

No Credit Unless You Show Your Work: How Judges Can Stop the Gaming of Climate Change Discount Rates in Federal Rulemaking

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INTRODUCTION

How should the federal government balance costs today against benefits a century from now? The question sounds highly abstract and philosophical, but federal agencies must distill the answer into one number: a discount rate. The number selected by federal agencies and subject to review by federal judges may determine the future habitability of Earth. Federal agencies making the rules relating to climate change face that daunting reality.

The most important variable in modeling damages from climate change is the discount rate, the rate by which future costs or benefits are

adjusted for comparison with present costs or benefits. The higher the discount rate, the relatively less important future costs and benefits. With heavy discounting applied over several decades, the future becomes less relevant. The Obama administration used discount rates ranging from 2.5 to five percent to justify its major plan to curtail carbon emissions.¹ The Trump administration used three to seven percent to justify repeal of that plan.² While there are other important differences in the two administrations' cost-benefit analyses, a change of three percent to the discount rate implies a roughly 1,000 percent increase in the social cost of carbon according to leading climate models.³

The simple mathematics of compounding explains why long-term discount rates dominate climate change economics. A discrepancy of a few percentage points does not make a significant difference over a few years, but the difference builds on itself over decades to yield vastly different outcomes. Nobel prize-winning climate change economist William Nordhaus noted that Manhattan was purchased for \$24 in 1626, a price often seen as ludicrously low until one considers that \$24 invested at four percent interest in 1624 would now be worth roughly as much as the current value of Manhattan.⁴ Similarly, the compounding effect makes the difference between a seven percent and 2.5 percent discount rate significant enough to swing decisions relating to climate change.

It should be no surprise that a fierce debate rages among economists and philosophers over how to determine the “correct” discount rate. Thousands of pages have been written on the subject, with no true consensus in sight. As a result, there is at least a superficially reasonable case for such a wide range of potential discount rates that virtually any climate action (or inaction) can claim some level of justification.

¹ U.S. ENVTL. PROT. AGENCY, EPA-452/R-15-003, REGULATORY IMPACT ANALYSIS FOR THE CLEAN POWER PLAN FINAL RULE ES-15-ES-16 (2015), *available at* https://www3.epa.gov/tneacas1/docs/ria/utilities_ria_final-clean-power-plan-existing-units_2015-08.pdf [hereinafter “CPP RIA”].

² U.S. ENVTL. PROT. AGENCY, EPA-452/R-18-006, REGULATORY IMPACT ANALYSIS FOR THE PROPOSED EMISSION GUIDELINES FOR GREENHOUSE GAS EMISSIONS FROM EXISTING ELECTRIC UTILITY GENERATING UNITS; REVISIONS TO EMISSION GUIDELINE IMPLEMENTING REGULATIONS; REVISIONS TO NEW SOURCE REVIEW PROGRAM at ES-5 (2018), *available at* https://www.epa.gov/sites/production/files/2018-08/documents/utilities_ria_proposed_ace_2018-08.pdf [hereinafter “ACE RIA”].

³ See Lawrence H. Goulder & Roberton C. Williams III, *The Choice of Discount Rate for Climate Change Policy Evaluation* 7–8 (Res. for the future, Discussion Paper RFF DP 12-43, 2012), *available at* <http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-12-43.pdf>.

⁴ Paul Voosen, *Cool Head on Global Warming*, CHRONICLE (Nov. 4, 2013), <https://www.chronicle.com/article/Cool-Head-on-Global-Warming/142713>.

The politics of climate change are such that both major parties use the discount rate to justify their actions. Agencies have used lower discount rates when Democratic presidents are in power and higher discount rates when Republican presidents are in power. New administrations can use discount rate changes to abandon the previous administration's climate change-related rules, as the Trump administration did when issuing regulatory changes relating to climate change. The logical tactic by each side would then be to impose extreme policies to compensate for the perceived error of the other side. Democratic administrations would logically over-invest in climate change mitigation and Republicans would invest as little as possible. Each change in the discount rate is effectively an exercise in naked political power.

Federal judges have, by and large, accepted the use of discount rates in agency rulemakings.⁵ That acceptance is understandable considering the technical and ethical complexities of the issue. However, with the federal judiciary unable or unwilling to exercise meaningful oversight over discount rates, we can expect a ping-ponging of policy between extremes from administration to administration. Judicial review of federal rulemaking prohibits actions that are arbitrary or capricious. But how can judges effectively review a potentially arbitrary agency action that is (a) vastly important, (b) technical in nature, and (c) easy to mask with a facially plausible explanation? This is precisely the issue that federal courts will face for decades to come in evaluating the use of discount rates in federal rules relating to climate change.

While no standard of judicial review will yield correct outcomes in all cases, the federal judiciary can weed out the worst examples of discount rate abuse by requiring a full explanation of the discount rates used. Because almost any rate has a "reasonable" explanation, courts must insist on explicit and complete explanations rather than arbitrary citation to precedent. Courts should also require consistency from agencies so that they cannot use different discount rates in various rules without good cause. Simple measures like these could force agencies to conduct better, more candid cost-benefit analyses. More candor will tend to drive both parties to moderate policies that can endure from one administration to the next, providing the stability needed to reach an international solution to climate change.

In Part I, I detail the various debates on what discount rate to use in the context of climate change economics. In Part II, I describe how those debates have played out in government policy around the world. In Part III, I discuss how courts currently review technical agency decisions for

⁵ See, e.g., *Zero Zone, Inc. v. United States Dep't of Energy*, 832 F.3d 654, 679-80 (7th Cir. 2016) (accepting the agency's discount rate without substantive discussion).

arbitrariness, including decisions relating to discount rates, and argue for the necessity of judicial review of those decisions. In Part IV, I offer recommendations on how judges can provide meaningful review of agency actions without needing to become experts in the minutiae of climate change economics.

I. THE DISCOUNT RATE DEBATE

A. *The Basics: How Discount Rates Work*

The discount rate is a tool for comparing current and future utility.⁶ It is a measure of how much we prefer to enjoy things now rather than later. Interest rates are a kind of discount rate: a measure of how much someone prefers to enjoy money now rather than later.⁷ Loans work in the private sector because people have different time preferences for money—a lender would rather have more money later than less money now, the opposite of the borrower. Discount rates in the context of public policy are not a negotiation so much as a statement: we value the present more than the future by X percent each year.⁸

Preference for the present over the future has a clear rational basis. As you hold \$100 in your hand, it is presumably worth \$100 to you. But how much would you pay today to get \$100 a year from now? Presumably, you would pay less than \$100 for several reasons. First, you would lose a year of enjoyment of whatever you would have bought with the \$100. Second, even if you were not going to spend the money, you could have saved it and accrued interest. Third, there is some possibility that you will not even be alive in a year to enjoy the money. A freak accident or unexpected medical tragedy could prevent you from enjoying the money next year. For all of those reasons, the normal economic intuition is that people's discount rates are positive (i.e., that you have at least a slight preference for having the money now vs. later).

⁶ See Diana Schoder, *What should we do about climate change? Economists agree that we need to invest in solutions, but exactly how much remains up for debate.*, AM. ECON. ASSOC. (Sept. 11, 2017), <https://www.aeaweb.org/research/climate-change-economics-discount-rate-sustainability>.

⁷ David Weisbach & Cass R. Sunstein, *Climate Change and Discounting the Future: A Guide for the Perplexed*, 27 YALE L. & POL'Y REV. 433, 439 (2009).

⁸ To preempt the objections of descriptivist economists, I note that even if they would like to calculate the discount rate by reference to the return on investments, the purpose would still ultimately be to determine the worth of a present investment, i.e., how valuable we consider present expenditure to be relative to the future. I submit that the concepts are equivalent, even if the calculation is different.

Economists typically calculate the discount rate as the annual rate of discount given to future benefits. In the example above, if you would pay \$97 for \$100 a year from now, your discount rate is about three percent.⁹ If you would pay \$90, your discount rate is about eleven percent. The difference over one year is just \$7, but compound growth quickly magnifies this difference. If we change the hypothetical to how much you would pay now for \$100 in fifty years, the three percent discount rate individual would pay about \$22. The ten percent discount rate individual would pay about half a cent.

B. The First Rumblings of Complexity

Discount rates become increasingly complicated as more people become involved. As difficult as it is to merge all of one individual's time preferences into one number, doing so for multiple people invariably involves arbitrary favoring of some considerations over others.

To keep our illustrative example as simple as possible, if you and your spouse had to agree on how much you would pay now for \$100 a year from now, the answers might be different for a wide variety of reasons. You might want to buy something in the short term and your spouse might not, or you might perceive a lower risk of death over the next year than your spouse does. There may even be an attractive investment available right now, but not in the future.

There are, in theory, a number of ways to reconcile two different discount rates. The two parties can average their diverging discount rates and arrive at a compromise rate. However, if both parties knew that averaging would decide the discount rate, each would have an incentive to claim a fraudulently extreme discount rate. If your spouse has a five percent discount rate and you have a ten percent discount rate, simple game theory suggests you should claim to have a fifteen percent discount rate so that the compromise rate results in you getting the rate you actually want.

More complicated financial dealings could reconcile the different discount rates in much the same way as an average while remaining immune to the cheating outlined above. Such a transaction requires that you and the other party have different discount rates. If your discount rate is three percent, perhaps theirs is five percent—i.e., they want the money right now more than you do. The other party presumably has something

⁹ If using annual discount rate to calculate the value of something in the future, the relevant equation is: $PV = FV/(1 + d)^n$ where PV is present value (what the money in the future is worth to you now), FV is future value (in the example, the amount you will receive in the future), d is the discount rate, and n is the number of years in the future.

more important to them to invest the money in. It should be in both parties' interest to resolve the discrepancy through a loan. If Party A has a discount rate of three percent and Party B has a discount rate of ten percent, Party A could loan Party B money at an interest rate somewhere in between (e.g., five percent) and everyone would be better off. Party A values the money less than five percent but is going to get paid more than that eventually. Party B values the money at more than five percent but only has to pay five percent to get it.

This loan strategy avoids the incentive problem inherent to simple averaging. Recall that in the averaging case, each party has an incentive to lie so that the resulting average would be closer to its actual discount rate. By contrast, in the loan strategy, Party A (with the low discount rate) has no incentive to pretend to have a lower discount rate. A lower discount rate would imply a lower interest rate on the loan, which would mean less money for Party A. Similarly, Party B would not want to lie because a higher discount rate would mean more interest to pay back later.

C. Things Get Complicated: The Problem of Future People

An agreement between two parties on a single discount rate is a surmountable problem, as shown by the loan solution above. The next big jump in difficulty comes from the fact that each individual human being must plan for a future in which they are not the primary beneficiaries of their own money. At best, that is because they have children. At worst, it is because they die. In the spouse example above, you and your spouse had to agree on a discount rate despite diverging preferences. Assume now that you and your spouse are expecting a child in six months. Presumably, spending money now will almost solely benefit you and your spouse. Spending next year would disproportionately benefit the child.

Three major issues arise from the introduction of a future generation: (1) how to estimate the supposed preference of a future person; (2) how to incorporate the supposed preferences of people who cannot express their preferences; and (3) how to respond if a current person's preference seems immoral or wrong.¹⁰ Each problem warrants further examination.

1. Guessing the Preferences of Future People

The simplest way to calculate the preferences of a future person is to assume they are like us. If the average of our preferences is a three percent

¹⁰ See generally Cass R. Sunstein, *Cost-Benefit Analysis and the Environment*, 115 ETHICS 351, 358–59 (2005) (describing moral questions relating to cost-benefit analysis involving future people).

discount rate, we assume they too would have suggested a three percent discount rate. There are two basic justifications for this method. First, the golden rule that forms the essence of so many ethical systems broadly postulates that we do unto others as we would have others do unto us. In the absence of any other information, we should assume that the future person wants the same discount rate. The other justification rests on the mediocrity assumption. In the absence of any information to the contrary, we should assume that our desires are the average, and that other people generally share our preferences.¹¹

There are some logical limitations, if not outright contradictions, to this approach. If we assume future people share our discount rate, that means they have a similar preference for current consumption. But from their vantage point in the future, future consumption is current consumption, and they would want the consumption to be current *for them*. Put in terms of the baby hypothetical, if you assume your child is just as selfish as you are, the baby would not want you to apply a three percent discount rate now. She would want you to apply a *negative* three percent discount rate.

Another criticism of this approach is that it assumes we should treat utility now the same as in the future even though the future will likely be very different. Even if one treats future people with the exact regard one treats present people, the discount rate should logically depend on whether they think the future will be better than the present. To the extent we are able, if we treat all people equally in time, we would want to transfer resources from rich times to poor times. Thus, the better the future, the higher the discount rate. The easiest way to understand this dilemma is to imagine we could gift food back and forth with a fifteenth-century peasant. Given how much easier it is for us to produce food, it would seem totally absurd for that peasant to give us anything. Phrased another way, the peasant should have an extremely high discount rate.

If we treat seriously the predictions of a “singularity,” an artificial intelligence-driven jump in technological and economic growth, we are essentially the fifteenth-century peasants. This supports the argument that we should have a very high discount rate even if we are treating future people the same as us.

There are two simple counterarguments to high discount rates. First, we do not actually know what the future holds. If we assume that no saving for the future is necessary (e.g., if we abandon any long-run environmental

¹¹ See generally Ted O’Donoghue & Matthew Rabin, *Doing It Now or Later*, 89 AM. ECON. REV. 103, 104 (1999) (discussing the different ways to model the discounting preferences of future people, particularly the assumption of similar preferences in the future).

protection) and we are mistaken, it could jeopardize the future of humanity.¹² Second, the compounding effect of discount rates means that discounting can undo the benefits of future technological growth surprisingly quickly.¹³ For example, if an economist from the Trump administration suggested one of the administration's approved climate change discount rates (seven percent) to govern our exchange with the fifteenth-century peasant, it would imply his consumption of \$1 was worth \$492 trillion to us now, about six times the size of all the wealth in the world. Even the difference in living standards between now and then is not vast enough to justify such a transfer.¹⁴

2. *Incorporating the Preferences of Future People*

Once we address the thorny issues involved in estimating the preferences of future people, we have to incorporate them into current calculations. Here, we encounter the problem of quantity. The population of the world is still increasing. Should we accord future people more weight simply because there are more of them? In that case, if the human population continues to expand indefinitely, we would expect the concerns of future people to overwhelm current consumption on the basis of sheer numbers. Because of dramatic population growth over roughly the past 2,000 years, about half of all human experience has occurred since 1309 CE, and about fifteen percent of all experience comes from people alive right now.¹⁵ Should people in, say, 800 CE, have focused all their attention on helping us because there would be so many more of us?

As with the question of future wealth, the question of future people cuts both ways. If we think of the first band of about 10,000 humans in (roughly) 50,000 BCE, it seems absurd to suggest they should have worried about the future at all. We should simply want that small band of humans to maximize their own survival potential because every one of them that survived contributed so much genetically to the billions of people who came after them. Perhaps we should accord future people less

¹² See, e.g., Ben Trachtenberg, *Health Inflation, Wealth Inflation, and the Discounting of Human Life*, 89 OR. L. REV. 1313, 1323-5 (2011) (discussing a hypothetical scenario where humanity does not invest to prevent disaster because of a flawed discount rate).

¹³ See generally Weisbach & Sunstein, *supra* note 7, at 440 (describing the quick accumulation of benefits under high discount rates).

¹⁴ See, e.g., Tyler Cowen & Derek Parfit, *Against the Social Discount Rate*, in JUSTICE BETWEEN AGE GROUPS AND GENERATIONS 144, 145 (Peter Laslett & James S. Fishkin eds., 1992) (presenting hypothetical discounting over multiple generations yielding absurd results).

¹⁵ Georgia Ray, *The funnel of human experience*, EUKARYOTE WRITES BLOG (Oct. 9, 2018), <https://eukaryotewritesblog.com/2018/10/09/the-funnel-of-human-experience/>.

weight because a future investment might be smaller per capita than it would be if we made it now.

Once a decision is made on how to answer the question of quantity, we can move on to an even more fundamental question: why value non-living people in the first place? Evolution has done a perfectly serviceable job of driving humanity forward over the past several million years without humans consciously weighing the value of future generations. Caring for the young while we are alive is arguably the limit evolution set for our caring about the future. Not knowing precisely what the future holds, why should each generation not simply take care of itself? If a certain intergenerational threat arose, such as an asteroid on a path to destroy Earth in 150 years, we would presumably take action. Without that certainty, intellectual modesty might suggest that we should mind our own business.

