THE NEW DATA OF STUDENT DEBT

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Where you go to college and what you choose to study has always been important, but, with the help of data science, it may now determine whether you get a student loan. Silicon Valley is increasingly setting its sights on student lending. Financial technology ("fintech") firms such as SoFi, CommonBond, and Upstart are ever-expanding their online lending activities to help students finance or refinance educational expenses. These online companies are using a wide array of alternative, education-based data points—ranging from applicants' chosen majors, assessment scores, the college or university they attend, job history, and cohort default rates— to determine creditworthiness. Fintech firms argue that through their low overhead and innovative approaches to lending they are able to widen access to credit for underserved Americans. Indeed, there is much to recommend regarding the use of different kinds of information about young consumers in order assess their financial ability. Student borrowers are notoriously disadvantaged by the extant scoring system that heavily favors having a past credit history. Yet there are also downsides to the use of education-based, alternative data by private lenders. This Article critiques the use of this education-based information, arguing that while it can have a positive effect in promoting social mobility, it could also have significant downsides. Chief among these are reifying existing credit barriers along

lines of wealth and class and further contributing to discriminatory lending practices that harm women, black and Latino Americans, and other minority groups. The discrimination issue is particularly salient because of the novel and opaque underwriting algorithms that facilitate these online loans. This Article concludes by proposing three-pillared regulatory guidance for private student lenders to use in designing, implementing, and monitoring their education-based data lending programs.

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INTRODUCTION

To quote JPMorgan Chase CEO and de facto head of Wall Street Jamie Dimon, "Silicon Valley is coming"—and, as recent events show, the tech sector is headed quickly toward America's colleges and universities.[1]

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1. JAMIE DIMON, JP MORGAN CHASE & CO. ANNUAL REPORT 2014, at 29 (2015), https://www.jpmorganchase.com/corporate/investor-relations/document/JPMC-AR2014-LetterToShare holders.pdf. Between the years 2005 and 2015—a mere ten years—education-related debt in the United States ballooned from $450 billion to $1.1 trillion; *see* DOWSE B. (BRAD) RUSTIN IV ET AL., AM. ENTER. INST., PRICING WITHOUT DISCRIMINATION: ALTERNATIVE STUDENT LOAN PRICING, INCOME-SHARE AGREEMENTS, AND THE EQUAL CREDIT OPPORTUNITY ACT 6 (2017), http://www.aei.org/wp-

Private student lenders are increasingly embracing financial technology ("fintech") and the use of alternative data to support their lending activities. While *federal* student loans are made to students regardless of their credit risk, *private* student lenders are increasingly using nontraditional data—such as an applicant's chosen major, college institution, job history, and even social media activities—processed through machine learning algorithms[2] to discern credit worthiness. Firms that specialize in private student loans—such as SoFi, Earnest, Upstart, and CommonBond—are lauded for their innovative methods.[3] They promise to deliver cheaper and more accessible credit with a better consumer experience due to their online-only operation, low-overhead, and innovative underwriting methods.[4] The argument advanced by these lenders is that their automated underwriting processes that use "results-based" data are more predictive of a borrower's ability to repay than more mainstream indicators like credit scores.[5] The low overhead that comes from doing business online, rather than through brick-and-mortar stores, so the argument goes, allows these lenders to provide access to credit at lower rates and on more favorable terms.[6] Of late, this type of student lending has given rise to other credit-like transactions such as income-sharing agreements ("ISAs"). ISAs are contracts whereby a funder advances monies to a student for purposes of paying for educational expenses.[7] These programs are being embraced by well-known colleges such as Purdue and Clarkson University and for-profit, tech-training institutions like the Lambda School.[8] With an ISA, the student promises to repay the loan by

content/uploads/2017/02/Pricing-Without-Discrimination.pdf [hereinafter AEI REPORT]. This means that student debt is now the second largest single category of consumer debt in the United States (surpassed only by residential mortgage debt). *Id.*; *see also* Alvaro Mezza & Kamila Sommer, *A Trillion Dollar Question: What Predicts Student Loan Delinquencies?* 46 J. STUDENT FIN. AID, no. 3, 2016, at 16, 16–17 (describing rise of U.S. student debt owed by American households).

    2.   Harry Surden, *Machine Learning and Law*, 89 WASH. L. REV. 87, 88–89 (2014).

    3.   *See infra* Sections II.C, III.A.

    4.   *See infra* Section II.C.

    5.   Peter Renton, *Fintech Predictions for 2019*, LEND ACADEMY: LENDIT FINTECH NEWS (Jan. 3, 2019), https://www.lendacademy.com/fintech-predictions-for-2019; *see also* Michael Simkovic, *Risk-Based Student Loans*, 70 WASH. & LEE L. REV. 527, 530 (2013) (arguing for the implementation of risk-based pricing in federal student loans); *cf.* Rick Swedloff, *Risk Classification's Big Data (R)evolution*, 21 CONN. INS. L.J. 339, 341–43 (2014) (describing how "algorithms driving big data will offer greater predictive accuracy than traditional statistical analysis alone" in the insurance context).

