pay the same.

The final variation on the fairness objection that I want to address is this: those who end up earning substantially more than the average income for their cohort will pay more, and in some cases substantially more, than what it actually cost to provide them with their education. By requiring them to pay more than the inflation-adjusted average total cost of their education, are we not in effect exploiting the rich? Although there are many different definitions for exploitation floating around, the one I am most concerned with here is the one I set forth in my recent book, *Exploitation and Economic Justice in the Liberal Capitalist State*, which defines exploitation as 'the intolerably unjust extraction of value from another as part of a voluntary exchange transaction not otherwise prohibited by law' (Reiff, 2013: 187). For reasons that are set forth at length in that book but that I won't take the time to go over here, an extraction of value is 'intolerably unjust' if it exceeds 100% of the inflation-adjusted average total cost of what the good exchanged cost to produce. And arguably, students who end up earning high incomes may ultimately pay more than this amount.

But remember, this transaction is not a straight-forward exchange. Each student is receiving not only an education, but also a form of insurance policy – that is, a guarantee that she shall not have to pay more than a certain percentage of her income. The way that guarantee works, she could end up paying more, or she could end up paying less, but the average total cost of providing that guarantee must be figured on a cohort-wide basis, not an individual basis, for that is the way that costing out risk-pooling works. If this kind of insurance were deemed exploitive, all risk-pooling insurance would have to be – those who paid for insurance but did not suffer the covered loss (fire, death, financial loss, or whatever) would be exploited because they paid something and received nothing, and those who paid for the insurance and did suffer the covered loss would have exploited the

insurer because what they receive exceeds what they paid in premiums many times over. If we look at the cohort as a whole, in contrast, what the cohort will pay (absent extremely unusual circumstances) is nowhere near 100% more than the average total cost of providing education to the cohort as a whole. This means that even those students who become very high earners and pay many times more than their *individual* education actually cost to produce on an inflation-adjusted basis have not been exploited, for what they have paid for is their education *plus* the cost of the relevant risk-pooling insurance, and if we figure this latter bit out on a cohort-wide rather than an individual basis, the amount paid is what it actually cost to produce.[70]

Returning now to possible practical rather than fairness objections to my proposal, yet another one of these is that adopting my proposal might limit the ability of public institutions to attract the top students. For example, a gifted student might obtain admission to Harvard or some other Ivy League or prestigious private university with a full scholarship, yet also be interested in attending Berkeley. (Note that this is primarily a problem with regard to attracting gifted middle-class and wealthy students – few gifted poor students currently even *apply* to far-away private institutions, preferring instead to stay close to home no matter what (Leonhardt, 2013b).) But if all students admitted to Berkeley no matter how gifted must agree to pay 6% of their AGI during their prime earning years to the then owners of their cohort's education securities, Berkeley will be at a disadvantage in trying to attract the best students vis-a-vis its equally prestigious private competitors. And we have already decided that we cannot allow opt-outs, because this would have an unpredictable effect on the cohort's average salary and therefore would impair the marketability of its securities, so this potential solution is not open to us. But this does not mean there is nothing we can do here. Instead of offering gifted students a scholarship, what public institutions can do is give these students shares in their own cohort's securities from the institution's inventory. A student who receives enough shares to cover the cost of educating one student will be guaranteed that when the time to make her own payments comes due, all she will actually have to pay is the amount by which her own AGI exceeds the average AGI for her cohort.[71] If she makes less than this, she will actually profit. Although this still leaves the risk that attending a public institution might end up being more expensive than attending a private institution with a scholarship, only a small minority of students will actually have to pay more, these payments are by definition easily affordable, and they occur far enough into the future that few students are likely to find this possibility sufficiently concerning that they will alter their choice of which institution to attend if they feel the public institution actually offers the better education in their field of interest.[72] We could even protect against this possibility by buying insurance that would compensate the student if there were any shortfall.[73]