That proposition is certainly arguable. Humans do seem to care about the future beyond their own lifetimes. The examples of people willingly sacrificing their lives for abstract goals are too numerous to bother recounting. While history is not replete with intergenerational investments, there are some examples. Cathedrals have been built over the course of centuries even when individual builders did not expect to see them finished.¹⁶ While the motive for such commitment was likely more religious than actuarial, whatever the reason, the builders clearly acted as if the future had value even if it did not include them. People have fought some wars over multiple generations.¹⁷ Intergenerational planning and commitments, while not the norm of human experience, are not unprecedented.

3. *What Discount Rates Can We Safely Rule Out?*

There can be reasonable disagreement about discount rates. We are discussing issues that are at the extremes of economic and moral intuition. The perspective that one brings to the table—that money is worth more to the poor than the rich, that the future will be wealthier than the past, that we should try to maximize utility between generations, that each generation should be responsible for itself—will determine the “correct” answer.

It seems clear that there is no slam-dunk case for any single discount rate. Surveys of economists produce seemingly reasonable averages; one

¹⁶ The York Minster Cathedral, for example, took 252 years to complete. 20 *Buildings and Structures That Took the Longest Time to Build*, GREAT PERFORMERS, <https://greatperformersacademy.com/interesting/20-buildings-and-structures-that-took-the-longest-time-to-build> (last visited Nov. 3, 2019).

¹⁷ The Hundred Years' War is an obvious example.

such recent survey found a mean preferred discount rate of 2.27 percent.¹⁸ Are there any meaningful limits we can place on discount rates at all? To have any hope of doing so, we need to establish broadly acceptable moral axioms. One obvious axiom is placing at least some value in our grandchildren. The majority of people would agree that their grandchildren matter. That is an easy moral intuition to check mathematically. A discount rate of roughly twelve percent means benefits seventy years from the present are worth one-thousandth of an equivalent benefit today. Any discount rate higher than twelve percent means we care very little about our grandchildren.

Similarly, we can solve for a discount rate for which our utility is one-thousandth that of our grandchildren. That scenario arises with a negative fourteen percent discount rate, which would require draconian sacrifices now for future benefits.

The conclusion from this simple example is that a generally “sane” range of discount rates in the context of long-run economic planning is negative fourteen percent to twelve percent. Any higher, and you are akin to a James Bond villain willing to wipe out the future for profit today.¹⁹ Any lower, and you are akin to a James Bond villain who is willing to wipe out humanity today to benefit future people.²⁰ Discount rates outside that range might still make sense for companies or individuals operating on shorter time scales or unusual circumstances, such as when a very profitable investment is available for a short time only. However, for policy purposes, negative fourteen to twelve percent roughly approximates the range for which there might exist some rational argument. As we will see, however, that range is sufficient to support a bewildering variety of policies.

D. The Discount Rate Debate in Climate Change Economics

As the discussion above suggests, discount rate selection is at the heart of the fiercest informed climate change debates because of simple mathematics.²¹ As one would expect, scholars across the spectrum of concern about climate change advocate not just for different discount rates,

¹⁸ Moritz A. Drupp et al., *Discounting Disentangled 3* (Ctr. for Climate Change Econ. & Pol’y, Working Paper No. 195, 2015), <http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2015/06/Working-Paper-172-Drupp-et-al.pdf>.

¹⁹ See, e.g., TOMORROW NEVER DIES (Eon Productions, Metro-Goldwyn-Mayer, & United Artists, Dec. 19, 1997).

²⁰ See, e.g., MOONRAKER (Les Productions Artistes Associés & Eon Productions, June 29, 1979).

²¹ See also Robert S. Pindyck, *The Use and Misuse of Models for Climate Policy*, 11 REV. OF ENVTL. ECON. & POL’Y 100, 100–01 (2017).

but for different methods of establishing the discount rates. The debate has led to acrimonious accusations that one side or another is simply cherry-picking methodologies to fit with its underlying policy objectives.²²

1. Why Discount Rates Dominate Climate Change Economics

Climate change damages accrue over decades, even centuries.²³ The discount rate affects our present valuation of those damages in a compound manner, such that a seemingly minor difference builds and builds until it is the difference between taking extreme action and essentially taking no action whatsoever.

Strange as it may sound, the discount rate is actually more powerful in determining optimal climate change policy than the overall amount of damage due to climate change. Doubling the damage estimate for climate change in 2100 implies we should double our spending to mitigate that damage. Doubling the discount rate (say, from three percent to six percent) reduces how much we should spend to mitigate climate change in 2100 by about ninety-seven percent. Recall the earlier example where after fifty years, an individual with a three percent discount rate valued a \$100 payout at \$22, and an individual with a ten percent discount rate valued the same payout at half a cent. To put that in the climate change context, if one assumes, say, \$5 trillion in damages by 2100 that humanity could avoid by some action, the three percent discount rate would imply we should spend \$411 billion to mitigate climate change. The ten percent discount rate implies \$884 million, about 99.2 percent less. That is far less than even what the United States under the Trump administration spends on climate change-related programs annually.²⁴

²² See Benjamin Wallace-Wells, *Cass Sunstein Wants to Nudge Us*, N.Y. TIMES, (May 13, 2010), <https://www.nytimes.com/2010/05/16/magazine/16Sunstein-t.html> (“To enshrine [Nordhaus’s descriptivist] Pollyannish studies and never look at the [prescriptivist] Stern Review — it’s not a technocratic middle of the road; it’s a political choice.”).

²³ U. OF CAMBRIDGE, CLIMATE CHANGE 2014 IMPACTS, ADAPTATION, AND VULNERABILITY PART A: GLOBAL AND SECTORAL ASPECTS 18 (2014).

²⁴ Charles S. Clark, *Agencies Continue Chipping Away at Science and Climate Change Spending*, GOV’T EXECUTIVE (Jun. 14, 2018), <https://www.govexec.com/management/2018/06/agencies-continue-chipping-away-science-and-climate-change-spending/149003/> (reporting Trump White House budget request of \$10.8 billion for climate change-related activities for fiscal year 2018).

2. *The Two Major Schools of Thought: Descriptivists and Prescriptivists*

Put simply, the discount rate measures the preference for current consumption over future consumption. In an individual case, we simply asked a person, for example, how much they would pay today for \$100 in a year. The situation became more complicated with the addition of a second person, but the solution still relied on comparing two distinct preferences. When establishing policy within the United States, how does one establish and weigh preferences for 330 million people?

Economists and philosophers have established two basic camps and arrayed themselves in or between those camps. “Descriptivists” look at economic or other data to reveal the aggregate preferences of society at large, and then conclude that we should use whatever number is revealed by that process in climate change economics.²⁵ For example, descriptivists might see that current investment returns hover around five percent and therefore conclude that society’s discount rate is five percent.²⁶

“Prescriptivists” generally argue that we should pick a number reflecting broad ethical principles, not just how individuals make investment decisions.²⁷ A prominent prescriptivist recommendation is a zero (or very near zero) discount rate on the grounds that governments should not give preference to current generations over future generations.²⁸ Some prescriptivists even argue for negative discount rates, noting that caring for future generations more than one’s own generation is a widely endorsed ethical notion.²⁹

Scholars have fleshed out the talking points for both sides in dozens of papers. Descriptivists claim that they offer discount rates grounded in real human behavior, such as the prevailing interest rate.³⁰ In their view,

²⁵ J. Paul Kelleher, *Descriptive Versus Prescriptive Discounting in Climate Change Policy Analysis*, 15 GEO. J. OF L. & PUB. POL’Y 957, 961 (2017).

²⁶ This is one of the discount rates endorsed by Cass Sunstein, who tends toward the descriptivist side of the spectrum. See Cass R. Sunstein, *Changing Climate Change, 2009-2016* 17 (Harv. Project on Climate Agreements, Discussion Paper 17–88, Aug. 2017), https://www.belfercenter.org/sites/default/files/files/publication/dp88_sunstein_final.pdf; William Nordhaus also endorses a rate of about 4.3 percent. See Goulder & Williams III, *supra* note 3, at 1, <http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-12-43.pdf>.

²⁷ Kelleher, *supra* note 25, at 961.

²⁸ Goulder & Williams III, *supra* note 3, at 4.

²⁹ Marc Fleurbaey and Stephane Zuber, *Climate Policies Deserve a Negative Discount Rate*, 13 CHI. J. OF INT’L L. 565, 565 (2013) available at <https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1381&context=cjil>.

³⁰ William D. Nordhaus, *The “Stern Review” on the Economics of Climate Change*

they are endorsing a democratic vision of discount rates—that peoples’ actual financial outcomes should determine the discount rate, not expert opinions about how humans should or should not behave.³¹ If people can get better returns by investing in a business than paying to mitigate climate change, why should they not do the former?³²

Prescriptivists object that descriptivist proxies for a societal discount rate are inexact at best and systematically misleading at worst. For example, interest rates reflect current market rates of return that may not account for externalities like environmental damage.³³ A factory might offer a ten percent rate of return because people want what it produces, but society as a whole might suffer a net negative return because of water contamination or other health issues resulting from pollution.³⁴ Similarly, because current U.S. policy does not meaningfully punish carbon emissions, current market rates of return are consistently higher than most estimated social discount rates.³⁵

There are many more mundane objections to descriptivism. For example, the long-term interest rate depends entirely on what timeframe one chooses to look at and what assumptions one builds in for the future.³⁶ If a descriptivist looks at average real gross domestic product growth in

1 (NBER Working Paper No. 12741, Dec. 2006), http://www.econ.yale.edu/~nordhaus/homepage/homepage/stern_050307.pdf.

³¹ Martin L. Weitzman, *A Review of The Stern Review on the Economics of Climate Change*, 45 J. ECON. LITERATURE 703, 712 (2007) (“An enormously important part of the ‘discipline’ of economics is supposed to be that economists understand the difference between their own personal preferences for apples over oranges and the preferences of others for apples over oranges.”), https://scholar.harvard.edu/weitzman/files/review_of_stern_review_jel.45.3.pdf.

³² See, e.g., WILLIAM D. NORDHAUS, *CLIMATE CASINO* 188–90 (Yale Univ. Press, 2013).

³³ Thomas R. Michl, *Discounting Nordhaus* 13 (Political Econ. Research Inst., Working Paper No. 158, Jan. 2008), https://scholarworks.umass.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1129&context=peri_workingpapers.

³⁴ Mitchell Kane, *Disagreement and Design: An Arbitration of the Climate Change and Intergenerational Discounting Debate* 34 (N.Y. Univ. Law and Econ., Working Papers. Paper 306, 2012), https://lsr.nellco.org/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1310&context=nny_lewp.

³⁵ Partha Dasgupta, *Discounting Climate Change* 37 J. OF RISK AND UNCERTAINTY 141, 166 (2012), <https://pdfs.semanticscholar.org/306b/5acaddc693539e4a6efeb0bb1c261025ab13.pdf>.

³⁶ See, e.g., Weisbach & Sunstein, *supra* note 7, at 443–44 (2009) (discussing the problem of which descriptivist interest rate to use when the markets themselves provide different rates for corporate securities, Treasury notes, short-term vs. long-term bonds, etc.).

the United States over the past ten years, she might conclude that the long-term discount rate is about three percent. If a descriptivist looked at the same figure in China, the rate might be closer to seven percent. Or, if we look at the past century instead of the past decade, the United States and Chinese numbers might be closer to each other because the United States grew faster in the early to mid-twentieth century. Descriptivists would also have to justify why past numbers accurately reflect the next century of growth.

Descriptivists can (and do) retort that it is better to use imperfect objective measures than to use arbitrary moral intuition to pick a number.³⁷ The math on discount rates is clear—a rate in the range of one to three percent makes climate change action much more economically necessary than a rate in the five to eight percent range. Philosophers that know the numbers and make moral arguments for low discount rates have, in the eyes of economists, decided what outcome they want and picked a discount rate to achieve that outcome.³⁸ Furthermore, descriptivists object that prescriptivists who ignore interest rates undervalue the compounding good that investments now can do by the time future people even enter the picture.³⁹

Unsurprisingly, given the robust arguments on both sides, there are well-respected academics and thought leaders in both the descriptivist and prescriptivist camps. The foremost member of the descriptivist camp is William Nordhaus, winner of the 2018 Nobel Prize for Economics and creator of the DICE climate change damages model used by the Intergovernmental Panel on Climate Change and governments around the world.⁴⁰ A fair choice for the leading prescriptivist would be Nicholas Stern, a British economist who was the lead author of an influential climate change report for the United Kingdom government in 2007.⁴¹ As discussed

³⁷ Martin L. Weitzman, *A Review of The Stern Review on the Economics of Climate Change*, 45 J. ECON. LITERATURE 703, 712 (2007) (“Inferring society’s [discount rate] is not an easy task in any event...but at least a good-faith effort at such an inference might have gone some way towards convincing the public that the economists doing the studies are not drawing conclusions primarily from imposing their own value judgments on the rest of the world.”).

³⁸ *Id.*

³⁹ Weisbach & Sunstein, *supra* note 7, at 437 (2009).

⁴⁰ J. Paul Kelleher and Gernot Wagner, *Prescriptivism, Risk Aversion, and Intertemporal Substitution in Climate Economics*, 132 ANNALS OF ECON. AND STAT. 129, 135 (2018) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3122162; See Binyamin Appelbaum, *2018 Nobel in Economics Is Awarded to William Nordhaus and Paul Romer*, N. Y. TIMES (Oct. 8, 2018), <https://www.nytimes.com/2018/10/08/business/economic-science-nobel-prize.html>.

⁴¹ See NICHOLAS STERN, *THE ECONOMICS OF CLIMATE CHANGE: THE STERN REVIEW* at i (2007), <http://mudancasclimaticas.cptec.inpe.br/~rmclima/pdfs/destaques/sternreview>

later in this article, the eminence of scholars within either camp complicates efforts for outsiders, such as judges, to conclusively rule that either methodology is arbitrary or capricious.

E. Discount Rates Around the World

To get some measure of how little consensus exists on discount rates, it is helpful to look at actual discount rates embraced in various settings. Many countries around the world have adopted standard discount rates for use in cost-benefit analyses, and these rates vary tremendously. Individual companies have also adopted standard discount rates, particularly in fields that require significant up-front investments in order to reap predictable gains later.

1. National Discount Rates

In today's globalized world, where academics frequently work in multiple countries, the lack of consensus in standard national discount rates is truly shocking. It is not surprising that countries such as India and New Zealand would differ significantly (twelve and eight percent respectively). India has a much more rapidly growing economy, so the opportunity cost of deferring benefits is higher. Canada and the United Kingdom, however, both have developed, modern economies. Canada generally uses a standard discount rate of eight percent, and the United Kingdom uses 3.5 percent.⁴²

One possible explanation for a non-arbitrary range of discount rates is the relative importance of growth in developed and developing countries. At the most basic level, a high rate of economic growth means that the opportunity cost of investing in things other than growth is higher. For a country with lower per-capita income, the loss in wealth from growth matters even more because of the diminishing marginal utility of income at higher wealth levels. It is thus reasonable to expect that countries with lower per-capita income would tend to adopt higher discount rates, which would tend to give preference to investments in short-term growth (e.g., a new infrastructure project) over investments in long-term growth (e.g., environmental improvements). Economic wealth seems to explain some of the difference in discount rates around the world, but the overlap is imperfect, as the discrepancy between Canada and the United Kingdom illustrates. However, relatively wealthier countries appear more inclined

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⁴² MARK HARRISON, VALUING THE FUTURE: THE SOCIAL DISCOUNT RATE IN COST-BENEFIT ANALYSIS 10 (2010), <https://www.pc.gov.au/research/supporting/cost-benefit-discount/cost-benefit-discount.pdf>.

toward environmental or educational investments, and thus might adopt discount rates that reflect those preferences. For example, Norway, Germany, France, and the United Kingdom have discount rates of roughly three percent.⁴³ India and Pakistan are both at twelve percent, a rate that tends to promote growth over environmental policy.⁴⁴

Another potential source of evidence supporting the cultural preference thesis comes from international development banks. Those organizations describe their mission as promoting economic growth and, while none of those organizations would claim to be indifferent to environmental concerns, the environment is not their primary mission.⁴⁵ Development banks use discount rates more akin to those of developing nations, despite receiving their funding primarily from developed nations. The European Bank for Reconstruction and Development, for example, uses a ten percent discount rate, which is roughly the same as those used by the World Bank, Asia Development Bank, and African Development Bank.⁴⁶

A pivotal inference from the divergence of discount rates around the world is that countries can choose discount rates to fit policy preferences, not because they are deviating from a non-existent objective discount rate. While there may be some independent driver of policy preferences other than economic wealth, countries appear to be choosing the discount rates that fit their goals. As we will see in Part II, the United States, likewise, changes its discount rates in ways that appear outcome-driven rather than evidence-based.

