
YALE LAW & POLICY REVIEW

Inflation-Based Adjustments in Federal Civil Monetary Penalties

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| INTRODUCTION | 2 |
| I. ADJUSTING CIVIL PENALTIES UNDER THE INFLATION ADJUSTMENT ACT..... | 5 |
| II. THE LEGISLATIVE HISTORY OF THE INFLATION ADJUSTMENT ACT..... | 8 |
| A. <i>Senate Bill 2559 (1986)</i> | 9 |
| B. <i>Senate Bill 1014 (1987)</i> | 12 |
| 1. Hearings on Senate Bill 1014 (1988)..... | 13 |
| 2. Amendments to Senate Bill 1014 | 16 |
| C. <i>Senate Bill 535 (1989)</i> | 16 |
| D. <i>Legislative Developments After 1990</i> | 17 |
| III. PROBLEMS CREATED BY THE MECHANICS OF THE INFLATION ADJUSTMENT ACT..... | 19 |
| A. <i>The “Inflation Gap”</i> | 19 |
| B. <i>CPI Lag</i> | 22 |
| C. <i>Rounding</i> | 24 |
| D. <i>Regulatory Self-Help</i> | 26 |

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| | |
|---|----|
| IV. POSSIBLE SOLUTIONS..... | 32 |
| A. Possible Legislative Amendments..... | 32 |
| 1. Inflation Gap..... | 32 |
| 2. CPI Lag..... | 34 |
| 3. Rounding..... | 38 |
| B. Exploiting Institutional Diversity Within the Federal Government | 39 |
| C. The Inflation Adjustment Act Improvements Act of 2015 | 41 |
| CONCLUSION | 43 |

[Editor’s Note: As this Article neared the completion of the editorial process, Congress enacted the Inflation Adjusted Act Improvements Act of 2015, which implements most of the recommendations made herein. Among other changes, the timing of adjustments has changed, the 10% cap on inflation is now 150%, and the Office of Management and Budget now exercises central control over adjustments. In response to these changes, Part IV.C has been added to detail the reforms contained in the new law. Due to the lateness in the production process at which these changes came, a comprehensive rewrite was neither feasible nor desired. This Article should be understood to describe the legal landscape before the 2015 Act with respect to inflation adjustments for civil monetary penalties, identifying the need for reform, explaining the policy issues that the 2015 Act would address, and anticipating the policy solutions that the Act ultimately offered. Notwithstanding the addition of Part IV.C, this Article is presented in its original form.]

INTRODUCTION

Civil monetary penalties play a vital role in federal law. The Federal Civil Penalties Inflation Adjustment Act of 1990¹ (“the Act” or “the Inflation Adjustment Act”) acknowledges that “the power of Federal agencies to impose civil monetary penalties . . . plays an important role in deterring violations and furthering the policy goals embodied in . . . laws and regulations.”² Over time, however, inflation erodes “the impact of many civil monetary penalties” and

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1. Federal Civil Penalties Inflation Adjustment Act, Pub. L. No. 101-410, 104 Stat. 890 (1990) (codified as amended at 28 U.S.C. § 2461 note (2012)) (Federal Civil Penalties Inflation Adjustment). The Federal Civil Penalties Inflation Adjustment Act is not codified as stand-alone sections of 28 U.S.C. It is set out, in its amended form, as a note to 28 U.S.C. § 2461. Unless otherwise noted, all subsequent citations to the Inflation Adjustment Act refer to the version that has been amended and codified at 28 U.S.C. § 2461 note, and not to the original 1990 version of the statute.
 2. *Id.* § 2(a).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

“weaken[s] the[ir] deterrent effect.”³ In passing the Inflation Adjustment Act, Congress sought to “maintain comprehensive, detailed accounting of the efforts of Federal agencies to assess and collect civil monetary penalties.”⁴ In prescribing “regular adjustment for inflation of civil monetary penalties,” Congress hoped to “maintain the deterrent effect of civil monetary penalties and promote compliance with the law” and to “improve the collection by the Federal Government of civil monetary penalties.”⁵

Proper adjustment of civil monetary penalties is central to the mission of the federal government. Civil monetary penalties provide a valuable alternative to “all-or-nothing decisions” based on harsher remedies, such as license suspension or revocation.⁶ These penalties extend enforcement options beyond criminal sanctions, which expose an offender to the disgrace and disabilities associated with ‘convictions’ . . . and [which] cannot be imposed administratively.”⁷ The value of civil monetary penalties is especially pronounced in areas of heightened regulatory concern, such as “health and safety, the environment, [and] consumer protection.”⁸ The efficacy of civil monetary penalties, however, proceeds from the assumption that economic loss deters private actors from engaging in socially destructive conduct.⁹ That deterrent effect may be eroded, even perversely distorted, if agencies do not receive appropriate statutory and administrative guidance for making accurate adjustments in the levels of those penalties as prices change across the entire United States economy.

The Federal Civil Penalties Inflation Adjustment Act addressed the federal government’s need to adjust civil monetary penalties for inflation. In 1979¹⁰ and in 1984,¹¹ the Administrative Conference of the United States (ACUS) studied the impact of inflation on, respectively, civil penalties and federal claims settlements. The 1979 ACUS recommendation urged Congress, in designing penal-

3. *Id.*

4. *Id.*

5. *Id.* § 2(b).

6. Civil Money Penalties as a Sanction, 38 Fed. Reg. 19,782, 19,792 (July 23, 1973); see also *id.* at 19,793 (observing that “more potent sanctions . . . such as license suspension or revocation . . . may prove . . . unduly harsh” and may also disrupt the offender’s provision of essential public services).

7. *Id.*

8. *Id.* at 19,792.

9. See Agency Assessment and Mitigation of Civil Monetary Penalties, 44 Fed. Reg. 38,817, 38,825 (July 3, 1979) (“A penalty intended to deter or influence economic behavior should, at a minimum, be designed to remove the economic benefit of the illegal activity.”).

10. See *id.*; see also Colin S. Diver, *The Assessment and Mitigation of Civil Money Penalties by Federal Administrative Agencies*, 79 COLUM. L. REV. 1435 (1979).

11. See Administrative Settlement of Tort and Other Monetary Claims Against the Government, 49 Fed. Reg. 49,840 (Dec. 24, 1984).

ties, to adopt “simplifying assumptions about the benefit realized from or the harm caused by illegal activity” in order “to reduce the cost of the penalty calculation process and increase the predictability of the sanction.”¹² The 1984 recommendation specifically encouraged Congress “to systematically raise ceilings on all agency authority to settle claims where inflation has rendered obsolete the present levels.”¹³ The passage of the Federal Civil Penalties Inflation Adjustment Act in 1990 responded to similar concerns in the context of civil monetary penalties.

In practice, the Inflation Adjustment Act has fallen far short of these goals. Three statutory defects are especially salient. First, inflation adjustments under the Act suffer from an “inflation gap.” The Act imposes a 10% cap on initial penalty adjustments. That cap creates an “inflation gap” reflecting the sometimes considerable difference between penalties as adjusted under the Act and the levels that such penalties would reach if they were set more precisely according to an actual measure of changes in the cost of living. This gap grows over time and can never be closed.

Second, the Act directs federal agencies to use Consumer Price Index (CPI) data in ways that are guaranteed to be out of sync with inflation. Agencies must use CPI data that is at least six months old, and sometimes as much as 18 months old. In effect, agencies lose a year of inflation every time they make an inflation-based adjustment. This problem is known as “CPI lag.” As with the “inflation gap” prescribed by the Act, errors forced by these adjustments create distortions relative to actual inflation. Under the existing statutory scheme, these errors can never be corrected.

Third, the Act’s rules on rounding, when taken together with the initial adjustment cap of 10%, can effectively prevent a subsequent inflation adjustment for some penalties until inflation increases at least 45%. At inflation rates approximating 2.5%, refinements to initial penalty adjustments may not be permitted for more than fifteen years.

This Article will examine the Federal Civil Penalties Inflation Adjustment Act in detail. A 2003 report by the United States General Accounting Office identified the difficulties that federal agencies had encountered in their implementation of the Inflation Adjustment Act.¹⁴ This Article extends the analysis offered by the 2003 GAO report in multiple ways. This Article comprehensively reviews the legislative history of the Act so that it can explain the Act’s economic problems as the consequence of Congress’s extensive but ultimately flawed drafting process. Through its Mathematical Appendix and its more contextual-

12. See Agency Assessment and Mitigation of Civil Monetary Penalties, *supra* note 9, at 38,825.

13. See Administrative Settlement of Tort and Other Monetary Claims, *supra* note 11, at 49,841.

14. See generally U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-03-409 CIVIL PENALTIES AGENCIES UNABLE TO FULLY ADJUST PENALTIES FOR INFLATION UNDER CURRENT LAW (2003) [hereinafter 2003 GAO Report].

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

ized illustrations, this Article supplies both formal and narrative explanations of the Act's shortcomings. This Article ultimately proposes concrete legislative solutions to each of the statutory flaws that it identifies.

In Part II, careful parsing of the language of the Inflation Adjustment Act reveals how the Act dictates three distinct sources of economic distortion in the inflation-based adjustment of federal civil monetary penalties: an inflation gap, the so-called "CPI lag," and absurd rounding rules. By recounting the legislative history of the Act, Part III hopes to show how Congress came to adopt these provisions.

Part IV will then devote close attention to each of the three most salient problems afflicting the Inflation Adjustment Act: the "inflation gap" attributable to the Act's 10% cap on initial cost-of-living adjustments, the "CPI lag" that forces federal agencies to ignore between six and eighteen months of CPI data in adjusting civil monetary penalties, and the Act's unwieldy rounding provisions. To contextualize the Mathematical Appendix's formal descriptions of the problems at hand, Part IV will provide concrete illustrations from actual federal civil penalties.

Part V will recommend specific amendments to the Inflation Adjustment Act. The defects in the Federal Civil Penalties Inflation Adjustment Act are profound and destructive. Because they arise from the plain language of the Act, those defects transcend the corrective power of federal regulatory agencies. Although some agencies have attempted to adjust civil monetary penalties in pragmatic ways that better reflect the real economic impact of inflation, those efforts do not comply with the plain language of the Inflation Adjustment Act. Responsibility for reform lies squarely with Congress.

I. ADJUSTING CIVIL PENALTIES UNDER THE INFLATION ADJUSTMENT ACT

Section 2 of the Inflation Adjustment Act recites the broad purposes of this statute and, more generally, of civil monetary penalties under federal law. Congress has concluded that "the power of Federal agencies to impose civil monetary penalties for violations of Federal law and regulations plays an important role in deterring violations and furthering the policy goals embodied in such laws and regulations."¹⁵ The impact of many of these penalties, however, "has been and is diminished due to the effect of inflation," which "has weakened the deterrent effect of such penalties."¹⁶ Congress also found that "the Federal Government does not maintain comprehensive, detailed accounting of the efforts of Federal agencies to assess and collect civil monetary penalties."¹⁷ The Act aspires

15. Inflation Adjustment Act, Pub. L. No. 101-410, § 2(a)(1), 104 Stat. 890, 890 (1990) (codified as amended at 28 U.S.C. § 2461 note (2012)).

16. *Id.* § 2(a)(2)-(3); accord *In re Oil Spill by the Oil Rig "Deepwater Horizon" in the Gulf of Mex.*, on Apr. 20, 2010, No. MDL 2179, 2015 A.M.C. 758, 759, 2015 WL 729701, at *2 (E.D. La. Feb. 19, 2015) ("[I]nflation weakens the deterrent effect by diminishing the economic impact of such penalties.").

17. Inflation Adjustment Act § 2(a)(4).

“to establish a mechanism” that would “(1) allow for regular adjustment for inflation of civil monetary penalties; (2) maintain the deterrent effect of civil monetary penalties and promote compliance with the law; and (3) improve the collection by the Federal Government of civil monetary penalties.”¹⁸

As originally enacted in 1990, the Act did not authorize federal agencies to adjust penalties for inflation. Instead, the 1990 version of this legislation required the President to report to Congress every five years on the increase needed to bring civil monetary penalties in line with inflation and every year on actual penalty assessments and collections. In 1996, Congress amended the Civil Penalties Inflation Adjustment Act to direct covered federal agencies to make their first inflation adjustments on October 23, 1996, and make subsequent adjustments “at least once every 4 years thereafter.”¹⁹

The legislative history of the Inflation Adjustment Act reflects primary congressional concern over the deterrent, punitive, and retributive purposes of federal civil monetary penalties. Congress also expressed a secondary interest in these penalties as a source of revenue. In his opening statement to the Senate’s 1988 hearings on the bill that became the Act, Senator Carl Levin declared: “Civil monetary penalties have been enacted into law to deter unwanted conduct. They send the message that if you do the crime, you are going to pay.”²⁰ He also lauded the bill’s goal of “establish[ing] accountability within the Executive Branch for keeping track of the numbers and amounts of civil penalties imposed and collected,” totaling “no small amount of money” that he estimated to be “over \$400 million a year.”²¹

Senator Levin’s house counterpart, John Conyers, likewise testified in 1990: “At the heart of . . . regulatory statutes . . . are the monetary fines intended to both penalize and deter practices prohibited by these laws.”²² Because “the amount of fines associated with the enforcement of these important statutes have remained unchanged,” however, Congressman Conyers lamented that “inflation has eaten away at the value of these fines, effectively reducing both the impact and the deterrent value of regulatory penalties.”²³

Appropriate inflation-based adjustments in federal civil monetary penalties enable federal agencies to fulfill their regulatory missions. By giving agencies

18. *Id.* § 2(b); accord *Deepwater Horizon*, 2015 A.M.C. at 759.

19. Debt Collection Improvement Act of 1996, Pub. L. No. 104-134, § 31001(s)(1)(A), 110 Stat. 1321, 1321-373 (1996).

20. *Federal Civil Penalties Inflation Adjustment Act of 1987: Hearing Before the S. Subcomm. on Oversight of Gov’t Mgmt.*, 100th Cong. 2 (1988) (statement of Sen. Carl Levin).

21. *Id.*

22. *Federal Civil Penalties Inflation Adjustment Act of 1989: Hearing Before the H. Subcomm. on Legis. & Nat’l Sec.*, 101st Cong. 3 (1990) (statement of Rep. John Conyers).

23. *Id.*

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

sufficient discretion to adjust downward from an adequately high punitive ceiling, “[s]uitably severe maximum penalties allow agencies to punish willful and egregious violators appropriately” and to establish “deterrent[s] to future violations.”²⁴ Proper adjustment for inflation enables agencies to keep pace with the persons and business entities within their spheres of regulatory responsibility.

Section 4 of the Federal Civil Penalties Inflation Adjustment Act, as amended in 1996, directs “[t]he head of each agency . . . by regulation” to perform an “inflation adjustment” for “each civil monetary penalty provided by law within the jurisdiction of the Federal agency.”²⁵ The Act then instructs each agency to publish the resulting regulation in the *Federal Register*.²⁶ Under the 1996 amendments to the Act, the first inflation adjustment was to have been performed on October 23, 1996—180 days after the amendment’s enactment date of April 26, 1996.²⁷ Subsequent adjustments must be performed “at least once every 4 years thereafter.”²⁸

“Section 5 of the Federal Civil Penalties Inflation Adjustment Act of 1990 . . . authorizes Executive agency adjustments for inflation of civil fines and penalties.”²⁹ According to section 5, the inflation adjustment under section 4 “shall be determined by increasing the maximum civil monetary penalty or the range of minimum and maximum civil monetary penalties, as applicable, for each civil monetary penalty by the cost-of-living adjustment.”³⁰ In turn, “the term ‘cost-of-living adjustment’” is defined as “the percentage (if any) for each civil monetary penalty by which—(1) the Consumer Price Index for the month of June of the calendar year preceding the adjustment, exceeds (2) the Consumer Price Index for the month of June of the calendar year in which the amount of such civil monetary penalty was last set or adjusted pursuant to law.”³¹

Section 5 of the Act also prescribes an elaborate process for the rounding of “[a]ny increase determined under” the statute’s inflation adjustment mechanism:

Any increase determined under this subsection shall be rounded to the nearest —

24. 2003 GAO Report, *supra* note 14, at 36.

25. Debt Collection Improvement Act of 1996, Pub. L. No. 104-134, § 31001(s)(1)(A)(1), 110 Stat. 1321, 1321-373.

26. *See id.* § 31001(s)(1)(A)(2).

27. *See id.* § 31001(s)(1)(A).

28. *Id.*; *see* Knapp v. United States Dep’t of Agric., 796 F.3d 445, 464 n.7 (5th Cir. 2015).

29. Kellogg Brown & Root Servs., Inc. v. United States, 99 Fed. Cl. 488, 503 n.5, 506 n.7 (2011), *aff’d*, 728 F.3d 1348 (Fed. Cir. 2013).

30. Inflation Adjustment Act, Pub. L. No. 101-410, § 5(a), 104 Stat. 890, 891 (1990) (codified as amended at 28 U.S.C. § 2461 note (2012)).

31. *Id.* § 5(b).

- (1) multiple of \$10 in the case of penalties less than or equal to \$100;
- (2) multiple of \$100 in the case of penalties greater than \$100 but less than or equal to \$1,000;
- (3) multiple of \$1,000 in the case of penalties greater than \$1,000 but less than or equal to \$10,000;
- (4) multiple of \$5,000 in the case of penalties greater than \$10,000 but less than or equal to \$100,000;
- (5) multiple of \$10,000 in the case of penalties greater than \$100,000 but less than or equal to \$200,000;
- (6) multiple of \$25,000 in the case of penalties greater than \$200,000.³²

In its 1996 amendment to the Act, Congress imposed a new 10% cap on the initial inflation adjustment of any civil monetary penalty required under section 4 of the Act: “The first adjustment of a civil monetary penalty . . . may not exceed 10 percent of such penalty.”³³ Section 6 of the amended Act ensures that inflation-adjusted increases are strictly prospective in application: “Any increase under this Act in a civil monetary penalty shall apply only to violations which occur after the date the increase takes effect.”³⁴

Finally, the amended Act exempts four statutes: the Internal Revenue Code of 1986, the Tariff Act of 1930, the Occupational Safety and Health Act of 1970, and the Social Security Act.³⁵ The 1996 amendments to the Civil Penalties Inflation Adjustment Act were effected through an omnibus budget bill, the Debt Collection Improvement Act of 1996.³⁶ The legislative history of the omnibus Debt Collection Improvement Act provided no reason for these four statutory exemptions—or, for that matter, any of the other amendments to the Inflation Adjustment Act.³⁷

II. THE LEGISLATIVE HISTORY OF THE INFLATION ADJUSTMENT ACT

Although the Inflation Adjustment Act does not approach the length and complexity of statutes such as the Patient Protection and Affordable Care Act or

32. *Id.* § 5(a).

