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Discounting and Restitution

Author(s): Tyler Cowen

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## I. INTRODUCTION

The issue of restitution for past injustices has taken on great importance in the last decade. Around the world, native inhabitants and indigenous peoples are seeking legal remedies for the unfair treatment and resource expropriations suffered by previous generations. A variety of Indian tribes, both in the US and in Canada, have sued for restoration of previous lands or compensation. Some black leaders in the US have proposed that black Americans are due restitution for the previous injustices of slavery.<sup>1</sup> The US government has already paid compensation to descendants of the Japanese-Americans imprisoned in internment camps during the Second World War. In New Zealand, the Crown has begun to settle land and resource claims that have been filed by Maori. Although Western governments had ignored restitutional pleas for many decades, Western courts are now beginning to recognize the validity of claims for intergenerational restitution.

These cases involve broadly similar issues. First, some significant and unjust loss was suffered in the past. Second, most or all of the individuals who suffered the losses are now dead. Only their descendants remain.

What rate of compounding should be applied to restitutional claims made across generations? If one billion dollars worth of resources was

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1. See Boris I. Bittker, *The Case for Black Reparations* (New York: Random House, 1973); Richard F. America, ed., *The Wealth of Races: The Present Value from Past Injustices* (New York: Greenwood Press, 1990); and Robert S. Browne, "The Economic Basis for Reparations to Black America," *The Review of Black Political Economy* 21 (1993): 99–110.

stolen two hundred years ago, how much should be paid to current descendants? Should one billion dollars be paid? (The one billion figure is in real terms; I adjust magnitudes for inflation throughout the paper.) Or should the courts award more than one billion dollars, compounding the initial sum at some positive rate of interest for two hundred years? More generally, how should we compare values over different lives or generations?

The quantitative importance of the compounding decision is significant, especially if the loss was suffered in the distant past. Consider the loss of a billion dollars worth of resources in the past. At a one percent rate of compounding, for a loss suffered one hundred years ago, positive compounding suggests a reward of 2.7 billion dollars rather than one billion. For a loss suffered two hundred years ago, compounding increases the reward to 7.3 billion dollars. At a three percent rate of compounding, the awards jump to 19.2 billion dollars and 369.4 billion dollars respectively. At a five percent rate of compounding, the sums rise to 131.5 and 17.3 trillion dollars. Positive compounding gives descendants of previous victims an extraordinarily high claim on current output. James Marketti, in his estimate of the restitution due from slavery, comes up with a figure of over \$53 trillion for 1983 US dollars, using a compounding rate of six percent.<sup>2</sup> The choice of compounding rate, in quantitative terms, can be more significant than the choice of whether or not to award restitution at all.

The stance of the courts on compounding rates has been difficult to classify. Typically the courts have awarded lump sum awards for previous injustices, without breaking such awards down into principal and interest. In the case of the Passamaquoddy tribe in Maine, tribe members were awarded a lump sum of cash and some undeveloped lands. The families of Japanese-Americans interred during World War II also received lump sum payments, with a baseline sum of \$20,000 for those who were still alive. The settlement claims for New Zealand Maori, either awarded or pending, do not typically retribute for the full value of assessed damages.<sup>3</sup>

2. James Marketti, "Estimated Present Value of Income Diverted Through Slavery," in Richard F. America, ed., *The Wealth of Races*, p. 118.

3. For a summary discussion of some intergenerational restitutional awards, see William Darity, Jr., "Forty Acres and a Mule: Placing a Price Tag on Oppression," in Richard F. America, ed., *The Wealth of Races*, pp. 3-13.

It is difficult to infer any specific attitude of the courts toward compounding per se. The awards have been constrained by budgetary factors and by public pressures, rather than by abstract reasoning about intergenerational justice. Nonetheless the relatively small sums of these awards imply that the courts do not insist on full restitution, compounded at market rates of interest. By awarding relatively small sums, the courts implicitly are using zero or negative compounding.