2. Corporate Discount Rates

Corporations inherently have a different outlook on discount rates than governments because they do not factor social benefits into their rates; but the numbers they use, and their methodology, provide an important perspective. In some fields, discount rates are immediately necessary for core business functions. Oil companies, for example, must decide whether to take on large up-front development costs on oil fields in exchange for relatively steady and predictable returns for decades to come.⁴⁷ To do that with any sort of accuracy requires careful consideration

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ See, e.g., *Who We Are*, THE WORLD BANK (2019), <https://www.worldbank.org/en/who-we-are> (describing the World Bank’s mission as “reducing the share of the global population that lives in extreme poverty” and “increasing the incomes of the poorest 40 percent of people in every country.”).

⁴⁶ HARRISON, *supra* note 42, at 10.

⁴⁷ Oil companies have been using discount rates for so long that they are actually

of discount rates. Financial firms obviously must make similar estimates before embarking upon major long-term loans.⁴⁸ Businesses in many different fields have pension plans, which essentially reverse the traditional discount rate economic situation—short-term gain from employees paying in, long-term costs as employees receive benefits.⁴⁹ The same accurate assessment of discount rates is necessary in order to accurately weigh future costs.

In some ways, corporations have a simpler task. They do not need to weigh philosophically difficult factors like intergenerational equity, leading some economists to differentiate between the “social” discount rates used by governments and the conventional discount rates used in the context of business decisions. Simply put, corporations need to decide how much they would benefit financially from spending now instead of later, not whether it is fair to do so. That narrows their task down to basically guessing what the long-term interest rate will be. Indeed, most corporations calculate their discount rates based on rolling averages of long-term interest rates.⁵⁰

Given the straight descriptivism that should be at work in corporate discount rates, we would naturally expect that the rates would be consistent across companies. However, it turns out that corporations widely differ in discount rates, even in similar industries.⁵¹ Shell, for example, used a discount rate of four percent in 2016 and 2017.⁵² Sinopec, a Chinese oil and gas company, used pre-tax discount rates ranging from

closely overseen in states with significant oil exploration. *See, e.g.*, GLENN HEGAR, 2018 PROPERTY VALUE STUDY: DISCOUNT RATE RANGE FOR OIL AND GAS PROPERTIES 1–2 (2018), <https://comptroller.texas.gov/taxes/property-tax/docs/96-1166.pdf>.

⁴⁸ *See* Michael T. Jacobs & Anil Shivdasani, *Do You Know Your Cost of Capital?*, HARV. BUS. REV., (Jul. 2012), <https://hbr.org/2012/07/do-you-know-your-cost-of-capital>.

⁴⁹ The exact discount rate used by public pensions has become a hotly contested issue. *See, e.g.*, Tyler Bond, *What is a Discount Rate and Why Does it Matter?*, NAT’L PUB. PENSION COALITION (Apr. 19, 2016), <https://protectpensions.org/2016/04/19/discount-rate-matter/>.

⁵⁰ David Trainer, *How Companies Use Discount Rates to Produce Misleading Earnings*, FORBES, (Jun. 26, 2018), <https://www.forbes.com/sites/greatspeculations/2018/06/26/how-companies-use-discount-rates-to-produce-misleading-earnings/#35ff0e80426c>.

⁵¹ *See* Jacobs & Shivdasani, *supra* note 48.

⁵² ROYAL DUTCH SHELL PLC, ANNUAL REPORT AND FORM 20-F at 18 (2017), *available at* https://www.sec.gov/Archives/edgar/data/1306965/000156459018005735/rdsa-20f_20171231.htm.

twelve to fifteen percent.⁵³ PetroChina used discount rates ranging from -0.09 percent to 4.9 percent in 2016.⁵⁴

How do basic descriptivist discount rates reach such wildly varying conclusions? A relatively innocent explanation is that discount rates are inherently complicated and difficult to pin down. A less innocent explanation is that companies face different incentives, and incentives tend to drive discount rates. For example, there is some empirical evidence suggesting businesses use discount rates to game earnings statements.⁵⁵ Before 2012, firms had to calculate their discount rates based on a two-year average of interest rates.⁵⁶ The 2008 financial crisis led to dramatically lower interest rates, which eventually would have led to firms using a lower discount rate. This presented a problem to firms with large future pension obligations—the lower their discount rate, the larger the present value of future pension costs. Those costs would be reflected in earning statements, which would suddenly seem significantly worse despite the actual pension obligations remaining unchanged. In 2012, Congress passed a law allowing firms to use a twenty-five-year average of interest rates to calculate their discount rates.⁵⁷ Some firms then began using significantly higher discount rates. One firm with a U.S. and Mexican workforce reportedly kept its discount rate abnormally high in both countries.⁵⁸ Those discount rates effectively reduced the company's pension liability by about ten percent, driving an increase of at least ten percent in operating profit.⁵⁹

This example from the corporate world suggests that careful attention and strict rules are necessary to preclude “gaming” discount rates. That lesson is especially salient as we move to changes in discount rates relating to climate change.

⁵³ SINOPEC DAYLIGHT ENERGY LTD., ANNUAL REPORT 2017 at 30 (2017), *available at* https://www.sinopeccanada.com/sites/default/files/docs/reports/sinopec_daylight_2017_annual_report.pdf.

⁵⁴ PETROCHINA CO. LIMITED, ANNUAL REPORT AND FORM 20-F at F-37 (2014), *available at* <https://www.sec.gov/Archives/edgar/data/1108329/000119312516561899/d264935d20f.htm>.

⁵⁵ Trainer, *supra* note 50.

⁵⁶ Stephen Miller, *President Signs Pension Funding Relief Measure*, SOC'Y FOR HUM. RESOURCE MGMT. (Jul. 6, 2012), <https://www.shrm.org/resourcesandtools/hr-topics/benefits/pages/reliefmeasure.aspx>.

⁵⁷ Moving Ahead for Progress in the 21st Century Act of 2012, Pub. L. No. 112-141, § 40211, 126 Stat 405.

⁵⁸ Trainer, *supra* note 50.

⁵⁹ *Id.*

II. HOW THE ACADEMIC DEBATE HAS PLAYED OUT IN U.S. POLICY

With neither descriptivists nor prescriptivists able to win a decisive share of climate change academia, it is unsurprising that various countries and administrations have used a wide range of discount rates. The United States provides a straightforward example: the Trump administration changed its discount rate to allow repeal and replacement of the Obama administration’s Clean Power Plan (“CPP”). The story of discount rates affecting climate policy over the past decade sheds light on how the political process has overwhelmed discount rate selection.

A. The Bush Administration’s Perambulations on Climate Change Economics

Through a serendipitous series of events, the lowest climate change-related discount rate ever endorsed by the federal government came from the George W. Bush administration. This fact is particularly surprising because many observers considered President Bush to be a climate change skeptic, and the president seemed to act the part at several points in his presidency.⁶⁰ However, the Bush administration was in a strangely apolitical situation on climate change in 2008, giving us perhaps the most uniquely unbiased climate change assessment of the past three administrations.

1. Bush the Candidate vs. Bush the President

Bush’s administration followed the Clinton administration, which signed the Kyoto Protocol, a 1997 treaty intended to limit greenhouse gas emissions by First World countries.⁶¹ However, the Clinton administration did not issue any rules that would have required it to adopt a climate-related discount rate. This lapse allowed President Bush to make the first federal mark on the debate over climate-related discount rates.

⁶⁰ See, e.g., Armin Rosencranz, *U.S. Climate Change Policy under G.W. Bush*, 32 GOLDEN GATE U. L. REV. 479, 479–80 (2002) (“President George W. Bush’s reversal and repudiation [of the Kyoto Protocol] seemed a head-in-the-sand response driven by ignorance, short-sightedness and the interests of certain elements of the American business community.”).

⁶¹ *Id.*

As a candidate, Bush opposed the Kyoto Protocol.⁶² However, unlike Donald Trump, Bush did acknowledge climate change as a real problem.⁶³ Bush claimed that his opposition to the Kyoto Protocol stemmed from the fact that developing countries like China and India were not signatories.⁶⁴ In 1997, the Senate voted 95-0 for a nonbinding resolution disapproving any climate agreement that did not involve developing countries.⁶⁵ Consequently, the Protocol was never formally submitted to the Senate for ratification. In 2002, President Bush announced a relatively modest plan to unilaterally reduce greenhouse gas emissions by eighteen percent over ten years.⁶⁶

2. OMB Circular A-4: Stumbling into the Role of Gold Standard

In 2003, the Bush Office of Management and Budget (OMB) issued Circular A-4, a “best practices” memo that would come to dominate discount rate discussions for fifteen years to come (at least).⁶⁷ The memo established standard practices for cost-benefit analysis. The drafters sought out top academics to review the memo, including Cass Sunstein and W. Kip Viscusi.⁶⁸ Today, one might say the 2003 memo reflects a Reagan era interest in cost-benefit analysis that has since fallen by the wayside. It is far and away the most cited policy memo relating to cost-benefit analysis that has emerged over the past twenty years.

The Obama and Trump administrations would both later use Circular A-4 to justify their discount rates, so it is important to examine its discount rate recommendations. The Circular states that agencies should use a real discount rate of seven percent as a base-case for regulatory analysis because that is the “average before-tax rate of return to private capital in the United States economy.”⁶⁹ The Circular also notes that seven percent “approximates the opportunity cost of capital, and it is the appropriate

⁶² George Bush & Al Gore, *October 11, 2000 Debate Transcript*, COMMISSION ON PRESIDENTIAL DEBATES (Oct. 11, 2000), <https://www.debates.org/voter-education/debate-transcripts/october-11-2000-debate-transcript/>. (“I’m not going to let the United States carry the burden for cleaning up the world’s air, like the Kyoto treaty would have done.”).

⁶³ *Id.* (“I think [climate change] is an issue that we need to take very seriously.”).

⁶⁴ *Id.*

⁶⁵ S. Res. 98, 105th Cong. (1997).

⁶⁶ See *Global Climate Change Policy Book*, THE WHITE HOUSE PRESIDENT GEORGE W. BUSH (Feb. 2002), <https://georgewbush-whitehouse.archives.gov/news/releases/2002/02/climatechange.html>.

⁶⁷ U.S. OFFICE OF MANAGEMENT AND BUDGET, CIRCULAR A-4: REGULATORY ANALYSIS (2003) [hereinafter “Circular A-4”].

⁶⁸ *Id.* at 1.

⁶⁹ *Id.* at 33.

discount rate whenever the main effect of a regulation is to displace or alter the use of capital in the private sector.”⁷⁰ This is descriptivism distilled.

However, OMB also endorsed a three percent rate when a given “regulation primarily and directly affects private consumption.”⁷¹ Three percent represents “the rate that the average saver uses to discount future consumption.”⁷² To make that distinction clearer: seven percent is the rate of return of private capital and three percent is how much consumers actually discount their own future consumption. The difference stems primarily from risk. The real rate of return on a ten-year Treasury note, which is essentially riskless, is about three percent.⁷³

Finally, adding more nuance but also more confusion, OMB stated that “[i]f your rule will have important intergenerational benefits or costs you might consider a further sensitivity analysis using a lower but positive discount rate in addition to calculating net benefits using discount rates of 3 and 7 percent.”⁷⁴ The final discount rate endorsed by Circular A-4 is best summarized as: three percent if it affects how people consume; seven percent if it affects how people invest; and maybe somewhere between zero and three percent if it affects future generations. Needless to say, whether a regulation affects consumption or investment is very much in the eye of the beholder, and future administrations would behold Circular A-4s in the ways most convenient to them.

3. Massachusetts v. EPA and Bush’s Discount Rates

In 2003, the Environmental Protection Agency (“EPA”) determined that it could not regulate greenhouse gas emissions under the Clean Air Act and that, even if it had that authority, it would not set emissions standards for vehicles.⁷⁵ However, the Supreme Court decisively changed the Bush administration’s policy in 2007 with *Massachusetts v. EPA*. The Court held that EPA had to render a scientific judgment on greenhouse gas emissions and, if a threat was found, regulate greenhouse gas emissions under the Clean Air Act.⁷⁶

⁷⁰ *Id.*

⁷¹ *Id.*

⁷² *Id.*

⁷³ *Id.* at 33–34.

⁷⁴ *Id.* at 36.

⁷⁵ Control of Emissions from New Highway Vehicles and Engines: Notice of Denial of Petition for Rulemaking, 68 Fed. Reg. 52922, 52923 (Sep. 8, 2003).

⁷⁶ *Massachusetts v. EPA*, 549 U.S. 497, 533 (2007).

Faced with the necessity of taking some action, EPA in 2008 sent out an Advance Notice of Proposed Rulemaking for Greenhouse Gases, seeking comments from the public on possible ways to regulate emissions.⁷⁷ It is entirely understandable that in a presidential election year, EPA would not want to embark upon an ambitious new regulatory initiative that could cause short-term economic problems.

Perhaps because the notice did not actually propose definitive action, the Advance Notice contains a short but surprisingly frank discussion of discount rates. The notice discusses the three percent and seven percent numbers that the Trump EPA would use ten years later.⁷⁸ Immediately following that discussion, it notes that “[w]hen there are important benefits or costs that affect multiple generations of the population, EPA and OMB allow for low but positive discount rates.”⁷⁹ The document specifically notes a range of 0.5 to three percent.⁸⁰ While the document does not offer a specific conclusion, it states:

[R]ates of three percent or lower are consistent with long-run uncertainty in economic growth and interest rates, considerations of issues associated with the transfer of wealth between generations, and the risk of high impact climate damages.⁸¹

While this discussion may sound anodyne, it is more nuanced than most other discussions of discount rates in EPA publications from any administration. It acknowledges multiple sources of uncertainty, as well as the inherent moral tensions in discounting.

It is not clear what the Bush administration’s embrace of a discount rate as low as 0.5 percent shows about the administration’s broader climate change policy. While the academic discourse on discount rates had been underway for years by 2008, it is conceivable that the notice did not reflect a conscious political decision. At the end of any presidential administration, political appointees start leaving, and the career officials take on a relatively larger role. Perhaps, since the document was only a notice and not an actual rule, it was not sufficiently scrutinized by political appointees.

It is also possible that President Bush, or senior figures in his administration, wanted to lay the foundation for major action to mitigate

⁷⁷ Regulating Greenhouse Gas Emissions Under the Clean Air Act, Advanced Notice of Proposed Rulemaking, 73 Fed. Reg. 44534 (Jul. 30, 2008).

⁷⁸ *Id.* at 44414.

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ *Id.* at 44414–15.

climate change. As discussed above, Bush’s skepticism on climate change was less than full-throated. He may have known that Republicans in Congress would block legislation or rebel against substantive action, so he simply did what he could. It certainly appeared that no matter who won the 2008 election, major action on climate change would be forthcoming. The Republican nominee for president in the 2008 election, John McCain, had already signaled his intent to take action to mitigate climate change, as had Barack Obama.⁸² Whatever the explanation, this is the only instance so far in the history of climate change politics when an administration suggested using a discount rate that did not align with its stated policy goals.

B. The Obama Administration Embraced a Dash of Prescriptivism

It is not at all realistic to expect candidates for office to embrace a particular discount rate, but as a consequence, it is difficult to tell the difference between a politically opportune discount rate and good-faith prescriptivism. As a candidate, Barack Obama was far clearer than George W. Bush regarding what he wanted to do about climate change. During the 2008 presidential campaign, he proposed a carbon emissions credit trading system (i.e., cap and trade), as well as subsidies to promote alternative energy sources and reduce energy waste.⁸³ It is not surprising then that the Obama administration would use prescriptivist discount rates to help justify its climate change policies.

1. The Social Cost of Carbon: Enter Prescriptivism

The Obama era EPA used a blend of descriptivist and prescriptivist approaches when developing its estimate for the social cost of carbon (“SCC”). The administration intended the SCC to harmonize different agencies’ cost-benefit analyses relating to climate change.⁸⁴ The SCC in turn provided the basis for the CPP, which would have required states to

⁸² Elisabeth Bumiller & John M. Broder, *McCain Differs with Bush on Climate Change*, N.Y. TIMES (May 13, 2008), <https://www.nytimes.com/2008/05/13/us/politics/12cnd-mccain.html>.

⁸³ OBAMA FOR AMERICA, BARACK OBAMA AND JOE BIDEN: NEW ENERGY FOR AMERICA (2008), https://www.energy.gov/sites/prod/files/edg/media/Obama_New_Energy_0804.pdf.

⁸⁴ INTERAGENCY WORKING GROUP ON SOCIAL COST OF CARBON, TECHNICAL SUPPORT DOCUMENT: SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12866 at 1, 17 (2010), https://www.epa.gov/sites/production/files/2016-12/documents/scc_tsd_2010.pdf [hereinafter “SCC TSD”].

achieve specific emissions reductions in electric power generation.⁸⁵ The CPP was arguably the Obama administration’s most ambitious climate change policy, and its justification required a robust SCC estimate. To the administration’s credit, its interagency process for establishing the SCC was thorough and included true luminaries in the field of cost-benefit analysis, like Sunstein, one of the experts the administration consulted for Circular A-4.