    6.   *See infra* Section II.C.

    7.   Adam Levitin, *What Is "Credit"? AfterPay, Earnin', and ISAs*, CREDITSLIPS (July 16, 2019, 1:31 PM), https://www.creditslips.org/creditslips/2019/07/what-is-credit-afterpay-earnin-and-isas.html.

    8.   Clare McCann & Sophie Nguyen, *Income Share Agreements Aren't a Solution to Student Debt*, NEW AM. (Oct. 5, 2017), https://www.newamerica.org/education-policy/edcentral/income-share-agreements-arent-solution-student-debt.

giving up a percentage of his or her future income that is above a certain minimum amount. Importantly, the interest rate and loan terms are based, as above, on education-based data. Whether through a loan or through a loan-like ISA, a student with a college major that is viewed as more lucrative, like one in computer science, receives different payment terms than, for instance, a liberal art major.[9]

Armed with new forms of data, private student lenders and their advocates herald a sea change in the financing of higher education.[10] Since customary loan underwriting draws on past credit histories, students who are often young and have yet to meaningfully interact with the debt economy lack the type of credit history needed to be viewed as creditworthy.[11] But, if borrower data that draws on other aspects of an individual's background or profile (like chosen major, standardized test scores, GPA etc.) can be shown to indicate creditworthiness, then the use of such data in student loan underwriting can be a major victory in the fight for access to affordable credit.[12] Access to reasonably priced loans has long been a problem in the United States and continues to frustrate policymakers. This has been particularly true since the 2008 financial crisis.[13] And even when individuals are able to access credit, the issue of affordability remains a challenge.[14]

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9.   Levitin, supra note 7.

10.   *See infra* Section II.C.

11.   *See infra* Section III.A.

12.   *See infra* Section III.A. *But see* Jonathan D. Glater, *Law School, Debt, and Discrimination*, J. LEGAL EDUC. (forthcoming 2019) (manuscript at 5) (on file with author) (discussing the downsides of pricing credit purely based on a student's economic success).

13.   Between the mid-1990s and 2012, the total share of bank loans made to small businesses went from 50% to a mere 30%. JACKSON MUELLER, MILIKEN INST. CTR. FOR FIN. MKTS., THE U.S. ONLINE, NON-BANK FINANCE LANDSCAPE 2 (2016), https://www.milkeninstitute.org/sites/default/files/reports-pdf/Online-Nonbank-Finance-Landscape2.pdf; Karen Mills & Brayden McCarthy, *The State of Small Business Lending: Credit Access During the Recovery and How Technology May Change the Game* 5 (Harv. Bus. Sch. Gen. Mgmt. Unit, Working Paper No. 15-004, 2014), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2470523. Consumers did not fare much better, with consumer loans from banks dropping 2% each quarter between 2007 and 2014, and credit card lending by banks declining 0.7% per quarter. Yuliya Demyanyk & Daniel Kolliner, *Peer-to-Peer Lending Is Poised to Grow*, FED. RES. BANK CLEV. (Aug. 14, 2014), https://www.clevelandfed.org/newsroom-and-events/publications/economic-trends/2014-economic-trends/et-20140814-peer-to-peer-lending-is-poised-to-grow.aspx. One market group pegged the credit-access deficit to be somewhere between $44 and $52 billion. Connie E. Evans, Association for Enterprise Opportunity, Comment Letter on Treasury Notice, Public Input on Expanding Access to Credit Through Online Marketplace Lending (Sept. 30, 2015), https://www.regulations.gov/document?D=TREAS-DO-2015-0007-0054

14.   Megan Leonhardt, *This Map Shows the States Where Payday Loans Charge Nearly 700 Percent Interest*, CNBC: MAKE IT (Aug 3, 2018, 11:27 AM), https://www.cnbc.com/2018/08/03/states-with-the-highest-payday-loan-rates.html.

This Article analyzes the growing use of alternative, education-based data in private student lending. Although such use may be superior to current credit scoring models when it comes to judging the creditworthiness of students, not all data that correlates to success in college or to high-earning jobs may necessarily be appropriate for educational credit underwriting. Indeed, recent studies indicate that alternative data more broadly may not, in fact, suggest whether a person is a good credit risk.[15] More importantly, many of these data points have the potential to reify preexisting income, class, racial, and ethnic barriers in the credit economy, as well as produce effective discrimination toward legally protected classes.[16]

This Article continues my past work,[17] which interrogates financial technology's role in innovating, disrupting, and disintermediating the credit economy[18]—this time on student lending. I argue here that the use of alternative education-related data points (like an applicant's chosen major, assessment scores, college or university of attendance, job history, and institutional cohort default rate) may have some positive salience in determining an applicant's creditworthiness, but, left unchecked, the use of this data is more likely to have the effect of merely fortifying the