33. Debt Collection Improvement Act of 1996, Pub. L. No. 104-134, § 31001(s)(2), 110 Stat. 1321, 1321-373.

34. *Id.* § 31001(s)(1)(C).

35. See H.R. REP. NO. 104-537, *Making Appropriations for Fiscal Year 1996 to Make a Further Downpayment Toward a Balanced Budget, and for Other Purposes* 386 (1996). The passages of the legislative history accompanying section 31001 of the Debt Collection Improvement Act focused exclusively on procedures for debt collection.

36. Debt Collection Improvement Act § 31001(s).

37. See H.R. REP. NO. 104-537, *supra* note 35. See also Inflation Adjustment Act § 4(1).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

the Food, Drug, and Cosmetic Act, this statute does exhibit the traits that have prompted the Supreme Court to engage in all-encompassing exercises in statutory interpretation. The high court has often supplemented the ordinary meaning of contested statutory words with inferences drawn from overarching statutory structure,³⁸ legislative history,³⁹ and broader understandings of a statute's interaction with other bodies of law.⁴⁰

Despite its brevity, the Inflation Adjustment Act merits a comparably thorough exegesis. The text, structure, and history of this Act, as well as its relationship to other statutes and the record of its implementation by federal agencies, reveals how the Act's practical difficulties all stem from the statute's contested history in Congress. Although these sources of legal meaning typically arise in judicial settings, they are also germane to legal enterprises such as administrative enforcement and subsequent legislative revision, including proposals for partial or complete repeal.

With these interpretive considerations in mind, Part III will review the legislative history of the Inflation Adjustment Act. Congress passed the Act in 1990, but only after three attempts to introduce the legislation. Extensive debate over the unsuccessful 1986 and 1987 bills strongly informed the ultimately successful 1989 bill. Sections III.A. through III.C. will discuss each of these bills. The Inflation Adjustment Act also underwent significant amendments in 1996 and 1998. Section III.D. will address those developments.

A. *Senate Bill 2559 (1986)*

Senator Frank Lautenberg of New Jersey introduced the Federal Civil Penalties Adjustment Act in 1986 as Senate Bill 2559.⁴¹ This bill prescribed a two-step process for performing inflation adjustments of federal civil monetary penalties according to increases in the cost of living. The first step consisted of an initial *historical* cost-of-living adjustment based on “the percentage (if any) by which (1) the average of the Consumer Price Index as of the close of the 12-month period ending on September 30, 1986, exceeds (2) the average of the Consumer Price Index as of the close of the 12-month period ending on September 30 of the calendar year in which such penalty amount was last determined under law.”⁴² “Any increase determined under” the original Lautenberg bill's historical cost-of-living adjustment would have been “rounded to the

38. See, e.g., *King v. Burwell*, 135 S. Ct. 2480 (2015).

39. See, e.g., *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120 (2000).

40. See *Moragne v. States Marine Lines, Inc.*, 398 U.S. 375 (1970).

41. S. 2559, 99th Cong. (1986).

42. *Id.* § 4(c).

nearest multiple of \$10.”⁴³ The initial cost-of-living adjustment would be capped at “1000 percent of the original penalty amount.”⁴⁴

Thereafter, Senate Bill 2559 prescribed *annual, prospective* adjustments.⁴⁵ After an initial round of historical adjustments in federal civil monetary penalties, a prospective series of annual adjustments, carried out by “the head of each Federal agency” and “publish[ed] in the Federal Register,” would apply “in lieu of the schedule prescribed under” the bill’s historical cost-of-living adjustment provision.⁴⁶ Not later than December 15 of each year, this annual adjustment process would require each agency to increase “each base penalty amount” within its jurisdiction “by the cost of living adjustment” for “the succeeding calendar year.”⁴⁷ The bill further contemplated that each agency would “add[] to [its] schedule any civil monetary penalty within [its] jurisdiction . . . that was enacted into law in the previous calendar year and increas[e] the base penalty amount by the cost of living adjustment for the current calendar year.”⁴⁸

Senate Bill 2559’s definition of its “cost-of-living adjustment” plays a critical role in the legislative history of the Federal Civil Penalties Inflation Adjustment Act. That definition warrants full elaboration here:

[T]he cost-of-living adjustment for any calendar year is —

- (1) in the case of base penalties provided by law before December 15, 1986, the percentage (if any) by which —
 - (A) the Consumer Price Index for the preceding calendar year, exceeds
 - (B) the Consumer Price Index for the calendar year 1986; and
- (2) in the case of base penalties provided by law on or after December 15, 1986, the percentage (if any) by which —
 - (A) the Consumer Price Index for the preceding calendar year, exceeds
 - (B) the Consumer Price Index for the calendar year in which the base penalty was provided by law.⁴⁹

Senate Bill 2559 further defined “the Consumer Price Index for any calendar year” as “the average of the Consumer Price Index as of the close of the 12-

43. *Id.* § 4(b).

44. *Id.* (“[I]n no event shall such increase exceed 1000 percent of the original penalty amount.”).

45. *See id.* § 5(c).

46. *Id.* § 5(a).

47. *Id.* § 5(b); *see also id.* § 5(a) (directing “schedules of civil monetary penalties” to apply “in the succeeding calendar year”).

48. *Id.* § 5(b).

49. *Id.* § 5(c).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

month period ending on September 30 of such calendar year.”⁵⁰ Although Senate Bill 2559 provided that any increases determined under its mechanism for annual, prospective cost-of-living adjustments would “be rounded to the nearest multiple of \$10,” those adjustments were not subject to any cap.⁵¹

Senate Bill 2559’s references to “the preceding calendar year” in its discussion of cost-of-living adjustments are ambiguous. One plausible reading of the bill’s cost-of-living adjustment confirms that portion of the contemporary statute from which “CPI lag” arises. The corresponding subsection of the Inflation Adjustment Act requires reference to “the Consumer Price Index for the month of June of the calendar year preceding the adjustment.”⁵² But it is also plausible to read this portion of Senate Bill 2559 as referring to CPI data for the nearly complete year preceding the bill’s December 15 deadline for annual agency action.

Three pieces of evidence support the latter reading. First, section 5 of Senate Bill 2559, titled “Annual Adjustments for Taxable Years Beginning After 1987,” contemplated that annual adjustments beyond the bill’s historical cost-of-living adjustment would take place “[n]ot later than December 15 of 1987 and each subsequent calendar year.”⁵³ “[I]n the case of base penalties provided by law before December 15, 1986,” the bill prescribed an annual adjustment based on “the percentage (if any) by which . . . the Consumer Price Index for the preceding calendar year, exceeds . . . the Consumer Price Index for the calendar year 1986.”⁵⁴ For this initial adjustment (scheduled to take place no later than December 15, 1987) to make sense, the bill’s reference to “the preceding calendar year” *must* have referred to CPI data for 1987 rather than 1986.

Second, the bill defined “the Consumer Price Index for any calendar year” as “the average of the Consumer Price Index as of the close of the 12-month period ending on September 30 of such calendar year.”⁵⁵ It is far more natural to expect that an agency head, directed by law to calculate an annual cost-of-living adjustment on December 15 “for the preceding year,” would use CPI data reaching back from September 30 of that year to October 1 of the previous year.

Finally, given the prevalence of concerns that civil monetary penalties were losing ground to inflation, it seems unlikely that Congress would have consciously considered an inflation adjustment mechanism that requires federal agency heads to ignore an entire year of inflation data. The text of the Act, after all, declares that “the impact of many civil monetary penalties has been and is

50. *Id.* § 5(d).

51. *Id.* § 5(b).

52. Inflation Adjustment Act, Pub. L. No. 101-410, § 5(b)(1), 104 Stat. 890, 892 (1990) (codified as amended at 28 U.S.C. § 2461 note (2012)).

53. S. 2559, 99th Cong. § 5(a) (1986) (emphasis added).

54. *Id.* § 5(c).

55. *Id.* § 5(d).

diminished due to the effect of inflation” and that “inflation has weakened the deterrent effect of such penalties.”⁵⁶

B. Senate Bill 1014 (1987)

Senator Lautenberg’s proposal to adjust federal civil monetary penalties for inflation underwent considerable debate and revision. The Subcommittee on Oversight of Government Management of the Senate Committee on Governmental Affairs conducted hearings to consider what by 1988 had become the proposed Federal Civil Penalties Inflation Adjustment Act of 1987.⁵⁷

Senate Bill 1014 retained the distinctive two-step cost-of-living adjustment prescribed by Senate Bill 2559. The first step prescribed a *historical* adjustment based on “the percentage (if any) by which (1) the average of the Consumer Price Index as of the close of the 12-month period ending on September 30, 1987, exceeds . . . (2) the average of the Consumer Price Index as of the close of the 12-month period ending on September 30 of the calendar year in which such penalty amount was last determined under law.”⁵⁸ Senate Bill 1014 made a material change to the first step of the two-step cost-of-living adjustment. Whereas Senator Lautenberg’s original bill had provided that the historical cost-of-living adjustment “in no event shall . . . exceed 1000 percent of the original penalty amount,”⁵⁹ Senate Bill 1014 omitted any mention of a cap on its initial adjustment.

As a second step, Senate Bill 1014 prescribed *annual, prospective* adjustments.⁶⁰ Beginning no later than December 15, 1988, Senate Bill 1014 directed agency heads to make annual cost-of-living adjustments according to “the percentage (if any) by which . . . (A) the Consumer Price Index for the preceding calendar year, exceeds (B) the Consumer Price Index for the calendar year 1987.”⁶¹ “[I]n the case of base penalties provided by law on or after December 15, 1987,” agencies would make annual cost-of-living adjustments according to “the percentage (if any) by which . . . (A) the Consumer Price Index for the preceding calendar year, exceeds (B) the Consumer Price Index for the calendar year in which the base penalty was provided by law.”⁶²

Finally, Senate Bill 1014 preserved other aspects of annual adjustments under Senate Bill 2559. Retaining the original bill’s approach to rounding, Senate Bill 1014 directed that “[a]ny increase determined under” the new bill’s histori-

56. Inflation Adjustment Act § 2(a)(2)-(3).

57. S. 1014, 100th Cong. (1987).

58. *Id.* § 4(c) (annotations added).

59. S. 2559, 99th Cong. § 4(b) (1986).

60. *See* S. 1014, 100th Cong. § 5(c) (1987).

61. *Id.* § 5(c)(1) (annotations added).

62. *Id.* (annotations added).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

cal cost-of-living adjustment “shall be rounded to the nearest multiple of \$10.”⁶³ Although any subsequent annual, prospective adjustments prescribed by Senate Bill 1014 would not be subject to any cap, they would also “be rounded to the nearest multiple of \$10.”⁶⁴

1. Hearings on Senate Bill 1014 (1988)

In January 1988, the Senate Subcommittee on Oversight of Government Management of the Committee on Governmental Affairs held a hearing on Senate Bill 1014.⁶⁵ This pivotal hearing enabled government agencies and the public to influence the consideration of inflation-based adjustment of civil monetary penalties. In virtually every meaningful respect, this hearing transformed Senator Lautenberg’s original bills into the law that eventually became the Federal Civil Penalties Inflation Adjustment Act of 1990. Many witnesses deemed annual adjustments to be too frequent and too burdensome. The subcommittee also heard considerable criticism that automatic adjustments reported solely in the *Federal Register* would increase civil monetary penalties without appropriate notice and due process. Finally, the subcommittee was evidently persuaded to adopt a more elaborate rounding mechanism than Senator Lautenberg’s simple \$10 provision.

The subcommittee hearing emphasized the frequency of inflation-based adjustments to civil monetary penalties. The deputy director of the Office of Management and Budget (OMB) proposed that adjustments should occur every three to five years.⁶⁶ Concerned that “the cost of carrying out an annual adjustment would outweigh the incremental revenues collected as a result of the adjustment,”⁶⁷ the deputy director argued that that annual adjustments might not properly deter private misconduct: “Very often, the statutory amount is a ceiling, *i.e.*, a figure representing the maximum sum the government could impose. But administrators, for one reason or another, do not always seek or threaten to impose the maximum amount. *Thus increases by small, regular increments may serve no purpose at all.*”⁶⁸

The Interstate Commerce Commission also favored a five-year adjustment cycle: “[D]eveloping cases based on small penalties often requires agency staff to document large numbers of counts to support a penalty which would realistically serve as a deterrent Subsequently, a year-to-year inflation adjust-

63. *Id.* § 4(b).

64. *Id.*

65. See generally *Federal Civil Penalties Adjustment Act of 1987: Hearing on S. 1014 Before the S. Comm. on Oversight of Gov’t Mgmt.*, 100th Cong. (1988) [hereinafter *Hearing on S. 1014*].

66. *Id.* at 7 (statement of Joseph Wright, Jr.).

67. *Id.* at 43.

68. *Id.* at 42-43 (emphasis added).

ment would not appear necessary; a 5-year renew cycle might be an appropriate alternative.”⁶⁹

The bill’s sponsors resisted the suggestion of a five-year cycle. Senator Lautenberg said, “I do not like to see us at first blush extend the review period to five years. Because if we look at one of the worst periods of inflation that we had in our history, a period ranging from 1979—1981, I mean we would be looking at a substantial change in the value of the penalty; and maybe three years.”⁷⁰ Senator Lautenberg added, “I have kind of a preference that it should be biannual [*sic*], every 2 years, or every 3 years, because in 5 years, you could have inflation running strong.”⁷¹

Fearing “a significant reduction in deterrent value,” the legislative director of Public Citizen’s Congress Watch also advocated more frequent adjustments: “[W]e would like to see it done as often as possible. We prefer 1 year. . . . [Five] years . . . is really quite a long time. . . . If inflation stayed [between four and five percent], the difference between a statute passed today and 5 years from now would be a diminution in value of 20 to 25 percent.”⁷²

This debate over the frequency of inflation adjustments should be seen in historical context. In 1988, the galloping inflation of the 1970s remained salient. The participants in the Senate hearing feared the burden of identifying all civil monetary penalties and updating them once a year. Presumably, advances in computing power, as well as the accessibility of inflation data, would allay those fears today. And even though inflation since 1988 has never returned to the levels that it reached during the 1970s, it is worth noting that an annual 2.5% increase in inflation, compounded over five years, would require a 13% adjustment at the end of that period. ($1.025^5 \approx 1.131$.) Though a 13% increase is less than the 20% to 25% increase presented to the Subcommittee, 13% nevertheless exceeds the 10% threshold that Congress adopted as the limit on the first adjustment of a civil monetary penalty.

Participants in the Senate hearing also expressed concerns that an automatic adjustment mechanism would not provide private parties adequate notice of increases in civil monetary penalties: “[T]he language identifying the prohibited conduct will be found in the statute, while the size of the penalty will be found elsewhere in the *Federal Register*. There is obvious opportunity for confusion

69. *Id.* at 94 (letter from William Love, Acting Dir., to Sen. Carl Levin (Feb. 23, 1988)).

70. *Id.* at 16 (statement of Sen. Frank Lautenberg).

71. *Id.* at 31 (statement of Sen. Frank Lautenberg). Senator Lautenberg undoubtedly meant “biennial” rather than “biannual.” A biennial adjustment would take place every second year. A biannual adjustment takes place every six months, or twice in a single year. See BILL BRYSON, BRYSON’S DICTIONARY FOR WRITERS AND EDITORS 39 (3d ed. 2008).

72. *Hearing on S. 1014, supra* note 65, at 31 (statement of Michael Waldman).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

and mistakes, particularly [by] those . . . who seek to evaluate the consequences of certain conduct or practices that may impinge upon the law.”⁷³

A witness from the Department of Justice’s Civil Division likewise suggested that civil penalties might lack deterrent power if penalties published “in the Federal Register each year” were at odds with “the original dollar amount” stipulated in “statutes that contain the terms themselves.”⁷⁴ According to the general counsel for the Department of Transportation, the annual publication of inflation adjustments in the *Federal Register* could make it “difficult for those subject to our statutes to understand what the current penalty is at a particular time, and whether the applicable penalty was that in place at the time of the violation, or that in place at the time enforcement is initiated.”⁷⁵

One witness did dispute “whether proper notice would be provided to the public of the new penalties, so as not to violate . . . due process rights.”⁷⁶ An attorney for the Congressional Research Service testified that “[u]nder the Federal Register Act, publication serves as constructive notice to the public.”⁷⁷ Because “the bill provides that the heads of the agencies will list specific schedules of penalties, and that enforcement of such penalties will not occur until after publication,” he argued that “any individuals who are later fined will have had constructive notice.”⁷⁸

Finally, the Senate hearing addressed the rounding of inflation-based adjustments. Senate Bill 1014 and its predecessor, Senate Bill 2559, had both provided that cost-of-living adjustments would be rounded to the nearest multiple of \$10. During the hearing, Senator Lautenberg expressed doubt over his own rounding mechanism: “[T]he original bill provides that all adjusted penalties are to be rounded off to the nearest 10 dollars. I would suggest that larger penalties should be rounded off to larger numbers. Maybe even the 10 dollars is too small, but that is something that we ought to work on.”⁷⁹ The Chairman of the Nuclear Regulatory Commission proposed the rounding of penalties “to the nearest increment of the original penalty to minimize calculation error.”⁸⁰ The President’s Council on Integrity and Efficiency concluded that inflation adjustments, together with Senator Lautenberg’s proposed rounding mechanism,

73. *Id.* at 136 (letter from Thomas M. Boyd, Acting Assistant Att’y Gen., to Sen. Carl Levin (Apr. 14, 1988)).