The Obama era SCC contained a detailed discussion of discount rates, stating, “[W]e draw on both [descriptivist and prescriptivist] approaches but rely primarily on the descriptive approach to inform the choice of discount rate.”⁸⁶ The word “primarily” does a lot of work in that sentence. The SCC was based on three different discount rates: 2.5, three, and five percent.⁸⁷ The 2.5 percent figure appears to have been explicitly prescriptivist, and the five percent figure also contained significant prescriptivism.

The interagency group based the three percent “central value” on OMB’s Circular A-4 guidance on interest rates.⁸⁸ They noted that the figure “roughly corresponds to the after-tax riskless interest rate.”⁸⁹ That represents a descriptivist approach. The group established the five percent rate by adjusting OMB Circular A-4’s highest figure (seven percent) down “to represent the possibility that climate damages are positively correlated with market returns.”⁹⁰ In other words, market rates of return might be seven percent, but if they do not incorporate climate damages, the discount rate should be lower. The methodology amounts to prescriptivist modification of a descriptivist measure. The five percent rate does not *describe* the rate people or firms use in real life but *prescribes* a two percent reduction based on nonmarket considerations.

Of the three discount rates used, only the 2.5 percent rate was explicitly prescriptivist. The SCC support document contains a one paragraph, 138-word justification of the 2.5 percent rate. Most of that paragraph is dedicated to a technical prescriptivist discussion of why a rate lower than three percent makes sense mathematically.⁹¹ At the end of that

⁸⁵ U.S. ENVTL. PROT. AGENCY, REG. IMPACT ANALYSIS FOR THE CLEAN POWER PLAN FINAL RULE (2015), https://www3.epa.gov/ttnecas1/docs/ria/utilities_ria_final-clean-power-plan-existing-units_2015-08.pdf, at ES-1-ES-2.

⁸⁶ SCC TSD, *supra* note 84, at 19.

⁸⁷ *Id.* at 3.

⁸⁸ *Id.* at 23.

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ The argument is that if the true discount rate is unknown and a range is used, lower discount rates tend to dominate expected values as timespans increase and higher discount rate scenarios are discounted away entirely. If we expect discount rates to

discussion, the authors tacked on a quick ethics-based explanation: “Use of this lower value also responds to certain judgments using the prescriptive or normative approach and to ethical objections that have been raised about rates of 3 percent or higher.”⁹²

2. The Effect of the Prescriptivist Discount Rate

As far as economics goes, the 2.5 percent discount rate represents a mathematically grounded prescriptivist approach. What is interesting, however, is the political framing. With a high discount rate of five percent and a low discount rate of 2.5 percent, the “middle ground” became three percent. Recall that the three percent figure was based on OMB Circular A-4, which recommended anything from three percent to seven percent for discount rates.⁹³ By using a little prescriptivism, the Obama administration could call three percent the *central value*, when it actually was the lowest they could go while remaining within the range of OMB Circular A-4, a document which dated to the Bush administration. If political opponents challenged the CPP in court or criticized its methodology, the Obama administration could rightly claim that they had used a discount rate embraced by the most recent Republican president.

Changing the central value would have had a major impact on subsequent climate change regulations. If the interagency group had just used the OMB range endorsed in Circular A-4, five percent would have been the central value instead of three percent. The central estimate for the SCC would then have been \$12 per ton of CO₂ emissions instead of \$40. The climate benefits from the CPP in 2030 would have been about sixty-eight percent lower.⁹⁴

The interagency group made reasonable choices and explained them with above average detail. Still, in the end, the group’s choices justified precisely the approach endorsed by Barack Obama before any federal agency cost-benefit analysis had been performed. The Trump administration would subsequently effect major changes by endorsing a different discount rate.

change randomly in the future, the times when the discount rate is lower than the long-term average matter more than when it is higher. Thus, for planning purposes, we should adjust the discount rate down if we want to use a constant discount rate (i.e., a “certainty equivalent” rate). See Richard G. Newell & William A. Pizer, *Discounting the Distant Future: How Much Do Uncertain Rates Increase Valuations?*, 46 J. ENVTL. ECON. AND MGMT. 52 (2003), <http://www.lasserre.uqam.ca/cours/ECO8071/Articles/NewellPizer03.pdf>.

⁹² SCC TSD, *supra* note 84, at 23.

⁹³ Circular A-4, *supra* note 67, at 33.

⁹⁴ CPP RIA, *supra* note 1, at 3-31 to 3-32 (\$6.4 billion in climate benefits at a five percent discount rate vs. \$61 billion at a three percent discount rate).

C. The Trump Administration Uses Convenient Descriptivism to Replace the Clean Power Plan

The Trump administration provides the clearest example of changing discount rate assumptions to justify a change in policy. As a candidate, Donald Trump had a clear policy goal of reducing regulatory costs by minimizing federal action against climate change. A major step toward achieving that goal, repeal of the CPP, depends on changing discount rates.

1. Trump’s Candidacy: Descriptivist in Fact, Prescriptivist in Effect

As a candidate, Trump repeatedly stated that he did not want the federal government taking action on climate change, which he did not believe to be happening. At a campaign rally, Trump stated: “Obama’s talking about all of this with the global warming and the—a lot of it’s a hoax. I mean, it’s a money-making industry, OK? It’s a hoax, a lot of it.”⁹⁵ One practical consequence of this belief was his repeated promise to repeal the CPP.⁹⁶ As president, Trump has said that climate change is not definitively caused by human activities, though he also said, “I don’t think it’s a hoax.”⁹⁷ Further, he stated that he believes the climate is warming, but that it will cool down again without human intervention.⁹⁸

It is difficult to situate the “hoax” argument in cost-benefit analysis terms. One could say that Trump believes there are zero benefits to mitigating climate change, but his administration has not made that claim, most likely because it would have adverse legal consequences, as discussed below. A more legally sound way to reach the same result would be to raise the discount rate and discount away the future benefits. That would make the benefits approach zero in practical terms, if not literal terms. Such an approach is arguably prescriptivist: it is choosing a discount rate based on a non-economically evident consideration (i.e., that climate change is not human-made or is not real). However, thanks to

⁹⁵ Donald Trump, 2016 Republican Presidential Candidate, Campaign Rally in Hilton Head, S.C. (Dec. 30, 2015), <https://www.c-span.org/video/?402610-1/donald-trump-campaign-rally-hilton-head-south-carolina&start=2138&transcriptQuery=hoax>

⁹⁶ Donald Trump, Republican Presidential Nominee, Speech at the New York Economic Club in Manhattan (Sept. 15, 2016).

⁹⁷ Mark Tutton, *Donald Trump: Climate ‘will change back again,’* CNN (Oct. 15, 2018, 4:50 PM), <https://www.cnn.com/2018/10/15/politics/trump-climate-change-60-minutes/index.html>.

⁹⁸ *President Trump on Christine Blasey Ford, His Relationships with Vladimir Putin and Kim Jong Un and More*, CNN (Oct. 15, 2018), <https://www.cbsnews.com/news/donald-trump-full-interview-60-minutes-transcript-lesley-stahl-2018-10-14/>.

OMB Circular A-4, his administration can achieve the same end by using a descriptivist rate in its regulatory impact analysis (“RIA,” the technical term for the cost-benefit analysis accompanying agency rules).

2. Raising Discount Rates to Solve the Cost-Benefit Analysis Problem

Legal necessities meant that Trump’s apparent policy preference to take no action relating to climate change could not be directly implemented in federal policy. President Trump could and did initiate a withdrawal from the Paris Agreement on carbon emissions because he did not have to offer a formal cost-benefit justification. Repealing the CPP presents far higher legal hurdles.

In order to actually repeal the CPP, the Trump administration has to come up with a plan that can survive judicial review. Recall that in 2007 the Supreme Court in *Massachusetts v. EPA* forced EPA to come to a scientific judgment about whether human-caused climate change was happening.⁹⁹ EPA’s subsequent 2009 endangerment finding relating to greenhouse gases further legally binds the administration to take actions to regulate emissions under the Clean Air Act.¹⁰⁰ President Trump could order the endangerment finding to be withdrawn, but that action too would be subject to judicial review. The D.C. Circuit has already upheld the endangerment finding, and the vast amount of scientific evidence that went into the finding means agency action to withdraw the finding would be unlikely to succeed.¹⁰¹ If the Trump administration’s overarching policy goal is to do as little as possible to address climate change, and it cannot withdraw the endangerment finding, the only path forward is to replace policies like the CPP with far less onerous alternatives that can survive judicial review.

3. The Affordable Clean Energy Rule Repeals the Clean Power Plan

The best way to craft a non-ambitious climate change plan that can survive judicial review is to increase the discount rate used in cost-benefit

⁹⁹ See *Massachusetts v. E.P.A.*, 549 U.S. 497, 532, 534–35 (2007).

¹⁰⁰ U.S. ENVIRONMENTAL PROTECTION AGENCY, ENDANGERMENT AND CAUSE OR CONTRIBUTE FINDINGS FOR GREENHOUSE GASES UNDER SECTION 202(A) OF THE CLEAN AIR ACT, Dec. 7, 2009, https://www.epa.gov/sites/production/files/2016-08/documents/endangerment_tsd.pdf.

¹⁰¹ Phillip Dane Warren, *The Impact of Weakening Chevron Deference on Environmental Deregulation*, 118 COLUM. L. REV. ONLINE 62, 74–75 (2018), https://columbialawreview.org/wp-content/uploads/2018/02/Warren_The-Impact-of-Weakening-Chevron-Deference-on-Environmental-Deregulation.pdf.

analysis, a fact the Trump administration understood perfectly well. In 2018, it issued the Affordable Clean Energy (“ACE”) rule, which would require moderate efficiency improvements in existing power plants to achieve a one percent reduction in carbon dioxide emissions by 2030.¹⁰² In its regulatory impact analysis of the 2018 proposed rule, as well as the finalized rule issued in June 2019, EPA used discount rates of three and seven percent.¹⁰³

The Trump administration’s promotional material for the rule nonetheless considered only the seven percent rate and boasted that the rule would produce \$3.4 billion in net benefits between 2023 and 2037.¹⁰⁴ About \$2.9 billion of those net benefits result from using a seven percent instead of a three percent discount rate.¹⁰⁵ There were additional changes in methodology to further increase the benefits of the CPP repeal. For example, EPA considered only domestic benefits rather than worldwide impacts, and did not consider co-benefits (i.e., benefits accruing for reasons other than limiting carbon emissions, primarily the health benefits from cleaner air due to less coal burning).¹⁰⁶

Discount rate selection made a decisive difference in the cost-benefit analysis. The proposed actions potentially produced net benefits (i.e., the cost savings from not enforcing the CPP were more than the forgone climate benefits) between 2023 and 2037 in two of the four scenarios modeled.¹⁰⁷ However, EPA also modeled the costs and benefits for specific years at three and seven percent discount rates. With a seven percent discount rate, two of the four repeal options resulted in net benefits; at three percent, only one did.¹⁰⁸ The relevant table from the RIA below depicts those results, with my own added highlighting of the scenarios with negative net benefits in red (i.e., scenarios where repealing

¹⁰² See ACE RIA, *supra* note 2, at 3-14.

¹⁰³ ACE RIA, *supra* note 2, at ES-4; U.S. ENVIRONMENTAL PROTECTION AGENCY, REGULATORY IMPACT ANALYSIS FOR THE REPEAL OF THE CLEAN POWER PLAN, AND THE EMISSION GUIDELINES FOR GREENHOUSE GAS EMISSIONS FROM EXISTING ELECTRIC UTILITY GENERATING UNITS, at ES-3, (2019), https://www.epa.gov/sites/production/files/2019-06/documents/utilities_ria_final_cpp_repeal_and_ace_2019-06.pdf [hereinafter “Final ACE RIA”].

¹⁰⁴ ACE RIA, *supra* note 2, at ES-5; See U.S. ENVTL. PROT. AGENCY, FACT SHEET: PROPOSED AFFORDABLE CLEAN ENERGY RULE – OVERVIEW 3 (2018), https://www.epa.gov/sites/production/files/2018-08/documents/ace_overview_0.pdf.

¹⁰⁵ See ACE RIA, *supra* note 2, at ES-5.

¹⁰⁶ *Id.* at ES-5.

¹⁰⁷ See *id.* at ES-1.

¹⁰⁸ *Id.* at ES-15 tbl.ES-11.

the CPP is a net harm) and positive net benefits in green (i.e., scenarios where repealing the CPP is a net good).¹⁰⁹

Table ES-11 Compliance Costs, Climate Benefits, and Net Benefits Associated with Targeted Pollutant (CO₂), Relative to Base Case (CPP), 3 and 7 Percent Discount Rates, 2025, 2030, and 2035 (billions of 2016\$)

	Costs		Domestic Climate Benefits		Net Benefits associated with the Targeted Pollutant (CO ₂)	
	3%	7%	3%	7%	3%	7%
No CPP						
2025	(0.7)	(0.7)	(0.3)	(0.1)	0.4	0.7
2030	(0.7)	(0.7)	(0.5)	(0.1)	0.2	0.6
2035	(0.4)	(0.4)	(0.5)	(0.1)	(0.1)	0.3
2% HRI at \$50/kW						
2025	0.0	0.0	(0.2)	(0.0)	(0.3)	(0.1)
2030	(0.2)	(0.2)	(0.4)	(0.1)	(0.2)	0.2
2035	0.1	0.1	(0.4)	(0.1)	(0.6)	(0.2)
4.5% HRI at \$50/kW						
2025	(0.6)	(0.6)	(0.2)	(0.0)	0.4	0.6
2030	(1.0)	(1.0)	(0.4)	(0.1)	0.5	0.9
2035	(0.6)	(0.6)	(0.5)	(0.1)	0.2	0.5
4.5% HRI at \$100/kW						
2025	0.5	0.5	(0.1)	(0.0)	(0.7)	(0.5)
2030	0.2	0.2	(0.3)	(0.1)	(0.5)	(0.2)
2035	0.5	0.5	(0.3)	(0.1)	(0.8)	(0.5)

Notes: Negative costs indicate avoided costs, negative benefits indicate forgone benefits, and negative net benefits indicate forgone net benefits. All estimates are rounded to one decimal point, so figures may not sum due to independent rounding. Climate benefits reflect the value of domestic impacts from CO₂ emissions changes. This table does not include estimates of ancillary health co-benefits from changes in electricity sector SO₂ and NO_x emissions.

*Figure 1*¹¹⁰

EPA also included a separate note in the appendix on sensitivity analysis where it considered the effect of a 2.5 percent discount rate in 2035.¹¹¹ These results are not included in any chart in the main body of the RIA, but rather in the appendix.¹¹² In the 2.5 percent scenario, none of the repeal options resulted in net benefits in 2035.¹¹³ Even with all of the

¹⁰⁹ *Id.* “HRI” stands for “heat rate improvement,” a measure of the efficiency gains at power plants subject to the new rule. *See id.* at ES-1 to ES-2.

¹¹⁰ *Id.* at ES-15 tbl.ES-11.

¹¹¹ *Id.* at 7-6.

¹¹² *Id.*

¹¹³ *Id.* (“[B]y 2035, the estimated forgone benefits increase to \$590, \$640, \$470 and \$710 million under the illustrative 2 percent HRI at \$50/kW scenario, 4.5 percent HRI at \$50/kW scenario, 4.5 percent HRI at \$100/kW scenario, and No CPP scenario, respectively.”) The RIA discloses compliance costs in 2035 of \$100 million, -\$600 million, \$500 million, and -\$400 million (negative numbers denoting that compliance costs decrease relative to the CPP rule). *Id.* at ES-7 tbl.ES-3. These two sets of numbers are separated by 219 pages and are listed in different orders, presumably to make

other methodological changes such as not counting global damages, if the Trump EPA had used the same discount rates as the Obama EPA, the repeal would not have been justified under cost-benefit analysis. Choice of discount rate was critical in justifying the repeal.