Social scientists, although they have given little systematic attention to the foundational issues involved, typically have recommended positive rates of compounding. Robert S. Browne, for instance, recommends the use of compounding rates ranging from three and five percent. He draws these figures from real interest rates and from real growth rates. Larry Neal recommends a real interest rate of at least three percent, given that the U.S. economy has grown at least that fast. James Marketti uses rates of compounding ranging from two and a half to six percent. Norman Girvan and David H. Swinton also suggest positive compounding, again based on market rates of interest. These measurements are motivated by standard cost-benefit practices, which typically apply a positive rate of discount to future costs and benefits, and a positive rate of compounding to past losses.<sup>4</sup>

4. See Robert S. Browne, "The Economic Basis for Reparations to Black America," pp. 104–105; Larry Neal, "A Calculation and Comparison of the Current Benefits of Slavery and an Analysis of Who Benefits," in Richard F. America, *The Wealth of Races*, 91–105; and James Marketti, "Estimated Present Value of Income Diverted Through Slavery," Norman Girvan, "The Question of Compensation: A Third World Perspective," *Race* 16 (1974): 53–82; and David H. Swinton, "Racial Inequality and Reparations," in Richard F. America, ed., *The Wealth of Races*.

Rational choice treatments of compounding across generations are scarce; Richard F. America, ed., *The Wealth of Races*, provides the only systematic treatment. The writers in that collection support positive compounding and do not consider zero compounding as an alternative. A separate literature focuses on discounting the future, rather than compounding from the past. Colin Price, *Time, Discounting, and Value* (Cambridge, Mass.: Blackwell, 1993), presents the most recent survey; John Broome and David Ulph, *Counting the Cost of Global Warming* (Cambridge: The White Horse Press, 1992), and John Broome, "Discounting the Future," *Philosophy & Public Affairs* 23, no. 2 (Spring 1994): 128–56, offer two recent and original contributions. Robert Lind, et al., *Discounting for Time and Risk in Energy Policy* (Washington, D.C.: Resources for the Future, 1982), offer an earlier and still valuable overview of the relevant issues. Tyler Cowen, "Consequentialism Implies a Zero Intergenerational Rate of Discount," in Peter Laslett and James Fishkin, eds., *Philosophy, Politics, and Society*, sixth series (New Haven: Yale University Press, 1992), pp. 162–68, and Tyler Cowen and Derek Parfit, "Against the Social Discount Rate," in Peter Laslett and James Fishkin, eds., *Philosophy, Politics, and Society*, pp. 144–61, focus on intergenerational considerations. Robert Solow, "The Economics of Resources or the Resources of Economics," *American Economic Review* 64 (1974): 1–14 rejects positive discounting of con-

I do not seek to assess the general validity of the cost-benefit approach. Rather, I wish to examine whether cost-benefit analysis, properly understood, does in fact supply a case for positive compounding at market rates of return. The proper rate of compounding will depend upon what ends restitution seeks to achieve, whose preferences we use to assess the loss, what the original victims would have done with the real resources, and how we define time preference across generations. I will outline which initial assumptions generate which respective compounding rates.

I find that under a wide variety of assumptions, we should not use full compounding at the economy's real rate of return, contrary to established wisdom. More generally, economic analysis does not yield a clear answer for the appropriate rate of compounding across generations. Instead court awards must be based on a direct estimate of the moral value of intergenerational restitution, Section II of the paper presents the analytical framework for what follows, and spells out some assumptions and definitions. I outline some principles upon which restitutional settlements might be based. Sections III and IV examine these assumptions and show which rates of compounding they imply. Section V presents some concluding remarks.

## II. THE PROBLEM AND SOME ASSUMPTIONS

I assume that the previous resource transfers (thefts) under consideration were unjust with no moral ambiguity. All members of society have agreed that intergenerational restitution is in order. The identities of the original victims and the identities of their subsequent descendants are known without doubt. Since the theft there has been no genetic exchange between the descendants of the thieves and the descendants of the victims. I also assume that numbers and identities of the subsequent

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sumption units across different generations in the forward-looking case. John Rawls, *A Theory of Justice* (Cambridge, Mass.: Harvard University Press, 1971), pp. 294–98, also supports neutrality across generations. For two relatively technical economic treatments, which do not focus on intergenerational issues, see David F. Bradford, "Constraints on Government Investment Opportunities and the Choice of Discount Rate," *American Economic Review* 65 (1975): 887–99, Robert C. Lind, "The Shadow Price of Capital: Implications for the Opportunity Cost of Public Programs, the Burden of the Debt, and Tax Reform," in Walter Heller, Ross Starr, and David Starrett, eds., *Essays in Honor of Kenneth J. Arrow*, Vol. I (London: Cambridge University Press, 1986), pp. 189–212, and R. Mendelsohn, "The Choice of Discount Rate for Public Projects," *American Economic Review* 71 (1981): 239–41.