Other objections to my proposal might arise, and there may even be risks inherent in this method of financing that we may not be able to anticipate. So there is going to be some uncertainty about whether my proposal will work as anticipated until we have some experience of it actually doing so, and we won't have that experience until the securities start paying off in 15 years. Once the system of financing has been established and actually pays off, this uncertainty will go away, but in the initial stages this fear of unanticipated risks may deter some investors. But given the attractiveness of these

investments, I don't see how this fear could be widespread enough to prevent the offering of such securities from being successful. There is always a danger that unforeseen events may render even the most carefully thought out investment opportunity unsuccessful. But this is a risk that investors take every day, so I do not think the presence of this risk would in any way interfere with making these educational securities attractive. If there is some lingering concern about this, however, perhaps this system could be implemented experimentally in only certain states initially, and be adopted widely only after we have gained some experience with this method of financing and have a better understanding of whether any initially unforeseen problems are likely to come up. In any case, to prevent the spread of any unforeseen risk here, we would make it illegal for anyone to buy or sell credit default swaps on these payment promises except as direct micro-hedges. In other words, people could buy swaps but only up to the amount of educational securities they actually own, and hold them only for so long as they hold the underlying securities. Buying speculative swaps (i.e. effectively insuring securities one does not own) would be illegal.[74] This would ensure that people were able to hedge their investments if they wanted to but that any catastrophic failure of these investments would not spread as the sub-prime mortgage crisis did.

There is one last issue that I want to raise, although it is not really a potential objection but rather a point of clarification. And this is to ask whether public institutions should be given a monopoly on this kind of financing. (Obviously, this is only really an issue in the United States – in Europe, essentially all the relevant institutions would be public.) There is an argument for doing so, for private institutions do not necessarily release the same kind of information as public institutions, and what information they do release is often not as carefully scrutinized; therefore the chance of misstatements in the securities offerings of private institutions would be greater. There is also the possibility that if private institutions were allowed to engage in this kind of financing, they could offer securities that would in some sense unfairly compete with those offered by public universities. So it might be necessary or at least advisable to bar private institutions from participating in this method of financing, at least initially. But I can see arguments on the other side too. It may be that there is no downside to allowing nonprofit private educational institutions to engage in this kind of financing even if, unlike public institutions, they were allowed to offer other methods of financing as well. Because we need not resolve the issue of private participation in this method of financing now, however, I will leave further discussion of this issue to another day. Suffice it to say for now that like all new methods of doing business, it is best to start utilizing the method envisioned by my proposal slowly so we can work out the kinks before we try to make it the new standard. So initially at least, this method of financing should be available only to public institutions (and in Europe, only to a portion of the eligible public institutions). Once we have sufficient experience to understand how a more widespread use of this method of financing would work, we can revisit the matter then.

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Notes

1. See also Parker (2012), who notes that state funding for the University of California system has declined to the level it was at in 1997, when the system had 75,000 fewer students. A similar halving of government funding per student has happened in the United Kingdom. See Greenaway and Haynes (2003).
2. See also Porter (2013a), who notes that in 2000 the United States was fourth among its peers in the Organisation for Economic Co-operation and Development (OECD) in terms of the percentage of its population obtaining a degree from a 2- or 4-year institution, but by 2011 the United States had slipped to 11th place.
3. What we are seeing is a 'hollowing out' of the job market. While the number of high-wage and low-wage jobs has grown rapidly as a result of technical innovation, the number of mid-wage jobs – the kinds of jobs that we need if society is to produce and maintain a growing middle class – has lagged behind. See Autor (2010) and Autor and Dorn (2009).
4. What this amounts to is a decline in American exceptionalism, for until 'the early twentieth century America educated its youth to a far greater extent than did most, if not every, European country. Secondary schools in America were free and generally accessible, whereas they were costly and often inaccessible in most of Europe. Even by the 1930s America was virtually alone in providing universally free and accessible secondary schools ... [And], 'the United States expanded its lead in education in the twentieth century by instituting mass secondary schooling and then establishing a flexible and multifaceted higher education system' (Goldin and Katz, 2008: 12, 18).