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15. *See, e.g.*, Tolga Bolukbasi et al., *Man Is to Computer Programmer as Woman Is to Homemaker? Debiasing Word Embeddings*, 29 NEURAL INFO. PROCESSING SYSTEMS (2016), https://arxiv.org/pdf/1607.06520.pdf ("The blind application of machine learning runs the risk of amplifying biases present in data. Such a danger is facing us with *word embedding* . . . . We show that even word embeddings trained on Google News articles exhibit female/male gender stereotypes to a disturbing extent."); *see also* Devin G. Pope & Justin R. Sydnor, *What's in a Picture? Evidence of Discrimination from Prosper.com,* 46 J. HUM. RESOURCES 53, 53 (2011) ("[B]lacks . . . are 25 to 35 percent less likely to receive funding than those of whites with similar credit profiles. . . . [L]enders making such loans earn a lower net return compared to loans made to whites with similar credit profiles because blacks have higher relative default rates."); Robert Bartlett et al., *Consumer-Lending Discrimination in the Fintech Era* 5 (UC Berkeley Pub. Law Research Paper, 2019), https://faculty. haas.berkeley.edu/morse/research/papers/discrim.pdf ("In aggregate, our findings suggest that from 2009 to 2015, lenders rejected 0.74 to 1.3 million Latinx and African-American applications that would have been accepted except for discrimination. FinTech lenders, on the other hand, do not discriminate at all in the decision to reject or accept a minority loan application in our sample."). *But see* Stefania Albanesi & Domonkos F. Vamossy, *Predicting Consumer Default: A Deep Learning Approach* (Nat'l Bureau of Econ. Research, Working Paper No. 26165, 2019), https://www.nber.org/papers/w26165.

16. *See* Bolukbasi et al., *supra* note 15; Danielle Keats Citron & Frank Pasquale, *The Scored Society: Due Process for Automated Predictions*, 89 WASH. L. REV. 1, 13 (2014); Bartlett et al., *supra* note 15, at 5.

17. For the first piece in this series, which deals with the rise of financial technology credit firms more broadly, with a specific focus on consumer loan products, see generally Christopher K. Odinet, *Consumer BitCredit and Fintech Lending*, 69 ALA. L. REV. 781 (2018).

18. For a discussion of the role of intermediaries in helping consumers make more informed choices, see generally Rory Van Loo, *Rise of the Digital Regulator*, 66 DUKE L.J. 1267, 1279–84 (2017); *see also* Abbye Atkinson, *Rethinking Credit as Social Provision*, 71 STAN. L. REV. 1093 (2019) (discussing the positive and negative role that credit plays in the American economy).

demographic walls that already divide America's credit haves and have-nots.[19]

For instance, consider the use of a chosen college's national ranking as an underwriting factor. Since highly ranked colleges are also highly selective, one could assume that students attending these institutions will complete their degrees and move on to high-income earning jobs—and will thus repay their student loans.[20] But consider the subtle facts that underlie this narrative. Minority students are already in short supply at many of America's most prominent universities and colleges. Dartmouth's student body is only 5.4% black and 7.2% Hispanic,[21] although these groups represent 13.4 and 18.1% of the total American population, respectively.[22] Washington and Lee University is overwhelmingly white with few black or Hispanic students.[23] Underwriting that advantages students attending Ivy League or highly-ranked schools necessarily inures to the benefit of white students who are already disproportionately represented at such institutions and who can already access affordable credit with relative ease.

The use of standardized test scores is also problematic.[24] Studies have revealed enormous gaps in testing results related to reading, math, and vocabulary between black and white students. The use of these scores for determining credit worthiness can therefore have long-lasting social and economic ramifications far into the student's future. This is to say nothing of how test scores span across the income spectrum. Students from more affluent families score better, on average, than students from low-income households. Thus, poor students remain poor due to burdensome student debt while wealthy students, who can afford to pay, remain well-off through favorable loan terms. This, in turn, limits social mobility and helps further stratify the economic and financial health of the American population.

Moreover, the credit differential between white and black student borrowers is already dramatic and hardly in need of innovations to help it

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19. *See infra* Part III.

20. *Top 100 – Lowest Acceptance Rates*, U.S. NEWS & WORLD REP, https://www.usnews.com/best-colleges/rankings/lowest-acceptance-rate (last visited Sept. 10, 2019). These schools include Harvard, Stanford, Columbia, Princeton, and Yale. *Id.*

21. Matt Schifrin, *Diversity at Top Colleges: Here's the Proof*, FORBES (Dec. 20, 2015, 7:07 AM), https://www.forbes.com/sites/schifrin/2015/12/20/diversity-at-top-colleges-heres-the-proof/#4dba9e8c6d3f.

