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## Postdoc Payback: A Call for Reform

*Every postdoctoral fellow (“postdoc”) who receives a Ruth L. Kirschstein National Research Service Award (“NRSA”) from the National Institutes of Health (“NIH”) is required to sign a payback agreement. This requirement was created by Congress, and mandates that the postdoc perform an additional month of health-related research or teaching for each month (up to a year) that the postdoc receives NRSA funds. Otherwise, the postdoc must pay back the same amount of money that he or she received from the NRSA. This is a problem because postdocs may be pressured to accept NRSA’s by the professors who employ them. A postdoc benefits very little by receiving an NRSA, and nearly all the benefit goes to the professor who employs the postdoc. The postdoc’s professor is benefitted by no longer having to pay the postdoc’s salary because the NRSA provides stipend money for the postdoc. However, this leaves the postdoc stuck with the burden of having to continue performing scientific research for an extra year or else pay back an equal amount of NRSA funds. Overall, the payback agreement is administered as an adhesion contract that provides very little benefit to the postdoc. Additionally, monitoring and enforcing the payback requirement does not benefit the public, but rather imposes costs on the United States. Because of these problems, the payback requirement should be discarded.*

### I. INTRODUCTION

After most biomedical scientists finish their Ph.D.s, they continue to perform research under the direction of a professor (“principle investigator” or “PI”) at a university for a few years. This period in which one performs additional research after finishing his or her Ph.D. (or other doctoral degree such as an M.D.) is generally referred to as a postdoctoral fellowship or *postdoc*. The scientist is also referred to as a *postdoc* during this period. The postdoc’s PI typically pays the postdoc’s salary with grant money that the PI receives from the National Institutes of Health (“NIH”). However, instead of being funded by a PI’s grant money, about one out of ten<sup>1</sup> postdocs in the biomedical

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1. See Nat’l Insts. of Health, *NIH Funding of Students and Postdocs*, ACD

field receive their salaries, or *stipends* as they are called, from the NIH in the form of a Ruth L. Kirschstein National Research Service Award (“NRSA”).

Postdocs who receive NRSA funds have a restriction imposed on them that is not imposed on other postdocs. Even though the source of two postdoc’s funding may come ultimately from the NIH, the postdoc who receives it in the form of an NRSA must fulfill an obligation of continuing to perform health-related or research teaching for an additional year after receiving one year of NRSA funding. This obligation is imposed upon the postdoc through a payback agreement that the postdoc must sign to receive the NRSA.<sup>2</sup> If the postdoc does not fulfill the one-year obligation of biomedical research or health-related teaching, he or she must pay back the stipend money that he or she received.

In understanding how postdocs receive NRSAs, and the accompanying problems, consider the following story based on my experience and the experiences of other postdocs.

Mr. Wormtongue is a successful graduate student. With his graduation near at hand, it is time to decide what to do with the time that is given to him. In seeking employment opportunities, he writes the following email:

Dear Professor Saruman, my name is Grimy Wormtongue. I will receive my Ph.D. next spring from the Neuroscience Program at Mordor University. I have been working in Dr. Shagrat Gorbag’s laboratory and have been studying the role of mitogen-activated protein kinases in pain signaling. I have developed an expertise in molecular biology techniques, including polymerase chain reaction, protein purification, and polyacrylamide gel electrophoresis, as well as in various methods of torture. I am impressed by your research, and would like to work in your lab when I graduate. Do you have any postdoctoral positions available? Please find a copy of my CV attached to this email.-Grimy

Mr. Wormtongue is excited when Dr. Saruman writes back and

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BIOMEDICAL WORKFORCE WORKING GROUP DATA (June 14, 2012), [https://report.nih.gov/investigators\\_and\\_trainees/ACD\\_BWF/Phd\\_Graduate\\_info.aspx](https://report.nih.gov/investigators_and_trainees/ACD_BWF/Phd_Graduate_info.aspx) (showing that 6821 postdocs received NRSA funding in 2009); Nat’l Insts. of Health, *Postdoctoral*, ACD BIOMEDICAL WORKFORCE WORKING GROUP DATA (June 14, 2012), [https://report.nih.gov/investigators\\_and\\_trainees/ACD\\_BWF/Phd\\_Postdoctoral.aspx](https://report.nih.gov/investigators_and_trainees/ACD_BWF/Phd_Postdoctoral.aspx) (estimating that there were 37,000 to 68,000 U.S. postdocs in 2009).

2. 42 U.S.C. § 288(e) (2012); Ruth L. Kirschstein National Research Service Award Payback Agreement, Form PHS 6031, June 2015, <http://grants.nih.gov/grants/funding/416/phs6031.pdf> [hereinafter Payback Agreement].

invites him to come visit for an interview, and even more excited when he receives the following signed offer letter:

Dear Grimy, I am pleased to offer you a postdoctoral position in my laboratory at the University of Isengard. Your full-time appointment will begin on 11/4/3018 of the third age, and will continue through 11/3/3019. During this appointment year, you will receive an annual salary of \$42,840, funded by my NIH grant number DE17794. The University has discretion to modify or change funding sources as necessary but will notify you of the change if it impacts your title or research project. To accept this offer, please provide your signature below and return the signed copy.

Dr. Wormtongue signs the form and moves to Isengard. On the first day, he fills out paperwork and gets his name badge. He loves Professor Saruman's lab and becomes so immersed in the research that he forgets to go outside and develops a pale, wise face with heavy-lidded eyes.

About four months into his research, Professor Saruman comes to him and says, "Grimy, a new spot has opened up on our department's training grant. The training program director owes me a favor, and she has agreed to put you on it. It will cover your stipend and other training-related expenses." Dr. Wormtongue doesn't think about this much until he receives an email from the department secretary, asking him to sign and return some paperwork for the training grant. One of the documents is a payback agreement. It contains the following statement:

In accepting a Ruth L. Kirschstein National Research Service Award to support my postdoctoral research training, I understand that my first 12 months of Kirschstein-NRSA support for postdoctoral research training carries with it a payback obligation. I hereby agree to engage in a month of health-related research, health-related research training, or health-related teaching for each month I receive Kirschstein-NRSA support for postdoctoral research training up to and including 12 months. . . . I understand that if I fail to undertake or perform such service . . . the United States will be entitled to recover from me [the amount of NRSA funds that I receive].<sup>3</sup>

Dr. Wormtongue is somewhat troubled by this because he does not like to have his freedom restricted. However, he is also intimidated by Professor Saruman and knows that Professor Saruman will be upset

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3. This wording is from Payback Agreement, *supra* note 2.

if he refuses to sign the document. Although Dr. Wormtongue is aware that it would be hard for Professor Saruman to fire him before his one-year anniversary of employment at the University of Isengard, he wants to remain in Professor Saruman's good graces so that Professor Saruman will write a positive recommendation letter when he seeks future employment. Dr. Wormtongue signs the document because he doesn't want to rock the boat.<sup>4</sup>

What if Dr. Wormtongue does not fulfill the obligation required by the payback agreement? Should he be required to pay back the stipend money that he receives during his training even though he would have been paid the same amount by Professor Saruman and would not have had to pay back this money if he had not accepted the NRSA? Although this story was told using fictional characters, it describes what happens to postdocs in real life. For example, John Cheng had to repay \$12,840 because he decided to teach in an elementary school after ending his NRSA fellowship in 1981.<sup>5</sup> Here, I argue that postdocs like John Cheng and Grimy Wormtongue should not have to repay the stipend money they receive for their training and that the payback requirement should be discontinued.

Section II of this paper presents additional background information about the payback agreement; Section III describes some problems with the payback agreement; Section IV discusses legal issues including contractual validity and conflict with minimum wage laws; Section V argues that enforcing the payback agreement goes against sound public policy; and Section VI concludes this paper by making recommendations for change.

## II. BACKGROUND

This section introduces the reader to biomedical research funding for postdocs, details how the payback agreement is administered, why it is problematic, and further sets the stage for issues discussed in subsequent sections.

### A. *Who Pays for Biomedical Research*

Although most biomedical research in the United States is carried

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4. The original adventures of Wormtongue and Saruman can be found in *THE LORD OF THE RINGS* series by J.R.R. TOLKIEN (1954–55).

5. *United States v. Cheng*, 840 F. Supp. 93, 94–95 (N.D. Cal. 1993).

out internally by pharmaceutical and biotechnology companies, a great deal is performed at universities.<sup>6</sup> For academic scientists, biomedical research is primarily funded by the NIH, an agency of the U.S. Department of Health and Human Services, which is comprised of twenty-seven institutes and centers.<sup>7</sup> The NIH conducts its own intramural research, and also funds outside projects. Scientists submit grant proposals to the NIH, which are peer-reviewed, and a subset of these are selected for funding. The NIH supports roughly twenty-six billion dollars of research per year in this way.<sup>8</sup> In addition to the NIH, private funding sources such as the American Heart Association, American Cancer Society, the Howard Hughes Medical Institute, and biotechnology and pharmaceutical companies invest a substantial amount of money in academic research.<sup>9</sup>

Although biomedical research costs billions of dollars, it promotes innovation and economic development.<sup>10</sup> The NIH's mission is "to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability."<sup>11</sup> These goals have certainly been furthered through the accomplishments of science. At the turn of the twentieth century, life expectancy for men and women was fifty and fifty-three years, respectively, whereas in the year 2000, it was

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6. Hamilton Moses et al., *Financial Anatomy of Biomedical Research*, 294 J. AM. MED. ASS'N 1333, 1333-42 (2005).

7. *Institutes, Centers, And Offices*, NAT'L INSTS. OF HEALTH, <http://www.nih.gov/institutes-nih> (last visited Nov. 21, 2015).

8. *HHS FY2016 Budget in Brief: National Institutes of Health (NIH)*, U.S. DEP'T OF HEALTH & HUMAN SERVS., <http://www.hhs.gov/about/budget/budget-in-brief/nih/index.html> (last visited Oct. 4, 2016) ("In FY 2016, about 83 percent of the [\$31.3 billion] funds appropriated to NIH will flow out to the extramural community, which supports work by more than 300,000 research personnel at over 2,500 organizations, including universities, medical schools, hospitals, and other research facilities.")

9. *See Apply for a Research Grant*, AM. CANCER SOC'Y, <http://www.cancer.org/research/applyforaresearchgrant/> (last visited Dec. 22, 2015); *Research Funding Opportunities*, AM. HEART ASS'N, [http://my.americanheart.org/professional/Research/FundingOpportunities/Funding-Opportunities\\_UCM\\_316909\\_SubHomePage.jsp](http://my.americanheart.org/professional/Research/FundingOpportunities/Funding-Opportunities_UCM_316909_SubHomePage.jsp) (last visited Dec. 22, 2015); *Biomedical Research Programs*, HOWARD HUGHES MED. INST., <http://www.hhmi.org/programs/biomedical-research> (last visited Dec. 22, 2015).

10. Sean Pool & Jennifer Erickson, *The High Return on Investment for Publicly Funded Research*, CTR. FOR AM. PROGRESS, Dec. 10, 2012, <https://www.americanprogress.org/issues/economy/report/2012/12/10/47481/the-high-return-on-investment-for-publicly-funded-research/>.

11. *What We Do*, NAT'L INSTS. OF HEALTH, <http://www.nih.gov/about-nih/what-we-do/mission-goals> (last visited Nov. 17, 2015).

seventy-four and eighty years.<sup>12</sup> Numerous diseases have been eradicated through the development of new vaccines, and disease treatments make many other diseases manageable.<sup>13</sup>

The NRSA program was created in 1974 by the National Research Act<sup>14</sup> and has funded training for more than 160,000 postdocs and students over forty years.<sup>15</sup> Most postdoc NRSA-recipients have Ph.D.s, but some have M.D.s<sup>16</sup> The NRSA program's purpose in funding postdocs is "to help ensure that a diverse and highly trained workforce is available to assume leadership roles related to the Nation's biomedical, behavioral and clinical research agenda."<sup>17</sup>

The National Research Council is a group that was created with the NRSA program and is commissioned to evaluate the nation's needs for research personnel.<sup>18</sup> Regarding the benefits of biomedical research, the National Research Council has stated that "[t]o continue to derive and extend these benefits, we require a highly trained workforce."<sup>19</sup> In seeking to develop a highly trained workforce, the NIH has been providing funding to students and postdocs in the form of fellowships since 1930.<sup>20</sup>

### B. Enter the Postdoc

As with law graduates,<sup>21</sup> jobs for Ph.D. graduates are limited. Competition is fierce to find jobs as professors or industry scientists, and it is a practical necessity to complete a postdoc to advance in a research career.<sup>22</sup> Completion of at least three years of postdoctoral

12. NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., ADVANCING THE NATION'S HEALTH NEEDS 5 (2005).

13. *See id.*

14. 42 U.S.C. § 288 (2012); National Research Act, Pub. L. No. 93-348 § 102 (1974).

15. NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., RESEARCH TRAINING IN THE BIOMEDICAL, BEHAVIORAL, AND CLINICAL RESEARCH SCIENCES 12 (2011).

16. *Physician-Scientist Workforce (PSW) Report 2014*, NAT'L INSTS. OF HEALTH, [http://report.nih.gov/workforce/psw/early\\_career\\_programs.aspx](http://report.nih.gov/workforce/psw/early_career_programs.aspx) (last visited Dec. 21, 2015).

17. NIH Grants Policy Statement § 11.3.3.3, NAT'L INSTS. OF HEALTH (Mar. 31, 2015), <http://grants.nih.gov/grants/policy/nihgps/nihgps.pdf> [hereinafter NIH Policy Statement].

18. NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., *supra* note 15, at 1.

19. *Id.*

20. *Id.* at 9–10.