74. *Id.* at 14 (statement of Stuart E. Schiffer, Deputy Assistant Att’y Gen.).

75. *Id.* at 103 (letter from B. Wayne Vance to Sen. Carl Levin (Feb. 23, 1988)).

76. *Id.* at 230 (letter from Kenneth R. Thomas, Legislative Att’y, Cong. Res. Serv., to Sen. Carl Levin (Feb. 26, 1988)).

77. *Id.*

78. *Id.*

79. *Id.* at 4 (statement of Sen. Frank Lautenberg).

80. *Id.* at 120 (letter from Lando W. Zech, Jr., to Sen. Carl Levin (Mar. 4, 1988)).

would have “very little” or even “minimal” impact on “just over 40 percent of” affected penalties.⁸¹

2. Amendments to Senate Bill 1014

“In response to . . . concerns” expressed at the hearing on Senate Bill 1014, the Subcommittee on Oversight of Government Management “substantially revised the bill.”⁸² The Subcommittee deleted Senator Lautenberg’s automatic adjustment provision: “Instead of requiring an automatic inflation adjustment published only in the Federal Register, the revised bill provides for the President to report to Congress every five years as to which penalties need to be adjusted, and by how much, to keep up with inflation.”⁸³ Absent “automatic, across-the-board adjustment,” the revised bill contemplated that “separate legislative action” would be “required to make each adjustment.”⁸⁴ The revision likewise addressed “[c]oncerns about the excessive frequency of adjustments . . . by requiring that adjustments be calculated and reported to Congress every five years, rather than every year.”⁸⁵

Though the Subcommittee unanimously approved the revision, and though the Justice Department expressed no objection, the full governmental affairs committee lacked “time to act on the bill before the end of the session.”⁸⁶

C. Senate Bill 535 (1989)

Senators Lautenberg and Levin introduced Senate Bill 535 in the 101st Congress on March 8, 1989.⁸⁷ Senate Bill 535 was identical to Senate Bill 1014, as amended by the Senate Subcommittee on Oversight of Government Management.⁸⁸ In House hearings on Senate Bill 535, Senator Lautenberg acknowledged that he and his colleagues had “modified the legislation in response to concerns

81. *Id.* at 41 (report prepared by the President’s Council on Integrity and Efficiency (July 1, 1988)).

82. *Civil Penalties Inflation Adjustment Act of 1989: Report of the Comm. on Governmental Affairs to Accompany S.535, to Increase Civil Monetary Penalties Based on the Effect of Inflation*, 101st Cong. 5 (1990).

83. *Id.*

84. *Id.*

85. *Id.*

86. *Id.*

87. S. 535, 101st Cong. (1989).

88. See *Hearing on S. 1014*, *supra* note 65, at 5.

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

raised by the administration and others.”⁸⁹ The House concurred in the Senate’s approval of Senate Bill 535 and recommended the bill’s passage.

Most of the features of the contemporary Inflation Adjustment Act can be traced to Senate Bill 535. This bill resolved the ambiguity in previous references to “the preceding calendar year” by unambiguously defining “the term ‘cost-of-living adjustment’” as “the percentage (if any) for each civil monetary penalty by which—(1) the Consumer Price Index *for the month of June of the calendar year preceding the adjustment*, exceeds (2) the Consumer Price Index for the month of June of the calendar year in which the amount of such civil monetary penalty was last set or adjusted pursuant to law.”⁹⁰ This definition codified the anomaly of the Inflation Adjustment Act known as “CPI lag.”

In addition, Senate Bill 535 replaced earlier bills’ simple \$10 rounding provision with an elaborate, six-tiered mechanism:

Any increase determined under this subsection shall be rounded to the nearest —

- (1) multiple of \$10 in the case of penalties less than or equal to \$100;
- (2) multiple of \$100 in the case of penalties greater than \$100 but less than or equal to \$1,000;
- (3) multiple of \$1,000 in the case of penalties greater than \$1,000 but less than or equal to \$10,000;
- (4) multiple of \$5,000 in the case of penalties greater than \$10,000 but less than or equal to \$100,000;
- (5) multiple of \$10,000 in the case of penalties greater than \$100,000 but less than or equal to \$200,000;
- (6) multiple of \$25,000 in the case of penalties greater than \$200,000.⁹¹

This mechanism is the source of contemporary concerns over the rounding of civil monetary penalties under the Inflation Adjustment Act.

Congress enacted Senate Bill 535 as the Federal Civil Penalties Inflation Adjustment Act of 1990.⁹²

D. Legislative Developments After 1990

In 1993, Congress defeated an effort to amend the Inflation Adjustment Act. One provision of House Bill 3400 would have made cost-of-living adjustments

89. *Federal Civil Penalties Adjustment Act of 1989: Hearing on S. 535 Before the Subcomm. on Legis. & Nat’l Sec., supra* note 22, at 21 (statement of Sen. Frank Lautenberg).

90. S. 535 § 5(b) (emphasis added).

91. *Id.* § 5(a).

92. Act of Oct. 5, 1990, Pub. L. No. 101-410, 104 Stat. 890 (1990).

automatic.⁹³ As the Senate report on that bill observed: “Currently the Act . . . requires a report on the penalties to be provided to the Congress, but does not actually index the penalties to inflation. This provision simply executes the purpose already approved by Congress”⁹⁴ In addition, by virtue of its silence on the issue, House Bill 3400 would have imposed no percentage cap on initial adjustments. Had this provision become law, it would have made the first adjustment a complete and automatic cost-of-living adjustment, subject to the one-year CPI lag imposed by the definition of “cost-of-living adjustment” in section 5(b) of the Act. Speaking in opposition to the provision of the Senate bill that mirrored House Bill 3400, Senator William Roth argued that it was inappropriate to delegate to agency heads a task with the practical effect of an automatic adjustment.⁹⁵

Three years later, Congress did amend the Federal Civil Penalties Inflation Adjustment Act through a provision of the omnibus Debt Collection Improvement Act of 1996.⁹⁶ This amendment accomplished something that Senator Lautenberg had originally proposed in 1986, but subsequent legislative consideration had blocked: automatic adjustment of civil monetary penalties for inflation by federal agency heads.⁹⁷ That adjustment would take place at least every four years.⁹⁸

The 1996 amendment also capped initial inflation adjustments, without regard to the temporal gap between that adjustment and the previous statutory designation of penalty amounts, at 10%.⁹⁹ The 1996 amendment thus introduced the 10% cap that serves as the source of the contemporary Inflation Adjustment Act’s “inflation gap.” It also retained two other distinctive (and ultimately unwieldy) features of the original 1990 statute: the “CPI lag” introduced by the statute’s reliance on CPI figures for “for the month of June of the calendar year preceding the adjustment,”¹⁰⁰ as well as the Act’s elaborate, six-tiered rounding mechanism.

The Debt Collection Improvement Act was an omnibus budget bill. The legislative record consequently left no trace of any discussion in which Congress

93. H.R. 3400, 103d Cong. § 16010 (1993).

94. S. REP. NO. 103-281, at 15 (1994); *see also id.* at 35-36 (adopting Section 16010 of H.R. 3400 as Section 410 of the corresponding Senate bill).

95. *Id.* at 37 (statement of Sen. William Roth).

96. Debt Collection Improvement Act of 1996, Pub. L. No. 104-134, § 31001(s), 110 Stat. 1321, 1321-373.

97. *Id.* § 31001(s)(1)(A).

98. *See id.* (calling for the first adjustment to be performed October 23, 1996—180 days after the amending statute’s enactment date of April 26, 1996—and directing subsequent adjustments to be performed “at least once every 4 years thereafter”).

99. *See id.* § 31001(s)(2).

100. Inflation Adjustment Act, Pub. L. No. 101-410, § 5(b)(1), 104 Stat. 890, 892 (1990) (codified as amended at 28 U.S.C. § 2461 note (2012)).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

might have debated the amendments to the Inflation Adjustment Act.¹⁰¹ It is nevertheless striking that the 1996 amendment prescribed automatic cost-of-living adjustments—a highly controversial mechanism that some advocates of this legislation had championed and other parties had vehemently opposed—and simultaneously adopted a 10% cap on initial adjustments. Despite the absence of legislative history, it is not far-fetched to speculate that the 10% cap may have arisen as a compromise in exchange for the controversial automatic adjustment mechanism, one to be carried out by agency heads and published in the *Federal Register*, in lieu of piecemeal congressional amendment.

A 1998 amendment to the Inflation Adjustment Act abolished the President's obligation to provide annual reports under the original statute.¹⁰²

III. PROBLEMS CREATED BY THE MECHANICS OF THE INFLATION ADJUSTMENT ACT

I will now address in detail the three most salient concerns about the amended Federal Civil Penalties Inflation Adjustment Act. First, Part III.A. will discuss the “inflation gap” arising from the statute's 10% cap on initial adjustments. Part III.B. will then examine the “CPI lag” attributable to the statute's directive that federal agencies base their cost-of-living adjustments on CPI data no fewer than six months old and possibly as old as 18 months. Finally, Part III.C. will describe how the Act's rounding mechanism confounds the rational adjustment of federal civil penalties to reflect the impact of inflation.

A. *The “Inflation Gap”*

The 10% cap imposed by the 1996 amendment, when coupled with § 5(b)(2)'s reference to the most recent inflation adjustment, creates a *permanent* “inflation gap.” That gap is equivalent to the difference between (1) the actual increase in inflation since the last adjustment in the penalty amount before the Inflation Adjustment Act, and (2) 10%.

As time passes, the Inflation Adjustment Act prevents closure of the inflation gap. The gap created by the 1996 amendment's 10% cap, expressed as the ratio of accumulated inflation to 10%, does remain constant. But the absolute amount will grow:

101. See 2003 GAO Report, *supra* note 14, at 22 (“The limited legislative history . . . regarding the 1996 amendment to the Inflation Adjustment Act does not explain why the 10 percent cap was established.”). The 2003 GAO report, however, is not precisely correct in asserting that “[u]ntil the 1996 amendment, no earlier executive branch or congressional initiative had called for any cap on the amount of inflation adjustments.” *Id.* Senator Lautenberg's original bills, Senate Bill 2559 and the unamended version of Senate Bill 1014, both proposed to cap first-stage, “historical” cost-of-living adjustments at 1000%.

102. Federal Reports Elimination Act of 1998, Pub. L. No. 105-362, title XIII, § 1301(a), 112 Stat. 3280, 3293 (1998).

$$\text{Absolute inflation gap over time} \approx p \cdot [(1 + \bar{\pi})^t - 1.1] \cdot (1 + \bar{\pi})^g$$

where the variable $\bar{\pi}$ represents average annual inflation, p represents the original penalty, t represents the number of years between the original penalty and the initial adjustment, and g represents the number of subsequent years after the initial adjustment over which inflation grows. Consistent with the conventions of macroeconomic literature, the rate of inflation is designated by the symbol, π .

Consistent with the General Accounting Office's 2003 study of the Inflation Adjustment Act, this Article will simplify many of its calculations by assuming that inflation constantly increases at a fixed annual rate of 2.5%.¹⁰³ Relaxing this assumption introduces only marginally more complexity into our expression of the absolute inflation gap:

$$\text{Absolute inflation gap over time} \approx p \cdot \left[\left(\prod_{i=1}^t 1 + \pi_i \right) - 1.1 \right] \cdot \left(\prod_{j=1}^g 1 + \pi_j \right)$$

where i and j are indexing variables facilitating the expression of different rates of inflation for different years and "capital pi" notation signifies multiplicative series. This more general expression of the absolute inflation gap requires no assumptions about inflation rates over the long run, let alone the equivalence of past and future inflation rates. Indeed, if average inflation over the next g years is designated by the variable \bar{q} , we can recast our original description of the absolute inflation gap in terms of different rates of past and future inflation:

$$\text{Absolute inflation gap over time} \approx p \cdot [(1 + \bar{\pi})^t - 1.1] \cdot (1 + \bar{q})^g$$

The following worked example illustrates the effect of the inflation gap. Let p represent the amount of the original, unadjusted penalty. Assume that 20 years (t) pass between the original penalty and its first adjustment. If the penalty had been fully adjusted for inflation at the time of its first adjustment, it would have been raised to $(1.025 \wedge 20) \cdot p$, or approximately $1.639 \cdot p$. But the Inflation Adjustment Act's 10% cap on initial increases would cap the increased penalty at $1.1 \cdot p$. The ratio between an adjusted penalty that accurately reflected inflation and a penalty adjusted according to the Act's 10% gap is 1.639 to 1.1, or approximately 1.490.

Ten more years pass, at which point a second adjustment for inflation is made. In other words, $g = 10$. Had the original penalty, p , been adjusted strictly in accordance with inflation over the course of thirty years ($20 + 10$), it would be approximately $2.098 \cdot p$: $1.025^{20} \cdot 1.025^{10} \cdot p = 1.025^{30} \cdot p \approx 2.098 \cdot p$. The penalty now reflects a further increase of inflation of approximately 28% in the 10 years that have passed since the initial twenty-year adjustment: $1.025^g = 1.025^{10} \approx 1.280$.

103. See 2003 GAO Report, *supra* note 14, at 10.

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

Adjusting for inflation in strict accordance with federal law, however, yields a different answer. The Act's 10% cap on initial adjustments means that the inflation-adjusted penalty, after the passage of the full 30 years (20 after the original penalty, plus another 10) is now $1.1 \cdot 1.025^{10} \cdot p$, or approximately $1.408 \cdot p$. After $t + g$ years, or $30 = 20 + 10$, the ratio between an economically adjusted penalty and one adjusted according to the Act remains approximately 1.490 (since $2.098/1.408 \approx 1.490$). The 1.408 multiplier attributable to the 10 years of inflation that passed between the initial adjustment and the later adjustment applies equally to an economically accurate penalty and to a penalty subject to the Inflation Adjustment Act's initial 10% cap. Further details and formal analysis are provided in Part II.A of the Mathematical Appendix.

In its 2003 study of the Inflation Act, the GAO provided a vivid example of the inflation gap in action.¹⁰⁴ In 1996, the Federal Aviation Administration (FAA) adjusted a maximum \$1,000 penalty for possession of a firearm discovered at a baggage security checkpoint. That penalty had been set in 1958 and had gone unadjusted until 1996. The CPI increase from June 1958 to June 1995 (which section 5(b) of the Inflation Adjustment Act required the FAA to apply, over the more recent, more relevant, and more accurate CPI figure for June 1996) was 427.7%. A straightforward application of the cost-of-living adjustment described above would have yielded an adjusted penalty of \$5,277. The 1996 amendment to the Inflation Adjustment Act, however, forced the FAA to cap this adjusted penalty at \$1,100—\$4,177 less than a full adjustment for inflation between 1958 and 1995.

In a 1999 regulation that adjusted civil monetary penalties for inflation, the National Highway Transportation Safety Administration (NHTSA) expressed specific concern that the Inflation Adjustment Act's 10% cap impaired the Agency's effort "to enhance the deterrent effect of [its] penalties because of their importance to [its] enforcement programs."¹⁰⁵ To illustrate the agency's concern that the Act's prescribed inflation adjustments would provide "less than adequate . . . deterrent[s] to violations"¹⁰⁶ of various provisions of 49 U.S.C., especially those portions of chapters 301, 325, and 327 that proscribe odometer tampering, require the provision of consumer information regarding vehicle crashworthiness, and set safety standards for bumpers,¹⁰⁷ NHTSA identified a penalty that had originally been set by statute at \$800,000. That penalty "would have increased more than threefold, to \$2.45 million, in June 1996 if [fully] adjusted for inflation."¹⁰⁸ The 10% cap, however limited the adjusted penalty to \$880,000. "[U]nder this aggregate penalty ceiling," NHTSA observed, "on a per

104. See 2003 GAO Report, *supra* note 14, at 18-19.

105. Civil Penalties, 64 Fed. Reg. 37,876, 37,877 (July 14, 1999) (codified at 49 C.F.R. pt. 578).

106. *Id.*

107. *Id.*

108. *Id.*

vehicle basis the maximum penalty amounts to less than one dollar per vehicle where a substantial fleet was in violation of the Safety Act”¹⁰⁹

Notably, the foregoing examples of the inflation gap in FAA and NHTSA penalties are not merely stylized examples based on a constant 2.5% rate of annual inflation. Rather, these examples are based on actual inflation figures. Part I.C of the Mathematical Appendix reports monthly inflation from January 1965 through August 2015, including the crucial values for CPI-U (Consumer Price Index for All Urban Consumers) for June of each year.

B. CPI Lag

The Inflation Adjustment Act, as amended, does not require agencies to set inflation adjustments according to the most recent available CPI data or even CPI data for the most recent benchmark month. Rather, section 5(b) defines “the term ‘cost-of-living adjustment’ as the percentage (if any) for each civil monetary penalty by which—the Consumer Price Index for the month of June of the calendar year preceding the adjustment, exceeds . . . the Consumer Price Index for the month of June of the calendar year in which the amount of such civil monetary penalty was last set or adjusted pursuant to law.”¹¹⁰ The previous-June-to-distant-June methodology prescribed by § 5(b) creates an *intermittent* CPI lag, or the potential loss of an entire year of inflation adjustment each time an agency readjusts civil monetary penalties for intervening increases in the cost of living. CPI lag exacerbates the gap between actual inflation and legally dictated adjustments in civil monetary penalties under the Inflation Adjustment Act. This distortion compounds any inflation gap that may result from the 10% cap on an initial inflation adjustment under the Act. Truly perversely, if an agency tries to adjust its penalties for inflation *more* frequently, that attempt at regularity aggravates the effects of CPI lag and creates an even wider gap between legally adjusted penalties and a hypothetical penalty adjusted strictly in response to inflation.