generations are invariant with regard to the theft, thus ruling out the problems of varying identities raised by Derek Parfit.<sup>5</sup>

For the time being, I consider restitutorial motives only, and ignore other factors which may influence the size of the settlement, including retribution, deterrence effects, compensation for the sheer injustice of the previous theft, or compensation as a symbolic statement of redress. Rigorous definitions of restitution will be offered further below.<sup>6</sup>

I conduct a partial equilibrium analysis. Specifically, I take as given rates of time preference, savings rates, and real rates of return on investment. In addition, I assume that market rates of return reflect the social value of investments, even though a full treatment would require adjustments for positive and negative externalities.<sup>7</sup>

In the scenario I consider, one group, the Settlers, stole one billion dollars' worth of real resources from another group, the Natives, two hundred years ago. We also know the going market rate of return over the last two hundred years. Given this context, I consider two standards for how restitution should be determined. The first restitutorial standard focuses on the loss suffered by the original victims and seeks to return that loss to the descendants, after adjusting for the passing of time. The second standard focuses on the losses suffered by members

5. See Derek Parfit, *Reasons and Persons* (New York: Oxford University Press, 1984). One of Parfit's points, applied to restitution, would run as follows. The exact individuals who comprise later generations would not have been borne, had the theft not occurred. (Many acts of theft have far-reaching social consequences and affect which marriages take place, when intercourse occurs, etc.) Can it therefore be said that later generations have benefited from the theft, and are owed no restitution at all? The assumption of fixed identities abstracts from these conundrums. For a further consideration of Parfit's dilemmas, see Tyler Cowen, "What Do We Learn from the Repugnant Conclusion?" *Ethics* 106 (1997): 754–75.

6. Jeremy Waldron, "Superseding Historic Injustice," *Ethics* 103 (1992): 4–28, considers why claims for intergenerational restitution may weaken over time. Even if we accept these arguments, the question remains what rate of compounding we should apply to the weakened claims. On restitution more generally, see Randy E. Barnett, "Restitution: A New Paradigm of Criminal Justice," *Ethics* 87 (1977): 279–301.

7. Justice may dictate altering rates of intergenerational saving and investment. The real rate of return and the real rate of time preference, in a first-best normative optimum, might differ from the real rates of return and time preference which we observe. Without meaning to discriminate against such arguments, I assume that restitution is the only policy instrument at hand. The court must take real rates of return and time preferences as given in determining its award. Policymakers cannot make global adjustments in the economic system, even if such adjustments would be desirable in terms of some more comprehensive normative theory.

of the current generation, who might have otherwise inherited wealth from their predecessors.

For both standards I abstract from issues of metric by assuming that the government possesses an adequate medium for restitution, such as land or cash. In many real-world cases, the available metric of restitution affects the final decision. Sometimes a stolen resource is irreversibly destroyed or desecrated. The descendants might wish to have the original resource back (e.g., an ancestral burial ground), and might not regard any sum of cash as an appropriate substitute. These cases may prompt at least two responses. First, we may wish to increase the cash award to compensate the victims for their irretrievable loss or for their high subjective value of the resource. Alternatively, we might believe that if the original resource cannot be returned, no restitution is due at all; the latter standard has been applied in some thefts of cultural property.<sup>8</sup> Again, without meaning to deny the importance of such issues, I focus on the choice of discount rate and proceed by assuming that a suitable metric for restitution is available.

Restitution standard one focuses on measuring the loss to the initial victims.

*Restitution standard one:* The courts should give the victims' current descendants the present value of the resources that were stolen from the earlier generation. Present value is to be defined in terms of standard cost-benefit techniques for converting past values to present values, namely the estimation of a discount rate based on time preferences.