EPA did not include any meaningful discussion of its choice of discount rates in the ACE rule. In the appendix of the Regulatory Impact Analysis, EPA noted that OMB Circular A-4 recommended three and seven percent generally.¹¹⁴ It also noted that Circular A-4 “suggests intergenerational rates from 1 to 3 percent per annum,” but did not discuss why it didn’t use those rates in the main analysis.¹¹⁵

The Trump administration finalized the ACE rule and repeal of the CPP in June 2019.¹¹⁶ The RIA for the final rule did not compare the costs and benefits of the ACE rule versus the CPP.¹¹⁷ However, in comparing the ACE rule against a baseline scenario of no CPP, EPA found that ninety percent of domestic climate benefits between 2023 and 2037 disappeared when using a seven percent discount rate instead of a three percent rate, and included no discussion of a 2.5 percent rate.¹¹⁸ A coalition of twenty-nine states and cities have already announced a pending lawsuit against EPA over the ACE rule.¹¹⁹ Either the state coalition or another plaintiff will likely challenge EPA’s use of discount rates, particularly given that a number of commentators have already noted the change in discount rates.¹²⁰

D. The Ghost of Discount Rates Yet to Come

In the absence of judicial intervention, there is every reason to believe the ping-ponging on discount rates will continue and increase in magnitude. Incentives for both parties will likely lead them to increasingly diverge in their preferred climate change policies. There is a scientific

comparison as difficult as possible.

¹¹⁴ *Id.* at 7-1.

¹¹⁵ *Id.* at 7-6.

¹¹⁶ *See* Final ACE RIA, *supra* note 104, at ES-1.

¹¹⁷ *Id.* at ES-2. EPA asserted that CPP’s presence or non-presence was economically irrelevant because states had already nearly met CPP’s emissions reduction goals. *See id.* at ES-1 to ES-2.

¹¹⁸ *See id.* at ES-4 tbl.ES-1.

¹¹⁹ Lisa Friedman, *States Sue Trump Administration Over Rollback of Obama-Era Climate Rule*, N.Y. TIMES (Aug. 13, 2019), <https://www.nytimes.com/2019/08/13/climate/states-lawsuit-clean-power-ace.html>.

¹²⁰ *See* David Roberts, *Discount rates: A boring thing you should know about (with otters!)*, GRIST (Sept. 24, 2012), <https://grist.org/article/discount-rates-a-boring-thing-you-should-know-about-with-otters/>.

argument for that divergence, but the underlying reason is simple: Republicans and Democrats will likely continue to disagree on climate change action until political circumstances change, and there is no reason to expect that they will. Starting with President Bill Clinton, climate policy has oscillated back and forth with increasing amplitude. If Clinton was tentatively pro-action, Bush was tentatively against action. Obama was much more pro-action, and Trump has gone to great lengths to avoid taking action.

1. Polls Suggest No Change in Public Opinion as Temperatures Increase

There is a facile argument that as time elapses and the world increasingly encounters the costs of climate change, political changes might make action more likely. For example, following the impact of Hurricane Harvey in North Carolina, polls found a large increase in Republican voters in the state who believed climate change was happening. Presumably, that belief is a precursor to an increased willingness to pay immediate costs to mitigate future climate change.

Despite increased firsthand experience with climate change, polls seem to indicate essentially no net change in public opinion relating to climate change since 2001.¹²¹ Elected officials appear to reflect this general disinterest despite increased visibility of climate change. Republicans in the House of Representatives passed a resolution in 2018 expressing disapproval of any carbon tax.¹²² Voters in Washington also rejected a carbon tax in a referendum.¹²³ If there is any validity in the theory that public opinion will shift over time regarding climate change, we have yet to see evidence of it.

¹²¹ See Megan Brenan, *Polarized Americans Rate Environment Worst Since 2009*, GALLUP (Mar. 29, 2018), https://news.gallup.com/poll/231971/polarized-americans-rate-environment-worst-2009.aspx?g_source=link_NEWSV9&g_medium=TOPIC&g_campaign=item_&g_content=Polarized%2520Americans%2520Rate%2520Environment%2520Worst%2520Since%25202009; See also Anthony Leiserowitz et al., *Six in Ten Americans Are Worried About Global Warming*, YALE PROGRAM ON CLIMATE CHANGE COMMUNICATION (Jan. 18, 2017), <http://climatecommunication.yale.edu/visualizations-data/six-ten-americans-worried-global-warming/>.

¹²² H.H.R. Con. Res. 119, 115th Cong. (2018). Expressing the sense of Congress that a carbon tax would be detrimental to the United States economy, 115th Cong. (2018).

¹²³ Hal Bernton, *Washington state voters reject carbon-fee initiative*, SEATTLE TIMES (Nov. 6, 2018, 5:48 AM), <https://www.seattletimes.com/seattle-news/politics/voters-rejecting-carbon-fee-in-first-day-returns/>.

2. *Incentives to Game Discount Rates Will Increase for Both Parties*

As the costs of preventing or mitigating climate change increase in the absence of action, Republicans will have a greater incentive to resist taking action. The U.S. Fourth National Climate Assessment, released in 2018, noted that early and substantial mitigation would offer a greater chance of avoiding increasingly adverse impacts and that “delayed and potentially much steeper emissions reductions jeopardize achieving any long-term goal” related to mitigating climate damages.¹²⁴ With costs of taking action increasing, there will be a larger political bonus to doing nothing, and discount rates offer one of the best ways to avoid taking action and to survive judicial review. Democrats, meanwhile, will need to show greater benefits to justify taking action in the face of increasing costs. Because federal agencies typically calculate benefits of climate mitigation linearly (e.g., for each ton of carbon emitted, assume \$30 of damage), the easiest way to increase apparent benefits will be to lower discount rates.

Republicans face one obvious and one subtle incentive to not take action. The obvious incentive is that, as discussed above, the costs of mitigation will continue to increase. Those mitigation costs disproportionately focus on Republican constituencies. The cost of most climate action plans, such as a carbon tax, would be primarily born by industries like coal, oil, and agriculture, all of which are key Republican constituencies. Particularly visible reminders of climate change like sea level rise and hurricane severity do not affect the vast majority of Republican-leaning states.¹²⁵ Among Republicans, those who live nearer to the coast are significantly more likely to think climate change is happening.¹²⁶ As for visible indicators like increased wildfires, President Trump and other leading Republicans have exclusively blamed other factors such as forest management instead of climate change.¹²⁷

Climate change adaptation policies offer a more subtle incentive to avoid action, particularly in the minority of Republican-leaning states that touch an ocean. Instead of limiting emissions to mitigate damages worldwide, Republicans can propose spending money on adaptations to

¹²⁴ U.S. GLOB. CHANGE RESEARCH PROGRAM, FOURTH NATIONAL CLIMATE ASSESSMENT, 1348, 1351 (vol 4, 2018).

¹²⁵ See Nadja Popovich & Livia Albeck-Ripka, *How Republicans Think About Climate Change – in Maps*, N.Y. TIMES (Dec. 14, 2017), <https://www.nytimes.com/interactive/2017/12/14/climate/republicans-global-warming-maps.html>.

¹²⁶ *Id.*

¹²⁷ Donald J. Trump (@realDonaldTrump), TWITTER (Jan. 9, 2018, 8:25 AM), <https://twitter.com/realDonaldTrump/status/1083022011574747137>.

reduce domestic damages.¹²⁸ Adaptive measures could include building sea walls, compensating local property owners adversely affected by increasingly severe hurricanes, increasing flood response infrastructure, etc.¹²⁹ Those measures all require spending that creates jobs within specific states, especially Florida and Texas, two influential Republican-leaning states.

The foregoing discussion suggests that climate change policy in the United States will oscillate between action and inaction, and discount rates will be the easiest way to effect those changes. If the legislative branch is unlikely to take action, and presidential administrations are likely to go back and forth inconsistently, what of the judicial branch? We have already explored the economic and policy reasons for the primacy of discount rates. In Part III, we will examine the courts' reaction to the role of discount rates in climate change economics.

III. JUDICIAL REVIEW OF DISCOUNT RATES

Courts in the U.S. have broadly declined to engage in serious, thoughtful review of agency discount rates. This is undoubtedly because discount rates in the climate change context fall at the nadir of justiciability. Discount rates are a technical field, subject to multiple rational interpretations. Perhaps most damning of all, climate change is a contentious political issue with vast ramifications. A decision to overturn a federal climate change policy on technical grounds would be among the most consequential judicial interventions in American history. While the Supreme Court was willing to address the issue in the 2007 case *Massachusetts v. EPA* with a 5-4 vote, that was a relatively simple question of whether EPA must consider climate change at all. Addressing discount rates is a much more granular question.

A. Existing Case Law Relating to Discount Rates

While courts do not have deep experience with oversight of intergenerational discount rates, they have decided a number of cases regarding cost-benefit analysis, which has been a factor in some agency

¹²⁸ For a partisan discussion of this phenomenon, see David Roberts, *Why conservatives keep gaslighting the nation about climate change*, VOX (Oct. 31, 2018, 9:57 AM), <https://www.vox.com/energy-and-environment/2018/10/22/18007922/climate-change-republicans-denial-marco-rubio-trump>.

¹²⁹ STÉPHANE HALLEGATTE & PATRICE DUMAS, ADAPTATION TO CLIMATE CHANGE: SOFT VS. HARD ADAPTATION, 3 (Meteo France), <http://www.oecd.org/env/cc/40899422.pdf>.

decision making since the 1940s. President Ronald Reagan issued an executive order in 1981 requiring federal agencies to conduct cost-benefit analysis for significant regulatory actions, dramatically increasing the number of potential cases for courts to hear.¹³⁰ Executive agencies normally adopt about thirty rules each year that include a cost-benefit analysis.¹³¹ In one study, of the rules challenged on the basis of their cost-benefit analysis, courts upheld nearly sixty percent.¹³² Over the past half-century, enough jurisprudence has sprung up around the issue of cost-benefit analysis to yield some meaningful conclusions about how courts could oversee an issue like intergenerational discount rates.¹³³

1. A Lenient Standard of Review

Courts generally apply a lenient standard of review to cost-benefit analysis. Courts reviewing agency cost-benefit analysis generally apply the Administrative Procedure Act’s prohibition against decision making that is “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.”¹³⁴ The Supreme Court has further expounded on that standard:

An agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.¹³⁵

That standard requires that the agency action is rationally related to the evidence available to the agency when it made its decision to act.¹³⁶

¹³⁰ Exec. Order No. 12,291, 3 C.F.R. § 127 (Feb. 17, 1981), *reprinted as amended in* 5 U.S.C. § 601 app. at 431–34 (1982).

¹³¹ Caroline Cecot & W. Kip Viscusi, *Judicial Review of Agency Benefit-Cost Analysis*, 22 GEO. MASON L. REV. 575, 589 (2015).

¹³² *Id.*

¹³³ In some cases where the court overturned a cost-benefit analysis, the reasoning is simply that the agency was not permitted to conduct a cost-benefit analysis to support its decision. *See, e.g.,* Whitman v. Am. Trucking Ass’ns, 531 U.S. 457 (2001). This article does not consider those cases because they do not pertain to the substance of the cost-benefit analysis. The Supreme Court has also trended more recently to allow cost-benefit analysis in cases where the statute was silent on the issue. *See* EPA v. EME Homer City Generation, L.P., 572 U.S. 489 (2014).

¹³⁴ 5 U.S.C. § 706(2)(A) (2018).

¹³⁵ Motor Vehicle Mfrs. Ass’n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983).

¹³⁶ *Id.*

The Supreme Court has further narrowed the scope of review by reminding courts that they cannot substitute their judgment for the agency's judgment.¹³⁷

More ominously still for plaintiffs challenging cost-benefit analyses, the Supreme Court has said that a reviewing court should “generally be at its most deferential” when the agency makes “predictions, within its area of special expertise, at the frontiers of science.”¹³⁸ Agency cost-benefit analyses are often based on detailed technical data and scientific assessments. It is difficult enough for outsiders to challenge the science, data, or economics behind an agency decision, let alone describe the areas of disagreement with sufficient clarity and persuasiveness to convince a non-specialist judge that the outsider knows better than the agency.

Despite these obstacles, in cases where plaintiffs challenge agency cost-benefit analyses, courts side with them forty percent of the time.¹³⁹ As described by Caroline Cecot and W. Kip Viscusi, cases where courts invalidated rules based on cost-benefit analysis fall into three categories: (1) the analysis ignored an important aspect of the problem (e.g., the agency did not examine the impact of an action on human health); (2) the methodology ran against scientific evidence or reason; or (3) the agency failed to disclose the analysis's assumptions or methodology.¹⁴⁰

For purposes of our discussion of discount rates, we can safely ignore category (1), where the agency completely misses a key part of the analysis. It is literally impossible to ignore discount rates—not discounting would just mean endorsing a discount rate of zero, which is within the range of expert-endorsed rates. The remaining two categories, however, merit further exploration.

2. *Methodological Flaws: Not Enough Reason to Overturn?*

Category (2), irrational methodology, would seem to be on point with the abuse of discount rates, but the actual case law in this area suggests challenges would be ultimately fruitless. *Corrosion Proof Fittings v. EPA* provides an example where methodological flaws were sufficient to remand a rule for further development by the agency.¹⁴¹ In that case, the plaintiffs sought to overturn a rule regarding asbestos processing.¹⁴² The

¹³⁷ *Id.*

¹³⁸ *Balt. Gas & Elec. Co. v. Natural Res. Def. Council, Inc.*, 462 U.S. 87, 103 (1983).

¹³⁹ Cecot & Viscusi, *supra* note 131, at 589.

¹⁴⁰ *Id.* at 592.

¹⁴¹ See *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201, 1218 (5th Cir. 1991), *opinion clarified* (Nov. 15, 1991).

¹⁴² *Id.*

court remanded the rule to the EPA for revision after finding, among other things, that EPA had inappropriately used discount rates to discount only costs, instead of both costs and benefits.¹⁴³

The one factor weakening the value of *Corrosion Proof Fittings* for policing discount rates is that the court applied a different standard of review. The statute in question explicitly spelled out that courts should consider the ordinary Administrative Procedure Act (“APA”) arbitrary and capricious standard separately. Courts had previously held that the standard for the statute in question was more rigorous.¹⁴⁴ Further differentiating this case from the norm, the agency’s problem was not that it selected the wrong discount rate, but that it selected two different rates for costs and benefits.¹⁴⁵

Most other cases alleging methodological flaws have not succeeded in overturning the rule in question. In 2002, the D.C. Circuit upheld an EPA Clean Water Act regulation, noting that “in view of the complex nature of economic analysis typical in the regulation promulgation process, [the plaintiffs’] burden to show error is high.”¹⁴⁶ Another case with a similar question, *City of Waukesha v. EPA* involved setting a maximum contamination level for naturally occurring uranium.¹⁴⁷ In that case, there was contradictory scientific data on the toxicity of uranium, and the court found it was reasonable for EPA to go either way depending on its expert judgment.¹⁴⁸

Most damning of all, perhaps, is a D.C. Circuit case upholding the National Highway Transportation Safety Administration’s (“NHTSA”) cost-benefit analysis justifying a decision to reduce minimum performance standards for automobile bumpers.¹⁴⁹ Then judge Antonin Scalia wrote a caustic majority opinion excoriating the NHTSA’s cost-benefit analysis, stating “[t]his passage bears every evidence of having been inserted as make-weight by someone who had not the slightest idea what he was talking about.”¹⁵⁰ Nevertheless, the court upheld the analysis’s conclusion because the agency offered an “alternative rationale based on the confluence of independently improbable assumptions.”¹⁵¹ This case stands for the proposition that courts are strongly averse to claiming that

¹⁴³ *Id.* at 1218.

¹⁴⁴ *See* *Envtl. Def. Fund v. EPA*, 636 F.2d 1267, 1277 (D.C. Cir. 1980).

¹⁴⁵ *Corrosion Proof Fittings*, 947 F.2d at 1218.

¹⁴⁶ *Nat’l Wildlife Fed’n v. EPA*, 286 F.3d 554, 563 (D.C. Cir. 2002).

¹⁴⁷ *City of Waukesha v. EPA*, 320 F.3d 228, 231 (D.C. Cir. 2003).

¹⁴⁸ *Id.* at 254.

¹⁴⁹ *See* *Ctr. for Auto Safety v. Peck*, 751 F.2d 1336 (D.C. Cir. 1985).

¹⁵⁰ *Id.* at 1366.

¹⁵¹ *Id.*

agencies have made improper judgments in their cost-benefit analyses, even when the judge states explicitly that the agency is uninformed.

Viewed through the prism of the Obama and Trump administrations' discount rates, the methodological challenge seems unlikely to succeed. If one wanted to overturn the Obama era SCC discount rate, one would have to argue that prescriptivism in discount rates (e.g., the 2.5 percent rate) is irrational despite an entire school of philosophers and economists backing it. To challenge the Trump era seven percent discount rate would require arguing that OMB has been endorsing a totally irrational discount rate for fifteen years. Essentially, a plaintiff would have to ask a federal court to cut the Gordian knot of the prescriptivist vs. descriptivist debate and choose not just an appropriate discount rate, but the correct philosophy for estimating a discount rate. There is little chance of any court doing that and, if it did, such a ruling would be unlikely to survive appeal.