   Indeed, until about 1969 an education at the University of California was virtually free, higher fees being introduced and the long attack on 100% public funding beginning with the administration of Governor Ronald Regan. See Bady and Komczal (2012).
5. For those who do want to investigate the causes of what has been happening here further, see, for example, Hofstadter (1963, esp. ch. 12).
6. The same thing has been happening in the United Kingdom, where a higher education system that was at one time free to all has been slowly moving toward the American system, where the best universities charge high fees supposedly ameliorated by scholarships for the poorest students and large student loans for the middle class. See, for example, Shepherd (2010). For criticism of this change in higher education funding in the United Kingdom, see Million + and London Economics (2013), which argues that reducing direct funding for higher education and switching to higher fees paid for by student loans will actually cost the UK Treasury six times more than it saves as well as lead to higher inflation.
7. *Brown v. Board of Education of Topeka*, 347 U.S. 483, 494 (1954).
8. On the identification of prime earning years, see *Political Calculations* (2007). We could, of course, use a shorter period, say either 35–44 or 45–54, depending on whether we thought a shorter period of payment at somewhat higher rates or a longer period of payment at lower rates was preferable, and whether it was better to start payments sooner rather than later. But

while average income might not vary much between the two periods, the 35–44 group is likely to have higher child-care costs, and thus it does not seem wise to impose a higher rate of repayment on them. On the other hand, freeing them of any payment obligation whatsoever and imposing this exclusively on the older group means we have an awfully long time to wait until payments start rolling in. So for purposes of this article, I will go with the full 20-year period of payment. But it does not seem that there are significant moral issues riding on this choice one way or the other. Those who think some other choice might be better are free to recalculate the figures I present and make their argument for another of these alternatives.

9. There is, however, one special feature of graduate education that I do want to mention. Unlike other graduate programs, most law schools are profit centers for their universities. In other words, law schools often bring in more money in fees than their average total cost per student, the excess being used to finance other aspects of the university's operations. But I am not suggesting that there is anything wrong with this. On the contrary, I am mentioning this simply because it is an attempt to accomplish the same thing indirectly that my proposal would do directly – that is, make those who earn more trading on their education pay more for it. And while some are concerned that law school fees have gotten so high now that it may no longer make economic sense to attend law school (see, for example, Bronner, 2013), this problem would not arise were we to follow my proposal rather than simply try to tweak the current system.
10. One other theorist has independently developed and floated a similar idea, although his notion of an equity participation seems to be far more limited than mine (see Zingales, 2012b). Zingales also mentions this proposal in his book, but he gives no further details of it there (see Zingales, 2012a: 152). Given the lack of details in his proposal, it is unfortunately not possible for me to make an informed comparison of Zingales' proposal and mine.
11. See, for example, Autor and Dorn (2013): 'Spurred by growing demand for workers performing abstract job tasks, the payoff for college and professional degrees has soared; despite its formidable price tag, higher education has perhaps never been a better investment'; Rampell (2012c, 2012b, 2013a, 2013c, 2013d), O'Brien (2012), Horn et al. (2012) and U.S. Department of the Treasury (2012) (median weekly earnings for a full-time, full-year bachelor's degree holder in 2011 were 64% higher than those for a high-school graduate – US$1,053 compared to US$638); Rampell (2012a) (even factoring in debt, the return on investment for the student going back to school is greater than that from investing the same tuition money in the stock market, long-term Treasury bills, housing, corporate bonds, or gold); and Tankersley (2012) (noting that education, not merely working hard, is now the key to moving up). And a higher income is not the only benefit of higher education. Life expectancy is also greater for those with a higher education (see Tavernise, 2012).
12. Because everyone pays the same percentage, this financing scheme is not redistributive, at least not in the strict sense, but by making education more accessible to the poor and middle class than it is now it will indirectly have some redistributive effects. Nevertheless, these are side effects, not objectives of the plan. For a direct response to the problem of economic inequality and suggestions about what we should do about it, see Reiff (2013).
13. See Wolff (1998), who argues that luck egalitarianism undermines the egalitarian ethos by forcing the unlucky to engage in shameful revelation about their inability to support themselves in order to get government assistance. See also Wolff (2010: 343–346). For a contemporary example of just this problem, see Lieber (2012b) (describing the lengths a disabled unemployed man with serious health problems must go to in order to get his student loans discharged in bankruptcy).
14. See also Consumer Financial Protection Bureau (2012).