Section 5(b)(1)’s requirement that agencies consult CPI “for the month of June of the calendar year *preceding* [an inflation] adjustment” commits agencies to ignore the most recent year of inflation every time they adjust a civil monetary penalty for inflation.¹¹¹ Each round of adjustments under the Act therefore introduces an additional error, equivalent in magnitude to the most recent June-to-June change in CPI. Over multiple iterations, CPI lag compounds and can become quite considerable.

Part II.B of the Mathematical Appendix formally describes the effects of CPI lag. For a prospective period of s years, subsequent to an initial adjustment, during which an agency expects to adjust penalties for inflation at a frequency

109. *Id.*

110. Inflation Adjustment Act, Pub. L. No. 101-410, § 5(b), 104 Stat. 890, 891-92 (1990) (codified as amended at 28 U.S.C. § 2461 note (2012)).

111. *Id.* § 5(b)(1).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

of once every f years, the cumulative lag can be predicted with the following equation:

$$\text{Cumulative CPI lag} \approx (1 + \pi)^{\lfloor \frac{s}{f} \rfloor} - 1$$

where the partial brackets indicate the floor, or “greatest integer” function, which is the largest integer which is less than or equal to s/f .¹¹² A more general, nonparametric expression of this effect replaces the exponentiation of average inflation with a multiplicative series of inflation actually observed in years that must be ignored through strict adherence to the Inflation Adjustment Act:

$$\text{Cumulative CPI lag} \approx (1 + \pi_f) \cdot (1 + \pi_{2f}) \cdot \dots \cdot (1 + \pi_{f \lfloor \frac{s}{f} \rfloor}) - 1$$

By way of illustration, I again offer a worked example. Suppose that an agency chooses to adjust its penalties for inflation every three years ($f = 3$) over an eleven-year period ($s = 11$). With a constant annual inflation rate of 2.5%, cumulative CPI lag will be $1.025^{\lfloor 11/3 \rfloor} - 1$, or $1.025^3 - 1 \approx 7.7\%$. The reason for this lag is that an agency observing a three-year cycle between adjustments can be expected to make three adjustments during an eleven-year span. Therefore, if inflation rises by a constant 2.5% every year, the compounded effect of three years’ inflation will be approximately 7.7%.

If we relax the assumption that inflation remains constant, cumulative CPI lag results from the compounding of inflation in years that must be skipped in accordance with the language of the Inflation Adjustment Act. In the foregoing example, penalties are adjusted every third year, which means that the CPI lag after eleven years is the compounded product of inflation as it occurs—and is ignored by operation of law—during years three, six, and nine.

The GAO’s 2003 report on the Inflation Adjustment Act provides a vivid illustration of CPI lag over time.¹¹³ In a 1999 adjustment, NHTSA expressed its frustration that the Inflation Adjustment Act prevented the agency from tripling penalties for violations of the National Traffic and Motor Vehicle Safety Act of 1966 from \$800,000 to \$2.45 million and instead capped NHTSA’s fine at \$880,000, or 10% over \$800,000.¹¹⁴ The same example also illustrates the deleterious effects of CPI lag. Thanks to CPI lag, multiple rounds of inflation adjustments, even if not handicapped by the initial 10% cap, would fall even further behind actual inflation. Perversely enough, the distortion attributable to CPI lag

112. See NICHOLAS J. HIGHAM, HANDBOOK OF WRITING FOR THE MATHEMATICAL SCIENCES 25 (2d ed. 1998); KENNETH E. IVERSON, A PROGRAMMING LANGUAGE 12 (1962). See generally RONALD L. GRAHAM, DONALD E. KNUTH & OREN PATASHNIK, CONCRETE MATHEMATICS: A FOUNDATION FOR COMPUTER SCIENCE ch. 3 (2d ed. 1994).

113. See 2003 GAO Report, *supra* note 14, at 23-26 (especially figs. 3, 4 & 5).

114. See Civil Penalties, 64 Fed. Reg. 37,876, 37,877 (July 14, 1999) (to be codified at 49 C.F.R. pt. 578).

would have been even greater if NHTSA had made two rather than one adjustments in a four-year span:

Inflation from 1996 through 2000, with no lag: 10.0%

Inflation from 1996 through 1999: 6.1%. The amount of one year in CPI lag would have been approximately $(1.1/1.061) - 1$, or approximately 3.7%

Inflation from 1996-97 and 1998-99: 4.3%. The amount of two years in CPI lag would have been approximately $(1.1/1.043) - 1$, or approximately 5.5%

The foregoing figures are based on actual inflation numbers from 1996 to 2000, as reported in Part I.C of the Mathematical Appendix. These figures are consistent with the amount of distortion that this Article's formula for cumulative CPI lag would predict after two rounds of inflation adjustments: $1.100 / (1.025)^{[4/2]} = 1.100 / 1.025^2 - 1 \approx 4.7\%$.

C. Rounding

From its origins in Senator Lautenberg's original bills, Senate Bill 2559 and Senate Bill 1014, the Inflation Adjustment Act has always contemplated some form of rounding. But the Act ultimately adopted a rounding mechanism that lacks the simple elegance of a directive that all cost-of-living increases "be rounded to the nearest multiple of \$10."¹¹⁵ Instead, section 5(a) of the Act prescribes an elaborate six-tiered schedule for rounding. One of these directives will serve to illustrate the set. Under the Act, any cost-of-living adjustment shall be "rounded to the nearest . . . multiple of \$100 in the case of *penalties* greater than \$100 but less than or equal to \$1,000."¹¹⁶

The evident intent underlying this provision was to prevent the use of awkward amounts in the adjustment of civil monetary penalties. But the rounding rules use the size of the *penalty* as opposed to the size of the *increase* as the trigger for rounding. As a result, the precise wording of the Inflation Adjustment Act creates some absurd results. The Act's rounding provisions "can't mean what [they] say[]." ¹¹⁷

Under this provision, some penalties (particularly smaller ones) may take as long as seventeen years to trigger an increase given the rounding, coupled with the 10% initial cap, since $(1 + 0.025)^{17} \approx 1.5$. The details of this calculation are laid out in Part II.C of the Mathematical Appendix. Over time, the rounding mechanism prescribed by the Act has the effect of withholding increases for cer-

115. S. 2559, 99th Cong. §§ 4(b), 5(b) (1986); S. 1014, 100th Cong., §§ 4(b), 5(b) (1987).

116. Inflation Adjustment Act § 5(b)(2) (emphasis added).

117. *Green v. Bock Laundry Mach. Co.*, 490 U.S. 504, 511 (1989) (quoting *Campbell v. Greer*, 831 F.2d 700, 703 (7th Cir. 1987)).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

tain penalties, only to unleash startlingly large increases after a long latency period. Delaying increases and then rounding them up to the nearest ten, hundred, or thousand dollar amount can trigger penalty increases twice the scale of the inflation that finally merits an increase under the Inflation Adjustment Act.

A little back-of-the-envelope mathematics provide a glance at the problems created by the rounding rules. I shall begin at the lower end of one of the six rounding categories defined by section 5(a) of the Inflation Adjustment Act. The impact of the rounding rules is much more pronounced toward the lower end of each rounding category.¹¹⁸ A \$101 statutory penalty is, in the language of section 5(a)(2), “greater than \$100 but less than or equal to \$1,000.”¹¹⁹ Because a cost-of-living adjustment to this penalty must be “rounded to nearest . . . multiple of \$100,” there can be no such adjustment until inflation dictates an increase of at least \$50.¹²⁰ Assuming that inflation increases at a constant annual rate of 2.5%, we can calculate the number of years (represented by the variable t) that must pass before the agency can make an adjustment. The formula involves comparing 1.025 raised to the exponent t , with the sum of 1 and 50/101. The following calculation shows that the agency must wait seventeen years before performing one \$100 adjustment¹²¹:

$$\begin{aligned} 1.025^t &\geq 1 + \frac{50}{101} \approx 1.495 \\ t \cdot \ln(1.025) &\approx \ln(1.495) \\ t &\approx 16.29 \\ \lceil t \rceil &\approx 17 \end{aligned}$$

In that seventeenth year—by which time inflation is projected to have increased 52.16%—the \$100 increase will represent a 99% increase over the \$101 base penalty. Although the Act’s congressional findings, stated purposes, and legislative history all focus on what had been the failure of federal civil monetary penalties to keep pace with inflation, adjustments in excess of inflation pose a distinct, significant problem in their own right. Every regulatory regime strikes some balance between enforcement and deterrence, between socially deleterious and privately beneficial behavior. Many acts subject to federal regulation are, at least to some degree, essential to the proper functioning of a market-based economy. Adjustments that are effectively double the rate of inflation elevate regulatory deterrence above levels that Congress originally contemplated and may inhibit business activities of the sort and/or at a level that Congress intended to permit.

118. See 2003 GAO Report, *supra* note 14, at 29.

119. Inflation Adjustment Act § 5(a)(2).

120. *Id.*

121. The inverted partial brackets indicate the ceiling function, which is the smallest integer that is greater than or equal to t . See sources cited *supra* note 112.

Excessive inflation adjustments assuredly undermine the broader purposes of the Inflation Adjustment Act. To be sure, the tenor of the Act's legislative history emphasizes the need to *increase* civil monetary penalties in an inflationary economic environment. True to a statute whose "inflation adjustment" speaks exclusively of "*increasing* the maximum civil monetary penalty or the range of minimum and maximum civil monetary penalties . . . by the cost-of-living adjustment,"¹²² the Act's legislative history does not directly address the prospect of adjustments in excess of inflation or the negative consequences of such excessive adjustments. But other areas of law using inflation-based adjustments do reflect this concern. For example, in using the CPI to adjust attorney's fees under the Equal Access to Justice Act,¹²³ courts are admonished to "avoid the possibility of a 'windfall'" by declining to "award an inflation-adjusted rate that is higher than the prevailing market rate . . . for comparable legal services."¹²⁴

The 2003 GAO report provides a real-life example of these effects.¹²⁵ The Pension and Welfare Benefits Administration (PWBA) performed cost-of-living adjustments for penalties that had originally been set by statute at \$10, \$100, and \$1,000. Section 6 of the Inflation Adjustment Act, as amended, capped initial adjustments at 10% each. That 10% cap would result in new penalties of \$11, \$110, and \$1,100. Because the Act's rounding provisions would require the next adjustment to be rounded by a full \$10, \$100, or \$1,000, respectively, no increase could take place until CPI had risen by 45.5% from the level that prevailed when the PWBA first adjusted its \$10, \$100, and \$1,000 penalties to \$11, \$110, and \$1,100, respectively. In other words, after an initial adjustment of \$10, \$100, and \$1,000 penalties to \$11, \$110, and \$1,100, the Act froze these new penalties in place until enough inflation had accumulated to warrant a subsequent increase of \$10, \$100, and \$1,000, respectively, in these three penalties, respectively, to \$21, \$210, and \$2,100. The triggering amount of inflation in each scenario would be half of \$10, \$100, or \$1,000—namely, \$5, \$50, and \$500. For a further explanation of the impact of section 6's rounding provisions, see Part II.C of the Mathematical Appendix.

D. Regulatory Self-Help

All of these practical irregularities in the statutory scheme for adjusting federal civil monetary penalties for changes in inflation—an incurable inflation gap traceable to the initial 10% cap, CPI lag that grows with each adjustment, and baroque and frequently absurd rounding provisions—have led or misled federal administrative agencies into a variety of departures from the strict letter of the Inflation Adjustment Act and its 1996 amendments. Anomalies traceable to the Inflation Adjustment Act's rounding provisions are so absurd that the

122. Inflation Adjustment Act § 5(a), 104 Stat. at 891.

123. 28 U.S.C. § 2412(d) (2012).

124. *Sprinkle v. Colvin*, 777 F.3d 421, 429 (7th Cir. 2015).

125. See 2003 GAO Report, *supra* note 14, at 29-31 (especially tbl. 3 & fig. 6).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

Farm Credit Administration and the Department of Commerce have mistakenly interpreted the statute in a common-sense way and performed rounding according to the size of the increase.¹²⁶ These agencies both appear to have taken matters into their own hands by adopting and applying their own, arguably more sensible interpretation of the Inflation Adjustment Act.¹²⁷

Although this sort of administrative self-help is understandable, it is contrary to the letter of the Inflation Adjustment Act. After all, “[i]f the intent of Congress is clear, that is the end of the matter; for . . . the agency,” no less than a reviewing court, “must give effect to the unambiguously expressed intent of Congress.”¹²⁸ “While [courts] will not allow a literal reading of a statute to produce a result ‘demonstrably at odds with the intentions of its drafters,’” with respect to filing deadlines, dates, and other concrete numbers, “a literal reading of Congress’ words is generally the only proper reading.”¹²⁹

More routinely, agencies have failed to uphold the schedule for inflation adjustments prescribed by the 1996 amendments. The Debt Collection Improvement Act of 1996 directed each covered agency to perform its first inflation adjustments on October 23, 1996, and to perform subsequent adjustments “at least once every 4 years thereafter.”¹³⁰ Many failures to abide by this schedule are nearly impossible to detect, inasmuch as agencies are not required to provide step-by-step details of the inflation adjustment calculations. Indeed, even the cost of publishing notices in the *Federal Register* provides a disincentive against comprehensive methodological explanations.

Even when an agency does describe its inflation adjustment methodology in detail, the simple act of complying with the 1996 amendments’ four-year timetable often eludes the agency. For example, in 2010, NHTSA took pains to explain its inflation adjustment methodology and to apply that methodology to a wide range of maximum penalties.¹³¹ Without apology or other explanation, however, NHTSA admitted that it had waited six years (from 2004 to 2010) to

126. See Letter from Victor S. Rezendes, Managing Dir., Strategic Issues, Office of the Compt. Gen., to Hon. Michael M. Reyna, Chairman of the Bd. & Chief Exec. Office of Farm Credit Admin. (Sept. 24, 2002) (on file with the Yale Law & Policy Review); Letter from Victor S. Rezendes, Managing Dir., Strategic Issues, Office of the Compt. Gen., to Hon. Donald L. Evans, Sec’y of Commerce (Sept. 24, 2002) (on file with the Yale Law & Policy Review).

127. See Rules of Practice and Procedure; Adjusting Civil Money Penalties for Inflation, 74 Fed. Reg. 2340 (Jan. 15, 2009) (to be codified at 12 C.F.R. pt. 622); Civil Monetary Penalties; Adjustment for Inflation, 73 Fed. Reg. 75,321 (Dec. 11, 2008) (to be codified at 15 C.F.R. pt. 6).

128. *Chevron U.S.A. v. Nat. Res. Def. Council*, 467 U.S. 837, 842-43 (1984).

129. *United States v. Locke*, 471 U.S. 84, 93 (1985) (quoting *Griffin v. Oceanic Contractors, Inc.*, 458 U.S. 564, 571 (1982)).

130. Act of Apr. 26, 1996, Pub. L. No. 104-134, ch. 8, § 31001(s)(1)(A), 110 Stat. 1321, 1321-358 to 1321-373.

131. See Civil Penalties, 75 Fed. Reg. 5244, 5245-47 (Feb. 2, 2010).

adjust penalties for “a related series of violations of bumper standards and of consumer information regarding crashworthiness and damage susceptibility.”¹³²

Quite often, an agency’s failure to perform adjustments on the legally prescribed timetable bars the agency from being able to capture all intervening inflation (net of the one-year CPI lag that accompanies any adjustment). For instance, in 2012, the Department of Education attempted to adjust “a penalty of up to \$1,000 for an educational organization’s failure to disclose certain information to minor students and their parents.”¹³³ Because that penalty had not been adjusted since it was established in 1994, the Department was faced with the prospect of adjusting the \$1,000 ceiling to reflect inflation from 1994 to 2011. Since this was the Department’s first adjustment of this penalty, however, the Debt Collection Improvement Act’s 10% cap applied.¹³⁴ The Inflation Adjustment Act evidently did not contemplate the possibility that agencies would miss their statutory inflation adjustment deadlines. Retroactively applying the 10% cap to adjustments that should have been made, on schedule, may seem as sensible as applying the Act’s rounding provisions according to the size of the increase rather than the amount of a penalty, but both of these maneuvers would squarely contradict the language of the statute and therefore would be unlawful.

Similarly, the Department of Homeland Security admitted in 2011 that it had not adjusted a penalty for noncompliance with section 231(g) of the Immigration and Naturalization Act (which imposes manifest requirements on commercial vessels and aircraft arriving in or departing from the United States), which penalty had been “set by legislation in 2002.”¹³⁵ Again, any adjustment designed to capture all of the intervening years of inflation fell victim to the 10% cap.

The interaction of missed deadlines, the 10% cap, and the Inflation Adjustment Act’s rounding rules played special havoc with the Federal Emergency Management Agency (FEMA). In 2009, FEMA admitted that its \$5,000 penalty for any knowing violation of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, which had been established in 1990,¹³⁶ had never been adjusted, notwithstanding the October 23, 1996, deadline for making initial inflation adjustments.¹³⁷ FEMA acknowledged that its default, coupled with the Inflation Adjustment Act and its 1996 amendments, precluded the agency from

132. *Id.* at 5245.

133. Adjustment of Civil Monetary Penalties for Inflation, 77 Fed. Reg. 60,047, 60,048 (Oct. 2, 2012).

134. *See id.*

135. Civil Monetary Penalties Inflation Adjustment, 76 Fed. Reg. 74,625, 74,626 (Dec. 1, 2011).

136. *See* 55 Fed. Reg. 2288 (Jan. 23, 1990) (codified at 44 C.F.R. § 206.14(d)).