22. *QuickFacts: United States*, U.S. CENSUS BUREAU, https://www.census.gov/quickfacts/fact/table/US/PST045217 (last visited Oct. 28, 2019) (providing population estimates as of July 1, 2018).

23. Schifrin, *supra* note 21.

24. *See infra* Sections III.B–.C.

widen. A 2016 Brookings Institution report found that almost half of all black graduates owed more in their federal undergraduate loans after a period of four years than they did immediately after graduation.[25] This was due to negative amortization, whereby unpaid interest is rolled into the principal over time.[26] That same study revealed that only 17% of white graduates saw such an increase during this period.[27]

Critics might argue that even if private student lenders using alternative data are catering to white, wealthy students attending Ivy League schools, their impact has little significance. The vast majority of student loans are not made by private lenders but rather by the federal government.[28] Private lenders hold only a small segment of the total outstanding student loan debt in the United States. In 2017, their market share was just a little over 7%.[29] If few student loans come from these private lenders, why be overly worried about the profile of their borrowers?

We should care because the student loan market may well be on the verge of a significant shift. The current political rhetoric suggests that private student lending may soon be on the rise. President Trump and the Republican party argued in their 2016 campaign platform that "[t]he federal government should *not* be in the business of originating student loans."[30] Rather, "private sector participation in student financing should be restored."[31] Also, in 2018 the Consumer Bankers Association—the banking industry's primary lobbying group—began urging the federal government to cap the amount of federal loans that students could use for graduate education and that parents could use for their children's undergraduate support.[32] This would, of course, push borrowers into the arms of private student lenders for additional borrowing to make up the

25.   JUDITH SCOTT-CLAYTON & JING LI, BROOKINGS INST., BLACK-WHITE DISPARITY IN STUDENT LOAN DEBT MORE THAN TRIPLES AFTER GRADUATION 2–3 (2016), https://www.brookings. edu/wp-content/uploads/2016/10/es_20161020_scott-clayton_evidence_speaks.pdf [hereinafter BROOKINGS DISPARITY STUDY].

26.   *Id*.

27.   *Id*.

28.   *See infra* Part I.

29.   Andrew Kreighbaum, *Private Lenders Eye Graduate Loan Market*, INSIDE HIGHER ED (May 4, 2018), https://www.insidehighered.com/news/2018/05/04/private-sector-lenders-ready-expand-gradu ate-loan-market.

30.   REPUBLICAN NAT'L CONVENTION, REPUBLICAN PLATFORM 2016, at 35 (2016) (emphasis added), https://prod-static-ngop-pbl.s3.amazonaws.com/media/documents/DRAFT_12_FINAL%5b1% 5d-ben_1468872234.pdf?mid=76330&rid=13491920.

31.   *Id.*

32.   Josh Mitchell & AnnaMaria Andriotis, *Banks Want a Bigger Piece of Your Student Loan*, WALL ST. J., https://www.wsj.com/articles/banks-look-to-break-governments-hold-on-student-loan-mar ket-1520418600 (last updated Mar. 7, 2018, 5:51 PM).

difference between the cost of college and the maximum amount of federal loans.[33] The private student loan giant Sallie Mae certainly seems to think things are headed in that direction. In an April 2018 earnings call, Sallie Mae's CEO stated that the company believed "that there is a mood to cut back on the federal dominance of the student lending market."[34]

Some concrete efforts have indeed already been underway to revitalize the private student loan market. The PROSPER Act, which was House Republicans' first attempt to update the Higher Education Act, would have adjusted the lending limits for federal undergraduate loans and would have imposed new limits on federal graduate student loans.[35] The PROSPER Act was ultimately unsuccessful, but provided a strong sign that more policymaking in this area is forthcoming.[36] Indeed, in July 2019, the U.S. Senate passed legislation to encourage the expansion of ISAs, and a senior advisor to Education Secretary Betsy Devos said earlier in the year that the Education Department was working on ways to further promote the use of ISAs in connection with the federal student loan program.[37]

This is not to say that the use of education-based data is all bad when it comes to lending. As I have written before,[38] there is great potential for nontraditional data to better reveal a borrower's true ability to repay a loan when compared with the antiquated and short-sighted methods that pervade the current credit scoring environment.[39] When it comes to students in

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33.   *See infra* Section I.B.

34.   Kreighbaum, *supra* note 29.

35.   PROSPER Act, H.R. 4508, 115th Cong. § 465(b)(2)(A) (2018); *see also* Andrew Josuweit, *Student Loan Changes You Need to Know for 2018 and Beyond*, FORBES (Jan. 17, 2018, 6:00 AM), https://www.forbes.com/sites/andrewjosuweit/2018/01/17/student-loan-changes-you-need-to-know-for-2018-and-beyond.