15. For more on this method of construction, see generally Das (2005: ch. 4).
16. Contrast this with one of the proposals currently under consideration to privatize student debt in the United Kingdom: the rate on outstanding student loans would be retroactively raised, requiring what could be years of extra repayments even for those who left university long ago, and the loans would then be sold to private investors. See Chakrabortty (2013).
17. State governments will have something constructive left to do too, but I will get to that in a moment.
18. This is probably the biggest problem with Oregon's 'Pay it Forward, Pay it Back' initiative that proposes using a similar method to finance public higher education, although the Oregon plan also provides that repayments would begin much sooner than I have proposed (4 years instead of 15 years after graduation), take longer but be made at a lesser rate, and most importantly, instead of shifting the burden of bridge financing and defaults to the market it leaves this mostly on the state. See Dudley (2013). For these and other criticisms of the Oregon plan, see Holt (2013).
19. The default rate would certainly be less than the default rate on student loans, which is currently 7.9% (see Weissmann, 2012a), given the fact that the amount to be paid is pegged to income. This in itself would offer potential savings of up to US$1.4b in inflation-adjusted dollars, which is what the US Department of Education alone paid to collection agencies and other groups to hunt down defaulters. See Martin (2012c). In any event, a similar enforcement approach has been successful at keeping defaults to a minimum in Australia, where student loan repayments are contingent on income. See Norton (2013).
20. For example, Treasury Inflation Protected Securities, or 'TIPS', are currently (as of December 2012) offering a negative 0.75% rate of return (9/28/12 nine year TIPS bond due 7/15/22), meaning that unless inflation increased more than this before the end of the term, an investor would get back less money in real dollars than he or she invested. Yet these investments have no trouble selling.
21. See, for example, Porter (2012): 'Investing in children is not just a matter of fairness but of economic vitality . . . Investing in education is about as good an investment as a society can make'.
22. See, generally, Bowles et al. (2005) and Chapman and Ryan (2005), who show that income-contingent plans improve access to higher education for middle and lower income students.
23. See Lieber (2013), who concludes that students who work fewer than 30 hours per week are 1.4 times more likely to graduate within 6 years and their grades are likely to be better too (Martin and Lehren, 2012).
24. See Stiglitz (2013): 'Young people from families of modest means face a Catch-22: without a college education, they are condemned to a life of poor prospects; with a college education, they may be condemned to a lifetime of living on the brink'; and DeParle (2012), who describes the problems of poor students now burdened by crushing debt and still unable to finish their educations.
25. The proposal to tie interest rates to the market rather than leave them at the fixed rate previously set by Congress is in part a reaction to the fact that interest rates have now dropped so low that many students who have borrowed through the program are paying more than they would be if they were repaying private adjustable loans – indeed, so much more that the Congressional Budget Office (CBO) estimates the Department of Education will earn a US$51b profit this year from the student loan program, more than the nation's most profitable companies and roughly equal to the profits enjoyed by the four largest US banks combined. See Nasiripour (2013). Tying rates to the market will prevent this in the future, but it will also leave students subject to swings in the other direction – for most of the history of the student loan program the fixed rate has been lower than the market rate; now that subsidy will no longer be available.