Principle one aims at restoring the loss of the original victims, albeit to their descendants. We cannot compensate the original victims, who are now dead, but their descendants hold a claim in their role as the legal or moral agents closest to the victims. Note that standard one does not require that the descendants have been harmed by the initial theft, but rather focuses on the losses of the original Natives.<sup>9</sup>

Standard one attempts to extend restitutional principles as they are applied within a single life. If resources were stolen twenty years ago, it

8. See Jeanette Greenfield, *The Return of Cultural Treasures* (Cambridge: Cambridge University Press, 1989).

9. Principle one therefore provides one possible means out of Parfit's identity dilemmas, discussed in footnote two.

is plausible that the resources should be returned to the victim, plus a time preference premium for having had to wait twenty years to enjoy the resources. The victim's time preferences might supply the relevant compounding rate. Standard one proposes a similar approach, except that the theft-restitution period spans different lives, thereby complicating the choice of time preference rate. Further below I will examine some concrete proposals for how time preference might be applied across lives.

The second standard of restitution does not measure the loss of the earlier generation. Rather, it gives the members of the *later* generation what they would have received, had no theft occurred. Standard two focuses on restoring the state of affairs that would have come about in a more just world. Robert Nozick, for instance, has written: "The principle of rectification presumably will make use of its best estimate of subjunctive information about what would have occurred (or a probability distribution over what might have occurred, using the expected value) if the injustice had not taken place."<sup>10</sup>

*Restitution standard two:* The courts should give the current generation what they would have received, under the counterfactual that no theft had occurred.

Unlike standard one, standard two does not require the use of time preferences to compare values across time. Had the theft not occurred, the resources would have borne some current fruits. Assuming that the counterfactual can be estimated, we already have a figure in terms of present value, and do not require further intertemporal conversion through the use of time preference concepts.

Standards one and two cover the available economic or cost-benefit approaches to the intergenerational restitution problem. Standard one attempts to use consumers' marginal rates of substitution, or time preferences, to compare values over time. Standard two focuses on the production side, and uses marginal rates of transformation (i.e., rates of return on investment) to make the same comparison. Marginal rates of substitution and marginal rates of transformation exhaust the economic information that is available to solve the problem.

Note that although standards one and two are mutually exclusive for

10. Robert Nozick, *Anarchy, State, and Utopia* (New York: Basic Books, 1974), pp. 152–53.



any given dollar, some proposals may apply standard one to part of a sum and standard two to the remaining part. For instance, standard one could apply to the resources that would have been consumed in the absence of theft (i.e., the resources that would have been enjoyed by the original victims), and standard two could apply to the resources that would have been invested and bequeathed (i.e., the resources that would have been enjoyed by the descendants).

### III. INTERGENERATIONAL COMPOUNDING UNDER THE FIRST RESTITUTIONAL STANDARD

Standard one specifies the concept of time preference as a means of comparing values across time. I define four mutually exclusive normative principles for estimating time preference across generations. First, we can define a rate of time preference from the point of view of the earlier (now dead) victims. Second, we can define a rate of time preference from the point of view of some collectivity, such as a tribe or racial group. Third, we can examine the time preferences of the individuals who will receive the restitution. Fourth, we can use some aggregate or weighted average of time preferences across generations. I define these alternatives in terms of four principles of temporal aggregation. Each principle raises two questions: first, is it reasonable on its own terms, and second, does it justify positive compounding at market rates of interest or market time preferences?

The general problem will run as follows. When we refer to preferences only, we have no commonly accepted means of making time preferences commensurable across different lives. If preferences are nonaltruistic, no single individual has preferences that span the entire time period under consideration. We must resort to considering the preferences of the dead, which will not typically generate positive compounding at market rates of interest or observed rates of time preference. Altruistic preferences do span the time gap, but the rate of compounding then depends on the degree of altruism, and how altruism diminishes over time, rather than depending on standard forms of intergenerational compounding.

*Temporal Aggregation Principle A:* We should evaluate intergenerational time preference from the point of view of the dead victims.