21. *See, e.g.*, Elizabeth Olson, *Burdened with Debt, Law School Graduates Struggle in Job Market*, N.Y. TIMES (Apr. 26, 2015), [http://www.nytimes.com/2015/04/27/business/dealbook/burdened-with-debt-law-school-graduates-struggle-in-job-market.html?\\_r=0](http://www.nytimes.com/2015/04/27/business/dealbook/burdened-with-debt-law-school-graduates-struggle-in-job-market.html?_r=0).

22. *See* Bruce Alberts et al., *Rescuing US Biomedical Research from Its Systemic Flaws*, 111 PROCS. NAT'L ACAD. SCIS. 5773, 5773–74 (2014) (referring to the "hypercompetitive system" of academic biomedical research); Alice G. Walton, *To Postdoc or Not To Postdoc?: How*

research is a typical prerequisite for a job as a professor in academia or as a scientist in industry.<sup>23</sup> Although some are lucky enough to find jobs without completing a postdoc, the majority of Ph.D. graduates end up in postdoctoral positions.<sup>24</sup> Even for postdocs, there are not enough jobs. The postdoc has thus become not only a training ground but a place to wait for career options to creep up.<sup>25</sup> Some people do postdocs because it is their only option upon graduation,<sup>26</sup> and it is not uncommon for a scientist who cannot find a job to work as a postdoc for several years.<sup>27</sup>

The NIH has estimated that there are between 37,000 and 68,000 postdocs in the United States, many of whom perform full-time biomedical research.<sup>28</sup> They are generally highly-trained but are paid substantially less than those who move on to industry positions.<sup>29</sup> As prescribed by the NIH, starting postdocs are paid a minimum salary of \$42,840 per year, and the salary increases by an average of 4.5% per year for seven years up to \$56,376.<sup>30</sup> Some universities set a slightly higher standard for their postdocs.<sup>31</sup> Although postdocs can *theoretically* negotiate for higher salaries, their wages tend to fall at or near the

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to *Weigh Whether Postdoctoral Training Will Boost Your Career Prospects*, GRADPSYCH, April 2014, at 35, <http://www.apa.org/gradpsych/2014/04/postdoc.aspx> (“In academia, postdocs aren’t required, but it’s almost become an unspoken rule to do one.”).

23. See, e.g., Jennifer Rohn, *In Which My Heart Goes Out to Postdoc B*, MIND THE GAP (Aug. 2, 2011), <http://occamstypewriter.org/mindthegap/2011/08/02/in-which-my-heart-goes-out-to-postdoc-b/>.

24. Kendall Powell, *The Future of the Postdoc*, 520 NATURE 144, 146 (2015) (referring to the bottleneck that trainees face, and stating that 65% of people with Ph.D.s do postdocs).

25. See Carolyn Y. Johnson, *Glut of Postdoc Researchers Stirs Quiet Crisis in Science*, BOSTON GLOBE, Oct. 5, 2014, <https://www.bostonglobe.com/metro/2014/10/04/glut-postdoc-researchers-stirs-quiet-crisis-science/HWxyErx9RNIW17khv0MWTN/story.html> (“[I]n recent years, the postdoc position has become less a stepping stone and more of a holding tank.”).

26. See, e.g., Beryl Lieff Benderly, *When Funding is a Costly Booby Trap*, SCIENCE (Sept. 28, 2015), <http://www.sciencemag.org/careers/2015/09/when-funding-costly-booby-trap> (“Nothing concrete [in terms of job prospects] had developed by the time the professor offered him the postdoc, so Owen accepted the position, assuming he could leave when something better came along. Though meager, the salary was steady and the work would keep him professionally active while he searched for his new career path.”).

27. Johnson, *supra* note 25.

28. Nat’l Insts. of Health, *supra* note 1.

29. See Thomas B. Hoffer & Vincent Welch, Jr., *Time to Degree of U.S. Research Doctorate Recipients*, NAT’L SCI. FOUND., Mar. 2006, <http://www.nsf.gov/statistics/infbrief/nsf06312/>; Paula Stephan, *How to Exploit Postdocs*, 63 BIOSCIENCE 245 (2013).

30. *FY 2015 Funding and Operating Guidelines National Research Service and Career Development Awards*, NAT’L HEART, LUNG, & BLOOD INST. (Feb. 2015), <https://www.nhlbi.nih.gov/research/funding/general/nrsa-fund-guide>.

31. For example, Stanford currently sets the minimum for its postdocs at \$50,000 per year

minimum set by the NIH or universities at which they work.<sup>32</sup>

Universities generally have two schemes for paying postdocs. The first is to classify them as employees, and the second is through fellowships such as NRSA.<sup>33</sup> Most postdocs initially come in under the employee scheme. They receive some form of full-time benefits, fill out W-2s, and have taxes withdrawn from their paychecks like regular employees. Typically, each postdoc works for a single professor and is paid by that professor's grant funding. In the introductory hypothetical, this is how Dr. Wormtongue was initially brought on by Professor Saruman, as outlined in his employment offer letter.<sup>34</sup> His job title would then change from *employee* to *fellow* when he began receiving NRSA funds.<sup>35</sup>

The effect on Dr. Wormtongue of becoming an NRSA-supported fellow would be that instead of being paid by Professor Saruman's grant funds, he would be paid by NRSA funds. Additionally, he would need to file his own taxes using Form 1040-ES instead of having the university withhold taxes for him, and his wages would technically be considered a *stipend* instead of a *salary*.<sup>36</sup> However, these changes would have few practical effects on him other than perhaps necessitating him to pay more to cover his own health insurance.<sup>37</sup> In addition to providing funds for Dr. Wormtongue's stipend, the training grant would also provide a small budget for training expenses such as traveling to attend a meeting.<sup>38</sup> However, because postdocs who are not on training grants typically have these expenses paid for by their PIs, the

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for the first three years. *Funding Guidelines*, STANFORD UNIV. (June 4, 2015), <http://postdocs.stanford.edu/handbook/salary.html>. This minimum is increased by 4.0% for the next three years. *Id.*

32. I say *theoretically*, because it is unlikely for most postdocs to negotiate for a substantial increase in pay. Their bargaining powers are low, especially where there are plenty of other potential postdocs willing to take their places, and where higher-paying jobs are scarce. See Jordan Weissmann, *The Ph.D Bust: America's Awful Market for Young Scientists—in 7 Charts*, THE ATLANTIC (Feb. 20, 2013), [www.theatlantic.com/business/archive/2013/02/the-phd-bust-americas-awful-market-for-young-scientists-in-7-charts/273339/](http://www.theatlantic.com/business/archive/2013/02/the-phd-bust-americas-awful-market-for-young-scientists-in-7-charts/273339/).

33. See, e.g., *Compensation*, UCSF OFFICE FOR POSTDOCTORAL SCHOLARS, <http://postdocs.ucsf.edu/compensation> (last visited Oct. 4, 2016) (describing a postdoc *employee* as one who receives a salary, and postdoc *fellow* as one who receives extramural funding).

34. See *supra* Introduction.

35. See, e.g., *Compensation*, *supra* note 33.

36. NIH Policy Statement, *supra* note 17, § 11.3.8.2.

37. *Id.* § 11.3.8.7 (“[I]t is inappropriate and unallowable for organizations to seek funds, or to charge Kirschstein-NRSA institutional research training grants, for costs that normally would be associated with employee benefits (for example, FICA, workers compensation, life insurance, union dues, and unemployment insurance).”).

38. *Id.* § 11.3.8.4.

budget for training expenses would also have little practical impact on Dr. Wormtongue.

When postdocs receive fellowships, their universities and PIs are benefited because the PI's grant money that was being used to pay their salaries can now be used for other purposes. University departments commonly write grant proposals to the NIH to obtain training funds from the NRSA program.<sup>39</sup> Funds received in this way are referred to as T32 institutional research *training grants*;<sup>40</sup> the majority of NRSA participants receive funding through these training grants.<sup>41</sup> A typical training grant will provide funds for several predoctoral students and postdocs. The department that receives the training grant has discretion about which students and postdocs to fund. Each training grant is supervised at the university by a training program director who is typically a professor.<sup>42</sup> The training program director of each training grant is responsible "for the overall direction, management, and administration of the training program," and "for the selection and appointment of trainees to the Kirschstein-NRSA research training grant."<sup>43</sup>

Sometimes a university department will have students or professors compete for training grant funds, while other departments will arbitrarily assign the funds. For example, while I was a postdoc at Washington University in St. Louis, my PI applied to place me on a departmental training grant. As part of the application, he obtained letters of recommendation from people who had worked with me and submitted them to the department's training program director. In another instance, while I was a graduate student at the University of Maryland, Baltimore, my PI was a training program director, and he made the decision to put me on the department's training grant. He remarked that if he had to do the work of overseeing the training grant, he might as well get something for it by having it fund me.

In addition to institutional training grants, postdocs and students can apply for individual fellowships (categorized as F32 fellowships)

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39. See *Institutional Training Grants*, NAT'L INSTS. OF HEALTH, <https://researchtraining.nih.gov/programs/training-grants/T32> (last visited Jan. 9, 2016).

40. *Id.*

41. NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., *supra* note 15, at 12. On the other hand, thirty-five percent of postdoctoral NRSA-recipients receive their NRSA's through individual fellowships. *Id.*

42. NIH Policy Statement, *supra* note 17, § 11.3.2.3; *Institutional Training Grants*, *supra* note 39.

43. NIH Policy Statement, *supra* note 17, § 11.3.2.3.

directly from the NIH.<sup>44</sup> Receiving one of these fellowships may carry some prestige due to the selective nature of the application process, but other than that, the practical consequences are the same as for those on training grants. Although at some universities receiving a fellowship relieves a postdoc of having to teach classes or be a teaching assistant, employee-postdocs at many universities are not required to teach classes in return for their salaries because they are paid by their PI's grant or startup funds. Thus, NRSA's are administered in the form of training grants and direct fellowships that carry very little benefit for most postdocs, while providing a boon to the postdocs' PIs.

### *C. Instigating Legislation – 42 U.S.C. § 288*

The Ruth L. Kirschstein NRSA program has funded over 160,000 students and postdocs since its inception in 1974 and is currently codified under Section 288 of 42 U.S.C.<sup>45</sup> The Act initially included a service obligation for both postdocs and students who received NRSA support, but now requires it only of postdocs.<sup>46</sup> In mandating the service obligation, the statute states that “[e]ach individual who is awarded a Ruth L. Kirschstein National Research Service Award for postdoctoral research training shall . . . engage in research training, research, or teaching that is health-related (or any combination thereof) for the period specified in paragraph (2).”<sup>47</sup> Paragraph (2) then goes on to define the period of the service obligation as “12 months, or one month for each month for which the individual involved receives a Ruth L. Kirschstein National Research Service Award for postdoctoral research training, whichever is less.”<sup>48</sup> Therefore, for each month up to a year of support, any postdoc who receives NRSA funds must engage in an equal period of health-related research or teaching.

The statute delegates to “the Secretary [of Health and Human Services]” to “by regulation prescribe the type of research and teaching in

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44. *Id.* § 11.2.

45. 42 U.S.C. § 288 (2012); National Research Act, Pub. L. No. 93-348 § 102 (1974); NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., *supra* note 15, at 1.

46. *Historical Payback Reporting Requirements (Prior to June 10, 1993)*, [https://grants.nih.gov/training/payback\\_historical\\_reporting\\_requirements.doc](https://grants.nih.gov/training/payback_historical_reporting_requirements.doc) (last visited Nov. 17, 2015).

47. § 288(c)(1).

48. § 288(c)(2)(A).

which an individual may engage to comply with such requirement[s].”<sup>49</sup> If the postdoc does not fulfill his or her service obligation, the statute authorizes the United States to recover the NRSA money that the postdoc received plus interest.<sup>50</sup> The amount to be paid back may be reduced if the service obligation is partially completed.<sup>51</sup> The statute also delegates to the Secretary to “provide for the waiver or suspension of any such obligation applicable to any individual whenever compliance by such individual is impossible or would involve substantial hardship to such individual or would be against equity and good conscience.”<sup>52</sup>

#### *D. Implementing 42 U.S.C. § 288 – The Payback Agreement*

As an agency of the U.S. Department of Health and Human Services, the NIH has implemented section 288 of 42 U.S.C. by creating regulations codified in part 66 of 42 C.F.R.<sup>53</sup> Additionally, the NIH has implemented section 288(c) of 42 U.S.C. by creating a payback agreement that all postdocs must sign to receive NRSA support. The payback agreement (PHS 6031) outlines the required conditions.<sup>54</sup> It states that the health-related research or teaching must be initiated within two years after terminating NRSA support, and the teaching or research must average at least twenty hours per week.<sup>55</sup> It also mentions the possibility of the payback obligation being waived, or of the time for fulfilling the obligation being extended.<sup>56</sup> These may occur in the case of impossibility due to disablement, or where “fulfillment would involve a substantial hardship and the enforcement of such obligation would be against equity and good conscience.”<sup>57</sup> However, such waivers are rare.<sup>58</sup>

The NIH has also created a policy statement that further defines

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49. § 288(c)(3).

50. § 288(c)(4).

51. *Id.*

52. § 288(c)(5)(B).

53. 42 C.F.R. § 66 (2014).