26. Associated Press (2013c) (quoting Federal Reserve Bank of New York quarterly report on consumer credit).
27. And this rapid increase in student debt shows no sign of abating. See Associated Press (2013a) (noting that since January 2011, the amount of outstanding student and auto loans has risen by US$312.6b, whereas other forms of consumer debt have risen only by US$16b); Reuters (2013) (but 'student debt rose again, with outstanding balances up $8 billion to $994 billion in the second quarter'); Associated Press (2013d) (while credit card debt is now 17% below its peak in July 2008, the auto and student loan debt category, which is not separately broken down, is up 8.1% since last year, has risen every month but one since May 2010, and is now at a record high of US$2t).
28. This issue is further explored in Bös (2000) and Buchanan (1963).
29. Of course, this would require responsible use of the money saved. Not only would the legislature have to use some of this money to support elementary and secondary education, it would also have to do a much better job distributing these funds equitably than it currently does. See Porter (2013b) (noting that among the 34 OECD nations, only the United States, Israel and Turkey give more educational resources to schools serving rich students than to schools serving poor students). My proposal is therefore not 'legislature proof'. If the legislature wants to pander to voters by returning all the savings my proposal would create in the form of tax cuts, or if it wants to distribute these savings inequitably, it is free to do so. Of course, there is much more to say about what form of distribution would be equitable, but that will have to wait for another day. No matter what, however, even if politics intrudes and adopting my proposal turns out not to help K-12 education (or not help as much as it could), my proposal would still ensure that public higher education is adequately funded and open to all.
30. The United Kingdom and certain other European Union (EU) nations that also have highly developed and successful higher education systems would be prime candidates for financing their systems in a similar manner. Because of the free movement of citizens within the EU, however, enabling legislation would have to be enacted both by the country issuing the relevant education securities and the EU itself, since all EU member states would have to agree to lend their taxation and regulatory infrastructure to ensure payment of the promised amounts no matter where each student ends up working. Students who were to attend the issuing universities from outside the EU would be excluded from the program and would have to pay for their education up front, as they do now, unless acceptable mutual enforcement agreements with their home states, and perhaps even their home regions, were made.
31. Even more of this burden would be borne by the taxpayers if an Obama administration proposal to expand this program to allow forgiveness of previously ineligible loans were to become law. See Mitchell and Belkin (2013). But this is exactly why this proposal is unlikely to become law, and why the loan forgiveness route is unlikely to ever command sufficient Congressional support to provide a solution to the ongoing problem of how to pay for higher education.
32. For a description of the Australian Plan and some of its effects, see Chapman and Ryan (2005).
33. A similar approach has been recommended by the Liberal Democrats in the United Kingdom. Under the Lib Dem proposal, education would require no up-front payments, and a student would only begin to contribute to offsetting the prior cost of their education once that student reaches a certain income level (in this case £21,000 per annum). But while the system of contribution proposed is somewhat progressive, it tops out at £50,000, thereby leaving high earners contributing a smaller proportion of their income than those in the middle income brackets, and it also still leaves the taxpayers funding a good deal of the actual cost. See, for example, Liberal Democrats (2009, 2012).

34. President Obama has proposed eliminating this particular tax as part of an extension of the cap and forgive program, but at this point that proposal seems to have little chance of success.
35. The idea for such a method of financing is usually sourced to Friedman (1955). See Krueger and Bowen (1993: 194 n. 1). The seed of this idea, however, actually goes back even earlier than this. See Friedman and Kuznets (1945: esp. p. 90).
36. One simulation puts these costs at about 50% of the total amount the government lends or guarantees. See Barr (2004: sec. 3).
37. For further discussion of the various income-contingent student loan programs in effect throughout the world, see Johnstone (2005) and Chapman (2005). See also Barr (1993) and Reischauer (1989: 33–55).
38. On the importance of framing in these situations, see Tversky and Kahneman (1981) and Thaler (1999).
39. For more on loss aversion, see Tversky and Kahneman (1991) and Kahneman et al. (1991).
40. Future discounting refers to our well-documented tendency to discount future benefits and burdens excessively when balancing them against benefits or burdens available now. See Reiff (2005: 86–87), Elster (2000: 25–26) and Nozick (1993: 14–15).
41. It is not clear from the proposal whether this rate of interest would be the market rate or a subsidized rate.
42. For a variation on this proposal, see Barr (2010).
43. Indeed, it seems that the problem of adequately securing an investment in individual human capital, despite the obvious attraction of having such an interest (see Friedman and Kuznets, 1945: 90), is what has prevented the idea of using equity rather than debt to finance public higher education from being taken forward for some time. See Friedman (1955: 100–104).
44. But we do not have to do this. There is actually no need for these investment vehicles to be limited to the students of a single state's university system. For California, it makes sense to do so, but for smaller, less populous states, or states where each campus has very different characteristics, it may make sense to allow them to join with the campuses of similarly situated state universities in other states and offer securities on a joint basis. The important thing for each such consortium is that average total cost per student and average income are currently similar.
45. Actually, the current yearly cost per student is closer to US$15,000. The US$20,000 figure is what providing an education cost in inflation-adjusted dollars in the University of California system for the 1990–1991 academic year, when the amount spent per student was near its height (see UC Office of the President, 2011; University of California, 2012–2013: 13). Because we are trying to restore funding to a more acceptable level, however, the higher figure is the one I have chosen to use. If one used the lower figure, this would simply make all the calculations that follow on even more attractive.
46. Note that we already finance some fixed costs of higher education through the market by issuing what are called 'tuition revenue bonds', or sometimes 'general revenue bonds'. About 20 states now use this type of financing for capital projects for institutions of higher learning, including California (see Adams, 2013). If we wanted to continue to use this method of financing fixed costs we could continue to do so, and this would drop the percentage of future income that students would have to contribute during their prime earning years significantly, but it would also leave the taxpayer on the hook for these fixed costs for, tuition is not typically used to actually pay off these bonds. Instead, they are merely secured by tuition should the bond issuer default. The bonds are actually serviced by grants from the state legislature out of the general fund, as they are in Texas (see Texas Higher Education Coordinating Board, 2010), or by the issuing university out of non-tuition revenue, as in California (see Press Release, 2010). In any case, there is nothing about issuing the education securities I have in