3. Challenges to Transparency: A Nuanced Alternative

The third category, failure to disclose, represents a more promising and less explored avenue for challenging discount rate abuse. The discount rate abuse problem really boils down to a single question: how can we know whether discount rates are chosen arbitrarily to suit political ends? That question in turn depends on the transparency of the process that yielded the discount rate used by the administration. If there is no significant discussion of why the agency picked the rate it did, or if there is only a pro forma citation to OMB Circular A-4, then the agency has not actually given a meaningful account of its process.

The case law gives some cause for optimism about this line of inquiry. In a 2007 D.C. Circuit case, plaintiffs challenged a Federal Motor Carrier Safety Administration ("FMCSA") rule regarding operator fatigue.¹⁵² The FMCSA did not disclose the methodology of its operator-fatigue model used to estimate risk of crash.¹⁵³ The court held the "complete lack of explanation for an important step in the agency's analysis was arbitrary and capricious."¹⁵⁴

That reasoning is applicable to the discount rate context. While a court might consider a range of discount rates viable, without explicit discussion of why the agency chose a particular rate, there is no way for participants in the notice-and-comment procedure (or courts) to know whether it is appropriate.

¹⁵² *Owner-Operator Indep. Drivers Ass'n, Inc. v. Fed. Motor Carrier Safety Admin.*, 494 F.3d 188, 193 (D.C. Cir. 2007).

¹⁵³ *Id.* at 202–03.

¹⁵⁴ *Id.* at 204.

4. Precedent for Challenging Discount Rates

Natural Resource Defense Council, Inc. v. Herrington is the case that most clearly illustrates the transparency argument in the context of discount rates.¹⁵⁵ It is one of very few cases in which plaintiffs successfully challenged agency discount rates. The case arose in the context of Department of Energy's ("DOE") energy efficiency standards for appliances. The plaintiffs alleged, among other things, that the agency in question used a too-high ten percent discount rate to reduce future benefits.¹⁵⁶ DOE justified its use of a ten percent rate by simply observing that OMB had recommended ten percent as a general rule, considering ten percent to represent the "future economic benefits of government investments."¹⁵⁷

The D.C. Circuit held that DOE had not adequately explained the reasoning behind its discount rate.¹⁵⁸ It specifically rejected citation to a general OMB memo as a basis for discount rate selection: "[I]n a rulemaking which must be supported by substantial evidence, DOE may not rely without further explanation on an unelaborated order from another agency."¹⁵⁹ The court further elaborated: "The major consequences of the discount rate made it particularly important that DOE fix the rate carefully and explain its decision intelligibly. It did not do these things, and we are accordingly constrained to reject its choice as fatally unexplained."¹⁶⁰

Herrington provides two important lessons for present discount rate litigants. First, the D.C. Circuit did not have to substitute its own judgment regarding exactly what the discount rate should be. It merely noted that the discount rate was an important enough factor that it warranted at least some substantive explanation.¹⁶¹ The court could not accept mere citation to another agency's recommended numbers. Second, the court required evidence of a thoughtful process. Without some indicia of actual consideration evidenced in the record, there was no way to know that the technical decision reached was based on expertise.

There are also cases where courts facing a similar set of facts decided that they could not overturn an agency's choice of discount rate. The D.C. Circuit in *Ohio v. Dep't of the Interior* faced a rule which, in the court's words, "terse[ly]" adopted the OMB ten percent discount rate. In this case,

¹⁵⁵ See *Nat. Res. Def. Council, Inc. v. Herrington*, 768 F.2d 1355 (D.C. Cir. 1985).

¹⁵⁶ *Id.* at 1412.

¹⁵⁷ *Id.* at 1412–13.

¹⁵⁸ *Id.* at 1413.

¹⁵⁹ *Id.*

¹⁶⁰ *Id.* at 1414.

¹⁶¹ *Id.*

the court accepted the agency's judgment with almost as little explanation as the agency offered in its analysis: "While DOI's explanation of its decision to adopt [OMB's] figure certainly was terse, we decline to step in and undermine what is first and foremost a policy choice."¹⁶² In a footnote following that sentence, the court said that DOI was perfectly free to revise the discount rate in the future as long as it had a "reasonable justification for doing so."¹⁶³

It is difficult to reconcile *Herrington* and *Ohio*, but one way to do so is to observe that the discount rate was outcome determinative in *Herrington*. In *Ohio*, the petitioners said that the high discount rate would "severely undervalue" the benefits of regulation,¹⁶⁴ but in *Herrington* the court itself recognized that the discount rate would have a major impact on the outcome of the analysis.¹⁶⁵ We can infer that courts generally review discount rates more strictly if they are clearly important to the case.

Another possible explanation is that courts simply disagree on how to evaluate agency discount rates. The *Ohio* court's assertion that discount rates are "first and foremost a policy choice" seems to imply that policy choices are only weakly subject to judicial review. In contrast, the *Herrington* court clearly thought discount rates warranted closer scrutiny. That disagreement might not be amenable to resolution without Congress or the interposition of the Supreme Court.

One unexplored issue is how the evaluation of discount rates should differ in the context of intergenerational benefits. A review of existing case law did not uncover any judicial discussion of whether courts should consider longer-term discount rates any differently than short-term rates. Even OMB Circular A-4, relied upon by the Trump administration in its discount rate justification, notes that intergenerational discount rates could be lower than the ordinary range.¹⁶⁶ Translated to the context of judicial review, a court more inclined to the *Ohio* deference to agencies might be encouraged to demand an explanation for using normal discount rates in the intergenerational context.

¹⁶² *Ohio v. U.S. Dep't of the Interior*, 880 F.2d 432, 465 (D.C. Cir. 1989).

¹⁶³ *Id.* at 465 n.46.

¹⁶⁴ *Id.* at 464.

¹⁶⁵ *Herrington*, 768 F.2d 1412, 1414. (1985).

¹⁶⁶ Circular A-4, *supra* note 67.

B. Theoretical Issues with Judicial Review of Discount Rates

Because discount rate jurisprudence is underdeveloped, courts inclined to get more involved will likely encounter problems unique to the discount rate context.

1. Arbitrary and Capricious Review: Actual Basis vs. Theoretical Basis for Agency Action

Arbitrary and capricious review under the APA is generally an inquiry into whether the agency offered a reasonable basis for its decision, not what the actual basis for the rule was. This presents a thorny dilemma in the discount rate context. Any halfway competent agency should be able to offer a reasonable explanation of its rate, even if the actual impetus behind the selection is justifying a politically preferred policy.

If we think any number falling within a wide range of possible discount rates has a rational basis, does it matter that agencies' actual motivations are political rather than technocratic? Put more bluntly, suppose President Trump tweeted at EPA, "I want you to repeal the CPP because it is bad for me politically. Feel free to make up whatever rationale you want to justify repeal."¹⁶⁷ Would that even be relevant to a court's consideration of whether the resulting agency action was arbitrary and capricious?

Two recent Supreme Court cases in this area provide little clarity on the question. The Supreme Court held in *Trump v. Hawaii* that presidential statements suggesting an unconstitutional motive were not relevant in determining whether a facially neutral travel ban could survive rational basis scrutiny.¹⁶⁸ That was not an APA case, but it did hinge on whether the agency had a rational basis for its action. The guiding principle of focusing on agency-provided justifications suggests courts will not inquire too deeply into actual motivations. In 2019, in *Dep't of Commerce v. New York*, the Supreme Court held that the Commerce Department's addition

¹⁶⁷ This is an exaggeration, but President Trump did test the theory well in his many statements on the CPP during the election of 2016. *See, e.g.*, "I will eliminate all needless and job-killing regulations now on the books...[that] also means scrapping the EPA's so-called Clean Power Plan which the government itself estimates will cost \$7.2 billion a year. This Obama-Clinton directive will shut down most, if not all, coal-powered electricity plants in America. Remember what Hillary Clinton said? She wants to shut down the miners, just like she wants to shut down the steel mills." Tessa Berenson, *Read Donald Trump's Speech on Jobs and the Economy*, TIMES (Sept. 15, 2016), <http://time.com/4495507/donald-trump-economy-speech-transcript/>.

¹⁶⁸ *Trump v. Hawaii*, 138 S. Ct. 2392, 2418 (2018) (holding that presidential statements are not significant in reviewing a presidential directive neutral on its face addressing a matter within the core of executive responsibility).

of a citizenship question to the census was pretextual and invalid under the APA.¹⁶⁹ Its rationale seemed to be that the Department offered a clearly pretextual justification.¹⁷⁰ However, the actual holding was that the pretextual justification did not fit the action taken. In the Court's words, the evidence "reveal[ed] a significant mismatch between the decision the Secretary [of Commerce] made and the rationale he provided."¹⁷¹ The Court also stressed that this sort of review should be "rare" and that the circumstances were "unusual."¹⁷² If one assumes that Supreme Court jurisprudence is consistent, then one could argue this case did not overturn agency action because of pretext, but because the specific pretext offered was inadequate. An analysis more predicated on legal realism might suggest that the Court will overturn pretextual agency action only when plaintiffs manage to obtain ironclad, obvious evidence that the actual rationale was completely divorced from the pretext.

If we take *Dep't of Commerce v. New York* as an aberration rather than a new rule, the focus on agency record over actual motivation for agency decisions may weaken some kinds of discount rate challenges but does not prohibit them entirely. The *Trump v. Hawaii* holding weakens the value of arguments about the true motivation for an agency action. It draws a box around the agency record and declares other evidence to be far less important. *Dep't of Commerce v. New York* arguably strengthens that box by stating how unusual it is to look outside the record. In the transparency approach to challenging discount rates, what is important is whether there is anything inside the box of the agency record that justifies the rates. While the actual motivation behind the discount rate might be political, what actually matters is whether there was a valid accounting for the discount rate in the record. If there is not, then the actual rationale was never made public, and therefore was never properly brought to the public's attention under notice-and-comment procedures.¹⁷³

2. The Difficulty of "Reasonableness" Review

It is important to understand why judicial review of cost-benefit analysis generally, and discount rates in particular, is so difficult. As discussed above, reasonableness of agency actions is the key inquiry in judicial review of cost-benefit analyses. Reasonableness itself can be

¹⁶⁹ *Dep't of Commerce v. New York*, No. 18-966, slip op. at 28 (2019).

¹⁷⁰ *Id.*

¹⁷¹ *Id.* at 26.

¹⁷² *Id.* at 28.

¹⁷³ See Steven T. Kargman, *OMB Intervention in Agency Rulemaking: The Case for Broadened Record Review*, 95 *YALE L.J.* 1789, 1797 (1986) for a more complete elucidation of this theory.

defined as the spectrum of interpretations drawing a substantial share of adherents. Thus, it is far easier to determine reasonableness for frequently occurring situations than for unique situations involving new dilemmas.

A simple example from ordinary experience reveals why reasonableness is easier for common experiences. It is reasonable in the United States to tip twenty percent for ordinary service in restaurants to compensate the wait staff, cooks, hosts, etc. People on the cheaper side might tip fifteen percent, which is also reasonable. From my experience with many people from different parts of the country, I suspect fifteen to twenty percent is the precise, reasonable range for tipping. Anything less for ordinary, non-objectionable service is unreasonably stingy, and anything more is notably generous.

Consider that at some point in the future, restaurant wait staff might be automated, replaced by machines. What is the reasonable tip rate at that point? Cooks presumably still need the tip money, as will the host or hostess. But I, as an ordinary consumer, have no idea what a reasonable tip is in a situation devoid of wait staff. Perhaps ten percent? If pressed to define a range, I would say probably not less than five percent, and probably not more than eighteen percent. Note that this “reasonableness” range is more than twice as large as the range for what a reasonable tip is in the present day. There is no broad base of experience to draw upon and, therefore, the range of reasonableness is larger.

Similarly, there is a limited basis for establishing a “reasonable” discount rate in the intergenerational context. While many modern governments have discount rates, as we saw earlier, the range is wide. The range is far larger than the difference between the rate needed to justify serious emissions limitations and the rate needed to justify doing nothing at all. Furthermore, few governments have policies for discount rates in the intergenerational context, as opposed to discount rates to be used for, say, five to ten years.

Expanding our scope further to identify sources of “reasonableness” for intergenerational discount rates in cost-benefit analysis, there are very few examples in history of consciously guided human activities that lasted longer than one generation. Construction of religious temples such as the Notre Dame Cathedral or the Egyptian pyramids might be the closest examples of intergenerational investment, and there were obviously no discernible cost-benefit analyses justifying their construction. Indeed, it seems as if the longest-scale human investments underwent the least amount of cost-benefit analysis, probably because the undemocratic systems that produced them lacked requirements for transparency and accountability in decision making.

There is thus no real way for a court to consider what a “reasonable” discount rate should be, at least not with enough specificity to oversee the federal government’s most important climate change rules.

IV. HOW COURTS AND CONGRESS CAN CREATE MEANINGFUL LIMITS ON DISCOUNT RATES

The foregoing discussion suggests that gaming of discount rates is a powerful tool for partisan mischief in climate change policy. While arbitrary and capricious review may provide a way to limit agency deviation, courts have thus far declined to intervene. All three branches of the federal government can, in theory, take steps to remedy the underlying problem. Congress could create procedural rules to place firm limits on discount rates. Courts could require more detailed explanations from agencies in order for rules to survive arbitrary and capricious review. The executive branch, of course, could simply stop ping-ponging back and forth between radically different climate change policies, or it could choose to engage in more forthright arguments about costs and benefits rather than justifying changes primarily through discount rates.

In this Part, I will discuss why corrective action is necessary, the options available to each branch, and each option’s practical likelihood of adoption. This analysis leads me to the conclusion that we need corrective action, judges will most likely be the source of it, and Congress would theoretically be the preferable branch to act (but probably will not).

A. Discount Rates Step Zero: Why Should We Worry About Gaming Discount Rates?

One could look at the ping-ponging of discount rates and not see a problem. The Trump and Obama administrations differ greatly in policy preferences. It stands to reason that they also disagree strongly about underlying moral concepts like discount rates. In a broad sense, the voters, who are the ultimate source of legitimacy in our system, certainly have different preferences regarding current versus future benefits. Arguing in the alternative, one could also note that even if the two administrations are both simply using discount rates to enact policy preferences, that may not be such a bad thing. Perhaps by alternating between strict and lenient climate policy, the United States might reach a sort of benign middle ground.¹⁷⁴

¹⁷⁴ While the extent to which the Obama administration’s climate change policy was

There are three primary reasons to dismiss these arguments. First, there is no real empirical basis for suggesting that Obama voters actually hold lower discount rates than Trump voters. To the contrary, Republicans and Democrats often adopt contradictory views on discount rates depending on the policy area. Second, even if an average-moderate climate policy made sense, flip-flopping between administrations carries costs that dramatically reduce the effectiveness of government policies. Finally, the use of discount rates to swing policy outcomes damages the credibility of cost-benefit analysis. The true source of partisan disagreement over climate change has nothing to do with discount rates. Politicians can simply use discount rates to avoid politically risky assertions, which undermines public discussion on climate change.

1. Do the Parties Truly Endorse Different Discount Rates?

There is no empirical support for the proposition that the Obama and Trump administrations' different discount rates reflect actual policy preferences. A glib but telling way to be certain is that neither administration has actually issued guidance on the use of discount rates in contexts other than climate change. Both administrations rely upon OMB Circular A-4, a document drafted during the Bush administration. Neither administration endorsed the use of a consistent discount rate, let alone actually forced its disparate agencies to use a single discount rate.

To the extent the members of either party actually endorse different discount rates, they do not do so in a consistent way. All else equal, Republicans tend to support higher defense spending, and Democrats tend to endorse higher educational spending. Not a single Republican senator, representative, or president has ever publicly justified cutting educational spending on the theory that the future earning potential of students matters less than current consumption. Rather, Republicans are more apt to believe educational spending is ineffective. Similarly, Democrats do not complain that it is not worth investing in weapons research because future Americans are not worth protecting. They argue, among other things, that projected threats are overblown or that military spending is not the most efficient way to address those threats.

2. Does Discount Rate Ping-Ponging Lead to Ideal Policy?

Recall the simple example from Part I of how two people can average their discount rates. In that case, each party had an incentive to exaggerate its position so that the resulting average would be closer to its actual

“strict” is debatable, one could imagine a far stricter future Democratic administration.

preference. We can conceptualize the current ping-ponging of climate change policy between administrations as a sort of “policy averaging.”

In a simplified model of policymaking, periodic shifts in policy direction might provide optimal long-run policy. If the correct emissions policy is mild discouragement of emissions, one could argue that is roughly the average of doing nothing and significantly curtailing emissions. This sort of argument is reminiscent of the difference between simple Newtonian physics and the actual behavior of objects in the real world. If one holds unrealistic assumptions about friction and air resistance, Newtonian physics works to describe motion. Similarly, if one assumes the federal government, the private sector, and other governments around the world can immediately and without cost accommodate a new regulatory regime every four or eight years, the average emissions strategy might work. However, in the real world, reliance interests make ping-ponging a costly approach.