54. Payback Agreement, *supra* note 2.

55. *Id.*

56. *Id.*

57. *Id.*

58. NIH Policy Statement, *supra* note 17, § 11.4.3.

the terms of the payback requirement.<sup>59</sup> For example, the policy statement contains definitions of health-related, teaching, and research, and also outlines other details of how to fulfill the requirement.<sup>60</sup>

The payback requirement is administered by the NRSA Payback Service Center (“Service Center”).<sup>61</sup> After completing NRSA training, postdocs report their payback activities to the Service Center by submitting Annual Payback Activities Certification forms.<sup>62</sup> This requirement is outlined in the payback agreement, which states, “on an annual basis I agree to complete and submit Annual Payback Activities Certification forms sent to me by the awarding Federal Agency concerning post-award activities.”<sup>63</sup>

### III. THE PROBLEM OF THE PAYBACK AGREEMENT

As I argue in Section II(B), instead of benefiting postdocs, NRSAs are a boon particularly to their PIs who do not bear the risk of non-compliance with the payback requirement. Additionally, the payback agreement imposes difficulties on postdocs because it is not uncommon for a postdoc to be unaware of the payback requirement until after the postdoc agrees with his or her PI to be on a training grant. Further, the payback requirements are vague and uncertain, and there is no guarantee that the NRSA Payback Service Center will administer the requirements predictably or consistently. Nothing is being done to remove the payback requirement from the NRSA program for postdocs, possibly because of misconceptions about postdocs and the payback requirement.

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59. *Id.* § 11.4.

60. *Id.* § 11.4.3.1.

61. Ruth L. Kirschstein National Research Service Awards (NRSA) Payback Service Center Home Page, NAT'L INSTS. HEALTH, <https://researchtraining.nih.gov/training/payback> (July 31, 2015) [hereinafter *Service Center Home Page*].

62. Ruth L. Kirschstein National Research Service Award Annual Payback Activities Certification (APAC), Form PHS 6031-1 (June 2015), <http://grants.nih.gov/grants/funding/416/phs6031-1.pdf> [hereinafter APAC].

63. Payback Agreement, *supra* note 2.

A. *Many Postdocs Do Not Know About the Payback Agreement When They Agree to Be on Training Grants*

The university that obtains a training grant is responsible for having its postdocs sign the payback agreement.<sup>64</sup> This is often done haphazardly, as in Dr. Wormtongue's case,<sup>65</sup> so that the postdoc does not find out about the payback agreement until a secretary informs the postdoc that he or she must sign it as part of the training grant paperwork. It is not generally brought up in the interview process for obtaining a postdoc position or even when the professor asks the postdoc to be on a training grant. In other words, the postdoc does not find out about the payback agreement until it is thrust upon him or her after having already agreed with his or her PI to be on a training grant. It is unfair to require postdocs to face this dilemma because of the disparity of power between postdocs and their PIs.<sup>66</sup> PIs have enough power to affect the career progression of their postdocs that their postdocs would be disadvantaged in the job market without their help and should not be expected to disregard their wishes.

In other cases, the postdoc does not start his or her postdoc until after applying to receive an NRSA. Although some university departments have set programs where potential postdocs apply to their training grants before the universities extend offers for those postdoctoral positions, such exceptions are rare, and they do not necessarily inform the postdoc about the payback agreement early in the application process.<sup>67</sup> In one instance, a medical practitioner moved to Boston to start an NRSA fellowship.<sup>68</sup> It was not until after he arrived that he was informed about the payback agreement.<sup>69</sup>

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64. NIH Policy Statement, *supra* note 17, § 11.3.7.

65. See *supra* Introduction (stating that Dr. Wormtongue was placed on a training grant because the training program director owed his PI a favor).

66. See *infra* Section IV(A)(3).

67. One example of such an exception is the *Research Training in Myocardial Biology at Stanford*. See *Application Procedure*, STANFORD SCH. OF MED., <http://med.stanford.edu/cvmedicine/education/timbs/application-procedure.html> (last visited Oct. 22, 2016). However, even this program does not mention the payback requirement in its informational materials. See *Program Outline*, STANFORD SCH. OF MED., <http://med.stanford.edu/cvmedicine/education/cv-imaging/program-outline.html> (last visited Oct. 22, 2016).

68. Thomas R. Klumpp, *Effect on Physician-Scientists of the Low Funding Rate of NIH Grant Applications*, 323 NEW ENGLAND J. MED. 1283, 1283–84 (1990) (letter to the editor).

69. *Id.* This situation is not isolated to one individual. Another person, called "Owen A. Bundle" (name changed to prevent embarrassment) had a similar experience. See Benderly, *supra* note 26 ("Upon arriving at his new institution, however, Owen had a very unpleasant shock. Until then, he had only dealt with the professor. Now, the human resources department presented him

*B. The Requirements for What is Considered Acceptable  
Payback Service Are Vague and Uncertain*

Even for postdocs who know in advance that they will be required to fulfill a payback obligation, the exact parameters of what is considered health-related teaching and research are unclear. Although continuing on as a postdoc under a NRSA fellowship is certainly considered health-related research,<sup>70</sup> and clinical medical practice does not qualify as research or teaching,<sup>71</sup> neither the statute nor the NIH has given specific examples of what else does or does not qualify. A policy statement by the NIH defines *research*, *teaching*, and *health-related activities* for the payback requirement,<sup>72</sup> but the definitions leave many open-ended questions. For example, according to the statement,

Research is defined as an activity that involves designing experiments, developing protocols, and collecting and interpreting data. In addition, review of original research or administration of original research that includes providing scientific direction and guidance to research may be acceptable if a doctoral degree and relevant research experience is required.<sup>73</sup>

However, what about positions where having a Ph.D. and research experience are beneficial but not required? For example, what about postdocs who obtain employment in biotechnology business management, consulting, legal work, technical writing, or journalism? The

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with a sheaf of papers to sign [including a previously unmentioned NRSA payback agreement].”). Yet another person reported having a similar experience in an online discussion forum. MLC, *This is Insane!! Indentured Servitude is Back*, SCIENCE CAREERS (Oct. 22, 2015, 7:18 PM), <http://scforum.sciencecareers.org/viewtopic.php?f=1&t=10775&p=83024&hilit=train-ing+grant+payback#p83024> (“I thought this article was exactly on-point, and reflects my own experience. I was not informed about the payback agreement until I was asked to sign it during my first week of work. It wasn’t a big deal to me at the time because . . . I \*did\* plan to stay in research. But, even then, I thought the way it was presented was very underhanded. . . . And the payback agreement BECAME a big deal for me. You never know what can and will change over 2 years of your life, or what will change in the lab you’ve signed on to. My family has suddenly and unexpectedly been faced with significant hardship. At the same time, the once well-funded lab I’m in has been hemorrhaging funding and failed to renew service contracts on critical equipment. So I have no equipment, no reagents, no real opportunity to progress professionally here—and at the same time, I need to earn more to support my family. But, because of the payback agreement terms, I’m rotting here, unable to take a more lucrative position, unable to even do the science I came here to do.”) (commenting on Benderly, *supra* note 26).

70. NIH Policy Statement, *supra* note 17, § 11.4.2.

71. “Payback” Under the National Research Service Award (NRSA), NAT’L HEART, LUNG, & BLOOD INST. (April 2015), <http://www.nhlbi.nih.gov/research/funding/research-support/t32/faqs/payback>.

72. NIH Policy Statement, *supra* note 17, § 11.4.3.1.1.

73. *Id.*

definition seems to suggest that these positions may be acceptable, but is unclear.

Similarly, the definition for *health-related* is vague. The term, *health-related activities* is defined as

incorporat[ing] a broad range of activities related to the description, diagnosis, prevention, or treatment of disease from the most basic biomedical or behavioral research to the most applied or clinical research. Activities in fields other than those usually considered to be directly related to human disease, such as agriculture, environmental sciences, biotechnology, and bioengineering, also will be considered health-related.<sup>74</sup>

This definition includes a few clear examples of what is indirectly health-related. However, it is far from comprehensive and does not say where to draw the line by suggesting what is *not* health-related. The few examples of activities that are indirectly health-related do not provide a definition of what is indirectly health-related. For fields that seem indirectly health-related, but are not listed, these examples provide little guidance. For instance, what about legal work in patent law or science journalism? Is a postdoc going to have to risk being sued by the U.S. government to go into one of these fields?

These vague definitions lead to wasted U.S. resources. Lawsuits could be avoided by clearer definitions that point out with particularity what activities constitute and do not constitute acceptable payback service. For example, in *United States v. Cheng*, the United States District Court for the Northern District of California held that elementary school teaching was not health-related.<sup>75</sup> The teacher, John Cheng, ended his NRSA fellowship in 1981.<sup>76</sup> In 1988, Mr. Cheng received a letter informing him that his debt had been referred to the IRS for collection by offsetting his taxes.<sup>77</sup> He then submitted Annual Payback Activities Certification forms<sup>78</sup> alleging that he had completed his payback service by being an elementary school teacher from 1981–88.<sup>79</sup> However, he was told by an attorney that the Department had determined that his teaching did not fulfill the payback requirements.<sup>80</sup>

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74. *Id.*

75. *United States v. Cheng*, 840 F. Supp. 93, 95 (N.D. Cal. 1993).

76. *Id.* at 94.

77. *Id.*

78. *APAC*, *supra* note 62.

79. *Cheng*, 840 F. Supp. at 95.

80. *Id.*

The IRS then began withholding his tax refunds, and in 1992 the United States sued him for the remainder of what was due.<sup>81</sup> This lawsuit likely would have been avoided if the NIH had written more specific definitions making it clear that elementary school teaching would not qualify as acceptable payback service.

*C. There Is No Guarantee that the NRSA Payback Service Center Will Administer the Payback Agreement Predictably or Consistently*

The NRSA Payback Service Center is staffed by three payback specialists.<sup>82</sup> These specialists are considered the NIH's experts on NRSA payback requirements,<sup>83</sup> and may informally advise postdocs who have questions about whether positions the postdocs are considering are acceptable service. However, what the payback specialists consider to be health-related research and teaching may be purely discretionary, and there is no guarantee of consistency between what each of the three specialists considers acceptable.<sup>84</sup> Further, there is no guarantee that a payback specialist will not change her mind after telling a postdoc that a certain activity may fulfill the payback requirements. Because a court may give great deference to the NIH in determining what activities constitute acceptable payback service,<sup>85</sup> these three individuals hold a lot of power over postdoc NRSA-recipients.

Problems of consistency could be avoided if a formal procedure was created for postdocs to submit queries about their future plans to the Service Center. For example, when a postdoc has a question about whether a specific job title qualifies as health-related research, the postdoc could submit a query that payback specialists would respond

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81. *Id.*

82. *Service Center Home Page*, *supra* note 61.

83. NIH Policy Statement, *supra* note 17, § 11.4.3.

84. I sought to find out details about how the NRSA Payback Service Center works by interviewing a payback specialist on Sep. 28, 2015. In declining to answer my questions, the payback specialist referred me to the *Service Center Home Page*, *supra* note 61. Because nothing on the website says anything about how their decisions are controlled for consistency, I assume they are unchecked.

85. *Cheng*, 840 F. Supp. at 94–95 (“The discretion to determine what constitutes appropriate service for the purposes of the NRSA service obligation resides in the Secretary of the Department of Health and Human Services . . . . The Secretary’s determination must be upheld unless it is arbitrary and capricious or an abuse of discretion.”) (citations omitted); *see infra* Section IV(A).

to on the Service Center's website.<sup>86</sup> The website could post these queries so other postdocs could view them. The public nature of formally posting the queries and responses would help ensure consistency among payback specialists. It would also allow postdocs to move into their new careers with confidence when their ideas are officially approved.

A formal query procedure might have helped to avoid John Cheng's troubles.<sup>87</sup> For example, it would have enabled him to determine in advance whether elementary school teaching qualifies as health-related. Maybe when Mr. Cheng signed the payback agreement, he thought elementary school teaching would count as acceptable payback service.<sup>88</sup> If he had been more aware, it seems likely that he would have decided against elementary school teaching after ending his NRSA fellowship.

John Cheng's case also highlights another problem of inconsistency in the NRSA Payback Service Center's administration of the payback requirement. It does not appear that the Service Center has been consistent in notifying NRSA-recipients when they are delinquent on their payback activities. Better communication from the Service Center could have alerted Mr. Cheng to the fact that his activities did not qualify as acceptable service before it was too late to pursue other activities that would qualify. For example, if the Service Center would have told Mr. Cheng in 1982 that he hadn't submitted his Annual Payback Activities Certifications form, he might have submitted that form sooner, and the Service Center could have informed him, before it was too late, that elementary school teaching did not constitute acceptable service. Instead, as is apparent from the court opinion on his case, nobody contacted him about his payback requirement until seven years after he completed his NRSA fellowship.<sup>89</sup>

In another instance, unnecessary litigation arose because of a lack of communication between the Service Center and an NRSA-trainee. Roughly ten years after Stephani Boykin received an NRSA, the IRS withheld her spouse's tax refund.<sup>90</sup> She tried contacting the IRS, but the IRS did not help her resolve the matter.<sup>91</sup> A case arose only to be

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86. *Service Center Home Page*, *supra* note 61.

87. *Cheng*, 840 F. Supp. at 94–95. *See supra* Section III(B).

88. *See Cheng*, 840 F. Supp. at 95.

89. *Id.*

90. Answer, *United States v. Boykin*, No. 6:08-CV-01306 (D. Kan. Dec. 15, 2008).

91. *Id.* ("In my efforts to clarify the situation I called the phone numbers given to me by IRS correspondence. After talking with several representatives of government offices I was finally

dismissed<sup>92</sup> after Mrs. Boykin indicated that she had been teaching in conformity with the payback requirements.<sup>93</sup> Because she had not received any correspondence from the NIH after terminating her NRSA,<sup>94</sup> she had not submitted the Annual Payback Activities Certification form.<sup>95</sup> Situations like this could easily be avoided by administering the payback requirement in a more consistent manner.