We cannot return value to the now-dead victims, but we can award value to their descendants. In the meantime, the dead victims have been “waiting” for that restitution to occur. We might use their rates of time preference to translate the loss into present value terms. This solution, of course, requires that we can speak meaningfully of the preferences of dead people; a small literature has arisen which considers this question. Since we sometimes honor the wishes of the dead, both in law and in our personal lives, I will not treat the idea as *prima facie* absurd (although honoring the time preferences of the dead may be less tenable than honoring a more select set of their preferences). In any case I am not proposing this alternative, but merely examining its implications.<sup>11</sup>

Economists sometimes invoke overlapping generations to avoid confronting the preferences of the dead (I have encountered such arguments frequently in discussion with economists). They have the following idea in mind. The first generation waited forty years for restitution, and then died. The subsequent generation waited their entire lives for restitution, and then died, and so on, up until the present generation. For each year after the theft, some generation had to experience abstinence, due to the occurrence of the theft. When converting past losses into present value, we should use the time preference rates of the first generation (based on their preferences while alive) for their abstinence, the time preference rates of the second generation for their abstinence, and so on. This intergenerational summation of time preferences will approximate positive compounding at market rates of interest, especially given that real interest rates do not usually vary much over time.

This argument misspecifies the event over which the preferences of the intervening generations should be considered. Only the current generation actually will receive a restitutorial award. The argument takes one event “restitution to the current generation,” and to value this event uses preference information for something else altogether—“restitution to initial or intermediate generations”—a proposal which is not on the table and indeed is impossible altogether. If we count the preferences of the intermediate generations at all, we must count their preferences over what is actually being proposed—restitution to the *current* generation. In other words, we must count the preferences of the inter-

11. Joan C. Callahan, “On Harming the Dead,” *Ethics* 97 (1987): 341–52, surveys the issues involving the wishes of the dead, and the relevant literature.

mediate generations over post-death events—i.e., we must consider the preferences of the dead.

The time preferences of the dead may justify positive compounding, but they do not justify positive compounding at the market rate of interest. Under some circumstances, the market rate of interest will proxy for the time preferences of living individuals (see footnote 13). Markets, however, do not generally reflect the preferences of the dead. The preferences of the dead could involve discounting rates much higher or lower than the market interest as determined by the living. The relevant question is how much the dead “mind” having had to wait for restitution, and no mechanism exists to bring this preference in line with an observed market rate of interest.<sup>12</sup>

If we are willing to count the preferences of the dead, we might consider restituting directly in terms of those preferences. We could, in principle, return enough to the descendants so that the dead “evaluate” the resulting outcome as no worse than if the theft had never occurred in the first place. The analysis of intergenerational restitution then collapses into the intra-generational case, albeit using post-death preferences.

To make this comparison meaningful, the dead must have altruistic preferences toward the current generation of descendants. We could try, in principle, to restore the dead to their pre-theft level of welfare by making the appropriate amount of restitution to their current descendants. Under this standard, the less the original victims (now the dead) cared about their descendants, the more restitution the government must provide. (Obviously, no sum will suffice if altruism is not strong enough.) Alternatively, if the original victims cared greatly for their (then forthcoming) descendants, the required restitutional sums will be correspondingly smaller. In none of these cases does direct positive compounding apply. Not only must we consider the degree of altruism held by the dead, but the implicit rate of time discount cannot be inferred from observed market interest rates. Furthermore, we end up with the morally counterintuitive result that individuals held in high regard by

12. In addition, economic cost-benefit analysis has trouble translating the preferences of the dead into standard numeraires. We might say, for instance, that a dead person desires revenge. But can this preference be expressed in terms of a dollar equivalent, given that the dead have no use for money?

their ancestors receive small rewards, and individuals who are relatively indifferent to their ancestors receive large awards.

*Temporal Aggregation Principle B:* We should compare values across time using some collective, tribal, or ethnic rate of time preference which spans generations.

Principle B replaces the preferences of the dead with the preferences of the tribe. For obvious reasons, we may not wish to defend the idea that the preferences of the dead should determine current policy, or that the dead victims have been “waiting” for restitution for two hundred years. For purposes of argument, however, let us accept the idea of collective time preference. Some group or tribe, taken collectively, has been waiting for two hundred years and might have a claim to compensation for such waiting. The postulate of collective or group time preference stands in accord with the holistic view that underlies many concepts of intergenerational restitution.