36.   As of this writing, the Democrats have taken control of the House of Representatives, but even many members of the Democratic Party are enamored by the potential for technology to change the way Americans access credit. Moreover, the issue of the federal government's involvement in the now crisis-level student debt load will undoubtedly be a 2020 presidential campaign issue. *See* Jack Herrera, *How Republicans and Democrats Plan to Attack Student Debt*, USA TODAY (Aug. 3, 2016, 2:30 PM), https://www.usatoday.com/story/college/2016/08/03/how-republicans-and-democrats-plan-to-attack-student-debt/37420855 (describing the policy stances of the two political parties on student debt issues); Susan Tompor, *2020 Presidential Election May Help You Shake off Student Loan Debt*, DET. FREE PRESS, https://www.freep.com/story/money/personal-finance/susan-tompor/2019/07/25/can-2020-o-election-help-you-shed-student-loan-debt/1797876001 (last updated July 25, 2019, 9:53 AM).

37.   Andrew Kreighbaum, *Senators Push Alternative to Student Loans*, INSIDE HIGHER ED (July 17, 2019), https://www.insidehighered.com/news/2019/07/17/senate-lawmakers-introduce-bill-spur-growth-income-share-agreements; Michael Stratford, *Income-Share Agreement Supporters Lobby Congress,* POLITICO (June 26, 2019, 10:00 AM), https://www.politico.com/newsletters/morning-education/2019/06/26/income-share-agreement-supporters-lobby-congress-450909.

38.   Odinet, *supra* note 17, at 77–78.

39.   *See infra* Section III.A.

particular—who are notoriously disadvantaged by the use of extant credit scoring models—alternative data may finally be able to remove the blind spots that have long plagued banks.[40] However, we must proceed with caution as we lean into big data's growing role in the credit economy.

This Article begins by describing the development of the student credit and debt market in America, both private and public.[41] Part II explores new financial technology innovations in student lending through the rise of certain credit firms (which I alternatively call "fintech lenders") who have moved into the student loan market.[42] Part II also describes how the market has grown and developed, how these businesses are structured, and the significant role played by alternative data and machine learning in their operations, particularly with respect to the promise of financial inclusion that these processes supposedly bring. It then focuses on those fintech firms that specifically operate in the student loan space, giving special treatment to representative companies and describing the credit products they offer. In Part III, I critique the use of education-based data in student loan underwriting.[43] Part III shows that while the use of such data may have the potential to advance financial inclusion goals, it can also bolster existing credit inequities. Lastly, Part III considers the serious threat of lending discrimination through the use of education-based data in private student loan underwriting. Part IV offers a concrete step for dealing with the issues described in Part III by making a proposal for financial regulators should react to the growth of fintech underwriting innovations in private student lending.[44] This proposal calls for regulators to promulgate supervisory underwriting guidelines for student lending firms to use to police their activities and guard against the downsides of education-based, big data.

I. THE STUDENT LOAN MARKET

Essential to understanding the role of financial technology and education-based data in how higher education is financed is an understanding of the cost of college more broadly and how existing credit structures operate. As the cost of attending college has grown over the years, the ability of parents and students to pay for an education has

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40.   *See infra id.*
41.   *See infra* Part I.
42.   *See infra* Part II.
43.   *See infra* Part III.
44.   *See infra* Part IV.

required significant borrowing.[45] By the 2013–2014 academic year, students and their parents had borrowed an aggregate of $106 billion to cover educational expenses—$71 billion was borrowed by undergraduates and $35 billion by graduate students.[46] The peak was in the 2010–2011 academic year when the total amount of federal student loan borrowing alone was $122 billion.[47]

The cause for these increases in borrowing can be traced to fast-rising cost of attendances.[48] Since 1983, the cost of operating a university has risen 67% faster than the Consumer Price Index.[49] As to how these rising costs are paid, the answer has been to increase tuition and fees.[50] Measured against inflation, between 2001 and 2011, tuition increased 60% faster at public institutions, 20% faster at private institutions, and 42% faster at community colleges.[51] In 1990–1991, a full-time undergraduate student, on average, borrowed $1916 and a full-time graduate student borrowed $4649.[52] By 2013–2014, that same undergraduate would borrow $5490 and that same graduate student would borrow $16,839.[53]

The student loan market has changed dramatically over the past few decades. A full discussion of the history of the government's involvement in financing a student's education is beyond the scope of this project,[54] but a short overview of recent events is instructive. The market as it currently stands can be divided into two categories—public loans and private loans.[55]

    45.   Robert Kelchen, *Student Loans: A Brief History, the Current Landscape, and Impacts on Society*, *in* HIGHER EDUCATION AND SOCIETY 173, 175, 177 (Joseph L. DeVitis & Pietro A. Sasso eds., 2016).

    46.   *Id*. at 177.

    47.   *Id.*

    48.   *Id*. at 175.