*D. Nothing is Being Done to Remove the Payback Requirement from the Statute*

The payback provision is an unnecessary requirement that has been negatively affecting postdocs for over forty years.<sup>96</sup> Perhaps one reason nothing has been done is because people seem to perceive NRSA's akin to student loans. For example, a former president of the Association of American Medical Colleges referred to postdocs as "students" in a letter that was included in a congressional report of the legislation that created the NRSA program.<sup>97</sup> Similarly, a 2006 law review article cited *United States v. Cheng* in support of a statement about "student loans."<sup>98</sup> Further, the money that a postdoc is required to pay back after failing to complete acceptable payback service has been referred to as a "debt."<sup>99</sup>

For student loans, a service repayment option is generous and makes sense. In such cases, instead of paying off a loan, a debtor has

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told by a frustrated employee that in all actuality I was not able to change anything with respect to my 'severely delinquent account' because it was 'too late'. When I asked what I was supposed to do I was told that I would have to wait for legal proceedings to start and present my case then.").

92. Order to Dismiss, *United States v. Boykin*, No. 6:08-CV-01306 (D. Kan. Mar. 16, 2009).

93. Answer, *United States v. Boykin*, No. 6:08-CV-01306 (D. Kan. Dec. 15, 2008).

94. *Id.* Note that although she changed addresses several times, the IRS was able to keep up with her so she couldn't have been that slippery.

95. Motion to Dismiss, *United States v. Boykin*, No. 6:08-CV-01306 (D. Kan. Mar. 12, 2009); *See APAC*, *supra* note 62.

96. NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., *supra* note 12, at 6 (indicating that the NRSA program was created 1974, and that it contained a payback requirement from its inception).

97. S. REP. No. 93-381, at 21-22 (1973) (letter of John Cooper, discussing fellowships of "postdoctoral students").

98. Bobby L. Dexter, *Transfiguration of the Deadbeat Dad and the Greedy Octogenarian: An Intratextualist Critique of Tax Refund Seizures*, 54 U. Kan. L. Rev. 643, 666 (2006) (citing *United States v. Cheng*, 840 F. Supp. 93 (N.D. Cal. 1993)); *see supra* Section III(B).

99. Complaint, *United States v. Boykin*, No. 6:08-CV-01306 (D. Kan. Oct. 14, 2008); Complaint, *United States v. Waid*, No. 0:07-CV-00762 (D. Minn. Feb. 2, 2007); *Cheng*, 840 F. Supp. at 94-95.

the option of providing public service. However, a fellowship with a payback requirement is different from a student loan that is used to pay for tuition. Here, a postdoc comes into a position as an employee expecting a salary, and ends up leaving with an obligation that is more than he or she bargained for. The amount that postdocs are compensated is already low in comparison to their degree of training.<sup>100</sup> As one writer put it, “[i]magine working for less than \$16.00 an hour with minimal fringe benefits and little job security. It may not sound that bad in an economy where 8.0 percent of the labor force is unemployed, but if you are a 30-something-year-old PhD, it is not a good return on your 7-year investment in graduate education.”<sup>101</sup> To then take back a postdoc’s stipend that was initially given merely as “a subsistence allowance to help defray living expenses”<sup>102</sup> adds insult to injury.<sup>103</sup>

Perhaps another reason nothing has been done to help postdocs is that most postdocs do not have problems fulfilling the payback requirement. In defending the payback requirement, one person commented before Congress that it is “not onerous.”<sup>104</sup> Similarly, the NIH states that “[f]or most trainees, payback is easily accomplished.”<sup>105</sup> But what about the postdocs who do have problems fulfilling the requirements? Just because the majority of postdocs pursue careers in research and teaching does not necessarily mean that it should be a requirement for all postdocs. Is the “relative ease”<sup>106</sup> with which the requirements may be fulfilled keeping us from seeing that the requirements are unnecessary?

Although it is easy to technically fulfill the payback requirements

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100. See Weissmann, *supra* note 32.

101. Stephan, *supra* note 29, at 245.

102. NIH Policy Statement, *supra* note 17, § 11.3.8.2.

103. Another person noted differences between students and postdocs as follows: “A postdoc is a job that does not result in any degree, education, or certification. This isn’t graduate school . . . . Postdocs in this funding climate are recruited for the skills they already possess. They don’t get to choose their postdoc based upon what they want or need to learn. I receive no more training than my peers funded on R01’s who have no payback obligation and get full employee benefits. As a matter of fact, it is part of my job to train technicians, graduate students, medical residents, and undergrads— none of whom have payback obligations of any sort.” MLC, *supra* note 69.

104. *Quality of Health Care—Human Experimentation, 1973: Hearings on S. 2071, S. 2072, and H.R. 7724 Before the Subcomm. on Health of the Comm. on Labor and Pub. Welfare U.S. S., 93d Cong. 1321 (1973)* [hereinafter *Quality of Health Care Hearings*] (statement of Eugene Braunwald, M.D., Chairman of Medicine, Peter Bent Brigham Hospital).

105. “Payback” under the National Research Service Award (NRSA), *supra* note 71.

106. *Id.*

by remaining as an NRSA-trainee for a second year, becoming a professor is much more difficult.<sup>107</sup> The number of postdocs has increased over the years, but the number of jobs as professors has remained steady, and in some places, has even decreased.<sup>108</sup> We cannot hope for every postdoc who receives an NRSA to become a professor. If the goal is to help postdocs become independent researchers,<sup>109</sup> then we should assess whether the payback agreement actually helps to achieve this goal rather than merely focusing on whether fulfilling the requirement is easy.

#### IV. LEGAL ISSUES THAT ARISE DUE TO THE PAYBACK AGREEMENT

In this section, I examine some legal issues implicated by the payback agreement, including whether the payback agreement should be enforced under contract law, and whether its enforcement conflicts with minimum wage laws.

##### A. *Is the Payback Agreement an Enforceable Contract?*<sup>110</sup>

The validity of the payback agreement as a contract has not been examined in court. However, in similar situations, courts have held that where a statute gives authority to an agency to create an agreement, statutory principles rather than contract principles govern the enforceability of the agreement.<sup>111</sup> Through such reasoning, courts ignore contract common law principles, and almost always hold in favor of the government by giving *Chevron*<sup>112</sup> deference to the government's side of the "agreement."

For example, in *United States v. Citrin*, the Ninth Circuit found

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107. See *supra* Section II(B); Richard Harris, *Too Few University Jobs for America's Young Scientists*, NPR (Sept. 16, 2014), <http://www.npr.org/sections/health-shots/2014/09/16/343539024/too-few-university-jobs-for-americas-young-scientists>; Johnson, *supra* note 25; Powell, *supra* note 24, at 146.

108. Powell, *supra* note 24, at 144.

109. NAT'L INSTS. OF HEALTH, BIOMEDICAL RESEARCH WORKFORCE WORKING GROUP REPORT 9 (June 14, 2012) ("[T]he working group believes that the postdoctoral experience be considered an extension of the training period primarily intended for those Ph.D. graduates who intend to pursue research-intensive careers.").

110. Perhaps the real question here is, "Should the Payback Agreement be an Enforceable Contract?" because as we will see below, courts seem unlikely to address contract validity concerns.

111. *United States v. Citrin*, 972 F.2d 1044, 1049 (9th Cir. 1992).

112. *Chevron, U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837 (1984).

that the United States was entitled to recover from a medical doctor who failed to perform a service obligation that he incurred by receiving a National Health Service Corps (“NHSC”) scholarship during medical school.<sup>113</sup> Individuals who receive NHSC scholarships must sign contracts to serve in health professional shortage areas after medical school, and the doctor had agreed to this obligation as part of his scholarship application.<sup>114</sup> The court reasoned that “statutory principles, not contract principles, govern the relationship between the Secretary and the scholarship recipient. Thus, contract defenses . . . cannot provide a defense for Citrin.”<sup>115</sup> The court further reasoned, “[w]e will uphold an agency’s decision unless it is arbitrary, capricious, an abuse of discretion, or otherwise contrary to law.”<sup>116</sup>

In thus applying *Chevron* deference to agency-made contracts, a court might simplistically hold in favor of the agency because the doctrine suggests that an agency’s interpretation of a statute should be struck down only if it is “arbitrary, capricious, or manifestly contrary to the statute.”<sup>117</sup> This highly disfavors the postdoc because it gives great weight to the government in interpreting the terms of its own contract.

Further, under *Seminole Rock* and *Auer*, an agency’s interpretation of its own regulations is “controlling unless plainly erroneous or inconsistent with the regulation.”<sup>118</sup> Therefore, if a court applies this doctrine to the NIH’s interpretation of what is considered *health-related research, health-related research training, or health-related*

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113. *Citrin*, 972 F.2d at 1046, 1050.

114. *Id.* at 1046 (citing 42 U.S.C. §§ 254(b)–(f) (1988)) (“All applicants must submit signed written contracts agreeing to serve their periods of obligated service in an HMSA. The statute specifies the terms to be included in the contract.”).

115. *Id.* at 1049 (citations omitted).

116. *Id.*; see also *United States v. Hatcher*, 922 F.2d 1402, 1406–07 (9th Cir. 1991) (rejecting contract principles for HMSA scholarships even though the statute authorizing them uses the word, “contract”).

117. *Chevron*, 467 U.S. at 843–44. Of course, under *Chevron*, the arbitrary or capricious standard applies where Congress explicitly delegates authority, while a reasonableness standard applies when the delegation is implicit. *Id.* at 844. Here, courts would likely assume the arbitrary or capricious standard because 42 U.S.C. § 288(c)(3) explicitly delegates authority to the Secretary of Health and Human Services to “by regulation prescribe the type of research and teaching in which an individual may engage to comply with such requirement and such other requirements respecting research and teaching as the Secretary considers appropriate.” 42 U.S.C. § 288(c)(3) (2012).

118. *Auer v. Robbins*, 519 U.S. 452, 461 (1997); *Bowles v. Seminole Rock & Sand Co.*, 325 U.S. 410, 414 (1945).

*teaching*<sup>119</sup> in its payback agreement, the government's side of the payback contract would receive even greater weight than under *Chevron*.<sup>120</sup> It seems that any agency contract—where the agency can define the terms of the contract in a regulation or in the agency's interpretation of its own regulation—has the propensity for misuse by the agency because it gives such great deference to the government's interpretation of the contract.

One such instance was in *United States v. Cheng*.<sup>121</sup> The case arose after the NIH decided that John Cheng's past teaching in an elementary school was not sufficiently health-related.<sup>122</sup> The Court refused to apply contract principles, and cited *Citrin* in stating that “[s]tatutory principles [not contract principles] govern the relationship between the parties.”<sup>123</sup> The Court then applied an “arbitrary and capricious” standard to the agency's interpretation of “health-related,” to hold in favor of the NIH.<sup>124</sup>

Because of the one-sided nature of contract interpretation under *Chevron* and other deference models, such extreme deference should be avoided when interpreting the payback agreement. Although section 288(c) of 42 U.S.C explicitly grants authority to “the Secretary” to “*by regulation* prescribe the type of research and teaching” that complies with the payback requirement,<sup>125</sup> courts should limit their deference by applying a strict reading to this statute. Such a reading would avoid giving deference to any aspect of the payback agreement other than the NIH's interpretation (which *by regulation* is included in 42 C.F.R. part 66.110)<sup>126</sup> of what qualifies as health-related research

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119. This wording is from the payback agreement, but these terms are defined in a policy statement by the NIH. NIH Policy Statement, *supra* note 17, § 11.4.3.1.1; *Payback Agreement*, *supra* note 2. This policy statement would likely be considered the NIH's interpretation of its own regulation (under *Auer* and *Seminole Rock* deference) that states, “Each individual who receives an Award for postdoctoral research or training shall engage in a month of *research training, research, or teaching that is health-related* (or any combination thereof) for each month of support received, up to a maximum of twelve months.” 42 C.F.R. § 66.110(a) (2014).

120. See William N. Eskridge, Jr. & Lauren E. Baer, *The Continuum of Deference: Supreme Court Treatments of Agency Statutory Interpretations from Chevron to Hamdan*, 96 GEO. L.J. 1083, 1099 (2008) (showing that the Supreme Court gives greater deference to agency decisions when applying *Seminole Rock* deference than *Chevron* deference).

121. *United States v. Cheng*, 840 F. Supp. 93, 93 (N.D. Cal. 1993); see *supra* Section III(B).

122. *Id.* at 94.

123. *Id.*

124. *Id.* at 94–95.

125. 42 U.S.C. § 288(c)(3) (2012) (emphasis added).

126. 42 C.F.R. § 66.110(a) (2014).

and teaching. The court should then avoid extending deference to the NIH's definitions in its Policy Statement<sup>127</sup> as an interpretation of its own regulation because unlike 42 C.F.R. part 66.110, the Policy Statement is not a "regulation" as the statute calls for.<sup>128</sup> This would enable those treated unfairly to bring contract challenges and defenses.

Further, courts should allow contract principles to apply to payback agreement disputes unless Congress explicitly repudiates contract principles in the NRSA context. For example, the Supreme Court of Arkansas concluded that "a legislative act will not be construed as overruling a principle of common law unless it is made plain by the act that such a change in the established law was intended [by the legislature]."<sup>129</sup> The court cited another case which stated, "[a]ny statute in derogation of the common law will be strictly construed."<sup>130</sup> This reasoning makes sense because it is contrary to accepted principles of statutory interpretation to assume that Congress intends to displace common law principles without explicitly acknowledging it. Although this reasoning was made in a state court, we should expect an agency of the United States to abide by state contract laws when entering into contracts with citizens of various states.