Like respecting the wishes of the dead, the positive tribal rate of time preference may imply positive compounding, but gives no guidance on the appropriate rate for that compounding. Observed market rates of return provide appropriate compounding rates only for living individuals. The equality of marginal time preference and market rates of interest requires that individuals transact in capital markets, and lend and borrow to bring the two magnitudes into equality.<sup>13</sup>

Observed market rates of return give no information about the time preference of the tribe or ethnic group. The tribe, by construction of principle B, is a holistic entity that exists above and beyond the preferences of its individual members. The “tribal rate of time preference” may be either higher or lower than observed market rates. The tribal rate

13. To the extent that markets operate perfectly, individuals move to points along their spending/savings schedules to equalize their marginal rate of time preference with the interest rate. At a real interest rate of say, five percent, individuals can invest one hundred dollars and receive one hundred and five dollars within a year. In equilibrium, individuals must prefer current consumption to an equal amount of future consumption by that same five percent. If individuals preferred current consumption by less than five percent, they would save more money and reap higher net returns; if individuals preferred current consumption by more than five percent, they would save less and spend more money now, thereby lowering their marginal rate of time preference. While a variety of frictions and imperfections (e.g., taxes, risk, transactions costs, etc.) prevent the smooth operation of this process, in principle we can adjust for these imperfections to obtain an appropriate rate of discount or compounding.

of time preference might even be zero. Presumably the tribe refers to some external moral principle in determining its discount rate, which reintroduces the problem of finding some appropriate standard for comparing values across generations. We should not reject the idea of a tribal rate of time preference out of hand, but it does not justify compounding as usually applied by economic cost-benefit analysis.

*Temporal Aggregation Principle C:* We should compare values across time using only the preferences of the living.

Principal C rules out the preferences of the dead and the preferences of the not-yet-born and considers living individuals only. By construction of the principle, individuals have positive time preference only after their lives have started and only until they pass away. Therefore the government should not compound values to cover the time before current heirs were born. If current heirs have been alive for thirty years, they should receive thirty years' worth of compounding, to cover the thirty years they have been waiting for the award. (We may, however, wish to start counting at some age of cognitive maturity rather than at birth.)

The reasoning behind Principle C runs something like the following. The descendants of the Natives cannot have meaningful time preferences for consumption experiences before their birth. If the victims' descendants were born in 1960, and the original crime occurred in 1760, the descendants have not been waiting two hundred years for restitution in any relevant sense of the term. So if we rule out the preferences of the dead, we are left only with compounding across the number of years that current heirs have been alive.<sup>14</sup>

Principle C has some unusual implications, and may not provide a satisfactory approach to intergenerational comparisons of value. If a thief steals money from a living victim, and must then retribute sixty

14. On the irrelevance of time preference before an individual's birth, see Tyler Cowen, "Consequentialism Implies a Zero Rate of Discount," Tyler Cowen and Derek Parfit, "Against the Social Discount Rate," and Thomas C. Schelling, "Intergenerational Discounting," *Energy Policy* 23 (1995): 395-401. Meaningful time preferences across events before my birth may be possible in some unusual cases. I might wish, for instance, that Europe had discovered the printing press earlier than the fifteenth century, so that medieval Europeans might have had the pleasure of printed books. Perhaps the earlier discovery would make me feel better. Such a preference, however, does not bear on the issue under consideration, which is the purely self-regarding consumption losses of subsequent generations.

years later, Principal C allows for the application of positive compounding based on time preference. Assume, however, that just before the award is determined, the victim dies and bequeaths his estate to an infant daughter. When restitution is awarded, the daughter will receive a much smaller restitutorial award, with essentially no positive compounding. If the victim had died only a day later, after the award was determined, the daughter would receive the compounded sum instead. Why should the size of the award be so sensitive to when the award is made, or when the original victim dies? For this reason, Principle C will appear implausible to many observers, just as Principles A and B did.<sup>15</sup>

In sum, we are left in a quandary. Regardless of our opinion of the merits of Principles A, B, and C, none of these principles generates positive compounding, as traditionally conceived. Rather, examining these principles illuminates the difficulty of comparing value across generations or making time preferences commensurable across different lives. I now move to another possible solution, the use of counterfactuals about potential investment returns.

#### IV. AWARDS BASED ON COUNTERFACTUALS

*Restitution standard two:* The courts should give the current generation what they would have received, under the counterfactual that no theft had occurred.