    49.   *Id.* The Consumer Price Index is the most well-recognized measure of general inflation in the United States. *See* Darren Rippy, *The First Hundred Years of the Consumer Price Index: A Methodological and Political History*, BUREAU LAB. STAT. MONTHLY LAB. REV., Apr. 2014, at 1, 36–37.

    50.   Kelchen, *supra* note 45, at 175.

    51.   *Id.*

    52.   *Id.* at 177.

    53.   *Id.*

    54.   For an excellent and robust discussion of the federal government's involvement in the higher education financing space, see Kate Sabolsky Elengold, *The Investment Imperative*, 57 HOUS. L. REV. (forthcoming 2019) (manuscript at 4) (on file with the author) ("[F]ederal higher education polic[ies] ha[ve] increasingly treated postsecondary education as a private, rather than a public, good. That has led to a patchwork of laws that encourage education at ever-increasing costs, primarily driven by personal debt, and without concomitant regulations that control for instructional quality." (footnote omitted))

    55.   OFFICE OF THE COMPTROLLER OF THE CURRENCY, COMPTROLLER'S HANDBOOK: STUDENT LENDING 2–3 (2016), https://www.occ.treas.gov/publications/publications-by-type/comptrollers-hand book/student-lending/pub-ch-student-lending.pdf [hereinafter OCC STUDENT LENDING].

Public loans are those that are made or subsidized by states or the federal government.[56] Private loans are those that are made by private institutions—either banks, nonbanks, or nonprofits—or by educational institutions that engage in the direct or indirect funding of a student's education.[57] Since 1965, student loans were made by commercial banks but also came with the benefit of being guaranteed by the federal government.[58] Such banks included Sallie Mae and Nelnet—both of which are still active in the private student loan market today.[59] In this context, the bank was the originator of the loan, but the government bore the risk of the borrower defaulting.[60] Many lawmakers complained of the program's unfairness to the taxpayer since the lender made the profit from the loan but undertook none of the default risk.[61] As former chair of the House Education and Labor Committee noted in 2010, "Why are we paying people to lend the government's money and then the government guarantees the loan and the government takes back the loan?"[62]

During the first term of President Obama, Congress overhauled the student loan program entirely by removing the role played by private banks with the passage of the Student Aid and Fiscal Responsibility Act of 2010.[63] Instead of continuing to guarantee the loans made by private lenders, the federal government decided to start extending credit directly to students.[64] In other words, the government became the lender.[65] This is not to say that private lenders were removed from the market entirely. They could still make loans, but they would not be government-backed any longer.[66] Also, private firms did (and still do) service loans made by both private lenders and the federal government, which allows them to indirectly reap a profit from the switch to a federally-dominated market.[67] Moreover,

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56. *Id.* at 2–3.

57. *Id.* at 3; *see also* Kelchen, *supra* note 45, at 178; David M. Herszenhorn & Tamar Lewin, *Student Loan Overhaul Approved by Congress*, N.Y. TIMES (Mar. 25, 2010), https://www.nytimes.com/2010/03/26/us/politics/26loans.html.

58. Herszenhorn & Lewin, *supra* note 57.

59. *Id.*

60. *Id.*

61. *Id.*

62. *Id.*

63. Student Aid and Fiscal Responsibility Act of 2010, Pub. L. No. 111-152, 124 Stat. 1071.

64. Gene Fox, *The Government Takeover Of Student Lending*, FORBES (May 11, 2010, 12:00 PM), https://www.forbes.com/2010/05/10/student-loans-hcera-leadership-education-fox.html.

65. Herszenhorn & Lewin, *supra* note 57.

66. *Id.*

67. ERIC M. FINK & ROLAND ZULLO, FEDERAL STUDENT LOAN SERVICING 3 (2014). The major private student loan servicers today include Sallie Mae (operating as Navient), Nelnet, Navient, Great Lakes, FedLoan Servicing, and Great Lakes, These firms together service the largest share of student

because federal student loans are capped at a certain amount, borrowing additional funds from private student lenders is necessary for many Americans.[68] The federal government may be the primary student lender, but it hardly covers the full cost—leaving open a significant gap to be picked up by the private market.[69]

The following gives an overview of these two sides of student lending in the United States, including how these loans are structured, how they are underwritten, and what rights borrowers have (or do not have) in repayment or when facing a default.

A. ON THE PUBLIC SIDE

Federal (public) student loans are administered by the U.S. Department of Education ("DOE").[70] To receive any of these kinds of loans a student must fill out the Free Application for Federal Student Aid ("FAFSA") form.[71] Also, students can only receive federal loans if the school they wish to attend qualifies with the DOE as being eligible.[72] Once the FAFSA is complete, the DOE determines how much of the overall cost of a student's education should be covered by the student or his or her family (called the "Expected Family Contribution" which is based on income and other sources of funds).[73] This information is then sent to the student's school of choice, which calculates how much it will cost to attend the institution.[74] This includes tuition, books, fees, any other charges, the cost of food and housing, transportation, and any other necessary and expected expenses.[75] The DOE will then generally make a loan to the student in the amount of the difference between the family contribution amount and the cost of attendance.[76] These loans come under the umbrella of one or more lending programs: Federal Pell Grants, Perkins Loans,

loans (public and private) in the United States. The federal government does not service its own loans. *Id.* at 4–5.