If courts would consider the payback agreement under contract principles, how would they rule on its validity? In this subsection, I begin by analyzing whether the way the payback agreement is administered satisfies contract requirements of offer, acceptance, and consideration. I then consider whether disparate bargaining power makes the payback agreement an adhesion contract that should not be enforced even if it is technically valid. I then end this subsection by discussing the payback agreement in the context of non-compete agreement policies. I do not compare the payback obligation to eighteenth century indentured servitude, but if I did, I would not be the first to do so.<sup>131</sup>

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127. NIH Policy Statement, *supra* note 17, § 11.4.3.1.1.

128. 42 U.S.C. § 288(c)(3). This would prevent the NIH from being able to usurp *Seminole Rock* and *Auer* deference by merely restating the statute (42 U.S.C. § 288(c)) in the regulation (42 C.F.R. § 66.110) and then claiming such deference to its own interpretation of the regulation in the *NIH Policy Statement*. *Supra* note 17, § 11.4.3.1.1. A court may thereby limit its deference to the NIH and give a postdoc a fair chance in explaining himself or herself in how he or she interpreted the payback requirements.

129. *Nelson v. Ark. Rural Med. Practice Loan & Scholarship Bd.*, 385 S.W.3d 762, 767–68 (Ark. 2011).

130. *Books-A-Million, Inc. v. Ark. Painting & Specialties Co.*, 10 S.W.3d 857, 859 (Ark. 2000).

131. In Congressional hearings, the payback provision was called the "'indenture' provision," and one person stated, "We frown upon long-term indentures that might assure the investor of gaining a return: Bond service is a relic of another century." *National Health Research*

*1. Negotiation: offer and acceptance*

Here, we return to the fictional Dr. Wormtongue.<sup>132</sup> In his case, the payback agreement itself does not indicate any clear offer and acceptance. Although Dr. Wormtongue signed the agreement, he was the only party to sign it. Unlike, for example, his postdoc offer letter that was signed by Professor Saruman prior to being sent to Dr. Wormtongue, neither the Secretary of Health and Human Services, nor the Secretary's representative signed the payback agreement form prior to sending it to Dr. Wormtongue. Likewise, the payback agreement does not contain an explicit offer by the government to provide anything to the postdoc. It merely states that the postdoc certifies that he or she has read and understood, and will abide by the terms.<sup>133</sup> Signing the payback agreement might be construed as an acceptance by the postdoc, but what offer is the postdoc accepting? Although the first heading in the payback agreement states, "this agreement is a required condition of award,"<sup>134</sup> a condition is not a promise.

Despite the lack of mutual promises on the face of the payback agreement, offer and acceptance are likely to be inferred by the subsequent course of performance.<sup>135</sup> Signing the payback agreement may actually be construed as an offer by the postdoc that the Secretary accepts by granting NRSA funding. Also, although it is a stretch, one might argue that all negotiations between Congress and its constituents that have led to the statutory delegation of the Secretary to create the payback terms could be construed as forming an intent to contract on the part of the government with any postdoc who accepts these obligations.<sup>136</sup> Overall, offer and acceptance concerns probably do not threaten the payback agreement's validity.

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*Fellowship and Traineeship Act of 1973: Hearings on H.R. 5640 and H.R. 5948 Before the Subcomm. on Pub. Health and Env't of the Comm. on Interstate and Foreign Commerce H.R.*, 93d Cong. 95, 164 (1973) [hereinafter *NRSA Fellowship Hearings*] (statements of Dr. Charles A. Janeway, Professor of Pediatrics, Harvard Medical School, and Physician-in-Chief, Children's Hospital Medical Center; and Joshua Lederberg, Ph.D., Chairman, Department of Genetics, Stanford University School of Medicine).

132. *See supra* Introduction.

133. Payback Agreement, *supra* note 2.

134. *Id.*

135. U.C.C. § 1-303(a) (2013).

136. *See generally* Robert S. Pasley, *The Interpretation of Government Contracts: A Plea for Better Understanding*, 25 FORDHAM L. REV. 211, 214 (1956) ("[The Government contract] is the result of a long process of negotiation and bargaining, although one which of necessity takes place on an over-all rather than an individual basis.").

## 2. Consideration

Consideration may be more of an issue for the payback agreement's contractual validity. Although the NRSA provides funding, and the postdoc provides labor and promises to fulfill the payback requirement, it is not clear that this exchange represents any real bargain between two parties. Further, the payback agreement may lack consideration if it is not signed as part of an employment contract. This subsection will discuss these issues.

For consideration to be valid, it must be bargained for.<sup>137</sup> In this context, we ask if both parties are motivated by an exchange of value.<sup>138</sup> In other words, for a contract to be valid, each party must be induced to give up something by what the other party gives up. From the postdoc's perspective, there is no real benefit incurred by receiving NRSA funding when the postdoc's PI has already agreed to pay the postdoc's salary. In such a situation, can we really say that a postdoc is being induced to sign the payback agreement by any new benefit?

Next, it is possible that the anticipation of payback obligations induces the United States to grant NRSA's to postdocs, but it is not clear. In granting NRSA funds, the United States is probably not motivated merely by the labor that postdocs perform while they are NRSA-trainees.<sup>139</sup> The motivation was to train enough scientists to fulfill the nation's research needs, as evinced by the NRSA program's purpose.<sup>140</sup> What this means is that the United States is interested in training future independent researchers. Thus, it is possible that the United States is motivated to grant NRSA's in exchange for an apparent demonstration (in the form of a payback agreement) that a postdoc is

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137. RESTATEMENT (SECOND) OF CONTRACTS § 71(1) (1981).

138. *Id.* § 71(2).

139. Although such a conclusion may be valid as postdocs' numbers increase and they do more and more of the work in the laboratory. *See* NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., *supra* note 15, at viii ("[T]o a significant degree, the value of the trainees supported by the NIH lies more with their current research output while they are trainees than with their future career development.").

140. National Research Act, Pub. L. No. 93-348 § 102 (1974) (stating that Congress's purpose in instituting the NRSA program was "to increase the capability of the [NIH] . . . to carry out their responsibility of maintaining a superior national program of research," which "depends on the availability of excellent scientists."); H.R. REP. No. 97-208, at 804 (1981) (Conf. Rep.) ("[T]he Conferees feel obligated to clarify their intent regarding the primary purpose of the NRSA program. National Research Service Awards are not made for the purposes of receiving services designated by the grantor. Rather the payback requirement offers benefits to the nation from the participation of NRSA recipients in the research enterprise. . . . [T]he Committee does not believe that the payback requirement is a quid pro quo . . ."); NIH Policy Statement, *supra* note 17, § 11.3.3.3.

inclined toward a future research career, but this conclusion is not definite.

On the other hand, the United States can continue to train independent researchers and fulfill its research needs without the payback requirement.<sup>141</sup> Would Congress have refused to create NRSA fellowships if a payback requirement was not included? It does not appear that anyone in Congress ever demanded that the provision be added. Instead, it was part of the bill as first introduced in the House of Representatives,<sup>142</sup> and has since been substantively modified only to decrease its severity.<sup>143</sup> Thus, the United States is probably not really induced to grant NRSA to postdocs in return for their payback obligations.

Further, some states hold that employee contracts (such as non-compete and non-disclosure agreements) lack consideration unless they are entered into before employment begins.<sup>144</sup> The payback agreement is generally not signed as part of an employment contract. In Dr. Wormtongue's case,<sup>145</sup> he and Professor Saruman entered into an employer-employee relationship long before Dr. Wormtongue received an NRSA. Although the University of Isengard was technically Dr. Wormtongue's employer, Professor Saruman acted on behalf of the university in offering him employment, supervision, and funding. They had a clear agreement in which Professor Saruman promised to employ Dr. Wormtongue for one year and pay him an annual salary of \$42,840. Thus, employment had already begun when Dr. Wormtongue signed the payback agreement.

In spite of this argument, it might be possible to conclude that Dr. Wormtongue switched employers when he agreed to receive NRSA

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141. As evidence of this statement, I refer to the overabundance of postdocs and fierce competition for independent research positions described in Section II(B).

142. National Biomedical Research Fellowship, Traineeship, and Training Act of 1973, H.R. 7724, 93d Cong. § 455(c) (May 10, 1973).

143. In particular, the payback period originally lasted two years, but has since been changed to one year. National Research Act, Pub. L. No. 93-348 § 102 (1974); 42 U.S.C. § 288(c) (2012). Additionally, the requirement originally extended to student NRSA-trainees, but now applies to only postdocs. *Id.*; *Historical Payback Reporting Requirements (Prior to June 10, 1993)*, *supra* note 46.

144. *National Survey on Restrictive Covenants* 17, FOX ROTHSCHILD, <http://www.fox-rothschild.com/content/uploads/2015/05/National-Survey-on-Restrictive-Covenants-September-2016.pdf> (last visited Nov. 3, 2015); see STEPHEN M. MCJOHN, INTELLECTUAL PROPERTY: EXAMPLES & EXPLANATIONS 467 (3d ed. 2009) ("If an employer institutes a program and requires present employees to sign on, courts have held that there is no consideration for the non-disclosure agreement.").

145. See *supra* Section I: Introduction.

funds. If so, then he would technically be signing the payback agreement before initiating his new employment. However, when granting NRSA funds, the NIH does not administer an employment contract to work for the United States. On the contrary, the NIH is quite clear that NRSA funds are not a salary, but are merely a stipend meant to help defray living costs.<sup>146</sup> Further, the NIH states, “Kirschstein-NRSA awards are not provided as a condition of employment with either the Federal government or the recipient.”<sup>147</sup>

### *3. Disparate bargaining power: a contract of adhesion*

The biggest contractual issue for the payback agreement is that it is an adhesion contract. “Adhesion contracts do not ‘issue from that freedom in bargaining and equality of bargaining which are the theoretical parents of the American law of contracts.’”<sup>148</sup> Although this is more of a policy concern than of contractual validity since adhesion contracts are not necessarily unconscionable (a defense under contract law),<sup>149</sup> decision-makers should take it into account in determining whether to enforce the payback agreement.

An adhesion contract is “one that is drafted unilaterally by the dominant party and then presented on a ‘take-it-or-leave-it’ basis to the weaker party who has no real opportunity to bargain about its terms.”<sup>150</sup> This definition has three apparent aspects: unilateral drafting, dominant and weaker parties, and a lack of any real opportunity to bargain about its terms.

Applying this definition, the payback agreement has been unilaterally drafted. The agreement was written under the authority of the Secretary of Health and Human Services,<sup>151</sup> and imposes uniform requirements on all postdocs throughout the United States.

Next, there is a dominant party and a weaker party. Arguably, no party is stronger than the United States. At another level, the postdoc’s PI is typically the one who asks the postdoc to be on a training grant. Because the postdoc’s PI is usually the postdoc’s supervisor and is

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146. NIH Policy Statement, *supra* note 17, at § 11.3.8.2.

147. *Id.* § 11.3.8.7.

148. Sierra David Sterkin, *Comment: Challenging Adhesion Contracts in California: A Consumer’s Guide*, 34 GOLDEN GATE UNIV. L. REV. 285, 290–91 (2004) (quoting *Neal v. State Farm Ins. Cos.*, 10 Cal. Rptr. 781, 784 (Ct. App. 1961)).

149. U.C.C. § 2-302 (2013).

150. RESTATEMENT (SECOND) OF CONFLICT OF LAWS § 187 cmt. b (1971).

151. *See* 42 U.S.C. § 288(c)(3) (2012).

looked up to as the postdoc's employer, a typical postdoc is cautious to avoid doing anything to displease him or her. By refusing to sign the payback agreement and receive training grant funds, a postdoc may find himself or herself looking for a new job. Job searching is made even more difficult for a postdoc who does not get along with his or her PI because a strong recommendation from the postdoc's PI is par-amount to receiving another job offer.<sup>152</sup> Sometimes, a professor will choose his or her next postdoc based solely on the potential postdoc's recommendation.

Third, the postdoc does not have any real opportunity to bargain about the terms of the payback agreement. Because the payback agreement is given to the postdoc on a take-it-or-leave-it basis, he or she does not have a chance to change any of its terms. Therefore, the payback agreement is administered as an adhesion contract.

One potentially redeeming quality of the payback agreement is that a payback obligation may be deferred or waived due to impossibility or where “[f]ulfillment would involve a substantial hardship and the enforcement of such obligation would be against equity and *good conscience*.”<sup>153</sup> However, the good conscience clause probably only holds the government to what would normally be required under contract law regardless of whether it was included. This is because courts do not normally enforce contracts that are against equity and good conscience whether or not a good conscience clause is included.<sup>154</sup>

#### 4. *Non-compete agreements*

Payback agreements are like non-compete agreements. A non-compete agreement indicates that a person will *refrain* from working in a certain industry. The NRSA payback agreement indicates that a person *will* work in a particular industry, or in other words, that a person will *refrain* from working in all industries except for the prescribed industry. Thus, a payback agreement is like a non-compete agreement but is farther-reaching in that it obligates the postdoc to refrain from

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152. Laura Bonetta, *Advice for Beginning Faculty: How to Find the Best Postdoc*, SCI. CAREERS (Feb. 6, 2009), [http://sciencecareers.sciencemag.org/career\\_magazine/previous\\_issues/articles/2009\\_02\\_06/science.opms.r0900065](http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2009_02_06/science.opms.r0900065) (“Many lab heads say that the most important component of a postdoc application is the letters of recommendation.”); Livia Puljak, *Career Blocker: Bad Advisors*, SCI. CAREERS (Jan. 13, 2006), [http://sciencecareers.sciencemag.org/career\\_magazine/previous\\_issues/articles/2006\\_01\\_13/nodoi.9522592743045586763](http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2006_01_13/nodoi.9522592743045586763) (“Letters of recommendation are so important that a bad one from an advisor could ruin their career.”).