mind that is inconsistent with continuing to employ either of these bond financing methods, should we decide this is what we want to do. Nor would my method of financing be inconsistent with using such a method of bond financing even if the bonds were serviced through tuition receipts. In that case, a portion of the revenue for each securities offering would simply have to go to existing bondholders to cover whatever current payments were due and the cost of this figured into designing the securities.

47. Of course, I have used the target rate as a stand-in for the expected rate of inflation simply for purposes of illustration – it is the expected rate of inflation at the time, not the target rate, that would be used to calculate our base figure. And the expected rate should be based on the Higher Education Price Index (HEPI), not the Consumer Price Index (CPI), for the former is a more accurate measure of education costs. See Griswold (2006).
48. See also Mishel et al. (2012: esp. p. 59, Table 2.1 (showing general rise in average real income)).
49. For those interested in making this calculation themselves, the relevant data can be downloaded from *The World Top Incomes Database* at http://g-mond.parisschoolofeconomics.eu/topincomes/#Database (select average income per tax unit). Note that median income has fallen somewhat over the last 10 years, but not *average* income, meaning that society has become more unequal. But this is a reason to support my proposal, not reject it.
50. The University of Manchester in the United Kingdom, for example, is currently issuing £300m in bonds due 2053 that pay 4.25%, meaning that purchasers who buy these bonds are betting that a 4.25% return will cover both inflation *and* provide them a profit. See StaffNet (2013). If the Manchester bonds can clear the market, then a security that offers a 3% return over inflation at even less risk, which is effectively what I am proposing, should do so easily.
51. It is not quite like this, because payments don't start straight away but in 15 years, and the 3% real rate of return assumes payments do begin right away, so the effective real rate of return on these securities using this method of calculation would be less than 3%. But it should still be enough to make our securities attractive, or at least attractive enough to try in our initial offering.
52. Mid-career salaries for six of the University of California (UC) campuses are actually higher than this. The exact figures are as follows: Berkeley (US$111,000); San Diego (US$101,000); Irvine (US$97,200); Davis (US$97,000); Santa Barbara (US$96,200); University of California, Los Angeles (UCLA) (US$95,300); Riverside (US$83,100); and Santa Cruz (US$77,500). See PayScale (2013–2014). And both Riverside and Santa Cruz are much smaller than the other campuses – indeed, taken together they are smaller than UCLA alone. So the US$90,000 figure is actually very conservative for the system as a whole.
53. For those who would like to see this calculation spelled out in more mathematical language, here it is: the percentage amount Px of future AGI to be securitized equals the percentage amount Py of current average AGI for graduates of this institution/s C that would produce amount X, where X equals the yearly payment amount A on a hypothetical loan at base amount B over set number of years to repayment once payments begin N at real rate of return R, where base amount B equals current average total cost of education E times average number of years to graduation times the expected rate of inflation Ie for this period.
54. Some of these securities would no doubt be purchased by the university itself out of its endowment – for why not invest in itself? Perhaps each university might purchase the entire equity tranche (these would consist of a relatively small percentage of the offering, perhaps 2 or 3 but certainly less than 10%), and leave the more risk-free tranches to the market, or perhaps each university would want to purchase some securities from each tranche. Regardless of the tranche from which these securities came, however, the return on risk for the university would be better than almost any other security the university could possibly purchase, for a

3% real return is better than most universities earn even if they have individually managed endowments. See Stewart (2012), Martin (2012b) and National Association of College and University Business Officers and Commonfund Institute (2011) (showing average endowment performance over 10-year period equivalent to between 0% and 2.2% real rate of return).