The simple lack of legal certainty also means that achieving the benefits of either lax climate policy (e.g., more coal jobs) or strict climate policy (e.g., less climate change) requires more extreme action to induce action by private parties. Each side essentially has to “pay” more to get private entities to do what they want because the private parties carry an increased risk of damage when the other political party regains control.

Businesses are far from the only entities harmed by ping-ponging. Other countries cannot plan their own climate policies if worldwide carbon emissions are always contingent on the uncertain outcome of the next presidential election. The absence of an enforceable long-run agreement on emissions will encourage defection.¹⁷⁵ The absence of steadfast American commitment provides a ready-made talking point for opponents of carbon emission regulation in countries around the world.

The federal government itself faces significant costs from changing emissions regulations, both from enforcing the new rules and from the same kinds of costs business face. New rules require more training, more collaboration with industry, more audits, and more costly cost-benefit analyses. The military may face fluctuating energy costs at bases. Energy grids will need to be upgraded to incorporate more renewable energy sources that might sit idle if subsidy programs are scaled back or abandoned. Each new round of regulatory action or inaction will trigger another set of expensive lawsuits. Lone federal district courts may stay the various new rules and repeals, further confusing the situation. In sum, the

¹⁷⁵ Tom Phillips, *China underreporting coal consumption by up to 17%, data suggests*, THE GUARDIAN (Nov. 4, 2015), <https://www.theguardian.com/world/2015/nov/04/china-underreporting-coal-consumption-by-up-to-17-data-suggests>.

costs of ping-ponging are significant enough that there should be ample incentive to find a solution.

*3. Damage to the Credibility of Cost-Benefit Analysis Carries
Long-Term Costs of its own*

Even if the policy resulting from abuse of discount rates was beneficial, the institutional costs of abusing cost-benefit analysis merit consideration. From the vantage point of 2019, it is safe to say that the policy revolution, heralded by cost-benefit advocates of both parties since 1980, has failed to materialize. While both parties have forced their agencies to conduct cost-benefit analyses, the public at large does not seem to know or care. One could conclude that it does not matter if cost-benefit analysis becomes just another form of propaganda where unrealistic assumptions can produce whatever outcome the president wants.

We should resist the temptation to declare cost-benefit analysis dead, however. In its purest form, cost-benefit analysis lines up precisely against the institutional trends that alarm political observers. It distills seemingly ideological arguments into testable hypotheses without totally dismissing either side's concerns. On issues where ideologues say all regulation is bad or no pollution is acceptable, cost-benefit analysis can point the way to sensible, principled compromise. An article like this one would not be possible if the threat of judicial review did not force agencies to at least attempt to justify their actions with cost-benefit analysis. Rather than simply abandoning cost-benefit analysis, we should instead try to prevent obvious forms of abuse.

*4. Should We Second-Guess Agencies on Difficult Moral
Questions?*

The rationalist Scott Alexander has theorized that as moral questions grow more all-encompassing and abstract, people diverge further in their answers.¹⁷⁶ As discussed in Part III, one could argue that there is no "reasonable" answer to discount rates because they are utterly divorced from everyday experiences. If agency discount rate selections *must* be arbitrary, on what grounds can judges claim to allow *any* discount rate selection?

In this case, it is helpful to fall back on proceduralism. What is objectionable about current agency practice is not necessarily the discount rates being used. The problem is that agencies appear to be using politics

¹⁷⁶ Scott Alexander, *The Tails Coming Apart As Metaphor for Life*, SLATE STAR CODEX (Sept. 25, 2018), <http://slatestarcodex.com/2018/09/25/the-tails-coming-apart-as-metaphor-for-life/>.

instead of actual judgment to set the rates. While Congress has not decisively legislated the issue of climate change, it has set the terms under which agencies can make policies for the country. There is no “correct” discount rate, but neither is there a “correct” amount of mercury pollution for EPA to allow, nor a “correct” judgment on the meaning of constitutional provisions. Instead, there are tradeoffs, and agencies must explain what they are and why they decided to accept a particular tradeoff. Judges need not be philosopher kings to demand explanations for important decisions.

B. Potential Legislative Solutions

Theoretically, establishing a uniform discount rate for intergenerational cost-benefit analysis is precisely the kind of thing Congress should do. First, it is a decision fraught with countervailing moral and economic considerations. Second, major decisions of that sort have greater democratic legitimacy and staying power when made by Congress. Third, Congress is less susceptible to ping-ponging policy, making it a preferable place to forge long-term strategies. The presidency, by contrast, is the result of a winner-take-all election. The loser of the popular vote has won two of the last five presidential elections, yet that has served as a sufficient mandate for total control over administrative climate change policy. Control of Congress is far less all-or-nothing. It matters how many seats each party occupies in the House and Senate, and even then, the individuals in office occasionally vote against their party’s line.

Unfortunately, legislation establishing an intergenerational discount rate is unlikely for three reasons. First, Congress has historically been indifferent to cost-benefit analysis, a practice largely popularized by the executive branch. Second, Congress has shown little willingness to wade into a battle as technical as the one over intergenerational discount rates. Finally, while Congress may someday pass major climate change legislation, it seems increasingly unlikely due to growing political polarization. These deterrents to action have contributed to Congress’s inability to act on climate change.

1. Congress’s Actions to Date on Climate Change

The failure of the 2009-10 effort to enact carbon emission regulation shows several of the reasons why Congress is unlikely to ever engage decisively on climate policy. In many ways, the context for the 2009-10 effort was optimal for action. The bill in question would have capped

carbon emissions and created a market for trading emissions credits.¹⁷⁷ President Obama had won a landslide election and enjoyed high approval ratings well into his second year in office.¹⁷⁸ Republican presidential nominee, John McCain, had endorsed a similar concept during the 2008 campaign.¹⁷⁹ Democrats controlled the presidency, the House of Representatives, and fifty-nine seats in the Senate—one seat shy of being able to overcome the filibuster with only Democratic votes.

Democrats in the House of Representatives passed the cap-and-trade bill in June 2009.¹⁸⁰ Several different groups of senators put forward climate-related legislation, but none garnered sufficient support. In July 2010, Senate Majority Leader Harry Reid announced that no climate legislation would be included in energy bills that congressional session.¹⁸¹ Democrats lost control of the House of Representatives in the midterm elections that year, and no major climate-related legislation has had any real chance of enactment since then.

2. *Why Congress is Unlikely to Take Action*

Two aspects of the 2009-10 failure stand out as considerations for future climate legislation. First, if an issue is divided on partisan lines and is not the foremost priority of the party in power, it will not be addressed through significant legislation. Parties only briefly attain the apex of federal power, controlling both chambers of Congress and the White House (a status I will refer to as “total control”). So far in the twenty-first century, Republicans held total control from 2003 to 2007, Democrats from 2009 to 2011, and Republicans from 2017 to 2019. In each case, to the extent the party could get anything done, it targeted its highest priorities. Republicans tried and failed to reform Social Security in 2005, Democrats passed the Affordable Care Act in 2010, and Republicans passed significant tax cuts in 2017.

Climate change is not the highest priority of either party’s voters and structural factors will hinder it in becoming a higher priority.¹⁸² It is an

¹⁷⁷ American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. (2009).

¹⁷⁸ See *Gallup Daily: Obama Job Approval*, GALLUP (2016), <https://news.gallup.com/poll/113980/Gallup-Daily-Obama-Job-Approval.aspx>.

¹⁷⁹ Bumiller & Broder, *supra* note 82.

¹⁸⁰ American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. (2009).

¹⁸¹ Carl Hulse and David M. Herszenhorn, *Democrats Call Off Climate Bill Effort*, N.Y. TIMES (Jul. 22, 2010), <https://www.nytimes.com/2010/07/23/us/politics/23cong.html>.

¹⁸² *Economic Issues Decline Among Public’s Policy Priorities*, PEW RES. CTR. (Jan. 25, 2018), <https://www.people-press.org/2018/01/25/economic-issues-decline-among->

abstract, invisible problem for most people in the country. Yes, many Americans have seen and will continue to see an intensification of droughts, hurricanes, wildfires, and flooding. However, the biggest event in the twenty-first century that changed public opinion about climate change was the financial crisis in 2008, following which there was a conspicuous drop in people advocating for action on climate change.¹⁸³ A reasonable explanation for that drop is that people understandably care more about immediate economic problems than long-term environmental threats. The economy, terrorism, healthcare—those have been the dominant issues of the twenty-first century to date. There is thus little reason to believe Democrats would spend their next period of total control passing climate change legislation.

The other significant aspect of the 2009-10 failure was the legislative filibuster. Of the three periods of total control, only part of the 2009-10 period included a filibuster-proof majority in the Senate.¹⁸⁴ The Senate was focused primarily on healthcare at that time. While negotiations on a potential climate change bill continued through the period, there was never a unified push for legislation. A filibuster can be avoided on some bills through parliamentary procedures such as reconciliation, but for technical reasons those procedures can only be used on the highest priority programs.¹⁸⁵ Republicans uniformly rejected attempts to use reconciliation for climate change legislation, as did moderate Democrats.¹⁸⁶ The more partisan wings of whichever party is in power tend to call for elimination of the legislative filibuster, but it has not yet been seriously threatened.¹⁸⁷ With climate change lagging behind tax cuts and healthcare in interest, it is unlikely the legislative filibuster could be

publics-policy-priorities/. (showing 46 percent of Americans say climate change is a top priority vs. 73 percent saying “terrorism,” 68 percent saying “healthcare costs,” etc. Sixty-eight percent of Democrats say climate change is a top priority, but that trails significantly behind education, health care costs, and Medicare.)

¹⁸³ Anthony Leiserowitz et al., *Six in Ten Americans Are Worried About Global Warming; About One in Five Are “Very” Worried*, YALE PROGRAM ON CLIMATE CHANGE COMMUNICATION (Jan. 18, 2017), <https://climatecommunication.yale.edu/visualizations-data/six-ten-americans-worried-global-warming/>.

¹⁸⁴ That 60-vote majority only lasted from July 2009, when Senator Al Franken was seated following months of recounts and litigation, until January 2010, when Republican Scott Brown won a special election to fill Senator Ted Kennedy’s seat.

¹⁸⁵ Budget reconciliation requires a budget resolution. Republicans used reconciliation to pass tax cuts in 2017.

¹⁸⁶ Kate Sheppard, *Can Reconciliation Rescue the Climate Bill?*, MOTHER JONES (Apr. 26, 2010), <https://www.motherjones.com/politics/2010/04/partisan-plan-b-climate/>.

¹⁸⁷ Kristina Peterson, *Trump’s Calls to End Filibuster, Revive Line-Item Veto Are Likely to Go Unanswered*, WALL STREET J. (Mar. 23, 2018), <https://www.wsj.com/articles/trumps-calls-to-end-filibuster-revive-line-item-veto-are-likely-to-go-unanswered-1521835797>.

overcome. It has already once hamstrung efforts to move climate change-related legislation through the Senate, and it will likely continue to do so for the foreseeable future.

One aspect of the Senate that has grown worse since 2009-10 is polarization. By any reasonable measure, senators are increasingly unlikely to vote for significant legislation primarily associated with a party other than their own.¹⁸⁸ With increasing polarization in both chambers of Congress, it will become more difficult to build a sufficiently large coalition in the Senate. Republicans in the House already passed a non-binding resolution rejecting the possibility of a carbon tax.¹⁸⁹ While Senate Republicans have not passed a similar resolution, none have voiced support for climate change mitigation, and several have vehemently opposed even educational efforts relating to climate change.¹⁹⁰

3. What Congress Could Pass (Other Than Comprehensive Climate Change Legislation)

If the foregoing discussion suggests that Congress will not be passing climate change legislation, that does not mean Congress cannot do something useful short of comprehensive legislation. Congress could resolve the discount rate debate and thereby significantly improve federal policy relating to climate change. In a single page bill, Congress could mandate that any cost-benefit analysis or RIA used to justify a climate related regulation apply one consistent discount rate. Three percent would seem a natural place to set a compromise since it was used in the Obama and Trump plans (albeit at different points in the range).

The biggest practical problem with legislation of this kind is that the president would have to sign it. Why would a president voluntarily give up their ability to game discount rates? The obvious answer is “after an election in which the opposition party has gained the White House.” The opposition party, however, would then have an incentive to block the legislation. Thus, the only time this strategy would be viable is during a lame duck session when the White House is switching from the incumbent to the opposition party and the incumbent party controls both chambers of

¹⁸⁸ Philip Bump, *Why the Senate is getting more polarized*, WASH. POST (Dec. 22, 2017), https://www.washingtonpost.com/news/politics/wp/2017/12/22/why-the-senate-is-getting-more-polarized/?utm_term=.4e074f7a2168.

¹⁸⁹ H.R. Con. Res. 119, Expressing the sense of Congress that a carbon tax would be detrimental to the United States economy, 115th Cong. (2018).

¹⁹⁰ Press Release, Sens. Cruz, Paul, Lankford, and Inhofe Call for Investigation at the National Science Foundation (June 20, 2018), https://www.cruz.senate.gov/?p=press_release&id=3904.

Congress.¹⁹¹ That is an unusual circumstance, given that the national vote usually determines both the House of Representatives and the presidency.¹⁹²

C. How Courts Might Review Discount Rates

By requiring a true and honest accounting of discount rates, judges can moderate policy shifts between administrations in the realm of climate change. They need not demand a single discount rate; they must merely require a good faith explanation of discount rate selection. The immediate effect of that requirement would be to eliminate extreme discount rates. The long-term effects might include crystallizing the true issues at stake, encouraging responsible governance, and restoring legitimacy to the reputation of federal agencies as neutral experts.

This approach would make federal policy significantly more honest about the value judgments behind climate change policies without substituting judicial judgments for those of executive agencies. Most of the necessary changes do not require doctrinal shifts so much as a renewed dedication to the seriousness of judicial review. To be sure, litigants and judges would need to distinguish or weaken some of the most deferential case law on agency decision making, but significant improvement would not require something as major as the end of *Chevron* deference.

While courts could go further and render substantive judgments on discount rates, that would merely invite a different sort of policy ping-ponging. District and circuit courts around the country would reach differing judgments on discount rates, eventually necessitating a Supreme Court intervention. The optimal solution to ping-ponging discount rates is not to have courts try their hand at table tennis, but rather to apply a moderating procedural influence to weaken the appeal of partisan rulemaking.

¹⁹¹ There is one alternative scenario that gets around this theoretical bottleneck: if a president secretly agrees, at least somewhat, with the opposition on climate change. This is not at all impossible to imagine—this very article speculated the President George W. Bush may have been more in favor of action on climate change toward the end of his presidency than he was as a candidate. A Republican president who secretly (or quietly) agreed that action was required could sign a bill passed by a Democratic Congress setting a low intergenerational discount rate.

¹⁹² The last time it happened was in the election of 1980, before climate change economics was a contentious political issue.

1. Require a Full Explanation, Not Just a Citation to Irrelevant Precedent

There is no good reason to allow agencies to skimp in discussing the single most important variable in climate change economics. Ignoring discount rates allows Democrats to downplay current costs and enables Republicans to ignore future benefits. The current practice is unacceptably vague, hiding important decisions from the public. Many agency explanations regarding discount rates are simple citations to OMB Circular A-4 from 2003.¹⁹³ In the parlance of logicians, this is an argument from authority, offered by the agencies that are supposed to be the authorities in their area. Given the influence of the discount rate on overall climate policy, mindless citation to Circular A-4 allows a fifteen-year-old OMB memo to set federal policy. Worse still, as we have seen, the citation is selective, ignoring discussion of the possible need for lower discount rates in an intergenerational context.¹⁹⁴ If agencies had to explain in detail why they use the rates they do, they would pay a greater political price for extremism.

An acceptable discussion of discount rates would explain in clear terms why the agency selected particular discount rates, not simply where the numbers came from. This distinction is subtle in practice, but it's necessary because of the ease of picking a seemingly "reasonable" discount rate. The ACE regulatory impact analysis provides an obvious example of this phenomenon.¹⁹⁵ Rather than simply observing that a seven percent rate reflects the average rate of return on investments in the private sector, my approach would require EPA to explain why that is the proper way to determine the value of environmental benefits in the future.¹⁹⁶ Agencies would have to answer easily anticipated objections, such as the fact that private rates of return do not reflect environmental damage and other externalities.¹⁹⁷

While requiring *some* explanation is an obvious first step, it is also important to require a specific, normative explanation. Cass Sunstein, director of the Office of Information and Regulatory Affairs when the Obama administration formulated its social cost of carbon estimate, wrote in a retrospective analysis that the administration "offer[ed] a detailed

¹⁹³ See, e.g., ACE RIA, *supra* note 2, at 7-6.