153. Payback Agreement, *supra* note 2 (emphasis added).

154. U.C.C. § 2-302 (2013).

more industries than a typical non-compete agreement.

California and some other states prohibit non-compete agreements.<sup>155</sup> In California, a person could sue his or her employer for merely asking the person to sign a non-compete agreement.<sup>156</sup> In explaining the reasoning behind this policy, the Supreme Court of California declared, “[e]very individual possesses as a form of property, the right to pursue any calling, business or profession he may choose.”<sup>157</sup>

Many state bars also acknowledge that non-compete agreements are against public policy because they adversely impact third parties. Even though non-compete agreements are legal in many states, it is against those states’ rules of professional conduct for attorneys to agree not to solicit clients after they leave a law firm.<sup>158</sup> These rules prohibit solicitation of clients because it is unethical to do anything that is not in the clients’ best interests. Like clients whose best interests are in having attorneys available to work for them, the general population’s best interest is in having trained scientists available in the job market.

There is evidence that California’s ban on non-compete contracts has played a role in its economic prosperity.<sup>159</sup> On the other hand, limiting employee mobility carries social costs that translate into economic losses.<sup>160</sup> Adverse effects of enforcing non-compete agreements

155. Cal. Bus. & Prof. Code § 16600 (2016) (“Except as provided in this chapter, every contract by which anyone is restrained from engaging in a lawful profession, trade, or business of any kind is to that extent void.”).

156. Lisa Guerin, *Understanding Noncompete Agreements*, NOLO, <http://www.nolo.com/legal-encyclopedia/understanding-noncompete-agreements.html> (last visited Nov. 21, 2015).

157. *Cont’l Car-Na-Var Corp. v. Moseley*, 148 P.2d 9 (Cal. 1944).

158. Robert M. Wilcox, *Enforcing Lawyer Non-Competition Agreements While Maintaining the Profession: The Role of Conflict of Interest Principles*, 84 Minn. L. Rev. 915, 915–16 (2000); see e.g., Dean R. Dietrich, *Ethics: No Noncompete Agreements for Lawyers*, 85 WIS. LAW. 4 (2012), <http://www.wisbar.org/newspublications/wisconsinlawyer/pages/article.aspx?Volume=85&Issue=4&ArticleID=2393>.

159. Prasanna Tambe & Lorin M. Hitt, *Job Hopping, Information Technology Spillovers, and Productivity Growth*, 60 MGMT. SCI. 338, 339, 352 (2014) (“[A] substantial amount of variation in IT returns can be explained by productivity spillovers generated by IT labor flows . . . . [L]abor market flexibility may play an important role in explaining cross-country IT-related productivity differentials . . . .”); see also On Amir & Orly Lobel, *Innovation Motivation: Behavioral Effects of Post-Employment Restrictions* (June 30, 2011), [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1876133](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1876133) (“[M]obility of personnel among firms provides a way of spreading information.”) (quoting KENNETH J. ARROW, *ECONOMICS WELFARE AND THE ALLOCATION OF RESOURCES FOR INVENTION* 619 (1962)); Natalie Kitroeff, *Silicon Valley Is the World’s Innovation Capital Because of a Technicality*, BLOOMBERG BUS., Mar. 17, 2015, 7:25 AM) <http://www.bloomberg.com/news/articles/2015-03-17/silicon-valley-is-the-world-s-innovation-capital-because-of-a-technicality>.

160. David A. Price, *Does Enforcement of Employee Noncompete Agreements Impede*

include limiting the diffusion of knowledge between companies (“knowledge spillovers”), limiting pooling of skilled workers, suppressing wages, and deterring people from founding valuable spinoff companies.<sup>161</sup> Decreasing postdoc mobility by enforcing payback agreements is likely to result in similar adverse consequences. The idea of stifling creativity and bolstering control is based on old, outdated notions, and it is unlikely that these negative impacts are worth any benefit that may be derived from enforcing such agreements.<sup>162</sup>

Many states allow non-compete agreements,<sup>163</sup> but use a reasonableness standard to determine when they are enforceable. For example, in Texas, non-compete clauses are required to contain reasonable limitations “as to time, geographical area, and scope of activity to be restrained,” and must “not impose a greater restraint than is necessary to protect” the employer’s legitimate business interests.<sup>164</sup> Based on this standard, it seems likely that a covenant to not work for one year, anywhere, in any industry except for biomedical research or teaching, would be invalid. Although a year is likely to be reasonable,<sup>165</sup> the scope of activity and geographical area would be far too vast because it covers all activities anywhere in the world that do not fall within the definition of health-related research or teaching.<sup>166</sup> Although the United States has a legitimate business interest in seeking to develop a highly trained workforce to promote the nation’s biomedical research agenda,<sup>167</sup> the restraint is unnecessary. There are plenty of highly trained postdocs available to perform research and teaching. In fact, there are many more postdocs than available research jobs.<sup>168</sup> Thus, the payback agreement would be unlikely to pass the reasonableness test in a state like Texas.

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*the Development of Industry Clusters?* 2 (Nov. 2014), [https://www.richmondfed.org/-/media/richmondfedorg/publications/research/economic\\_brief/2014/pdf/eb\\_14-11.pdf](https://www.richmondfed.org/-/media/richmondfedorg/publications/research/economic_brief/2014/pdf/eb_14-11.pdf).

161. *Id.*

162. ORLY LOBEL, TALENT WANTS TO BE FREE: WHY WE SHOULD LEARN TO LOVE LEAKS, RAIDS, AND FREE RIDING 32 (2013) (quoting WILLIAM M. LANDES & RICHARD A. POSNER, THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW 371 (2003)).

163. See *National Survey on Restrictive Covenants*, *supra* note 144.

164. Tex. Bus. & Comm. Code § 15.50(a) (1969).

165. See, e.g., *Marsh USA Inc. v. Cook*, 354 S.W.3d 764 (Tex. 2011) (enforcing a two-year non-compete clause).

166. See Mark J. Oberti, *2013 Update: Texas Noncompete Law, Trade Secrets Litigation, the Inevitable Disclosure Doctrine, and Fiduciary Duties* 1, 21–25, 30–32, [http://www.osattorneys.com/pdf/presentations\\_63\\_3657626730.pdf](http://www.osattorneys.com/pdf/presentations_63_3657626730.pdf) (last visited Nov. 21, 2015).

167. NIH Policy Statement, *supra* note 17, § 11.3.3.3.

168. Powell, *supra* note 24, at 146 (stating that only 15–20% of postdocs obtain tenure-track academic positions in the United States); Weissmann, *supra* note 32.

Even when a non-compete agreement is narrow in scope, some states may decline to enforce it if it negatively impacts third parties.<sup>169</sup> The payback agreement and the policy behind it discourage scientists from working in other fields besides research or teaching. This policy is counterproductive because if postdocs would seek employment in sectors other than research, they could have an invigorating effect on the economy. Having a Ph.D. is highly prized in non-traditional, non-research areas such as business consulting<sup>170</sup> and patent law.<sup>171</sup> Companies in Silicon Valley are known to benefit from knowledge spillovers,<sup>172</sup> and industries everywhere may likewise benefit from access to postdocs.

*B. Does Enforcing the Payback Agreement Conflict with Minimum Wage Laws?*

As explained in Section II(B), postdocs generally start as university employees with salaries and regular full-time benefits. Universities commonly hire postdocs under one-year contracts that ensure that they will be paid and make it difficult for them to be fired.<sup>173</sup> Postdocs do not pay tuition for their training, and are not students. When a postdoc receives NRSA support, his or her *salary* generally remains the same but is called a *stipend*, and instead of being considered an *employee*, he or she is considered a *fellow*. Although this may be technically different, to the postdoc it merely amounts to a change in title and funding source.

Minimum wages are set by federal and state governments to make sure workers earn enough to live on.<sup>174</sup> Effective July 24, 2009, the Fair

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169. MCJOHN, *supra* note 144, at 468 (“A noncompete clause that has adverse consequences for third parties or is contrary to public policy may not be enforced, even if very narrow in scope.”); *see, e.g.*, *Radio One, Inc. v. Wooten*, 452 F. Supp. 2d 754, 757 (E.D. Mich. 2006).

170. For example, top consulting firm McKinsey & Co. actively recruits postdocs from top biomedical research universities. *See Other PhD and Post Doctoral Schools*, MCKINSEY & CO., [http://www.mckinsey.com/careers/your\\_career/mckinsey\\_on\\_campus/schools/apd/other\\_phds\\_and\\_post\\_doctorates](http://www.mckinsey.com/careers/your_career/mckinsey_on_campus/schools/apd/other_phds_and_post_doctorates) (last visited Nov. 20, 2015).

171. Robert Hagan, *Getting Started with Patent Law*, BIO CAREERS, <http://biocareers.com/resource/getting-started-patent-law> (last visited Nov. 21, 2015) (stating that people with Ph.D.s in life sciences possess the critical training necessary to fulfill the intellectual property needs of biotechnology and pharmaceutical companies).

172. *See* On Amir & Orly Lobel, *supra* note 159, at 13; Kitroeff, *supra* note 159; Tamba & Hitt, *supra* note 159, at 339.

173. For example, this was my experience as a postdoc at UCSF.

174. Frances Coppola, *Why We Need a Minimum Wage*, FORBES (Jan. 13, 2014, 10:06 AM), <http://www.forbes.com/sites/francescoppola/2014/01/13/why-we-need-a-minimum->

Labor Standards Act (“FLSA”) set the national minimum wage to \$7.25 per hour.<sup>175</sup> This wage applies to federal and state employees, as well as non-government employees.<sup>176</sup> Additionally, the NIH has set a minimum wage for postdocs at \$42,840 per year.<sup>177</sup> Accordingly, postdocs expect to receive this amount. However, when a postdoc has to pay back his or her stipend, it is as if he or she was never paid.

As mentioned in Section III(A)(2), the NIH has stated that an NRSA is not an employee of the federal government or the grantee (the granting institution).<sup>178</sup> However, for purposes of minimum wage laws, there are only *employees* and *volunteers*, with no in-between classification.<sup>179</sup>

Interns who work for free are classified under the FLSA as *volunteers*.<sup>180</sup> Although one might try to argue that postdocs are like volunteer interns, they are not. To be considered a volunteer under the FLSA, an individual must offer his or her services “*freely and without pressure or coercion*, direct or implied, from an employer.”<sup>181</sup> The NIH might argue that a postdoc’s stipend is merely a small amount meant to defray volunteer expenses.<sup>182</sup> However, because postdocs start working for professors with an expectation of receiving at least \$42,840 per year (an amount near the national salary average of

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wage/.

175. *Compliance Assistance - Wages and the Fair Labor Standards Act (FLSA)*, U.S. DEP’T OF LABOR, <http://www.dol.gov/whd/flsa/> (last visited Nov. 21, 2015).

176. *Policy Basics: The Minimum Wage*, CTR. ON BUDGET & POL’Y PRIORITIES, <http://www.cbpp.org/research/economy/policy-basics-the-minimum-wage>; *History of Changes to the Minimum Wage Law*, U.S. DEP’T OF LABOR, <http://www.dol.gov/whd/minwage/coverage.htm> (last visited Nov. 21, 2015).

177. *Ruth L. Kirschstein National Research Service Award (NRSA) Stipends, Tuition/Fees and Other Budgetary Levels Effective for Fiscal Year 2015*, NAT’L INSTS. OF HEALTH (Dec. 30, 2014), <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-15-048.html>.

178. NIH Policy Statement, *supra* note 17, § 11.3.8.7.

179. At least in the public sector (and since NRSA-recipients are not federal employees, they seem to be in the public sector). 29 C.F.R. §§ 553.100–01 (2015); Diane Juffras, *Internships Under the Fair Labor Standards Act*, COATES’ CANONS: NC LOCAL GOV’T LAW (Mar. 19, 2014), <http://canons.sog.unc.edu/?p=7588> (“In the public sector, interns can be true volunteers or they can be employees. There is no legally in-between status”).

180. § 553.101(a).

181. § 553.101(c) (emphasis added); *see* Diane Juffras, *supra* note 179.

182. NIH Policy Statement, *supra* note 17 § 11.3.8.2 (“Trainees generally are supported for 12-month full-time training appointments for which they receive a stipend as a subsistence allowance to help defray living expenses during the research training experience. The stipend is not ‘salary’ and is not provided as a condition of employment with either the Federal government or the recipient organization.”).

\$47,230),<sup>183</sup> it seems unreasonable to assume that they offer their services *freely*.

Further, because of the disparity of power between a postdoc and his or her PI, where the postdoc's PI asks him or her to go on an NRSA training grant, the postdoc is arguably *pressured*<sup>184</sup> or *coerced* by his or her employer into the "volunteer" position of paying back his or her stipend in response to non-compliance with the payback agreement. Therefore, even if postdocs were considered interns, having to pay back their stipends runs contrary to the FLSA.

## V. IS THE PUBLIC SERVED BY THE PAYBACK REQUIREMENT?

Requiring either a year of service or monetary repayment imposes a serious obligation on postdocs. For this reason, it should be placed on them only if it is justified by strong public policy. This section discusses the policies behind the payback requirement, and whether they justify the serious burden that it puts on postdocs.