55. This does not mean that the offering institutions will be clueless as to how much money the offering is likely to raise until it is over. As with all securities offerings, the investment banker acting for the offeror will usually be able to provide a fairly accurate estimate of how the market will react to the offering (this is what they get paid for), and (if the bank also acts as an underwriter) it will also guarantee a certain minimum (again, this is what they get paid for). If the underwriter makes a mistake here, it may take a bath, but this rarely happens, and the offering university gets its money no matter what. And while there may be some uncertainty regarding the popularity of these securities the first time they are offered, this will largely be eliminated thereafter. In any case, whatever uncertainty does exist, even at the initial offering, it will be no greater than the uncertainty stemming from the possibility of budget cuts or increases that result from last minute shifts in the political and economic landscape. If anything, public universities should have a more secure and predictable basis for future budgetary planning than they have now, not less.
56. This is because the income distribution of each cohort is likely to highly skew. In other words, rather than a normal distribution, where the median and the mean are at or near the same point and the number of observations rise to and then decline from the center, it is more likely that there will be a few very high earners that increase the mean but hardly change the median at all. Thus, the number of people who pay substantially more on their promise than a typical security would generate is likely to be small. And they simply should pay more, since they have benefited more from their education, and have overwhelmingly greater means than the vast number of their classmates.
57. Note that this adjustment is already required of anyone filing a California tax return. See Franchise Tax Board, Instructions for Schedule CA (540).
58. For a discussion of the current tax treatment of tuition and other education expenses, see IRS Publication 970 (2013).
59. One way to ensure this is to put the name of the government official (actually, not nominally) in charge of reviewing and approving each particular offering on the offering itself. (Not the name of the political appointee in charge of the agency or the division with regulatory responsibility, but the actual individual assigned within the agency to perform the review of the particular offering.) The reputational concern this generates should be more than sufficient to ensure that regulatory review is appropriately stringent.
60. For further discussion of my views on the unemployment problem, see my *On Unemployment* (in progress).
61. Following the preparation and circulation of the initial draft of this article, I became aware that Chris LoCascio, editor of the student newspaper at the University of California Riverside, had recently floated an equity participation proposal that contained some of the same elements as mine. See FixUC: UC Student Investment Proposal (http://www.fixuc.org/). While the original FixUC proposal did not include any provision for how student promises to pay would be enforced, in a later amendment LoCascio did propose an enforcement role for the IRS. Rather than raise money through securitization, however, the FixUC proposal assumed student payments would go to the university directly, starting as soon as each student became employed. I have my doubts that such an approach would be feasible or that the numbers would work out as LoCascio suggests given the lower income to which his proposed 5% rate of payment, which would itself be subject to various credits, caps, and adjustments, would attach. The FixUC proposal also provided that a specified portion of the state budget be

devoted to education, something which might be thought admirable but which is probably unenforceable and almost certainly politically infeasible. Besides, it seems to me that this kind of microeconomic management is a political decision that is more properly left up to the electorate and their representatives, rather than something that should be fixed in stone as a constitutional requirement. In any event, it seems that the mammoth effort required to do this would only create an unnecessary distraction from the effort to encourage a rethinking of the available methods of education finance. My proposal and that of FixUC also differ in many other ways, both large and small. Nevertheless, some of the important basic ideas contained in my article and even some of the arguments for these ideas can also be found in the FixUC proposal in one form or another. Anyone interested in these ideas would accordingly benefit from further study of the FixUC proposal.