68.   *See infra* Section I.B.

69.   *Private Student Loans*, SALLIEMAE, https://www.salliemae.com/student-loans/private-student-loans (last visited Sept. 10, 2019).

70.   CONSUMER FIN. PROT. BUREAU, PRIVATE STUDENT LOANS 9–10 (2012), https://files.consumerfinance.gov/f/201207_cfpb_Reports_Private-Student-Loans.pdf [hereinafter CFPB, PRIVATE STUDENT LOANS].

71.   *Id.* at 10.

72.   *Id.*

73.   *Id.*

74.   *Id.*

75.   *Id.*

76.   *Id.*

subsidized Stafford Loans, work study, or other general grants.[77] Perhaps most importantly for purposes of this Article, the DOE does *not* take into account the student borrower's creditworthiness or how they performed with credit in the past.[78] In other words, federal student loans are not underwritten.[79]

Students and their parents often face the challenge of affording the Expected Family Contribution. This is because the borrowing limits imposed by the federal government are far less than what the student needs to cover the cost of college.[80] The DOE offers programs to help pay for this expense as well—the unsubsidized Stafford Loan, the Parent PLUS loan (taken out by a parent of undergrad students), and the Grad PLUS Loan (only for graduate or professional school students).[81] The last two do involve a limited amount of underwriting, but not like a conventional loan from a private lender.[82]

The difference between unsubsidized and subsidized Stafford loans (sometimes called simply "direct loans") is that with the former interest continues to accrue while the student is in school.[83] Any amounts that the student is unable to pay (and students rarely pay interest while enrolled) is capitalized into the principal.[84] With the latter, the federal government handles any accrued interest while the student is in school and for six months after graduation.[85]

In general, the interest rate on student loans depends on the type of loan at issue. These rates are updated periodically by DOE, largely based on the ten-year Treasury bond.[86] Only the Perkins Loan has a constant rate of 5%, although the authority to make new Perkins Loans expired in September 2017 and has not yet been renewed.[87] Table 1 below provides

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77. *Id.*

78. *Id.* (emphasis added).

79. *Id*.

80. Kelchen, *supra* note 45, at 178–79; *see also* Katie Lobosco, *Too Poor to Pay for College, Too Rich for Financial Aid*, CNN: MONEY (Apr. 29, 2016, 3:06 PM), https://money.cnn.com/2016/04/28/pf/college/college-financial-aid/index.html.

81. CFPB, PRIVATE STUDENT LOANS, *supra* note 70, at 10.

82. *Id*. at 10.

83. Kelchen, *supra* note 45, at 179.

84. CFPB, PRIVATE STUDENT LOANS, *supra* note 70, at 11–12.

85. Kelchen, *supra* note 45, at 178.

86. Matt Carter, *What the Fed's Interest Rate Hikes Mean for Student Loan Borrowers*, CREDIBLE, https://www.credible.com/blog/refinance-student-loans/feds-interest-rate-hike-means-student-loan-borrowers (last updated Jan. 15, 2019).

87. U.S. Dep't of Educ., *Perkins Loans*, FED. STUDENT AID, https://studentaid.ed.gov/sa/types/loans/perkins (last visited Oct. 28, 2019). For an explanation of why Congress did not renew the

interest rates (all fixed) and fees for federal student loans made on or after July 1, 2019 but before July 1, 2020.[88]

TABLE 1. Federal Student Loan Interest Rates

Loan Category	Student Category	Interest Rate	Loan Fee %
Direct Loans (All)	Undergraduate	4.53%	1.059%
Direct Unsubsidized Loans	Graduate or Professional	6.08%	1.062%
Direct Plus Loans	Parents and Graduate/Professional	7.08%	4.248%
Perkins	Undergraduate and Graduate	5%	None

When it comes to repayment terms, the federal student loan program is considered to be quite generous.[89] A student borrower generally starts repaying a federal student loan about six months after departing the institution or becoming enrolled less than half-time.[90] In the event of military service, unemployment, or financial hardship, repayment can be deferred (although interest will continue to accrue during this period).[91] Forbearance is also available for similar life events, which is where periodic loan payments can be stopped or reduced for up to a year (although again, interest will continue to accrue).[92]

The general repayment period for federal student loans is ten years in equal monthly payments, although students can often select other options such as scheduling monthly payments to increase over time as the student

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program and a critique of the loan policy itself, see Preston Cooper, *Let It Go: Perkins Loans Should Expire*, FORBES (Sept. 11, 2017, 9:08 AM), https://www.forbes.com/sites/prestoncooper2/2017/09/11/let-it-go-perkins-loans-should-expire/#35b885f82789.