The first standard of restitution possessed two significant properties. First, the standard defined the appropriate amount of restitution by trying to measure the original loss in terms of some set of preferences. Second, the size of the award was independent of what the Natives would have done with the resources, had no theft occurred. We did not need to ask whether the Natives would have consumed the resources, or whether they would have invested and bequeathed the resources.

The second standard of restitution drops each of these properties. Rather than using time preferences to compare values across generations, the second standard uses the rate of return on capital investment. And rather than assessing the original loss as suffered by now-dead vic-

15. I am indebted to Alex Tabarrok for suggesting a related example. Denying the rationality of time preference within a single life creates one avenue out of the apparent paradoxes. This could save Principle C, but it would not help the case for positive compounding.

tims, the second standard attempts to ascertain the losses suffered by the currently living heirs of the Natives. The second standard sidesteps the problems of the first standard by focusing on the interests of the living alone, and by using rates of return rather than time preferences.

Asking how much the current generation would have had, had the theft not occurred, raises the possibility of an ambiguous counterfactual. What do the Settlers do in lieu of stealing the resources? Do they trade peacefully with the Natives? Do they remain in their home country? Do they steal something else? Do they still build a value-enhancing railroad? The resource values resulting from “what would have happened” depend upon what we take as the relevant alternative.<sup>16</sup>

I put these objections aside, however, and consider whether standard two can justify straightforward positive compounding. Throughout the following discussion, I assume a unique and well-defined counterfactual.

#### *Standard Two and Compounding*

Standard two makes the final award contingent on what the earlier generation of Natives would have done, had the theft not occurred. If the Natives would have consumed the resources in their entirety, the current generation would not have received anything. Standard two justifies compounding only for resources that would have been saved, invested, and bequeathed.

Savings rates in most societies are well under fifty percent, and are often less than ten percent. We cannot take for granted that the stolen resources would have been saved and bequeathed to subsequent generations. Most resources are consumed within the lifetimes of their owners. Some natural resources, such as beautiful views or durable land, are not consumed in the same manner that monetary income is consumed. For those resources the relevant rate of savings may be higher than aggregate data on monetary savings would suggest, but the point remains that resources are not automatically saved. Even land can be “consumed,” as shown by the growing realization that indigenous peoples often have wreaked great damage on their environments.

To determine the final sum for restitution, we must consider the consumption of all intervening generations that preceded the current one. Each of these generations would have had an opportunity to consume

16. See Jeremy Waldron, “Superseding Historic Injustice.”

the resources in question, and to prevent a bequest from reaching the current generation. More generally, some of these generations would have added value to the resource, and some would have taken away value from the resource. We must account for these changes in value when determining the appropriate restitutional sum. Positive compounding at market rates of interest, once again, does not follow. The final appropriate award will be dominated by our estimates of savings and bequest rates. We would be giving the current heirs the rates of return that would have been produced for them by their forefathers.

A modified version of standard two could consider the lost gift-giving opportunities of the earlier generations. With regard to the resources that would have been invested and bequeathed, the theft arguably destroyed goods for two sets of people. First, the current generation has been denied a bequest. Second, earlier generations have been denied opportunities to bequeath gifts. Those individuals, had they not been victimized, would have received some value or pleasure from making a gift to their descendants. For every generation that was denied a gift-giving opportunity, we might wish to count a loss equal to the value that would have been placed on giving the gift. Not only did the first victimized generation suffer a loss in this way, but so did every interim generation that would have taken pleasure from passing down a gift. These gift-giving losses must then be converted into present value, presumably using one of the methods outlined in Section III above. This procedure will increase the size of the award, but again it will not generate positive compounding of the traditional kind.<sup>17</sup>

*A Modified Version of Standard Two: Returning the Physical Resources Directly*

In practice, the courts usually have not undertaken the counterfactual analyses required by standard two. For reasons discussed above, these

17. Not all bequests are motivated by pure altruism. Donors may promise bequests to manipulate the behavior of their children, or individuals may hold resources as a form of insurance because they do not know when they will die, to name two possibilities. The motivation of the bequest is not important, however, as long as the donor generation would have received some benefit from making the intergenerational transfer. I do ignore some complex issues about bequests. For instance, do we need to count the number of intervening generations, or the number of intervening parents? Is the value of a bequest split evenly between two parents, or does each parent reap the full value of giving the gift? The answers to these questions may suggest further adjustments.



analyses might be impossible. Instead, courts sometimes have pursued the separate option of directly returning the stolen resources; this option is feasible when the stolen resources have remained physically intact.