137. *See* Criminal and Civil Penalties Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 74 Fed. Reg. 58,849, 58,849 (Nov. 16, 2009).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

fully accounting for the dramatic increase in consumer prices during the intervening decades:

Since the [1990] promulgation of 44 CFR 206.14(d), the CPI has increased by nearly 80 percent. However, [since] this rule is FEMA's first adjustment of its civil penalty regulations since the passage of the Adjustment Act . . . [t]he first increase may not exceed 10 percent of the original penalty amount.¹³⁸

Thereupon FEMA adjusted the penalty to \$5,500. But even that decision violated the strict letter of the Inflation Adjustment Act. Section 5(a)(3), one of the Act's rounding provisions, commands that "[a]ny increase" reflecting a risen cost of living "be rounded to the nearest . . . multiple of \$1,000 in the case of penalties greater than \$1,000 but less than or equal to \$10,000."¹³⁹ Depending on its admittedly contestable interpretation of "the nearest multiple of \$1,000," FEMA could either have adjusted this penalty to \$6,000 (rounding up) or kept the penalty unchanged at \$5,000 (rounding down). The one unlawful outcome was a penalty of \$5,500, which could only be described as an attempt to round according to the size of the increase rather than the size of the penalty.

The Department of Agriculture (USDA) provides a study in contrast. In 2010, USDA identified a \$1,200 Perishable Agricultural Commodities Act penalty that would have qualified for a 10% increase under the 10% cap imposed by the Debt Collection Improvement Act of 1996.¹⁴⁰ But the resulting \$120 increase had to be rounded to zero under section 5(a)(3) of the Inflation Adjustment Act, which requires that any cost-of-living increase "be rounded to the nearest . . . multiple of \$1,000 in the case of penalties greater than \$1,000 but less than or equal to \$10,000."¹⁴¹

Indeed, USDA has proved uniquely sensitive to the effects of the Inflation Adjustment Act's rounding rules. Compared to many other agencies, USDA issued its initial round of inflation adjustments on July 31, 1997, merely nine months after the 1996 amendments' original deadline.¹⁴² USDA announced that "[t]he rule contained in this notice reflects the initial adjustment . . . required by the Act."¹⁴³ In subsequent inflation adjustment rules, USDA has announced its position that the publication of a penalty amount in the *Federal Register*, even if rounding rules preclude change in that amount, constitutes the adjustment of a penalty for inflation in accordance with the Act:

138. *Id.*

139. Inflation Adjustment Act, Pub. L. No. 101-410, § 5(a)(3), 104 Stat. 890, 891 (1990) (codified as amended at 28 U.S.C. § 2461 note (2012)).

140. *See* Civil Monetary Penalties Adjustment, 75 Fed. Reg. 17,555, 17,556 (Apr. 7, 2010).

141. Inflation Adjustment Act § 5(a)(3).

142. *See* Civil Monetary Penalties Adjustment, 62 Fed. Reg. 40,924 (July 31, 1997).

143. *Id.* at 40,924.

USDA continues to interpret the Act such that all listed civil monetary penalties undergo the required adjustment whenever USDA adjusts those civil monetary penalties by regulation pursuant to the Act and publishes the regulation in the Federal Register. In other words, the civil monetary penalty is considered to have been adjusted even though the dollar amount of the penalty does not increase (a situation that arises due to application of the rounding formulas in section 5(a) of the Act). . . USDA believes that this interpretation most accurately reflects the plain language of the statutory text.¹⁴⁴

Another dramatic example of these statutory anomalies in action can be seen in the Department of Homeland Security's (DHS) attempt to adjust a host of penalties for violations of the Immigration and Naturalization Act (INA).¹⁴⁵ These penalties relate to a number of serious violations of the INA, including: non-compliance with departure manifest requirements for vessels and aircraft, non-compliance with landing requirements at entry points by aircraft transporting aliens, failure to depart the U.S. voluntarily, failure to comply with removal orders or to remove alien stowaways, failure to report an illegal landing or desertion of an alien crewman or passenger, use of an alien crewmen for longshore work, employment of aliens with certain disabilities as crewmen, failure to control alien crewmen, bringing alien crewmen into the U.S. with the intent to evade the INA, failure to prevent the unauthorized landing of aliens, bringing aliens into the U.S. who are subject to denial on a health-related ground or who lack required documents, as well as general penalties for failure to depart or improper entry.¹⁴⁶ The following table illustrates the impact of the Inflation Adjustment Act on a wide variety of penalties that DHS imposes in its enforcement of the INA:

144. Civil Monetary Penalties Adjustment, 75 Fed. Reg. 17,555, 17,555 (Apr. 7, 2010); Civil Monetary Penalties Adjustment, 70 Fed. Reg. 29,573, 29,573 (May 24, 2005).

145. See Civil Monetary Penalties Inflation Adjustment, 76 Fed. Reg. 74,625, 74,627-28 (Dec. 1, 2011).

146. See *id.*

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

Department of Homeland Security, Immigration and Naturalization Act
Civil Monetary Penalties Inflation Adjustment (2011)¹⁴⁷

| [A] INA § Statute | [B] Cur- rent penalty | [C] Year last ad- justed | [D] CPI factor (2011) (%) | [E] Raw in- crease (2011) [B · D] | [F] Rounder [Inflation Adjustment Act con- straint] | [G] Rounded in- crease [Inflation Adjustment Act increase] | [J] Inflation Ad- justment Act distortion* [G – E] |
|--|--|--------------------------------------|---------------------------------------|---|--|--|--|
| INA § 231(g); 8 U.S.C. 1221(g) | \$1,000.00 | Enacted 2002 | 21.16 | \$211.60 | 10% statutory cap | \$100.00 | -\$111.60 |
| INA § 234; 8 U.S.C. 1224 | \$2,200.00 | 1999 | 31.15 | \$685.30 | \$1,000.00 [rounder] | \$1,000.00 | +\$314.70 |
| INA § 240B(d); 8 U.S.C. 1229 (c)(d) | \$1000.00 minimum/\$5,000.00 max | Enacted 1996 | 39.10 | \$391.00 minimum/\$1,955.00 maximum | 10% statutory cap | \$100.00 minimum/\$500.00 maximum | -\$291.00 minimum/\$1,455.00 maximum |
| INA § 243(c)(1)(A); 8 U.S.C. 1253(c)(1)(A) | \$2,000.00 | Enacted 1996 | 39.10 | \$782.00 | 10% statutory cap | \$200.00 | -\$582.00 |
| INA § 243(c)(1)(B); 8 U.S.C. 1253(c)(1)(B) | \$5,000.00 | Enacted 1996 | 39.10 | \$1,955.00 | 10% statutory cap | \$500.00 | -\$1,455.00 |
| INA § 251(d); 8 U.S.C. 1281(d) | \$220 for each alien not reported / \$5,500 for use of alien crewman | 1999 | 31.15 | \$68.53 for each alien not reported/\$1,713.25 for use of alien crewman | \$100.00 for each alien not reported/\$1,000.00 for use of alien crewman [rounder] | \$100.00 for each alien not reported/ \$2,000 for use of alien crewman | \$31.47 for each alien not reported/ \$286.75 for use of alien crewman |
| INA § 254(a); 8 U.S.C. 1284(a) | \$550.00 minimum/\$3,300.00 max | 1999 | 31.15 | \$171.33 minimum/\$1,027.95 maximum | \$100.00 minimum/\$1,000.00 maximum [rounder] | \$200.00 minimum/\$1,000.00 maximum | \$28.67 minimum / -\$27.95 maximum |
| INA § 255; 8 U.S.C. 1285(a). | \$1,100.00 | 1999 | 31.15 | \$342.65 | \$1,000.00 [rounder] | \$0.00 | -\$342.65 |

147. This table presents a subset of four penalties from the table of penalty adjustments contained in the 2011 *Federal Register* notice from the Department of Homeland Security, together with an additional column ([J], denoted by a *). See *id.*

IV. POSSIBLE SOLUTIONS

All three of the significant defects in the amended Inflation Adjustment Act—the inflation gap, CPI lag, and rounding constraints—arise from the plain language of the statute. Although some agencies have tried to work around this statute’s most awkward provisions, those efforts are contrary to law. To be sure, the norms of statutory construction instruct courts and agencies alike not to interpret statutes so as to achieve absurd results.¹⁴⁸ Congress, however, ultimately chose unambiguous language to achieve dubious results. Clear statutory language puts an end to an agency’s interpretive discretion, for “the agency[] must give effect to the unambiguously expressed intent of Congress.”¹⁴⁹ Congressional designation of concrete numbers “with respect to filing deadlines” and other dates leaves no room for any “proper reading” besides “a literal reading of Congress’ words.”¹⁵⁰ Since step one of so-called *Chevron* analysis leaves no room for imaginative administrative interpretation,¹⁵¹ any reform addressing the failures of the Inflation Adjustment Act must emerge from Congress itself. I recommend possible legislative solutions to the major problems afflicting the Inflation Adjustment Act.

A. Possible Legislative Amendments

1. Inflation Gap

The simplest solution to the inflation gap rests in outright repeal of the 10% cap on initial inflation adjustments found in section 6. Until the 1996 amendment, no member of Congress or witness at a congressional hearing had proposed any cap more stringent than 1000%. In fairness, the 10% cap may be rationalized, especially in hindsight, as part of a larger legislative package. The

148. See, e.g., *United States v. Wilson*, 503 U.S. 329, 334 (1992); *Green v. Bock Laundry Mach. Co.*, 490 U.S. 504, 510-11 (1989); *id.* at 527 (Scalia, J., concurring in the judgment); *Griffin v. Oceanic Contractors, Inc.*, 458 U.S. 564, 571 (1982); *United States v. Turkette*, 452 U.S. 576, 580 (1981); EINER ELHAUGE, *STATUTORY DEFAULT RULES: HOW TO INTERPRET UNCLEAR LEGISLATION* 148 (2008); Veronica M. Dougherty, *Absurdity and the Limits of Literalism: Defending the Absurd Result Principle in Statutory Interpretation*, 44 AM. U.L. REV. 127 (1994).

149. *Chevron U.S.A. v. Nat. Res. Def. Council*, 467 U.S. 837, 842-43 (1984).

150. *United States v. Locke*, 471 U.S. 84, 93 (1985).

151. See, e.g., *Nat’l Cable & Telecomms. Ass’n v. Brand X Internet Servs.*, 545 U.S. 967 (2005) (describing “*Chevron* step one” as a “demanding . . . standard” under which a textually clear “statute unambiguously forecloses” agency discretion and leaves “no gap for [an] agency to fill”); *In re Oil Spill by the Oil Rig “Deepwater Horizon,”* 2015 A.M.C. 758, 763, 2015 WL 729701, at *6 (E.D. La. Feb. 19, 2015) (“The Inflation Adjustment Act . . . provided a detailed formula for calculating . . . adjustments. Thus, the EPA had no discretion—it was required by Congress to adjust the penalty according to the formula.”).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

1996 amendment introduced an automatic adjustment mechanism that had proved quite controversial in the debates preceding passage of the original Inflation Adjustment Act in 1990. Indeed, the original 1990 statute reverted to a presidential reporting mechanism that left the actual legal work of adjusting civil monetary penalties to Congress, in the form of full-blown legislation. The 1996 amendment, seen in this light, may have conditioned congressional acquiescence in an automatic adjustment mechanism upon the imposition of a restrictive cap on initial adjustments.

The legislative history of the Inflation Adjustment Act reflects Congress's evident concern that no single adjustment for inflation exceed 10%, lest the public be shocked or even unduly inconvenienced by a large, one-time increase in civil monetary penalties. Retaining the 10% limit solely as a cap on any cost-of-living adjustment made in any single year allows Congress to keep some limit on inflation-based increases. By the same token, allowing a 10% increase in any given year does supply a slow cure for the inflation gap that cripples the existing Inflation Adjustment Act. If we assume modest inflation, somewhere in the neighborhood of the historical average of 2.5%, annual 10% increases would enable agencies eventually to align civil monetary penalties with the inflation that has intervened since the original passage of the statute imposing those penalties.

As demonstrated in Part II.D of the Mathematical Appendix, agencies operating under a 10% cap on annual cost-of-living increases can close the historical inflation gap within 0.35 times the number of years that a civil penalty languished without an inflation adjustment, assuming that inflation remains at its historical average of 2.5%. (The Mathematical Appendix provides further details on the impact of relaxing assumptions about constant levels of inflation or about the equivalence of past and future inflation.) If Congress, in amending the Act, sought to soften the initial implementation of inflation adjustments for civil monetary penalties that have lain dormant, this ratio would facilitate a reasonably informed estimate of the time that it will take for a phased-in set of inflation adjustments, each observing a fixed cap on annual increases, to catch up for lost intervening time and take full effect.

Some danger remains if Congress chooses to limit annual inflation adjustments to 10% in the interest of softening the transition from long-neglected civil penalties. Contrary to the simplifying assumption adopted hitherto by this Article, I will no longer assume that inflation increases at a constant annual rate of 2.5%. Rather, I will use actual historical CPI data. Since 1914, the CPI has increased more than 10% in a single year on ten occasions.¹⁵² This represents an incidence just over 10% (ten occasions divided by ninety-eight years \approx 10.2%). The past two decades have witnessed remarkable stability in consumer prices. The CPI has not increased by more than 4% in any year since 1992. Of the ten years since 1914 that witnessed annual inflation of 10% or more, seven (1917 through 1920, plus 1979 through 1981) took place in streaks of three or four

152. *Consumer Price Index: All Urban Consumers - (CPI-U)*, BUREAU OF LABOR STATISTICS (Feb. 20, 2014), <http://www.bls.gov/cpi/cpifiles/cpiui.txt>. These figures are reported in Part I.C of the Mathematical Appendix.

years. *Any* meaningful ceiling on initial or intermittent adjustments is therefore vulnerable to a mismatch between statutory design and economic realities.

2. CPI Lag

CPI lag is likely the product of poor legislative drafting. The Act's reference to "the Consumer Price Index for the month of June of the calendar year preceding the adjustment" appears to have arisen from a linguistically decisive but pragmatically troubling resolution of ambiguous language in Senator Lautenberg's original bills.¹⁵³ The plain meaning of this provision systematically directs federal agencies to ignore six to eighteen months of CPI data as they make cost-of-living adjustments in civil monetary penalties. If Congress wishes to retain current law's reliance on CPI data for the month of June, it can do so by rewriting section 5(b)(2) so that it refers to "the Consumer Price Index for the most recent month of June."

CPI lag is an artifact of the Inflation Adjustment Act's requirement that agencies performing inflation-based adjustments in civil monetary penalties apply CPI data for the "calendar year preceding the adjustment." Parallel language in the Internal Revenue Code, however, demonstrates that it is possible for a statute to prescribe inflation-based adjustments based on CPI data from a "preceding calendar year" without forcing each round of adjustments to ignore an entire year of inflation. Section 1 of the Internal Revenue Code¹⁵⁴ is the provision that gives federal income taxation its generally progressive nature by prescribing brackets of increasingly higher marginal rates.¹⁵⁵ Generally speaking, the structure of income tax rates is the place where inflation has its greatest impact on income taxation.¹⁵⁶ The Economic Recovery Tax Act of 1981 added paragraph (f) to I.R.C. Section 1 in order to index tax brackets for inflation.¹⁵⁷ In the absence of indexing, progressive tax brackets "creep" on taxpayers as inflation shoves them into higher brackets. Inflation creep had become especially acute in the years immediately preceding the 1981 tax reform.¹⁵⁸ Because many

153. Inflation Adjustment Act, Pub. L. No. 101-410, § 5(b)(1), 104 Stat. 890, 892 (1990) (codified as amended at 28 U.S.C. § 2461 note (2012)).

154. I.R.C. § 1(a)-(e) (2012) (West 2014).

155. See Jim Chen, *Progressive Taxation: An Aesthetic and Moral Defense*, 50 U. LOUISVILLE L. REV. 659, 662 (2012).

156. See Jim Chen, *The Price of Macroeconomic Imprecision: How Should the Law Measure Inflation?*, 54 HASTINGS L.J. 1375, 1386-88 (2003) [hereinafter Chen, *The Price of Macroeconomic Imprecision*]. See generally James Ming Chen, *Indexing Inflation: The Impact of Methodology on Econometrics and Macroeconomic Policy*, 1 CENT. BANK J.L. & FIN. 3 (2014) [hereinafter Chen, *Indexing Inflation*].

157. See Economic Recovery Tax Act of 1981, Pub. L. No. 97-34, tit. I, § 104(a), 95 Stat. 172, 188.

158. See, e.g., Emmanuel Saez, *The Effect of Marginal Tax Rates on Income: A Panel Study of "Bracket Creep"*, 87 J. PUB. ECON. 1231, 1233 (2003).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

other aspects of federal income taxation are based on section 1(f)'s definition of the cost of living,¹⁵⁹ this provision's approach to inflation indexing has a profound impact on the entire Internal Revenue Code.

As amended in 1981, section 1(f) adjusts federal income tax brackets for increases in the cost of living. Subsections (3) and (4) refer to CPI data for a "preceding year":

(3) Cost-of-living adjustment

For purposes of paragraph (2), the cost-of-living adjustment for any calendar year is the percentage (if any) by which—

(A) the CPI for the preceding calendar year, exceeds

(B) the CPI for the calendar year 1992.

(4) CPI for any calendar year

For purposes of paragraph (3), the CPI for any calendar year is the average of the Consumer Price Index as of the close of the 12-month period ending on August 31 of such calendar year.¹⁶⁰

On the surface, the language of section 1(f)(3) and (4) parallels that of section 5(b) of the Inflation Adjustment Act. Although the legislative history of the Inflation Adjustment Act provides no evidence that the drafters of this statute relied upon section 1(f) of the Internal Revenue Code, it is almost certain that members of the 100th and 101st Congresses were aware of that provision. After its introduction in 1981, inflation indexing of the Internal Revenue Code became a distinctive feature of federal income taxation. At a minimum, even if the architects of the Inflation Adjustment Act paid no direct heed to section 1(f) of the Internal Revenue Code, section 5(b) of the Inflation Adjustment Act and section 1(f) of the Internal Revenue Code are statutes *in pari materia*, meant to be read together.¹⁶¹ Interpretive inferences drawn from the Internal Revenue Code may therefore shed light on the Inflation Adjustment Act, and vice versa.