### A. *Reasons for Instituting the Payback Requirement*

In instituting the payback requirement, Congress relied on the testimony of professors and researchers who thought it was a good idea. The legislature wanted to avoid wasting the United States' resources by granting funding that did not coincide with the NRSA program's purpose of ensuring that highly trained scientists would be available to fulfill the nation's research agenda.<sup>185</sup> To do this, Congress sought to recoup potential losses from those individuals who did not provide value to the United States by staying in biomedical research or teaching. The legislature was also interested in disincentivizing people from accepting NRSAs if they did not plan to continue on in research careers. Particularly, the legislature was worried about giving NRSAs to people who would switch careers and make much larger salaries practicing medicine. Here, I provide legislative history statements that

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183. *May 2014 National Occupational Employment and Wage Estimates United States*, BUREAU OF LAB. STAT. (Mar. 25, 2015), [http://www.bls.gov/oes/2014/may/oes\\_nat.htm](http://www.bls.gov/oes/2014/may/oes_nat.htm).

184. One former postdoc said in a forum discussion, "I had tried to turn down the fellowship myself but was pressured into taking it by my mentor since it virtually made me a free postdoc." LMM, *Resigning from a Post-doc*, SCIENCE CAREERS (Mar. 13, 2008, 12:55 PM), <http://sforum.sciencecareers.org/viewtopic.php?f=1&t=5783&p=39471&hilit=train-ing+grant+payback#p39471>.

185. National Research Act, Pub. L. No. 93-348 § 102, 88 Stat. 342 (1974); NIH Policy Statement, *supra* note 17, § 11.3.1.

demonstrated this reasoning.

First, Congress instituted the payback requirement as a way of ensuring that the United States would recoup its losses from those who did not provide value by staying in biomedical research or teaching. In a sub-committee hearing in the House of Representatives, Dr. John A. Cooper said, “Congress intends that those who benefit from this program do enter into research and teaching in the academic health centers or else pay back the cost.”<sup>186</sup> One congressman said the payback requirement would “assure that some individuals will not take advantage of the Federal funding and then fail to return any benefit to the taxpayers.”<sup>187</sup> Similarly, in a subcommittee hearing before the Senate, Dr. Sherman Levine said that NRSA funds are “given to an individual . . . on the expectation that he will be providing something of particular value.”<sup>188</sup> Finally, another person summed up this line of thinking by saying, “it is vitally necessary today that any waste in this program be eliminated.”<sup>189</sup>

Second, Congress sought to disincentivize scientists from accepting NRSA as if they did not plan to continue on in research careers. Dr. Eugene Braunwald stated that the payback requirement “make[s] people think twice about the direction they are going to go.”<sup>190</sup> Another referred to the “generous funding of training and research,” and considered it to be an abuse of the NRSA program that some young people “went on into research training really because they didn’t know what they were going to do next.”<sup>191</sup> The commenter explained that the payback requirement “makes the candidate take his job seriously. He really has to be committed to research before he enters his training.”<sup>192</sup> In a similar vein, a medical professor presented a survey of whether young physicians would be deterred by the payback requirements from

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186. *NRSA Fellowship Hearings*, *supra* note 131, at 80 (statement of Dr. John A. Cooper, President, Association of American Medical Colleges).

187. 119 CONG. REC. H17, 467 (May 31, 1973) (statement of Mr. Nelsen).

188. *Quality of Health Care Hearings*, *supra* note 104, at 1281 (statement of Sherman Levine, M.D., Research Fellow, Albert Einstein College of Medicine).

189. *NRSA Fellowship Hearings*, *supra* note 131, at 80 (statement of Tim Lee Carter, Kentucky).

190. *Quality of Health Care Hearings*, *supra* note 104, at 1321 (statement of Eugene Braunwald, M.D., Chairman of Medicine, Peter Bent Brigham Hospital).

191. *NRSA Fellowship Hearings*, *supra* note 131, at 164 (statement of Dr. Charles A. Jane-way, Professor of Pediatrics, Harvard Medical School, and Physician in Charge, Children’s Hospital Medical Center).

192. *Id.*

undertaking traineeships before a House of Representatives subcommittee.<sup>193</sup> Regarding the half of young physicians in the survey who expressed reluctance because of family obligations, the professor said that “this group is not that highly motivated to research and teaching.”<sup>194</sup>

Third, Congress was worried about wasting NRSA funds on people who would switch careers to make much larger salaries practicing medicine. For example, in one subcommittee hearing, chairman Paul G. Rogers asked Dr. James Wyngaarden if “persons receiving training grants and fellowships” should “have to pay back the amounts they receive if they go into private practice,” and Dr. Wyngaarden said he agreed with that.<sup>195</sup> In this hearing, Dr. Wyngaarden had spoken positively about the flexibility of allowing young trainees to pay back their stipends when they “change career goals early” and “discover that their talents are greater in medical practice than in research or teaching.”<sup>196</sup> Another professor wrote to Mr. Rogers, stating, “People who go on into medical practice, of course, generally make much larger incomes than [professors]. Many of them could afford to pay back substantial debts within a few years.”<sup>197</sup> Mr. Rogers stated that Congress “wouldn’t support those” who “are going into clinic medicine or are going out into rich practice.”<sup>198</sup> Thus, Congress seemed especially concerned with physicians who could afford to pay back their stipends after changing careers.

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193. *Id.* at 176 (statement of Dr. Ludwig W. Eichna, Association of Professors of Medicine).

194. *Id.*; see also *Quality of Health Care Hearings*, *supra* note 104, at 1280 (statement of Lawrence Beck, University of Pennsylvania Hospital) (“There are a number of us who go into training programs with firm convictions that this is what we want to do for our career. In other words, we are firmly convinced at that point that we want to stay in the academic careers. I think there are others who have not entirely made up their minds who go into it and many of whom will remain in academic research careers, but with the provisions for this payback that might not enter at this point.”).

195. *NRSA Fellowship Hearings*, *supra* note 131, at 155 (statements of Dr. James Wyngaarden, Professor and Chairman, Department of Medicine, Duke University Medical Center; and Paul G. Rogers, Chairman).

196. *Id.* at 128 (statement of Dr. James Wyngaarden, Professor and Chairman, Department of Medicine, Duke University Medical Center). Interestingly, Dr. Wyngaarden later changed his tune, and, in 1979, blamed “the reprehensible payback provision” as one of the reasons for a declining interest in research among M.D. postdocs and medical students. James B. Wyngaarden, *The Clinical Investigator as an Endangered Species*, 301 *NEW ENG. J. MED.* 1254, 1258–59 (1979).

197. *NRSA Fellowship Hearings*, *supra* note 131, at 263–64 (letter of John T. Edsall, Professor of Biochemistry).

198. *Id.* at 57 (statement of Paul G. Rogers, Chairman).

Overall, Congress took a tough love approach toward its trainees. Although it was agreed that the funds were “generous,”<sup>199</sup> those discussing the legislation at its conception clearly did not want to waste any money on anyone who would not continue in research or teaching. The bill’s subcommittee chairman noted that “for those who would go into research . . . it would be disastrous to move into alternative[] [careers].”<sup>200</sup> Another person testified, “I think the man going into this training should assume some obligations for that training.”<sup>201</sup>

### *B. Does Congress’s Reasoning Make Sense?*

As stated, Congress instituted the payback requirement to save money by funding only those who were likely to continue into research and teaching careers. Congress wanted to dissuade people from accepting NRSA funds if they were not planning to stay in science, particularly those who would change careers to go into medical practice. Do these rationales make sense? Here, I argue that they do not.

The main rationale for instituting the payback requirement was to avoid wasting money funding anyone who would not spend a career in research or teaching. However, this argument backfires for those who are intolerant of spending excess funds. Instead of saving money, the NRSA program likely spends more money *because* of the payback requirement. This is because most postdocs perform their payback service by remaining as NRSA fellows for a second year.<sup>202</sup> For postdocs who decide not to spend their careers in research before completing their second year of NRSA funding, they might have spared NRSA funds by leaving their fellowships early to go into their new careers. Instead, they are likely to remain as NRSA fellows for the full two years to avoid having to pay back their stipends. By staying on longer, they increase the amount of NRSA money spent on their training.

Further, enforcing the payback requirement imposes costs on the

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199. *Id.* at 164 (statement of Dr. Charles A. Janeway, Professor of Pediatrics, Harvard Medical School, and Physician-in-Charge, Children’s Hospital Medical Center).

200. *Id.* at 57 (statement of Paul G. Rogers, Chairman).

201. *Id.* at 177 (statement of Dr. Ludwig W. Eichna, Association of Professors of Medicine).

202. NIH Policy Statement, *supra* note 17, § 11.4.2 (“the 13th and subsequent months of postdoctoral NRSA supported research training serves to pay back this obligation month by month.”); Judith Podskalny, *Training, Career Development, and Small Business Support from the National Institutes of Health*, 49 *GASTROINTESTINAL ENDOSCOPY* S96, S96 (1999) (“The NIH strongly encourages fellows to remain on Institutional training grants for a minimum of 2 years.”).

United States. For example, it costs money to employ payback specialists in the NRSA Payback Service Center, and to monitor postdocs' payback activities. When the requirement was discontinued for predoctoral students in 1993, the NIH acknowledged that the cost of monitoring payback is not justified for predoctoral students.<sup>203</sup> It stated, "[t]he NIH thinks that a research career is so likely a career outcome for individuals who have received predoctoral research training that the obligation serves no useful purpose. In addition, the cost of monitoring service payback is not justified by the limited effect on career choices."<sup>204</sup> Could not the same be said for postdocs?

As an example of unjustified costs in payback enforcement, a needless burden was placed on the IRS, courts, a prior NRSA-recipient, and the recipient's spouse in *United States v. Boykin*.<sup>205</sup> Ultimately, the litigation was unnecessary because the prior NRSA recipient had engaged in, but not reported, her payback service. However, even if she had not engaged in acceptable service, the amount the United States sought to recover was only \$12,068 plus interest.<sup>206</sup> Does this small amount justify getting the Service Center, the IRS, and the courts involved? All the costs of employing these groups seem unlikely to be worth the small amount sought in this case.

Next, although it is understandable that Congress would want to dissuade people who do not plan to stay in science from accepting NRSA's, this rationale only works if postdocs are aware of the payback requirement and are not pressured to accept NRSA's by outside sources. Many postdocs are unaware of the requirement until after they agree with their PIs to be on training grants.<sup>207</sup> Further, PIs are incentivized to put pressure on their postdocs to receive fellowships because an NRSA fellowship would remove the burden of paying a postdoc from a PI.<sup>208</sup> Although a postdoc could refuse to accept an NRSA, doing so could damage the postdoc's important relationship with his or her PI. This is especially so if the refusal is made when the postdoc finds out about the payback requirement after already agree-

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203. S. REP. No. 103-2, at 56 (1993).

204. *Id.* at 48-49.

205. Answer, *United States v. Boykin*, No. 6:08-CV-01306 (D. Kan. Dec. 15, 2008); see *supra* Section III(C).

206. Complaint, *United States v. Boykin*, No. 6:08-CV-01306 (D. Kan. Oct. 14, 2008).

207. See Benderly, *supra* note 26; Klumpp, *supra* note 68 and accompanying text.

208. See *supra* Section II(B); LMM, *supra* note 184.

ing with his or her PI to accept an NRSA fellowship. This puts postdocs in an unfavorable position of having to choose between a last-minute decision to go against his or her PI's wishes or to accept the burden of the payback provision.

Additionally, many successful biomedical researchers did not decide to pursue research careers until after earning their degrees. For example, a survey of 516 successful clinical researchers in internal medicine indicated that 34% did not choose to enter their research careers until they were already in their residencies or fellowship training.<sup>209</sup> If those researchers had been dissuaded by a payback requirement, they would not have become successful researchers. Luckily, most of them indicated that they would not have been dissuaded by a payback requirement, but 22% of those who had fulfilled military requirements by undergoing research training said they would not have embarked on their research careers if they had been subject to a payback requirement.<sup>210</sup> Therefore, if the payback provision dissuades some postdocs from continuing in research careers, it is likely to weed out some who would otherwise become successful researchers.

Third, the argument that switching careers to practice medicine wastes NRSA resources does not apply to postdocs who hold Ph.D.s and not medical degrees. Continuing the legislation's founders' reasoning, the payback requirement would be more of a hardship for people with Ph.D.s than M.D.s because people with Ph.D.s make on average less money than those who practice medicine.<sup>211</sup> For example, in a subcommittee hearing, Dr. Albert Sabin argued that "the training of Ph.D.'s in the preclinical sciences and basic sciences is quite a different operation from that involving people who have obtained their M.D. but want to spend their life in research," and "they should not carry the 'payback' burden."<sup>212</sup> Despite these protests, the payback provision

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209. Wayne K. Davis & William N. Kelley, *Factors Influencing Decisions to Enter Careers in Clinical Investigation*, 57 J. MED. EDUC. 275, 277-78 (1982).

210. *Id.* at 279.

211. *NRSA Fellowship Hearings*, *supra* note 131, at 264 (letter of John T. Edsall, Professor of Biochemistry) ("People who go on into medical practice, of course, generally make much larger incomes than [researchers]").

212. *Quality of Health Care Hearings*, *supra* note 104, at 1271-73 (Statement of Albert Sabin, M.D., Fogarty International Center, National Institutes of Health); *see also* 119 CONG. REC. H17, 479 (May 31, 1973) (statement of Mr. Drinan) ("After 4 years of College and 5 years of graduate work, these students will normally take 2 to 3 years of postgraduate work at salaries in the range of 7-8,000 dollars yearly, and then they will move to academic positions where some may reach the upper 20,000 dollar range, but many more will remain at around 20,000 dollars. We are far away from the 100,000 dollar salaries [of medical practitioners]") (quoting Prof. Robert W. Jeanloz of Harvard Medical School).

is applied to both M.D. postdocs and Ph.D. postdocs in the same manner.