Returning the resource involves an implicit rather than an explicit rate of compounding; the difference between today's value of the land and the original value of the land provides the relevant implicit compounding rate. Such an implicit compounding rate will not typically equal the market rate of interest. Even the assumption of perfect economic equilibrium implies only that *ex ante* returns on different assets are equal, not that *ex post* returns are equal. Rather than restituting by offering the market rate of return on assets in general, the government would be offering the market rate of return on a single asset, the stolen asset.<sup>18</sup>

In effect, the government is giving the descendants of the Natives the returns that were generated by the Settlers, rather than the returns that would have been generated by the Natives. Even if the Settlers and Natives have had access to the same rates of return on investment, the Settlers and Natives need not have had the same savings rates over time. The change in resource value may lie either above or below going market rates of return.

In addition to returning the resource, the government may wish to adjust for the loss of resource use in the interim period before restitution occurs. If someone steals my car, I have been cheated even if the thief returns the car one year later. In the meantime I have been deprived of the use of the car for one year.<sup>19</sup>

By adjusting for these "use values," or "liquidity premia," the government makes yet further adjustments to the compounding process. Once we measure the rate of return on the stolen resource and add the relevant foregone liquidity premia, the implicit rate of compounding once again may be higher or lower than the market rate of interest or the market rate of time preference.

To summarize the discussion of Section IV, standard two does not suggest the uniform application of positive compounding at the market rate of interest. Rather, we must estimate a complex series of counter-

18. It is an open question whether the descendants of the Natives should receive a higher, risky return on the actual asset, rather than the expected risk free return. Over the interim period before the asset was returned, the Natives and their descendants have not been bearing the relevant risk.

19. Jeremy Waldron, "Superseding Historic Injustice."

factuals; at the end of this process we apply positive compounding to only part of the stolen sum, the part that would have been saved and bequeathed. Further adjustments, typically additions, should be made if the government wishes to count the altruistic preferences of earlier generations. In practice, if the relevant counterfactual cannot be defined with sufficient precision, the government may end up simply returning the physical resource itself. In that case the government again chooses an implicit compounding rate which may differ greatly from the market rate of interest or time preference.

#### V. CONCLUDING REMARKS

The above arguments suggest that we should rethink restitutional policy across generations. Cost-benefit analysis does not provide a direct case for using market interest rates or measures of time preference to determine the rate of compounding across generations. Under the standards examined above, the resulting restitutional awards may be either far greater or far smaller than suggested by straightforward positive compounding at market interest rates. Most of these differences arose from whether positive compounding at market rates of interest or time preference was appropriate at all, and not from applying minor modifications to positive compounding.

The fundamental problem is our inability to make differing time preferences commensurable across generations, as discussed in Section III. Without recourse to a consistent, well-defined set of underlying preferences, applied cost-benefit analysis tends to lose both its normative force and its practical applicability. We therefore are left with two alternatives. First, we can attempt a counterfactual reconstruction of what would have happened with the stolen resources, as discussed above. Despite its practical and conceptual problems, this procedure appeals to some powerful moral intuitions. At most, however, it supports positive compounding only for the resources that would have been invested and bequeathed.

Second, we may attempt to impose some external rate of time preference to compare values across generations. The attempts to use the time preference rates of the dead or the time preferences of the tribe provide variants of this proposal. These procedures also have moral appeal, but they give little direct guidance to the specific rate of com-

pounding. The market rate of interest does not provide an appropriate guide, for reasons discussed in Section III. To implement a positive rate of time preference across generations, the analyst must make an explicit moral judgment about how much restitutorial liabilities have accumulated, compounded, or weakened over time. Such an explicitly ethical imposition of an external time preference rate may provide the most satisfactory available solution.

I conclude that no rate of compounding provides a strictly correct answer to the initial problem. Restitution across generations is not fundamentally a matter of translating a resource value from the past into a current valuation, using positive economic analysis. Rather, restitutorial policy must make direct value judgments about how much money we wish to transfer today, for what reason, and how we weight the moral importance of present claims, compared to past injustices.