To see how the Internal Revenue Code might serve as a drafting model for revisions of the Inflation Adjustment Act, consider the Code's handling of CPI adjustments. Section 1(f)'s reference to the CPI for a "preceding calendar year" refers unambiguously to cost-of-living data from the year immediately prior to the year in which a CPI inquiry is made. The current version of section 1(f) treats CPI for 1992 as the cost-of-living baseline for tax year 1993.¹⁶² If tax brackets for 1993 begin with the baseline of CPI as of August 1992, then inflation-adjusted tax brackets for a subsequent year must track the growth in CPI from

159. See, e.g., I.R.C. § 63(c)(4)(B) (West 2014) (standard deduction).

160. I.R.C. § 1(f)(3)-(4) (West 2014).

161. See, e.g., *United States v. Stewart*, 311 U.S. 60, 64-65 (1940); *United States v. Freeman*, 44 U.S. (3 How.) 556, 564-65 (1845).

162. I.R.C. § 1(f)(3)(B) (West 2014).

August 1992 to August of the year prior to the targeted tax year. For instance, brackets for tax year 2000 must have been based on CPI data for 1999.

The use of CPI data by the Internal Revenue Service (IRS) confirms this interpretation of section 1(f). As of 2000, the relevant date for purposes of examining how the Internal Revenue Service used CPI data to calculate inflation from 1999 to 2000 in keeping with section 1(f) of the Internal Revenue Code, federal income tax retained the basic bracket structure that had been established in 1993. For single taxpayers who were not heads of households, income above the zero-bracket level but below \$22,100 was taxed in 1993 at 15%.¹⁶³ For tax year 2000, single taxpayers paid a marginal rate of 15% on all income between \$0 and \$26,250, net of the personal exemption and of all deductions.¹⁶⁴ The ratio of \$26,250 to \$22,100 is approximately 1.188.

Close examination of CPI data demonstrates that the IRS, in readjusting income tax brackets in 2000, used CPI data for 1999. This is precisely what section 1(f)(3) of the Code meant by the “preceding year.” Historical tables for CPI reveal August figures for 1992, 1999, and 2000¹⁶⁵:

| | |
|-------|-------|
| 1992: | 140.9 |
| 1999: | 167.1 |
| 2000: | 172.8 |

The ratio between CPI for 1999 and CPI for 1992, vis-à-vis the ratio between CPI for 2000 and CPI for 1992, makes clear that the IRS applied the 1999 CPI figure:

$$\begin{aligned} \text{CPI}_{1999} / \text{CPI}_{1992} &: 167.1 / 140.9 \approx 1.186 \\ \text{CPI}_{2000} / \text{CPI}_{1992} &: 172.8 / 140.9 \approx 1.226 \end{aligned}$$

Use of CPI data for a “preceding year” makes affirmative sense in the context of federal income taxation. To define tax brackets for 2000, the IRS was required to determine the CPI adjustment “not later than December 15” of 1999.¹⁶⁶ As of December 15, 1999, the IRS obviously could not have projected CPI levels in August 2000.¹⁶⁷ The IRS continues to adjust bracket boundaries on this basis, prescribing bracket boundaries for the coming tax year in the final months of the “preceding year.”

163. See *id.* § 1(c).

164. See INTERNAL REVENUE SERV., 2000 TAX RATE SCHEDULES 71 (2000), <http://www.irs.gov/pub/irs-prior/i1040tt--2000.pdf>.

165. See *supra* note 152.

166. See I.R.C. § 1(f)(1) (West 2014).

167. See *id.* § 1(f)(4) (defining the CPI for any year by reference to the 12-month average ending in August of that year).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

By contrast, section 5(b) of the Inflation Adjustment Act incorporates an iteratively compounding form of inflation lag that I.R.C. § 1(f) appropriately avoids. The Inflation Adjustment Act directs federal agencies to calculate

the percentage (if any) for each civil monetary penalty by which—(1) the Consumer Price index for the month of June of the calendar year preceding the adjustment, exceeds (2) the Consumer Price Index for the month of June of the calendar year in which the amount of such civil monetary penalty was last set or adjusted pursuant to law.¹⁶⁸

If Congress had wanted to structure section 5(b) of the Inflation Adjustment Act precisely in parallel with I.R.C. § 1(f), it would have been better served to write the following (altered language in italics):

the percentage (if any) for each civil monetary penalty by which—(1) the Consumer Price index for the month of June of the calendar year preceding the adjustment, exceeds (2) the Consumer Price Index for the month of June of the calendar year *preceding the calendar year* in which the amount of such civil monetary penalty was last set or adjusted pursuant to law.

The current version of section 1(f) of the Internal Revenue Code effectively accomplishes this mission by starting with a baseline of 1993 tax brackets based on 1992 CPI figures.

Remarkably enough, an even better legislative model appears in the Debt Collection Improvement Act of 1996, the omnibus budget bill that amended the Inflation Adjustment Act in 1996. A different subsection of section 31001 of the Debt Collection Improvement Act (the very provision that amended the Inflation Adjustment Act) amended 31 U.S.C. § 3717 to enable “the head of an executive, judicial, or legislative agency [to] increase an administrative claim by the cost of living adjustment in lieu of charging interest and penalties.”¹⁶⁹ The “cost of living adjustment” for this statute is defined as “the percentage by which the Consumer Price Index for the month of June of the calendar year preceding the adjustment exceeds the Consumer Price Index for the month of the June of the calendar year in which the claim was determined or last adjusted.”¹⁷⁰ A crisper textual implementation of year-to-year CPI increases can scarcely be imagined.

168. Inflation Adjustment Act § 5(b).

169. Pub. L. No. 104-134, § 31001(q), 101 Stat. 1321, 1321-358 (1996) (adding 31 U.S.C. § 3717(i)(1)).

170. *Id.* (adding 31 U.S.C. § 3717(i)(2)(A)).

3. Rounding

Rounding has confounded the Inflation Adjustment Act ever since Senator Lautenberg invited his congressional colleagues to modify his original proposal of rounding all increases to the nearest multiple of \$10. Perhaps the time has come to restore the original bill's \$10 rounding provision. Alternatively, as some agencies and the GAO have suggested, Congress may wish to consider repealing the rounding provision in its entirety.¹⁷¹

A less drastic alternative lies in amending the Inflation Adjustment Act so that rounding is based solely on the size of the increase rather than the size of the underlying penalty. Section 5(a) of the Act reads in part: "Any increase determined under this subsection shall be rounded to the nearest—(1) multiple of \$10 in the case of penalties less than or equal to \$100; (2) multiple of \$100 in the case of penalties greater than \$100 but less than or equal to \$1,000"¹⁷² Substituting the word "increases" for the word "penalties" yields this alternative: "Any increase determined under this subsection shall be rounded to the nearest—(1) multiple of \$10 in the case of ~~penalties~~ *increases* less than or equal to \$100; (2) multiple of \$100 in the case of ~~penalties~~ *increases* greater than \$100 but less than or equal to \$1,000." Rounding adjustments according to the level of the increases rather than the level of the penalties will ameliorate two of the deleterious effects of the Inflation Adjustment Act. The Act's rounding provisions, as they stand, make adjustments less frequent (in partial contravention of congressional intent) and more volatile when they do occur (in complete frustration of Congress's expectations and of any plausible legislative purpose underlying a statutory directive to adjust monetary penalties for inflation). Rounding according to increases rather than entire penalties will facilitate more frequent (or at least more regular) adjustments, and with far less "whiplash" than under existing law.

Section 1(f) of the Internal Revenue Code, whose referral to CPI data from a "preceding year" provides *in pari materia* evidence for interpreting parallel language in section 5(b) of the Inflation Adjustment Act, offers a model for amending the Inflation Adjustment Act's rounding provisions. Under section 1(f)(6) of the Internal Revenue Code, cost-of-living adjustments are "rounded to the next lowest multiple of \$50" (or, in the case of married individuals filing separate returns, "the next lowest multiple of \$25"):

(6) Rounding

(A) In general

If any increase determined under paragraph (2)(A), section 63(c)(4), section 68(b)(2) or section 151 (d)(4) is not a multiple of \$50, such increase shall be rounded to the next lowest multiple of \$50.

171. See 2003 GAO Report, *supra* note 14, at 33, 38.

172. Inflation Adjustment Act, Pub. L. No. 101-410, § 5(a)(1)-(2), 104 Stat. 890, 891 (1990) (codified as amended at 28 U.S.C. § 2461 note (2012)).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

(B) Table for married individuals filing separately

In the case of a married individual filing a separate return, subparagraph (A) (other than with respect to sections 63 (c)(4) and 151 (d)(4)(A)) shall be applied by substituting “\$25” for “\$50” each place it appears.¹⁷³

Relative to the Inflation Adjustment Act’s debilitating methodology, the Internal Revenue Code’s approach to rounding offers two virtues. First, it rounds according to the size of an increase rather than the size of the penalty. Second, the Code uses a simple, round number—\$50—for most rounding purposes, with the logically sound exception of splitting \$50 into two halves of \$25 for married taxpayers filing separately.

B. Exploiting Institutional Diversity Within the Federal Government

If Congress does reexamine the Inflation Adjustment Act, it should take advantage of institutional diversity within the U.S. government. The Inflation Adjustment Act exempted four statutes: the Internal Revenue Code of 1986, the Tariff Act of 1930, the Occupational Safety and Health Act of 1970, and the Social Security Act.¹⁷⁴ Although the precise reasoning behind these exemptions has always remained obscure, the exemptions stand. Consequently, they (and the agencies exempted) might as well be enlisted in service of legislative rationality.

The agencies exempted from the Inflation Adjustment Act are not strangers to the exercise of adjusting civil monetary penalties for changes in inflation. Indeed, the Department of Labor, where the Occupational Safety and Health Administration resides, is responsible for calculating and reporting the CPI through its Bureau of Labor Statistics (BLS). For their part, the IRS and the Social Security Administration are among the federal government’s most voracious “consumers” of CPI data.¹⁷⁵ These agencies have extensive familiarity with the CPI as the federal government’s preferred measure of inflation.

Agencies responsible for the statutes exempted from the Inflation Adjustment Act have had their own experiences, positive and negative, in implementing their own inflation adjustments free from the constraints of the Inflation Adjustment Act. The record of the IRS is especially instructive.¹⁷⁶ Some tax penalties automatically adjust for inflation because they are based on a percentage of the taxpayer’s overall liability. For example, the penalty for failure to pay tax

173. I.R.C. § 1(f)(6) (West 2014).

174. *See id.* § 4(1).

175. *See generally* Chen, *The Price of Macroeconomic Imprecision*, *supra* note 156.

176. *See generally* U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-07-1062 TAX COMPLIANCE: INFLATION HAS SIGNIFICANTLY DECREASED THE VALUE OF SOME PENALTIES (Aug. 2007) [hereinafter 2007 GAO Report]; Michael C. Durst, *Inflation and the Tax Code: Guidelines for Policymaking*, 73 MINN. L. REV. 1217 (1989).

obligations is “0.5 percent of the amount of such tax if the failure is for not more than 1 month, with an additional 0.5 percent for each additional month or fraction thereof during which such failure continues, not exceeding 25 percent in the aggregate.”¹⁷⁷ Penalties of this sort automatically adjust in response to inflation. But the Internal Revenue Code is also filled with civil penalties based on a fixed dollar amount. For instance, the penalty for failure to file a partnership return “is the product of \$195, multiplied by the number of” partners.¹⁷⁸ Like penalties covered by the Inflation Adjustment Act, those penalties are vulnerable to erosion due to inflation over time.

If any federal agency is uniquely, appropriately equipped to adjust civil monetary penalties to reflect inflation and to ensure that deterrent effects remain robust despite changes in consumer prices and the broader economy, that agency is the IRS. The IRS is familiar with the use of CPI to adjust many parts of the Internal Revenue Code.¹⁷⁹ The Code uses the CPI to adjust tax brackets,¹⁸⁰ the standard deduction,¹⁸¹ the personal exemption,¹⁸² and itemized deductions such as Hope and Lifetime Learning Credits.¹⁸³

To be sure, the IRS’s institutional capacity should not be equated with actual institutional performance. The IRS has not implemented inflation-based adjustments to civil penalties within the Internal Revenue Code.¹⁸⁴ The result is a considerable loss of revenue to the Treasury and a corresponding dilution of the effectiveness of fixed-amount civil monetary penalties in federal income tax law. At first glance, this record of institutional performance hardly serves to recommend the IRS as the agency of first resort if Congress were to tap the latent expertise of the federal government in developing and implementing effective inflation-based adjustments of civil monetary penalties. The truth remains, though, that dollar-denominated penalties under the Internal Revenue Code serve the same legislative purposes as their counterparts throughout the rest of the federal government: to deter conduct targeted by civil monetary penalties and, perhaps secondarily, to raise revenue for the United States. The pervasiveness of statutory references to the CPI within the Internal Revenue Code and the overall impact of inflation on income taxation should enable the IRS, under appropriate congressional authorization, to supply helpful guidance to other federal agencies.

177. I.R.C. § 6651(a)(2) (West 2014).

178. I.R.C. § 6698(b) (West 2014).

179. See, e.g., Internal Revenue Serv., IR-2011-104, *In 2012, Many Tax Benefits Increase Due to Inflation Adjustments* (Oct. 20, 2011), <https://www.irs.gov/uac/In-2012,-Many-Tax-Benefits-Increase-Due-to-Inflation-Adjustments>.

180. I.R.C. § 1(f)(3) (West 2014).

181. I.R.C. § 63(c)(4) (West 2014).

182. I.R.C. § 151(d)(4) (West 2014).

183. I.R.C. § 25A(h) (West 2014).

184. See 2007 GAO Report, *supra* note 176, at 3-4.

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

Finally, if Congress amends the Inflation Adjustment Act, it may wish to consider designating a single agency to guide other agencies in applying the Act or (in the case of exempt statutes) in fashioning inflation adjustments not subject to the Act. The BLS in the Department of Labor develops and updates the CPI. The IRS in the Department of Treasury has more experience applying the CPI than perhaps any other agency. Each of these agencies is responsible for enforcing one statute exempted from the Inflation Adjustment Act. Either the BLS or the IRS would be capable of providing guidance to the rest of the federal government on performing inflation-based adjustments in civil monetary penalties. The BLS should receive primary consideration for this coordinating role, if only because placing responsibility for this function outside the IRS would reinforce the primary function of civil monetary penalties as deterrence-driven tools for implementing administrative law over these penalties' secondary function as sources of revenue.

It bears remembering, however, that no agencies answered an earlier call for coordinated oversight of inflation adjustments within the federal government. In response to the 2003 GAO report, both the Commissioner of Financial Management Services within the Department of the Treasury and the staff of the OMB took pains to emphasize that some agency other than their own should undertake the "central oversight and guidance function . . . needed to ensure consistency in" the interpretation and application of the Inflation Adjustment Act.¹⁸⁵

C. *The Inflation Adjustment Act Improvements Act of 2015*

As this Article neared the conclusion of the editorial process, Congress passed the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015 as section 701 of the Bipartisan Budget Act of 2015.¹⁸⁶ The Improvements Act implements many of the suggestions described in this Article and in Recommendation 2012-8 of the Administrative Conference of the United States. The Improvements Act has greatly simplified the calculation of cost-of-living adjustments under the Inflation Adjustment Act. The most significant modification of the Act's CPI methodology directs all prospective annual adjustments to be made according to the amount by which "the Consumer Price Index for the month of October preceding the date of the adjustment exceeds . . . the Consumer Price Index for the month of October" in the previous year.¹⁸⁷ The Improvements Act also simplifies all rounding under the Inflation Adjustment Act "to the nearest multiple of \$1."¹⁸⁸ The former modification eliminates the

185. 2003 GAO Report, *supra* note 14, at 39-40. The quoted language is in reference to the response of the Commissioner of Financial Management Services to the GAO Report, but also describes the OMB's response.

186. See Bipartisan Budget Act of 2015, Pub. L. No. 114-74, § 701, 129 Stat. 584, 599.

187. *Id.* § 701(b)(2)(B).

188. *Id.* § 701(b)(2)(A).

CPI lag problem; the latter eliminates anomalies associated with the baroque rounding provisions of the Inflation Adjustment Act as it stood before 2015.

The Improvements Act has ameliorated but not eliminated the “inflation gap” problem that plagued the pre-2015 version of the Inflation Adjustment Act. In anticipation of future adjustments, the Improvements Act has directed initial adjustments based on the increase in the CPI for October 2015 relative to the CPI “for the month of October of the calendar year during which the amount of [the relevant] civil monetary penalty was established or adjusted under a provision of law other than” the Improvements Act.¹⁸⁹ “The amount of the increase in a civil monetary penalty” subject to this initial adjustment, however, “shall not exceed 150 percent of the amount of that civil monetary penalty” on the Improvement Act’s date of enactment.¹⁹⁰ At the same time, the Improvements Act has repealed that portion of the 1996 amendment that was responsible for imposing a 10% cap on initial inflation adjustments.

In short, some sort of cap on initial inflation adjustment remains, but it has increased from 10% to 150% of the penalty. Because the amended Act leaves a cap in place, an inflation gap theoretically could emerge in the unlikely event that an initial inflation adjustment would increase an existing civil monetary penalty by an amount exceeding 150% of the penalty’s current level. Under the simplifying assumption that inflation increases every year at a fixed rate of 2.5%, an increase hitting the new 150% ceiling (tantamount to a new penalty that is two and a half times as large as the original penalty) implies more than 37 years of accrued inflation:

$$\begin{aligned} 1.025^t &\approx 2.5 \\ t \ln(1.025) &\approx \ln(2.5) \\ t &\approx \frac{\ln(2.5)}{\ln(1.025)} \approx 37.11 \end{aligned}$$

By contrast, a mere four-year delay ($\ln(1.1)/\ln(1.025) \approx 3.86$) in adjusting a civil monetary penalty under conditions of 2.5% annual inflation would trigger the 10% limit imposed by the pre-2015 version of the Inflation Adjustment Act.