Further, the rationale that those who do not stay in research careers will make vastly more money in other careers and can easily pay back their training funds does not apply to people who make less money in public service careers. Consider David Cheng, who taught in an elementary school after completing his NRSA fellowship.<sup>213</sup> As a teacher, he would probably make less money than he would as, for example, a biochemist, and possibly even less than he made as a postdoc.<sup>214</sup> Although teaching is something that provides a public benefit, he was punished for it because of Congress's reasoning that he might make more money by "going out into rich practice."<sup>215</sup>

Congress's tough love approach toward its trainees has a sense of vindictiveness to it. One person went so far as to compare it to the Soviet exit tax, stating, "what [was] wrong with the Soviet exit tax [was] the discriminatory way it [was] in practice applied."<sup>216</sup> In the case of the payback agreement, there is also potential for discriminatory application because of the lack of any formal guarantee that the payback specialists will be consistent in their administration of the requirement.<sup>217</sup> Unlike the Soviet exit tax, which increased revenue for the Soviets, administering the payback agreement likely sucks away more resources from the United States than it recovers. In sum, enforcing the payback agreement is a waste of money, the payback provision does little to disincentivize non-committed postdocs from accepting NRSA's, and the rationale of keeping NRSA-trainees from practicing medicine is irrelevant for Ph.D. postdocs.

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213. *United States v. Cheng*, 840 F. Supp. 93, 94 (N.D. Cal. 1993).

214. *See Biochemists and Biophysicists*, BUREAU OF LAB. STAT. (Dec 17, 2015), <http://www.bls.gov/ooh/life-physical-and-social-science/biochemists-and-biophysicists.htm> (stating that biochemists and biophysicists averaged \$82,150 in 2015); *Kindergarten and Elementary School Teachers*, BUREAU OF LAB. STAT. (Dec 17, 2015), <http://www.bls.gov/ooh/education-training-and-library/kindergarten-and-elementary-school-teachers.htm> (stating that elementary school teachers averaged \$54,550 in 2015); *see also Elementary School Teacher: Salary*, U.S. NEWS & WORLD REPORT, <http://money.usnews.com/careers/best-jobs/elementary-school-teacher/salary> (last visited Jan. 9, 2016) (stating that in 2013, the lowest paid elementary school teachers were paid an annual salary of \$35,760).

215. *NRSA Fellowship Hearings*, *supra* note 131, at 57 (statement of Paul G. Rogers, Chairman).

216. *Id.* at 100 (statement of Joshua Lederberg, Ph.D., Chairman, Department of Genetics, Stanford University School of Medicine).

217. *See supra* Section III(C).

*C. The Harms and Benefits of Suppressing Postdocs*

This sub-section discusses additional pros and cons of having a payback requirement, and incentives it creates. Although Congress created the NRSA program to promote productive research, decreasing postdocs' autonomy through the payback requirement likely decreases their creativity and motivation.<sup>218</sup> Moreover, this suppression is unnecessary because there is an abundance of postdocs that perform research, and an overflow into other careers may benefit the economy. Politically, it makes sense to pass laws that promise increased scientific output. However, the payback provision likely results in economic harm, and comes with incentives for PIs to place their postdocs on training grants, and thus reap a benefit without bearing the payback cost. The payback legislation is a classic example of politicians trying to please the majority population through legislation that places costs on a minority group.

Those contemplating the creation of the NRSA program determined that trainees could add value as researchers during their training in addition to their future careers in research.<sup>219</sup> However, because the payback requirement reduces postdocs' autonomy, it likely suppresses their creativity and motivation. For example, empirical work in psychology suggests that acting in controlling ways decreases employee motivation.<sup>220</sup> On the other hand, "autonomy increases intrinsic motivation, which in turn enhances creative output."<sup>221</sup> Thus, postdocs who feel constrained to stay in science research after receiving NRSA are likely to be less productive than if they were unconstrained.

Further, suppressing the careers of postdoctoral NRSA-trainees is unnecessary because there are plenty of postdocs who stay in science to fulfill the nation's research needs, and an overflow into other careers

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218. See Haleh Eghrari et al., *Facilitating Internalization: The Self-Determination Theory Perspective*, 62 J. PERSONALITY 119 (1994); Marylene Gagné & Edward L. Deci, *Self-Determination Theory and Work Motivation*, 26 J. ORG. BEHAV. 331 (2005).

219. *Quality of Health Care Hearings*, *supra* note 104, at 1280 (statement of Lawrence Beck, University of Pennsylvania Hospital) ("[T]here is a great deal of productive research that comes out of the 2 or 3 years in these programs.").

220. See Eghrari, *supra* note 218.

221. Stephanie Plamondon Bair, *The Psychology of Patent Protection*, 48 CONN. L. REV. 297, 345 (2015) (citing Theresa Amabile, *The Social Psychology of Creativity: A Componential Conceptualization*, 45 J. PERSONALITY & SOC. PSYCHOL. 357, 364 (1983) (finding positive effects of autonomy on motivation that are strengthened by creative tasks)), <http://ssrn.com/abstract=2637505>; Gagné & Deci, *supra* note 218 (finding that autonomy is positively related to job motivation and performance).

may benefit our economy. As discussed earlier, there is an overabundance of postdocs in relation to the amount of university jobs available.<sup>222</sup> Postdocs should be encouraged, not discouraged, to pursue careers in fields other than research and teaching, because they can benefit society by bringing their scientific insight into those other fields.<sup>223</sup> This has been acknowledged for predoctoral students in recent years. The Council recently stated that “graduate programs must accommodate a greater range of anticipated careers for students,”<sup>224</sup> and that “[s]tudy sections reviewing graduate training programs should be educated to value a range of career outcomes.”<sup>225</sup>

Say’s Law posits that supply creates its own demand.<sup>226</sup> The payback requirement is representative of the no-longer-held belief that only “failures” get jobs outside of academic research. Yet, the NRSA program continues to contribute to the increase in the scientific workforce that does not have sufficient professorial jobs to house them all. If we accept the reality that not all postdocs will become professors, we may see that their knowledge and skills will be valued in areas outside academic research. When we see from this perspective, we find that rather than creating an “overabundance” of postdocs, we have actually created a wealth of scientific expertise through NRSA and other postdoctoral training. The more we free them to find their own positions within the workforce, the more they will be able to create their own demand by using their talents in new positions.

One group of people that benefits from the NRSA program is the postdocs’ PIs who are relieved from paying their postdocs’ salaries when their postdocs accept NRSAs. Are PIs greedy for encouraging their postdocs to be on NRSA training grants when doing so makes their postdocs take on a burden of future payback? I do not argue that to be the case. I point merely to the incentives that are created by the laws. Politicians frequently pass laws that appear beneficial but are actually harmful to society.<sup>227</sup> For example, price limits and rent caps lead to supply and housing shortages because of the economic incentives

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222. See *supra* Section II(B); Johnson, *supra* note 25; Powell, *supra* note 24.

223. *Supra* discussion of knowledge spillovers in Section III(A)(4); Price, *supra* note 160, at 2; see Tambe & Hitt, *supra* note 159.

224. NAT’L INSTS. OF HEALTH, *supra* note 109, at 8.

225. *Id.* at 9.

226. See THOMAS SOWELL, BASIC ECONOMICS: A COMMON SENSE GUIDE TO THE ECONOMY 346–47 (5th ed. 2015).

227. *Id.* at 58–63.

they create.<sup>228</sup> However, legislatures pass laws that limit prices despite the accompanying economic harm because it looks good politically to try to prevent the “greedy landlord” from raising rents.<sup>229</sup> Here, Congress sought to “safeguard against . . . abuses” of funding by postdocs,<sup>230</sup> but in reality created incentives for PIs to benefit by placing burdens on their postdocs. As one economist put it in a similar context when describing postdocs, “[w]e had the incentives all wrong.”<sup>231</sup>

The type of lawmaking that led to the creation of the payback requirement is known as entrepreneurial politics, and is characterized by the large majority imposing its will on a weaker minority.<sup>232</sup> This happens when the benefits of legislation are distributed among the majority, while the costs are concentrated on the weak minority.<sup>233</sup> Typically, in these situations, politicians get to cater to the large majority and gain the popular opinion. They do so generally by drafting an ambiguous bill and delegating authority to an agency to work out the details.<sup>234</sup> Here, the payback requirement promises to benefit the masses by increasing biomedical research output, but the minority of postdocs must bear the cost. As is typical in this type of lawmaking, the statute is ambiguous and passes the buck by delegating its authority to an agency to work out the details. Specifically, the statute is ambiguous because it did not define “research training, research, or teaching that is health-related.”<sup>235</sup> The meaning of these words is an important part of the statute because the words define what is necessary to fulfill the payback requirement.<sup>236</sup> Congress delegated its authority to define those terms to “the Secretary [of Health and Human Services],”<sup>237</sup> and thus the responsibility fell on the shoulders of the NIH.<sup>238</sup>

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228. *Id.*

229. *Id.*

230. NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., *supra* note 12, at 6.

231. Powell, *supra* note 24, at 144 (explaining the overabundance of postdocs in the job market, and stating, “We made postdocs so cheap that principal investigators had lots of incentives to hire them.”).

232. WILLIAM N. ESKRIDGE, JR. ET AL., CASES AND MATERIALS ON LEGISLATION: STATUTES AND THE CREATION OF PUBLIC POLICY 56–57 (4th ed. 2007).

233. *Id.*

234. *Id.* at 59.

235. 42 U.S.C. § 288(c)(1) (2012).

236. *Id.*

237. § 288(c)(3).

238. NIH Policy Statement, *supra* note 17, § 11.4.3.1.1.

## VI. RECOMMENDATION

Given the policies that disfavor a payback requirement, Congress should consider whether it is really necessary to retain postdocs in research by having this requirement, and if it is worth its accompanying social harms.<sup>239</sup> Outdated notions of not having enough highly-trained postdocs available for biomedical research should be abandoned in favor of the contrasting reality that there is an overabundance of postdocs and not enough jobs for all of them to become independent researchers.<sup>240</sup> If Congress wants to ensure that more medical students pursue careers in research, they should focus more on positive rather than negative incentives. For example, if the NRSA Payback Service Center was discontinued, its costs could be used to provide money to provide more funds for research and scholarships.

In the meantime, the NIH should provide clearer definitions of health-related research and teaching. This would help postdocs be more informed, and may help avoid situations similar to *United States v. Cheng*, where a prior NRSA-trainee found out the hard way that elementary school teaching was sufficiently health-related.<sup>241</sup>

Also, the Service Center should set-up a formal process for deciding in advance whether certain payback activities are acceptable. The formal process should produce a final decision that cannot be changed after the postdoc embarks on the approved service. That way, postdocs could find out in advance whether certain activities are acceptable, and then move forward with confidence after completing their NRSA training.

The Service Center should also contact prior trainees who fail to submit acceptable Annual Payback Activities Certification forms,<sup>242</sup> to provide sufficient notification for postdocs to correct their mistakes early. This would allow a postdoc to begin engaging in acceptable service payback before it is too late, rather than having to pay back his or her stipend or be sued by the United States.<sup>243</sup>

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239. As one person put it when writing about the payback requirement, "It may be legal. But that does not mean it's in any way ethical." MLC, *supra* note 69.

240. Harris, *supra* 107; Johnson, *supra* note 25; Powell, *supra* note 24, at 146.

241. *United States v. Cheng*, 840 F. Supp. 93 (N.D. Cal. 1993); *see supra* Section III(B).

242. *APAC*, *supra* note 62; *see supra* Section II(D) (discussing how NRSA-trainees report payback activities to the Payback Service Center).

243. This also might have helped to avoid the case of *United States v. Cheng*. 840 F. Supp. at 94. In the court's opinion, no mention is made of the NRSA Payback Service Center ever trying to contact Mr. Cheng until seven years after he ended his NRSA training. *Id.*; *see supra* Section II(D), III(B).

Additionally, courts should be lenient on postdocs who obtain positions that seem like health-related research or teaching but are on the fringes of the definitions. Courts should also consider the disparate bargaining power that postdocs have in negotiating their positions, and allow contract principles to guide their analyses.

Universities should be aware of issues that arise for postdocs when placing postdocs on training grants. For example, they should inform postdocs early on that they are subject to the payback requirement if they accept NRSAs. Prior to placing postdocs on training grants, training program directors should sit down with postdocs and their PIs to ensure that the PIs are not putting pressure<sup>244</sup> on their postdocs to accept NRSAs, and to ensure that the postdocs are aware of the payback requirement.

Finally, people should stay in science out of an intrinsic desire, not because they are required to. We should let scientists exercise their own creativity, and not yoke them down with “a counterproductive measure to avoid the misuse of funds.”<sup>245</sup> If “[s]cientists and engineers ought to stand side by side with athletes and entertainers as role models,” as President Obama directed,<sup>246</sup> we should give them our confidence in choosing how to pursue their careers. This will allow them to provide an unlimited contribution to the public good. For years, scientists have brought us inventions that were never even dreamed of. If we restrain them, we may be doing ourselves a disservice by preventing their creativity from taking hold in unforeseen ways.<sup>247</sup>

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244. LMM, *supra* note 184.

245. *Quality of Health Care Hearings*, *supra* note 104, at 1272 (statement of Albert Sabin, M.D., Fogarty International Center, National Institutes of Health).

246. President Barack Obama, *Remarks by the President on the “Education to Innovate” Campaign*, WHITE HOUSE (Nov. 23, 2009, 11:46 AM), <https://www.whitehouse.gov/the-press-office/remarks-president-education-innovate-campaign>.

247. *See Quality of Health Care Hearings*, *supra* note 104, at 1272–73 (statement of Albert Sabin, M.D., Fogarty International Center, National Institutes of Health) (“To force departments to retain such persons to carry out services prescribed in the act, would only be a disservice to research, rather than a service.”).

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