¹⁹⁴ *Id.*

¹⁹⁵ ACE RIA, *supra* note 2, at 4-3.

¹⁹⁶ *Id.*

¹⁹⁷ Thomas R. Michl, *Discounting Nordhaus* 14 (Political Economic Research Institute, Working Paper No. 158, 2008), https://scholarworks.umass.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1129&context=peri_workingpapers.

discussion of discount rates and climate change.”¹⁹⁸ To his credit, the technical support document for the Obama administration’s social cost of carbon estimate did contain an explicit discussion of discount rates.¹⁹⁹ However, the technical support document’s discussion was, to borrow terms from the underlying debate, more descriptive than prescriptive. The working group explained thoroughly what the discount rate is and why experts disagree about it.²⁰⁰ After explaining OMB Circular A-4’s precedent, the document uses Circular A-4’s range for two of the three modeled discount rates.²⁰¹ The document does not explain why the OMB Circular A-4 precedent should be used, which would seem particularly important since the working group then also used a discount rate outside the typical three to seven percent range described by Circular A-4.²⁰²

As discussed earlier, the technical support document justified using a 2.5 percent rate as “respond[ing] to certain judgments using the prescriptive or normative approach and to ethical objections that have been raised about rates three percent or higher.”²⁰³ Left unsaid, in chronological order within the sentence: (1) how is a 2.5 percent rate responding to the “certain judgments”; (2) what are the “certain judgments”; (3) what were the ethical objections to rates three percent or higher; and (4) why should we credit those objections? To meet my envisioned standard, the working group would have to endorse a specific discount rate and explain why it should be used, not simply why it is reasonable.

2. Require a Detailed Explanation for Rejecting Previous Discount Rates

This requirement is implicit in the formulation above but bears mentioning because it would appear to be a departure from previous doctrine. In the climate change economics context, we have seen that any course of action has some “reasonable” discount rate to justify it. An explanation for any change in rates would be far more illuminating as to the agency’s rationale than a citation to OMB Circular A-4. One of the goals of judicial review would be to force agencies to explain changes in discount rates. Thus, courts should demand an explanation for agency shifts on discount rates on similar policy issues.

¹⁹⁸ Sunstein, *supra* note 26, at 16.

¹⁹⁹ SCC TSD, *supra* note 84, at 17.

²⁰⁰ *Id.* at 17–18.

²⁰¹ *Id.* at 17–20.

²⁰² *Id.* at 18–20.

²⁰³ *Id.* at 23.

In *F.C.C. v. Fox*, the Supreme Court held that an agency does not need to explain rule changes so long as there is a reasonable explanation for the new rule.²⁰⁴ That holding would suggest no need to explain a change in discount rates. One simple way to distinguish *Fox* in the discount rate context would be to require a *new* explanation to justify a *new* rate. What does not need to be explained, per *Fox*, is the reason for the change. But presumably an agency cannot offer the same explanation to justify a different outcome.

Imagine two administrations both endorsed OMB Circular A-4. Administration A only modeled a three percent rate and relied upon it to make a climate change rule. Administration B only modeled a seven percent rate. I contend that Administration B should not be allowed to only model the seven percent rate without explaining why that is proper. Administration B should not be able to rely on the former administration's evidence to come to a different conclusion. The holding in *Fox*, properly applied to discount rates, would mean that if Administration A modeled three percent based on OMB Circular A-4, and Administration B modeled seven percent based on some other study, Administration B would only have to explain its chosen rate, not why Administration A was wrong to use OMB Circular A-4.

3. *Require an Explicit Endorsement of a Discount Rate*

One subtle way to game discount rates is to offer as broad a range as possible. The Trump and Obama administrations both did this, offering ranges of three to seven and 2.5 to five percent, respectively, for their major climate change actions.²⁰⁵ If done in good faith, presenting a range of outcomes for different discount rates is good practice. The purpose would be to show that the policy being offered is robust and is the right thing to do regardless of accounting assumptions. However, when an agency wants to use an extreme discount rate, presenting a range of options provides cover for the extreme rate. Then the agency and the administration more generally can simply highlight the outcome of the most extreme rate as justification for the rule.

Both the Trump and Obama administrations used this tactic. In the ACE rulemaking, EPA performed benefit calculations across several different discount rates, then presented the rule as justified as long as at least one discount rate yielded the desired result.²⁰⁶ In a promotional "fact sheet" accompanying the ACE rule, the Trump EPA asserted that

²⁰⁴ *F.C.C. v. Fox Television Stations, Inc.*, 556 U.S. 502, 515–16 (2009).

²⁰⁵ SCC TSD, *supra* note 84, at 1; ACE RIA, *supra* note 2, at ES-15.

²⁰⁶ ACE RIA, *supra* note 2, at ES-5.

“replacing the CPP with the ACE rule could result in \$3.4 billion in net benefits.”²⁰⁷ If one looks into the RIA, however, one finds that the \$3.4 billion case arises in one scenario under a seven percent discount rate assumption.²⁰⁸ Left unsaid was that one scenario with a three percent discount rate showed \$5.4 billion in *net costs*—meaning that the Trump administration’s own analysis could have justified saying, *replacing the CPP with the ACE rule has higher costs than benefits*.²⁰⁹ The Obama EPA’s models did not contain any scenarios in which costs were larger than benefits, but its promotional materials did point consistently to \$45 billion in net benefits, the outcome of a three percent discount rate scenario.²¹⁰ Its full analysis showed net benefits could be as small as \$25 billion under a five percent scenario.²¹¹

Courts should, at the very least, require a detailed explanation of why an agency would adopt a rule that its own analysis shows could result in net costs. Such an explanation would necessarily explain that while the agency modeled different discount rates, it actually thought one discount rate was more accurate than the others. That would remove some of the incentive to modeling a wide range of discount rates and then cherry-picking the one that shows the highest net benefits.

Requiring specific endorsement of a discount rate within a range would be a new doctrinal step, but it is generally consistent with existing case law on judicial cost-benefit analysis review. As discussed in Part III, previous cases have established that the failure to explain important assumptions renders a rule arbitrary and capricious, and that discount rates qualify as important assumptions.²¹² It would seem a trivial extension of that logic to require explicit selection of a preferred discount rate. Otherwise, a neutral observer could legitimately question whether the agency has disclosed its rationale for the rule. In the ACE rule context, EPA might actually believe the rule will have net costs, but there may be unstated public policy reasons for preferring the rule’s allocation of costs and benefits.²¹³

²⁰⁷ U.S. ENVIRONMENTAL PROTECTION AGENCY, FACT SHEET, PROPOSED ACE RULE – COSTS AND BENEFITS (Aug. 2018) at 1, https://www.epa.gov/sites/production/files/2018-08/documents/ace_cost-benefit.pdf.

²⁰⁸ ACE RIA, *supra* note 2, at ES-5.

²⁰⁹ *Id.*

²¹⁰ U.S. Environmental Protection Agency, *What’s Next for the Clean Power Plan?*, EPA BLOG (Aug. 5, 2015), <https://blog.epa.gov/2015/08/05/whats-next-for-the-clean-power-plan/>.

²¹¹ CPP RIA, *supra* note 1, at ES-22 n.b.

²¹² See *Owner-Operator Indep. Drivers Ass’n, Inc. v. Fed. Motor Carrier Safety Admin.*, 494 F.3d 188 (D.C. Cir. 2007).

²¹³ For example, perhaps increased carbon regulation will lead to less domestic

4. Require Consistency Within the Same Administration for Different Rules

One easy way to discern gaming of discount rates is if the administration uses different discount rates on similar rules. There is, of course, an incentive to use different rates depending on what the administration wants to show. For example, in January 2018, the Department of the Interior (“DOI”) proposed opening almost all of the outer continental shelf for gas and oil development.²¹⁴ The rule forecasted the expected future net economic value of each planning area of U.S. ocean territory.²¹⁵ Obviously, the greater the expected net economic value, the better the case for opening those areas. DOI exclusively used a three percent discount rate for those calculations.²¹⁶ However, as previously discussed, the Trump EPA also used a seven percent discount rate to model the effects of the ACE rule.²¹⁷ Without further explanation, it appears each agency simply employed the discount rate that best furthered its policy objective.²¹⁸

Judicial review provides a simple remedy for this problem. If two agencies within the same administration propose rules supported by different discount rates, without explanation, then both rules should be presumptively invalid until the agencies explain their rate selections. If they offer contradictory explanations, then at least one must continue to be invalid until the agencies either harmonize the rates or give a reasonable explanation for the divergence.

energy production, leading to unquantifiable national security concerns. While that rationale is arguable, it is a potentially legitimate justification, and if it is the actual justification, the APA requires that it be offered explicitly so that the public can understand the rule.

²¹⁴ U.S. BUREAU OF OCEAN ENERGY MGMT., DEP’T OF INTERIOR, 2019-2024 NATIONAL OUTER CONTINENTAL SHELF OIL AND GAS LEASING DRAFT PROPOSED PROGRAM (2018), <https://www.boem.gov/NP-Draft-Proposed-Program-2019-2024/>.

²¹⁵ *Id.* at 5-18.

²¹⁶ *Id.*

²¹⁷ ACE RIA, *supra* note 2, at ES-5.

²¹⁸ This is even more likely to be the case given that normal economic theory would suggest a lower discount rate for the intergenerational context of climate change than for the relatively short-term benefits of increased oil and gas exploration until 2026. In the short run, economic growth is more easily predicted, and moral considerations about intergenerational tradeoffs are less relevant.

D. Potential Criticism of Increased Judicial Review of Discount Rates

Critics of this approach would likely claim that the court system cannot regulate the climate in lieu of executive agencies. Objections naturally arrange themselves around two points: (1) that the agencies should not have their expertise supplanted by too much judicial review and (2) that only the president, having won a nationwide election, has the democratic legitimacy to make policy on questions as important as climate change. I will consider the two objections separately, but it is worth noting at the outset that my proposal for increased judicial review may represent the “Goldilocks” solution. It is not wholly deferential to unelected judges, and it is not wholly deferential to the policy preferences of the democratically elected president.

1. Usurping the Role of Experts?

The Supreme Court does not have the institutional expertise of the EPA. Recall that the Supreme Court urged reviewing courts to be at their “most deferential” when reviewing agency “predictions, within its area of special expertise, at the frontiers of science.”²¹⁹ Review of discount rates is far from that scenario, and in fact represents a moderate approach to judicial involvement in climate change issues. Discount rates are fundamentally not an issue “at the frontiers of science.” They are mathematically simple, and their derivation requires far more moral consideration than economic insight. While no one can state with 100 percent certainty what the correct discount rate is, it is far simpler to see when the discount rate is being abused to reach a favored policy conclusion.

There is an understandable hesitance on the part of courts to intervene in technical matters, even when politics cause an agency to abruptly change policy. This was roughly the question raised in *Fox*, in which the FCC had abruptly reversed policy relating to fleeting expletives on television.²²⁰ Justice Scalia wrote the 5-4 majority opinion holding that agencies adopting a new policy do not have to explain why the new policy is better than the old.²²¹ Agencies only need to provide a rational

²¹⁹ *Balt. Gas & Elec. Co. v. Natural Res. Def. Council, Inc.*, 462 U.S. 87, 103 (1983).

²²⁰ *See F.C.C. v. Fox Television Stations, Inc.*, 556 U.S. 502, 515–16 (2009).

²²¹ *Id.*

justification, just as they would have needed had there been no old policy.²²²

That rationale should carry less weight in the context of highly politicized issues where the agency is more likely to be acting because of its political masters than from neutral expertise. On the question of discount rates, the underlying matter of climate change has been a major issue in nearly every presidential election for two decades. The suspicion that agencies are acting arbitrarily and/or capriciously must be strongest when an agency's supposed expert opinion reverses the moment a new administration takes office.

2. Usurping the Role of the People?

One objection to judicial review in the climate change context is that the issue is so inherently political that it must be left to the executive branch, led as it is by a democratically elected president. Even if experts might blanch at the rapid changes in climate policy, federal courts should not displace democratic processes. However, the reverence for executive branch expertise evident in opinions like *Fox* overlooks the original usurpation of democratic authority when Congress delegated its powers to agencies like EPA.

While this article is not primarily concerned with the constitutionality of delegated powers, it is important to note that Congress never intended the agencies to be wholly political entities. As the D.C. Circuit put it in an opinion in 1968:

The paramount objective [of judicial review] is to see whether the agency, given an essentially legislative task to perform, has carried it out in a manner calculated to negate the dangers of arbitrariness and irrationality in the formulation of rules for general application in the future.²²³

If Congress wanted federal policy in these technical areas to be carried out politically, it would have kept the power for itself and never passed laws like the APA restricting the ability of agencies to act politically. If stricter judicial review weakens the "unitary" executive, it is merely snatching back a power originally delegated by Congress.

In the discount rate context, as we saw in Part I, agencies are deciding moral questions of a distinctly legislative nature. The mere fact that the issues are distilled down to numbers does not render them less moral.

²²² *See id.*

²²³ *Automotive Parts & Accessories Ass'n v. Boyd*, 407 F.2d 330, 338 (D.C. Cir. 1968).

When the agency is engaged in such a legislative activity, at the very least, it is perfectly reasonable to demand a greater level of explanation.

3. Would a More Extreme Solution Work Better?

Taking a step back and examining the situation as a whole, a critic of my approach might observe that the true original sin driving policy rate ping-ponging is partisanship in executive agencies. There are more extreme solutions for such partisanship, including turning EPA into a more independent agency akin to the Federal Energy Regulatory Commission.²²⁴ Take away the power of presidents to unilaterally run environmental policy, and apolitical technicians can take the steering wheel on climate policy.

Lack of confidence in partisan executive agencies is understandable, but the political uncertainties involved should give pause to advocates for independence. Because agencies have shouldered the responsibility for addressing climate change, legislators have few opportunities to vote on related bills. Legislators in turn naturally focus more on issues which might actually come up for votes, such as immigration legislation, healthcare, or judicial confirmations. Presidential elections become the only ones relevant for climate change, and as we have seen, it is difficult for climate change issues to gain exposure when every other issue is simultaneously up for consideration.

While this article does not endorse either party's particular approach to climate change, it is easier to see the dangers of de-politicization in Republican policy. Republican officials in Congress can feel pressure from three sources: (1) donors; (2) Republican primary voters; and (3) general election voters. Republican donors do not generally want action on climate change. Because Democrats talk about climate change far more than Republicans, Republican primary voters are far likelier than the general public to think climate change unimportant, or even a hoax. General election voters generally want some action on climate change. If Republicans in Congress do not have to vote on anything meaningful relating to climate change, their optimal strategy is to concede that climate change is real while opposing or remaining silent on any potential action. That strategy muddies the waters sufficiently between primary and general election voters while pleasing donors. If Republican elected officials had to vote on climate change action, they would pay a price with general election voters. They would thus have an incentive to talk to their primary

²²⁴ FERC and other independent agencies are not under the sole control of an appointee of the current president. While most independent agencies are led by commissions, some are headed by an appointee who is not removable without cause by the president, e.g., the Office of the Special Counsel.

voters about the importance of climate change, educating both themselves and primary voters in the process.

If climate change policy is entrusted to a less politically accountable agency, how much worse might the disconnect between voters and climate change become? Republicans would certainly step up their attacks on agency rulemakings. Perhaps less obviously, Democrats could start blaming the independent agency for failure to take action, leading to a similar outbreak of populism on the left. For example, if a wholly apolitical EPA concluded that the Green New Deal outlined by Rep. Alexandria Ocasio-Cortez and endorsed by many Democratic presidential candidates was unfeasible, Democratic primary voters might drive Democratic elected officials to curtail the agency's powers. The very attempt to enshrine agency expertise could lead to exactly the kind of mindless ping-ponging the independent agency was meant to avoid. There are thus dangers from both parties in hastily taking decisions on discount rates too far away from electoral politics.

CONCLUSION

In an ideal world, Congress would deliberate on the complicated moral questions implicit in discount rates, come to a collective judgment, and legislate a solution that reflects the will of the people. In an implausibly noble world, the executive branch, recognizing the trust delegated to it by Congress, would come to an impartial and expert opinion regarding discount rates and stick to its conclusion regardless of which party controls the White House. In the world we live in, judges can and should force agencies to justify their selections of discount rates, particularly in the climate change context.

The cost of judicial acquiescence could be decades of wasteful ping-ponging on climate change policy, a decline in trust of executive branch decision making, and the further decay of cost-benefit analysis in federal rulemaking. If instead judges recognize the inherent risk of gaming in discount rate selection, they can force either a legitimate public debate on climate change economics or a true technocratic best effort on the part of the agencies. Either result would be preferable to the status quo.