Several other changes effected by the Improvements Act are similarly worthy of notice. In making initial inflation adjustments prescribed by the Improvements Act, an agency head may make an adjustment below the level dictated by the newly simplified inflation computation by issuing a final rule determining that “increasing the civil monetary penalty by the otherwise required amount will have a negative economic impact” or that “the social costs” of increasing the penalty as prescribed would “outweigh the benefits.”¹⁹¹ Such a rule must also secure the concurrence of the director of the OMB.¹⁹² Indeed, the

189. *Id.* § 701(b)(2)(B).

190. *Id.*

191. *Id.* § 701(b)(1)(D).

192. *See id.*

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

OMB now supervises compliance with the Inflation Adjustment Act, since the Improvements Act directs the OMB to “issue guidance to agencies on implementing [required] inflation adjustments.”¹⁹³ In turn, agencies are required to report information on civil monetary penalties and their adjustment to the OMB.¹⁹⁴ The Comptroller General must report annually on “the compliance of agencies” with the Inflation Adjustment Act.¹⁹⁵ Finally, the Improvements Act now subjects civil monetary penalties under the Occupational Safety and Health Act and the Social Security Act to the Inflation Adjustment Act.¹⁹⁶ Penalties imposed under the Tariff Act of 1930 and the Internal Revenue Code remain excluded.¹⁹⁷

CONCLUSION

Adjusting civil monetary penalties is indisputably sound legal policy. Neither Congress nor the executive branch has contested the goals of the Inflation Adjustment Act. Before its 2015 amendment, however, the language of that statute undermined the attainment of those goals. Thanks to the Inflation Adjustment Act Improvements Act of 2015, Congress has effectively eliminated the CPI lag arising from the unamended Act’s directive that agencies ignore six to eighteen months of CPI data when making adjustments. The Improvement Act’s adoption of rounding to the nearest dollar has restored rationality to the statute’s rounding provisions. Although Congress has not altogether eliminated the inflation gap that arose from the 10% cap on initial adjustments, the new 150% gap should minimize the instances in which such a gap will plague future adjustments of civil monetary penalties for inflation. The OMB and the Comptroller General now serve vital roles in collecting institutional information on inflation-based adjustments throughout the federal government. In addition, the BLS, as the producer of the CPI, and the IRS, as the leading governmental “consumer” of CPI data, may supply valuable institutional insights into future reform and implementation of inflation adjustments across the federal government.

Civil monetary penalties are more than a source of revenue. Their proper calibration advances substantive regulatory policies across a wide spectrum of federal agencies. Monetary penalties also provide valuable alternatives to more draconian civil remedies (such as the suspension or revocation of licenses) or even criminal sanctions. The enduring link between inflation and revenue made it possible for Congress to amend the Inflation Adjustment Act as part of a legislative compromise to postpone partisan bickering over the federal budget un-

193. *Id.* § 701(b)(4).

194. *See id.*

195. *Id.*

196. *See id.* § 701(b)(1)(B).

197. *See id.*

til the 2016 election and the installation of a new Congress and a new presidential administration. The most significant amendments to the Act before 2015, it bears remembering, took place in connection with an omnibus budget bill styled the Debt Collection Improvement Act. In an age of divided government and bitter partisan brinksmanship over budgets and debt ceilings, tweaking the process by which civil monetary penalties are adjusted for inflation has offered a politically palatable path toward added revenues without crossing electrified boundaries over taxation. In an age when even the reindexation of cost-of-living increases for Social Security benefits lies beyond political plausibility, rational reform of the Inflation Adjustment Act offers a glimmer of hope.

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

Mathematical Appendix

I. OBSERVING AND REPORTING INFLATION

A *Inflation, Over Time and On Average*

Like interest on loans or savings, inflation compounds over time. Mathematically, inflation over a period of time can be expressed as a multiplicative series of annual inflation rates:

$$\text{Total inflation over } n \text{ years} = \pi = \prod_{k=1}^n (1 + \pi_k)$$

Consistent with conventional notation in the literature of macroeconomics, the Greek letter π represents inflation. This Article does not use π in the more commonplace sense as the ratio of a circle's circumference to its diameter. In any given year k , π_k represents the annual inflation rate.

This Article does not dispute actual observations of the level of inflation or inflation-measuring methodologies. The Inflation Adjustment Act measures inflation according to the CPI. Although this choice among inflation indexes is vulnerable to attack on econometric grounds,¹⁹⁸ the Act prescribes resort to the CPI.¹⁹⁹ Since actual inflation is undisputed as a matter of law (if not as a matter of fact), one way to simplify analysis is to assume a constant rate of inflation that is consistent with historical levels and not overly optimistic or otherwise misleading for purposes of projecting future inflation. This is very similar to the familiar problem of calculating compound interest on the assumption that interest remains fixed. Total inflation over an interval from $k=1$ to $k=n$ may be stated in terms of average annual inflation, $\bar{\pi}$, a term that I will now define:

$$\text{Total inflation over } n \text{ years} = \pi = \prod_{k=1}^n (1 + \pi_k)$$

Total inflation as the compounding of π over n years:

$$\bar{\pi} = \sqrt[n]{\prod_{k=1}^n (1 + \pi_k)}$$

198. See generally Chen, *The Price of Macroeconomic Imprecision*, *supra* note 156; Chen, *Indexing Inflation*, *supra* note 156.

199. See Inflation Adjustment Act, Pub. L. No. 101-410, § 5(b), 104 Stat. 890 (codified as amended at 28 U.S.C. § 2461 note (2012)); *McCabe v. Mais*, No. 05-CV-73-LRR, 2010 WL 3938383, at *8 (N.D. Iowa Oct. 5, 2010) (“Congress provided that civil monetary penalties should be adjusted for inflation and adopted the CPI as the method for calculating inflation.”).

More simply: $\pi = (1 + \bar{\pi})^n$

The Inflation Adjustment Act uses annual changes in CPI as its measure of inflation. For any given year k , $\Delta\pi_k = \Delta CPI_k$:

$$\pi = \prod_{k=1}^n (1 + \Delta CPI_k)$$

Average annual inflation, $\bar{\pi}$, over any given period is the geometric mean of this product, minus 1:

$$\text{Average annual inflation} = \bar{\pi} = \sqrt[n]{\prod_{k=1}^n (1 + \Delta CPI_k)} - 1$$

If n , the total number of years, is defined as the difference between later year b and earlier year a , the previous relationships can be restated in terms of the difference between b and a :

$$\begin{aligned} n &= b - a \\ \bar{\pi} &= \sqrt[b-a]{\prod_{k=a}^b (1 + \Delta CPI_k)} - 1 \\ \pi &= (1 + \bar{\pi})^{b-a} \end{aligned}$$

The CPI is reported as a ratio of the price of a market basket of consumer goods, relative to an index of 100 for a base year. Total inflation over that period is the ratio of the later CPI value to the earlier CPI value:

$$\pi = \frac{CPI_b}{CPI_a}$$

where CPI_a refers to CPI in the earlier base year a and CPI_b refers to CPI in the later target year b . Average annual inflation is the geometric mean of this ratio, minus 1:

$$\bar{\pi} = \sqrt[b-a]{\frac{CPI_b}{CPI_a}} - 1$$

B. Estimating Annual Inflation

Computing a geometric mean is not an intuitive mathematical operation. Casual estimates of annual inflation based on the ratio of CPI values for different years routinely make the mistake of taking the ratio and dividing by the

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

number of years between the earlier and the later year. This is a valid method for computing an *arithmetic* mean, but not for computing a *geometric* mean.

Although modern computing readily facilitates the calculation of exact geometric means, I wish to offer a responsive alternative to the continuing allure of estimating annual inflation by dividing a ratio of CPI values by the number of years elapsed. The natural logarithm of the ratio of CPI values for different years, divided by the number of years, provides a useful approximation of the geometric mean:

$$\bar{\pi} \approx \frac{\ln(CPI_b / CPI_a)}{b - a} = \frac{\ln(CPI_b) - \ln(CPI_a)}{b - a}$$

A worked example illustrates this shortcut. Suppose that the CPI increases from 100 to 150 in a period of ten years. The ratio of the ending CPI value of 150 to the baseline value of 100 is 1.5. The all-too-common expedient of dividing 1.5 by 10 (the number of years elapsed) reports a misleadingly high figure of 5% annual inflation. The ratio of $\ln(1.5)$ to 10, however, provides a much closer estimate of 4.055% annual inflation. In reality, inflation over this hypothetical period was 4.138% (the geometric mean of 1.5 over 10 years).

Why this shortcut works warrants a brief mathematical excursion. Euler's constant, e (approximately 2.718), is the base of natural logarithms. It is defined as the limit of $(1 + 1/x)^x$ as x approaches infinity:

$$e = \lim_{x \rightarrow \infty} \left(1 + \frac{1}{x}\right)^x$$

Moreover:

$$e^y = \lim_{x \rightarrow \infty} \left(1 + \frac{y}{x}\right)^x$$

Previous equations have expressed inflation over an interval of multiple years in the following two ways:

$$\pi = (1 + \bar{\pi})^{b-a}$$

$$\pi = \frac{CPI_b}{CPI_a}$$

The first of these equations expresses the effect of compounding an average annual inflation rate, $\bar{\pi}$, over $b - a$ years. The second equation expresses inflation as the ratio of a later CPI figure (CPI_b) to CPI for an earlier, baseline year (CPI_a). Knowing the values for CPI_a and CPI_b facilitates a solution for the value of $\bar{\pi}$:

$$(1 + \bar{\pi})^{b-a} = \frac{CPI_b}{CPI_a}$$

$$\ln[(1 + \bar{\pi})^{b-a}] = \ln\left(\frac{CPI_b}{CPI_a}\right)$$

$$(b - a) \cdot \ln(1 + \bar{\pi}) = \ln(CPI_b) - \ln(CPI_a)$$

$$\ln(1 + \bar{\pi}) = \frac{\ln(CPI_b) - \ln(CPI_a)}{b - a}$$

For small values of $\bar{\pi}$, the expression $\ln(1 + \bar{\pi})$ is a good approximation of $\bar{\pi}$ itself. For example, if $\bar{\pi}$ is 0.01, the error [as defined by $\bar{\pi}/\ln(1 + \bar{\pi})$] is 0.00497; if $\bar{\pi}$ is 0.10, the error is 0.0469. A table of all values from 0.01 to 0.10 follows:

| $\bar{\pi}$ | $\ln(1 + \bar{\pi})$ | $\frac{\ln(1 + \bar{\pi})}{\bar{\pi}}$ | $1 - \frac{\ln(1 + \bar{\pi})}{\bar{\pi}}$ |
|-------------|----------------------|--|--|
| 0.01 | 0.009950 | 0.995033 | 0.004967 |
| 0.02 | 0.019803 | 0.990131 | 0.009869 |
| 0.03 | 0.029559 | 0.985293 | 0.014707 |
| 0.04 | 0.039221 | 0.980518 | 0.019482 |
| 0.05 | 0.048790 | 0.975803 | 0.024197 |
| 0.06 | 0.058269 | 0.971148 | 0.028852 |
| 0.07 | 0.067659 | 0.966552 | 0.033448 |
| 0.08 | 0.076961 | 0.962013 | 0.037987 |
| 0.09 | 0.086178 | 0.957530 | 0.042470 |
| 0.10 | 0.095310 | 0.953102 | 0.046898 |

Demonstrating the relationship between $\ln(1 + \bar{\pi})$ and $\bar{\pi}$ begins with a modest rearrangement of our original definition of average annual inflation:

$$\pi = (1 + \bar{\pi})^{b-a}$$

$$\pi = \left[1 + \frac{\bar{\pi}(b-a)}{b-a}\right]^{b-a}$$

As $(b - a)$ increases, this quantity approaches e raised to the quantity, $\bar{\pi}(b - a)$:

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

$$\lim_{b-a \rightarrow \infty} \left[1 + \frac{\bar{\pi}(b-a)}{b-a} \right]^{b-a} = e^{\bar{\pi}(b-a)}$$

$$(1 + \bar{\pi})^{b-a} \approx e^{\bar{\pi}(b-a)}$$

$$(b-a) \cdot \ln(1 + \bar{\pi}) \approx \bar{\pi}(b-a)$$

$$\ln(1 + \bar{\pi}) \approx \bar{\pi}$$

Extending the previous exercise in algebraic rearrangement to its logical conclusion provides the *exact* value of $\bar{\pi}$:

$$\ln(1 + \bar{\pi}) = \frac{\ln(CPI_b) - \ln(CPI_a)}{b-a}$$

$$1 + \bar{\pi} = \exp\left[\frac{\ln(CPI_b) - \ln(CPI_a)}{b-a}\right]$$

$$\bar{\pi} = \exp\left[\frac{\ln(CPI_b) - \ln(CPI_a)}{b-a}\right] - 1$$

where the expression $\exp(x)$ indicates exponentiation, or the raising of e , Euler's constant, to the power of x .

Alternatively, inasmuch as $(1 + \bar{\pi})^{b-a}$ is an estimate, it may be more convenient in all instances to express that variable as a power of Euler's constant:

$$(1 + \bar{\pi})^{b-a} \approx e^{\bar{\pi}(b-a)}$$

Taking the natural logarithm of both sides and dividing by $(b-a)$ yields the following approximation (which, again, works better for smaller values of $\bar{\pi}$):

$$\bar{\pi} \approx \ln(1 + \bar{\pi})$$

For positive values of π and $\bar{\pi}$, the actual inflation rate falls between the two estimates I have proposed:

$$\ln(1 + \bar{\pi}) < \bar{\pi} < e^{\bar{\pi}} - 1, \quad \pi > 0$$

Ultimately, these shortcuts permit the convenient division into two steps of the admittedly awkward process of calculating average annual inflation: (1) taking the natural logarithm of the ratio of target-year CPI to base-year CPI, *see* BUREAU OF LABOR STATISTICS, *supra* note 152, and (2) dividing that result by the number of years that have passed:

$$\bar{\pi} \approx \frac{\ln(CPI_b / CPI_a)}{b-a} = \frac{\ln(CPI_b) - \ln(CPI_a)}{b-a}$$

This estimate may be readily converted to the exact geometric mean by exponentiation, followed by subtraction of 1:

$$\bar{\pi} = \exp\left[\frac{\ln(CPI_b / CPI_a)}{b - a}\right] - 1 = \sqrt[b]{\frac{CPI_b}{CPI_a}} - 1$$

C. *Table of Actual Inflation, 1965-2015*²⁰⁰

| Year | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1965 | 31.2 | 31.2 | 31.3 | 31.4 | 31.4 | 31.6 | 31.6 | 31.6 | 31.6 | 31.7 | 31.7 | 31.8 |
| 1966 | 31.8 | 32.0 | 32.1 | 32.3 | 32.3 | 32.4 | 32.5 | 32.7 | 32.7 | 32.9 | 32.9 | 32.9 |
| 1967 | 32.9 | 32.9 | 33.0 | 33.1 | 33.2 | 33.3 | 33.4 | 33.5 | 33.6 | 33.7 | 33.8 | 33.9 |
| 1968 | 34.1 | 34.2 | 34.3 | 34.4 | 34.5 | 34.7 | 34.9 | 35.0 | 35.1 | 35.3 | 35.4 | 35.5 |
| 1969 | 35.6 | 35.8 | 36.1 | 36.3 | 36.4 | 36.6 | 36.8 | 37.0 | 37.1 | 37.3 | 37.5 | 37.7 |
| 1970 | 37.8 | 38.0 | 38.2 | 38.5 | 38.6 | 38.8 | 39.0 | 39.0 | 39.2 | 39.4 | 39.6 | 39.8 |
| 1971 | 39.8 | 39.9 | 40.0 | 40.1 | 40.3 | 40.6 | 40.7 | 40.8 | 40.8 | 40.9 | 40.9 | 41.1 |
| 1972 | 41.1 | 41.3 | 41.4 | 41.5 | 41.6 | 41.7 | 41.9 | 42.0 | 42.1 | 42.3 | 42.4 | 42.5 |
| 1973 | 42.6 | 42.9 | 43.3 | 43.6 | 43.9 | 44.2 | 44.3 | 45.1 | 45.2 | 45.6 | 45.9 | 46.2 |
| 1974 | 46.6 | 47.2 | 47.8 | 48.0 | 48.6 | 49.0 | 49.4 | 50.0 | 50.6 | 51.1 | 51.5 | 51.9 |
| 1975 | 52.1 | 52.5 | 52.7 | 52.9 | 53.2 | 53.6 | 54.2 | 54.3 | 54.6 | 54.9 | 55.3 | 55.5 |
| 1976 | 55.6 | 55.8 | 55.9 | 56.1 | 56.5 | 56.8 | 57.1 | 57.4 | 57.6 | 57.9 | 58.0 | 58.2 |
| 1977 | 58.5 | 59.1 | 59.5 | 60.0 | 60.3 | 60.7 | 61.0 | 61.2 | 61.4 | 61.6 | 61.9 | 62.1 |
| 1978 | 62.5 | 62.9 | 63.4 | 63.9 | 64.5 | 65.2 | 65.7 | 66.0 | 66.5 | 67.1 | 67.4 | 67.7 |
| 1979 | 68.3 | 69.1 | 69.8 | 70.6 | 71.5 | 72.3 | 73.1 | 73.8 | 74.6 | 75.2 | 75.9 | 76.7 |
| 1980 | 77.8 | 78.9 | 80.1 | 81.0 | 81.8 | 82.7 | 82.7 | 83.3 | 84.0 | 84.8 | 85.5 | 86.3 |
| 1981 | 87.0 | 87.9 | 88.5 | 89.1 | 89.8 | 90.6 | 91.6 | 92.3 | 93.2 | 93.4 | 93.7 | 94.0 |
| 1982 | 94.3 | 94.6 | 94.5 | 94.9 | 95.8 | 97.0 | 97.5 | 97.7 | 97.9 | 98.2 | 98.0 | 97.6 |
| 1983 | 97.8 | 97.9 | 97.9 | 98.6 | 99.2 | 99.5 | 99.9 | 100.2 | 100.7 | 101.0 | 101.2 | 101.3 |
| 1984 | 101.9 | 102.4 | 102.6 | 103.1 | 103.4 | 103.7 | 104.1 | 104.5 | 105.0 | 105.3 | 105.3 | 105.3 |
| 1985 | 105.5 | 106.0 | 106.4 | 106.9 | 107.3 | 107.6 | 107.8 | 108.0 | 108.3 | 108.7 | 109.0 | 109.3 |
| 1986 | 109.6 | 109.3 | 108.8 | 108.6 | 108.9 | 109.5 | 109.5 | 109.7 | 110.2 | 110.3 | 110.4 | 110.5 |
| 1987 | 111.2 | 111.6 | 112.1 | 112.7 | 113.1 | 113.5 | 113.8 | 114.4 | 115.0 | 115.3 | 115.4 | 115.4 |
| 1988 | 115.7 | 116.0 | 116.5 | 117.1 | 117.5 | 118.0 | 118.5 | 119.0 | 119.8 | 120.2 | 120.3 | 120.5 |
| 1989 | 121.1 | 121.6 | 122.3 | 123.1 | 123.8 | 124.1 | 124.4 | 124.6 | 125.0 | 125.6 | 125.9 | 126.1 |

200. *Consumer Price Index – All Urban Consumers: CUUR0000SA0*, BUREAU OF LABOR STATISTICS, <http://data.bls.gov> (last visited Nov. 19, 2015) (select the “All Urban Consumers (Current Series) Top Picks” hyperlink; then select the “U.S. All items, 1982-84=100 - CUUR0000SA0” check box; then click the “retrieve data” hyperlink); BUREAU OF LABOR STATISTICS, *supra* note 152.