62. See also Weissmann (2012b). Unemployment rates follow a similar pattern. See Carnevale and Cheah (2013).
63. Note, however, that these figures do not account for the fact that many students who choose an ostensibly less lucrative undergraduate major often go on to graduate school (some 41%) and therefore ultimately end up earning a very good income. Because their admission to graduate school is largely dependent on their performance as an undergraduate, their ultimate incomes should indeed be tied to their ostensibly less lucrative undergraduate education, at least in part (see Carnevale et al., 2013: 132–134). Thus, the comparison only looks as bad as it does for the humanities and the arts if we look just at those who achieve nothing more than an undergraduate degree. For reasons I will get to in a moment, however, the more accurate and no doubt smaller all-things-considered differences in income-generating potential between undergraduate majors in their prime earning years turns out not to matter anyway for purposes of the argument I am making here, so I will not discuss these figures further.
64. In light of this, why continue to call these institutions of higher education ‘public’? Well, I suppose we could call them anything we want, but there are still good reasons to think of them as public: they are funded by the public in the same way that publicly traded companies are, and they are also public in the sense they are open to the public at no cost at the point of entry while private institutions are not. And government would, of course, be free to provide subsidies to the education services provided by these institutions too, thereby keeping the percentage promise required from incoming students down. Finally, it would be a mistake to underestimate the importance of the enforcement and administrative services the government will provide in any case; without these services the plan will not work, and the cost for this will most likely be borne by the public. But the word itself is not important – if some other term strikes someone as a more appropriate way to refer to institutions financed in this way they are free to use it.
65. See Delbanco (2012: 26): ‘Among those who do get to college, high-achieving students from affluent families are four times more likely to attend a selective college than students from poor families with comparable grades and test scores’; Gerald and Haycock (2006); and Satz (2007: 624): ‘At elite colleges, those at the bottom 28 percent of the socioeconomic scale make up only 3 percent of the student population’ (footnote omitted).
66. For a list of mid-career incomes by Cal State campus, see *PayScale* (2013–2014).
67. If there was, this might indicate that more resources were being consumed by lesser institutions than their accomplishments deserve, and so we might want to engage in some re-budgeting before we made this method of financing available, but I don’t see how this would indicate there is something wrong with the method of financing itself. Indeed, the 6% figure (the amount required to cover current average total costs given current average income during prime earning years for previous cohorts) provides a useful ‘rough guide’ for telling us

whether a university is conducting itself in a financially responsible fashion or borrowing excessively in order to lure more or better students (see Martin, 2012a). It can also be used as a way of telling us when other fixed costs like administrative salaries have grown too high relative to the value of the education services provided.

68. Borrowing to buy cars and to attend school, for example, continues to rise and reached a seasonally adjusted record of US$2.77t in November 2012. See Associated Press (2013b).
69. To put this in Rawlsian terms, the question here is whether requiring some currently poor students to pay later when they would not have to pay anything ever under the current system is in effect making the least advantaged worse off, something that would violate the principle of economic justice Rawls calls 'the difference principle'. According to that principle, social and economic inequalities are justified only if they work to the greatest benefit of the least advantaged, meaning that some lesser degree of inequality would make the least advantaged even worse off (see Rawls, 1971, rev. ed. 1999: 65–73, 2001: 42–43, 61–66). To apply this principle, however, we must decide *when* the determination is to be made before we can determine *who* the least advantaged are. If everyone must pay up front, those who have few current financial resources now are at least arguably the least advantaged. But if everyone only pays 10–15 years into the future, and then only a set, modest percentage of their income, it seems that current family wealth is irrelevant to deciding who is the least advantaged. That determination must instead be made at the time payments begin, and at that time it is the current resources of the student himself or herself, not the long-ago resources of his or her family, that matter. There is accordingly nothing in my proposal that makes the relevant group of least advantaged worse off as a group than they would be under the current system, regardless of its effect on particular individuals.
70. For a discussion of the nonexploitive pricing of similar insurance schemes, see Reiff (2013: 248–249).
71. This assumes, of course, that there are no adverse tax consequences that prevent the payments in and payments out from cancelling each other out, but that is simply something that we will have to ensure as part of the enabling legislation that will need to be enacted to operationalize my proposal.
72. Remember also that the best high-school students are *not* necessarily the ones most likely to go on and earn high incomes. Michael Bloomberg, for example, who is now the most generous living donor to any educational institution in the United States, having given a staggering US$1.1b to his alma mater, Johns Hopkins, was 'a middling high school student . . . who had settled for C's'. See Barbaro (2013).
73. This, for example, is what public universities might do for gifted athletes to ensure they do not pay any more than they would on an athletic scholarship to a private university. Of course, public universities could also ensure there is no deficiency simply by offering athletes as well as academically gifted students *more* shares in their cohort's securities than would cover just one student's education, but my view is this should be prohibited, for we do not want to allow bidding wars for these students to become unlimited. Public institutions could still offer scholarships to cover living expenses or provide housing or other subsidies for their best students, however, as well as to student athletes, for these are not covered by the relevant securities, and the university can offer partial scholarships too in the form of shares worth something less that the average total cost of educating a single student, so there is as much flexibility here in designing incentives under my proposal as there is now where scholarships largely take the form of cash payments or credits.
74. For further discussion of and argument for, this see Reiff (2013: ch. 6).

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