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

| | | | | | | | | | | | | |
|------|-------------|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1990 | 127.4 | 128.0 | 128.7 | 128.9 | 129.2 | 129.9 | 130.4 | 131.6 | 132.7 | 133.5 | 133.8 | 133.8 |
| 1991 | 134.6 | 134.8 | 135.0 | 135.2 | 135.6 | 136.0 | 136.2 | 136.6 | 137.2 | 137.4 | 137.8 | 137.9 |
| 1992 | 138.1 | 138.6 | 139.3 | 139.5 | 139.7 | 140.2 | 140.5 | 140.9 | 141.3 | 141.8 | 142.0 | 141.9 |
| 1993 | 142.6 | 143.1 | 143.6 | 144.0 | 144.2 | 144.4 | 144.4 | 144.8 | 145.1 | 145.7 | 145.8 | 145.8 |
| 1994 | 146.2 | 146.7 | 147.2 | 147.4 | 147.5 | 148.0 | 148.4 | 149.0 | 149.4 | 149.5 | 149.7 | 149.7 |
| 1995 | 150.3 | 150.9 | 151.4 | 151.9 | 152.2 | 152.5 | 152.5 | 152.9 | 153.2 | 153.7 | 153.6 | 153.5 |
| 1996 | 154.4 | 154.9 | 155.7 | 156.3 | 156.6 | 156.7 | 157.0 | 157.3 | 157.8 | 158.3 | 158.6 | 158.6 |
| 1997 | 159.1 | 159.6 | 160.0 | 160.2 | 160.1 | 160.3 | 160.5 | 160.8 | 161.2 | 161.6 | 161.5 | 161.3 |
| 1998 | 161.6 | 161.9 | 162.2 | 162.5 | 162.8 | 163.0 | 163.2 | 163.4 | 163.6 | 164.0 | 164.0 | 163.9 |
| 1999 | 164.3 | 164.5 | 165.0 | 166.2 | 166.2 | 166.2 | 166.7 | 167.1 | 167.9 | 168.2 | 168.3 | 168.3 |
| 2000 | 168.8 | 169.8 | 171.2 | 171.3 | 171.5 | 172.4 | 172.8 | 172.8 | 173.7 | 174.0 | 174.1 | 174.0 |
| 2001 | 175.1 | 175.8 | 176.2 | 176.9 | 177.7 | 178.0 | 177.5 | 177.5 | 178.3 | 177.7 | 177.4 | 176.7 |
| 2002 | 177.1 | 177.8 | 178.8 | 179.8 | 179.8 | 179.9 | 180.1 | 180.7 | 181.0 | 181.3 | 181.3 | 180.9 |
| 2003 | 181.7 | 183.1 | 184.2 | 183.8 | 183.5 | 183.7 | 183.9 | 184.6 | 185.2 | 185.0 | 184.5 | 184.3 |
| 2004 | 185.2 | 186.2 | 187.4 | 188.0 | 189.1 | 189.7 | 189.4 | 189.5 | 189.9 | 190.9 | 191.0 | 190.3 |
| 2005 | 190.7 | 191.8 | 193.3 | 194.6 | 194.4 | 194.5 | 195.4 | 196.4 | 198.8 | 199.2 | 197.6 | 196.8 |
| 2006 | 198.3 | 198.7 | 199.8 | 201.5 | 202.5 | 202.9 | 203.5 | 203.9 | 202.9 | 201.8 | 201.5 | 201.8 |
| 2007 | 202.4 16 | 203.49 9 | 205.352 | 206.686 | 207.949 | 208.352 | 208.299 | 207.917 | 208.490 | 208.936 | 210.177 | 210.036 |
| 2008 | 211.08 0 | 211.693 | 213.528 | 214.823 | 216.632 | 218.815 | 219.964 | 219.086 | 218.783 | 216.573 | 212.425 | 210.228 |
| 2009 | 211.14 3 | 212.193 | 212.709 | 213.240 | 213.856 | 215.693 | 215.351 | 215.834 | 215.969 | 216.177 | 216.330 | 215.949 |
| 2010 | 216.6 87 | 216.741 | 217.631 | 218.009 | 218.178 | 217.965 | 218.011 | 218.312 | 218.439 | 218.711 | 218.803 | 219.179 |
| 2011 | 220.2 23 | 221.30 9 | 223.467 | 224.906 | 225.964 | 225.722 | 225.922 | 226.545 | 226.889 | 226.421 | 226.230 | 225.672 |
| 2012 | 226.6 65 | 227.66 3 | 229.392 | 230.085 | 229.815 | 229.478 | 229.104 | 230.379 | 231.407 | 231.317 | 230.221 | 229.601 |
| 2013 | 230.2 80 | 232.16 6 | 232.773 | 232.531 | 232.945 | 233.504 | 233.596 | 233.877 | 234.149 | 233.546 | 233.069 | 233.049 |
| 2014 | 233.91 6 | 234.78 1 | 236.293 | 237.072 | 237.900 | 238.343 | 238.250 | 237.852 | 238.031 | 237.433 | 236.151 | 234.812 |
| 2015 | 233.7 07 | 234.72 2 | 236.119 | 236.599 | 237.805 | 238.638 | 238.654 | 238.316 | 237.945 | 237.838 | | |

II. THE MECHANICS OF THE INFLATION ADJUSTMENT ACT

A. The “Inflation Gap”

Annually reported inflation data pose a formidable barrier to analysis. The expedient of assuming a constant rate of inflation radically simplifies analysis. The General Accounting Office’s 2003 study of the Inflation Adjustment Act estimated that CPI historically increased by an annual average of 2.5%.²⁰¹ This Article adopts that estimate. Unless indicated otherwise, the variable $\bar{\pi}$, representing average annual inflation, in this Mathematical Appendix (and elsewhere

201. See 2003 GAO Report, *supra* note 14, at 10.

in this Article) may be interpreted without loss of generality as the constant 0.025.

The magnitude of any initial inflation gap may be expressed through the following equations:

$$\text{Initial inflation gap} = (1 + \bar{\pi})^n - 1.1$$

where n equals $(b - a)$, the number of years that have elapsed before adjustment.

The amount of the inflation gap for a particular penalty is the value of the unadjusted penalty times the initial inflation gap:

$$\text{Amount of the inflation gap for a particular penalty} = p \cdot [(1 + \bar{\pi})^n - 1.1]$$

where p represents the original, unadjusted civil monetary penalty.

As time passes, the Inflation Adjustment Act prevents closure of the inflation gap. The gap created by the 1996 amendment's 10% cap, expressed as the ratio of accumulated inflation to 10%, does remain constant. But the absolute amount will grow:

$$\text{Absolute inflation gap over time} = p \cdot [(1 + \bar{\pi})^n - 1.1] \cdot (1 + \bar{\pi})^g$$

where g represents the number of subsequent years after the initial adjustment over which inflation grows.

To restate this relationship in more general (and more realistic) terms, we should (1) relax the assumption that future inflation will equal past inflation and (2) allow inflation, whether past and future, to fluctuate on an annual basis:

$$\text{Absolute inflation gap over time} = p \cdot \left[\prod_{i=1}^n (1 + \pi_i) - 1.1 \right] \cdot \left[\prod_{j=1}^g (1 + \pi_j) \right]$$

B. CPI Lag

The CPI lag created by the Inflation Adjustment Act lends itself to formal mathematical description. The cost-of-living adjustment prescribed by section 5(b) of the Inflation Adjustment Act may be formally expressed by the following formulas²⁰²:

$$\text{Cost-of-living adjustment} = \frac{CPI_{b+} - CPI_a}{CPI_a} = \frac{CPI_{b+}}{CPI_a} - 1$$

where b represents the later year and a represents the original year by which the cost-of-living adjustment is to be computed.

202. Inflation Adjustment Act § 5(b).

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

Section 5(b)(1)'s requirement that agencies consult CPI “for the month of June of the calendar year *preceding* [an inflation] adjustment” commits agencies to ignore the most recent year of inflation every time they adjust a civil monetary penalty for inflation.²⁰³ Each round of adjustments under the Act therefore introduces an additional error, equivalent in magnitude to the most recent June-to-June change in CPI:

$$CPI\ lag = \frac{CPI_b}{CPI_{b+}} \approx 1 + \bar{\pi} \approx 1.025$$

Over multiple iterations, CPI lag compounds and can become quite considerable. For a prospective period of g years, subsequent to an initial adjustment, during which an agency expects to adjust penalties for inflation at a frequency of once every f years, the cumulative lag can be predicted with the following equation:

$$Cumulative\ CPI\ lag \approx (1 + \bar{\pi})^{\lfloor \frac{g}{f} \rfloor} - 1$$

where the partial brackets indicate the floor, or “greatest integer,” function, which is the largest integer which is less than or equal to g/f .²⁰⁴

The inflation gap and cumulative CPI lag compound each other. Assuming that annual inflation changes by a constant amount enables us to use a simple, parametric expression for the combined effect of the inflation gap and cumulative CPI lag:

$$Combined\ effect = p \cdot [(1 + \bar{\pi})^n - 1.1] \cdot (1 + \bar{\pi})^g \cdot (1 + \bar{\pi})^{\lfloor \frac{g}{f} \rfloor}$$

By relaxing the assumption that future inflation will equal past inflation, we may restate this formula in even more general terms:

$$Combined\ effect = p \cdot [(1 + \bar{\pi})^n - 1.1] \cdot (1 + \bar{q})^g \cdot (1 + \bar{q})^{\lfloor \frac{g}{f} \rfloor}$$

where \bar{q} represents average inflation in the future, as distinct from average past inflation, $\bar{\pi}$.

C. Rounding

The Inflation Adjustment Act's rounding provisions follow a predictable pattern. The relationship between (1) changes in inflation that would trigger an

203. *Id.* § 5(b)(1).

204. See sources cited *supra* note 112.

increase and (2) the amounts by which an adjusted penalty must be adjusted may be expressed as a constant ratio: five-elevenths, or approximately 45.5%. The ratio between \$5 and \$11, between \$50 and \$110, and between \$500 and \$1,100, in each instance, is 5/11, or approximately 45.5%. The foregoing sentences express a simple mathematical relationship: 1.1 times 5/11 (roughly 45.5%) equals 0.5, since $\frac{11}{10} \times \frac{5}{11} = \frac{5}{10} = \frac{1}{2}$. The following inequality expresses this relationship in formal fashion:

$$\Delta p \geq 1.1p \cdot \frac{5}{11}$$

$$\Delta p \geq 0.5p$$

Once this 45.5% increase in inflation triggers an adjustment, the Act's rounding provisions force what would have been an already substantial 45.5% increase to be implemented, in whiplash-like fashion, as a 90.9% increase. As discussed in section IV.C. of this Article, the Pension and Welfare Benefits Administration (PWBA) faced this issue. The PWBA, if faithfully complying with the Inflation Adjustment Act, would not raise its penalties from \$11, \$110, and \$1,100 by 45.5% to \$16, \$160, and \$1,600, but rather by 90.9% from \$11, \$110, and \$1,100 to \$21, \$210, and \$2,100:

$$p' \geq 1.1p + 2 \cdot \frac{5}{11} \cdot 1.1p$$

$$p' \geq 1.1p + p = 2.1p$$

$$\frac{p'}{1.1p} - 1 \geq \frac{2.1p}{1.1p} - 1 \approx 90.9\%$$

Having raised the penalty from $1.1p$ to $2.1p$, the rounding provisions dictate that the next round of PWBA adjustments take place when the cost-of-living adjustment factor reaches $2.1+0.5$, or 2.6. The number of years, represented in the following equation by the variable t , that must elapse can be calculated thus:

$$(1 + \bar{\pi})^t \geq \frac{2.6}{2.1}$$

$$1.025^t \geq \frac{2.6}{2.1}$$

$$t \ln(1.025) \geq \ln\left(\frac{2.6}{2.1}\right)$$

$$t \geq \ln\left(\frac{2.6}{2.1}\right) / \ln(1.025)$$

$$t \approx 8.65$$

$$\lceil t \rceil = 9$$

where the inverted partial brackets indicate the ceiling function, which is the smallest integer that is greater than or equal to t .²⁰⁵ The next integer greater than 8.65 is 9. Therefore, the next PWBA adjustment must take place in 9 years.

205. See sources cited *supra* note 112.

INFLATION-BASED ADJUSTMENTS IN FEDERAL CIVIL MONETARY PENALTIES

The foregoing analysis presupposes that inflation adjustments are not further distorted by the CPI lag feature of the Inflation Adjustment Act. If CPI lag is taken into account, waiting periods (such as 17 or 9 years) should in all events be increased by an additional year.

D. The Effect of a 10% Cap on Annual Inflation Adjustments

As described in Part IV.C., the 2015 Act raised the cap on initial inflation adjustments from 10% to 150%. This change addressed the “inflation gap” under previous law. A less radical reform would have consisted of converting the 10% cap on *initial* inflation adjustments to a 10% cap on *annual* adjustments. This expedient would have enabled the federal government to harmonize long-dormant civil monetary penalties with contemporary economic conditions, without exposing private parties to the sudden shock of a massive increase. The effect of a 10% cap on annual increases can be projected mathematically.

Let x = past years that have already “expired,” y = years in transition “yet” to come as we catch up with future inflation adjustments, $\bar{\pi}$ = average past inflation rate (which we have consistently stipulated to be 2.5%), \bar{q} = average future inflation rate (which may differ from 2.5%, but will be held at that level to simplify calculations) and m = maximum annual adjustment (presumably 10%):

$$(1 + \bar{\pi})^x \cdot (1 + \bar{q})^y = (1 + m)^y$$

$$(1 + \bar{\pi})^x = \left(\frac{1 + m}{1 + \bar{q}} \right)^y$$

$$y \ln \left(\frac{1 + m}{1 + \bar{q}} \right) = x \ln(1 + \bar{\pi})$$

$$y = x \frac{\ln(1 + \bar{\pi})}{\ln(1 + m) - \ln(1 + \bar{q})}$$

For small values of $\bar{\pi}$, \bar{q} , and m , it is a reasonable shortcut to substitute these values, respectively, for $\ln(1 + \bar{\pi})$, $\ln(1 + \bar{q})$, and $\ln(1 + m)$. Formally:

$$y \approx x \frac{\bar{\pi}}{m - \bar{q}}$$

Since we have stipulated values for $\bar{\pi}$, \bar{q} , and m , respectively, as 2.5%, 2.5%, and 10%, the unwieldy multiplier for x ,

$$\frac{\ln(1 + \bar{\pi})}{\ln(1 + m) - \ln(1 + \bar{q})},$$

may be approximated as 0.3497, or even more simply as 0.35, since:

$$\frac{\ln(1.025)}{\ln(1.1) - \ln(1.025)} \approx 0.3497$$

Or even more simply, if we adopt the estimate,

$$y \approx x \frac{\bar{\pi}}{m - \bar{q}},$$

on the reasoning that $x \approx \ln(1+x)$ for small values of x , the multiplier is $1/3$, or approximately 0.3333 . In the end, these are very rough estimates, and the difference between 0.3333 and 0.3497 should not be dispositive.

With either multiplier, a penalty that languished without adjustment for eleven years can be expected to catch up within four years, with no annual adjustment exceeding 10%. If $x = 11$, then $y \approx 11 \cdot 0.35$ or $11 \cdot 0.33$. By either multiplier, $y < 4$, since $11 \cdot 0.35 \approx 3.85$ and $11 \cdot 0.33 \approx 3.63$.

The foregoing analysis also demonstrates the backward “reach” of the 2015 Act’s 150% cap on initial inflation adjustments. Using the more elaborate exact formula for y and defining m as 1.5 (the equivalent of 150%), we can predict that the 150% gap allows initial inflation adjustments to capture as many as 36 years of ignored inflation. Defining y as 1 and solving for x should report the number of years of missed adjustments that can be captured by a single 150% adjustment: $[\ln(1+1.5) - \ln(1.025)] / \ln(1.025) \approx 36.1079$.