88.   U.S. Dep't of Educ., *Interest Rates and Fees*, FED. STUDENT AID, https://studentaid.ed.gov/sa/types/loans/interest-rates (last visited Sept. 10, 2019); *Federal Perkins Loan Program*, BENEFITS.GOV, https://www.benefits.gov/benefit/418 (last visited Oct. 28, 2019).

89.   *See* FED. STUDENT AID, U.S. DEP'T OF EDUC., YOUR FEDERAL STUDENT LOANS: LEARN THE BASICS AND MANAGE YOUR DEBT 16 (2010), https://studentaid.ed.gov/sa/sites/default/files/your-federal-student-loans.pdf ("These federal loans offer more favorable terms than private and commercial loans . . . ."); *see also* Glater, *supra* note 12, (manuscript at 4).

90.   Kelchen, *supra* note 45, at 179.

91.   *Id.* at 180.

92.   *Id.*

earns a higher income and by extending the term to thirty years.[93] The most beneficial of the federal government's repayment options, however, are the income-based repayment plan and the "Pay As You Earn" plan.[94] These require the borrower to pay 10% of his or her disposable income each year (stipulated to be 150% above the poverty level for the state of residence) for twenty years or until the loan is paid off—whichever comes first.[95] This is beneficial to borrowers because if the twenty-year mark arrives and a loan balance remains, the federal government will forgive the remaining amount due.[96] In addition, those who work for a nonprofit or in public service also enjoy an income-based repayment plan whereby the individual gets the added benefit of not having to pay income taxes on any forgiven loan amounts.[97]

B. ON THE PRIVATE SIDE

Since 2010, private student loans were primarily used as a way to cover the cost of the Expected Family Contribution.[98] Even when a student uses one of the federal government's programs to cover the family contribution, he or she can often be in need of additional funds.[99] As noted above, all federal student loan programs are subject to aggregate limits. Additional funding is also needed if the student is attending a high-cost institution or is enrolled in an expensive graduate or professional program.[100] Further, some students (rather counterintuitively) do not exhaust their federal student loan options when it comes to covering the family contribution, opting instead to go to the private market.[101] In fact, in a study of data from 2007–2008 it was revealed that more than half of all private student loan borrowers did not deplete their Stafford or direct loan

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93.   *Id.* One of the major downsides of the federal student loan program has to do with the enhanced collection abilities enjoyed by the government. While a private student lender is relegated to a lawsuit and the typical enforcement mechanisms that go along with being an unsecured creditor, the federal government can sue in court as well as seize tax refunds, garnish wages absent a court order, deny other forms of student aid, appropriate some social security benefits, and have some regulatory bodies revoke a professional or vocational license. *See* OCC STUDENT LENDING, *supra* note 55, at 7. And, courtesy of preemption, there is also no statute of limitations on federal student loan obligations. *See* 20 U.S.C. § 1091a(a) (2018).

94.   Kelchen, *supra* note 45, at 180.

95.   *Id.*

96.   *Id.*

97.   *Id.* at 181.

98.   CFPB, PRIVATE STUDENT LOANS, *supra* note 70, at 10.

99.   U.S. Dep't of Educ., *Subsidized and Unsubsidized Loans,* FED. STUDENT AID, https://student aid.ed.gov/sa/types/loans/subsidized-unsubsidized (last visited Oct. 28, 2019).

100.   OCC STUDENT LENDING, *supra* note 55, at 5.

101.   CFPB, PRIVATE STUDENT LOANS, *supra* note 70, at 10.

limits or even apply for federal student aid financing to cover the gap.[102]

In stark contrast to federal student loans, all private student loans require underwriting.[103] This means that a lender will only lend based on the creditworthiness of the borrower and that the level of creditworthiness will determine on what terms the loan is made, if at all.[104] Many private lenders require cosignors (guarantors) that are employed and have certain credit scores and debt-to-income ratios.[105] After the 2008 crisis, private student lenders went from requiring cosignors at a rate of 67% to a rate of 85% in 2009.[106] As discussed in Section III.A below, the credit score has long played an enormous role in the underwriting decisions of private student lenders.[107]

Also, most private student loans are made using an interest rate that changes over time.[108] In comparison, federal student loans are only made with fixed interest rates. Some private student lenders, such as a number of the fintech lenders detailed below, are starting to offer fixed rates, but they are usually only given to very creditworthy students or to students who have guarantors−like parents−that are creditworthy.[109] The actual interest rate can vary widely based on the creditworthiness of the borrower.[110] According to December 2011 data analyzed by the CFPB, floating rates for private student loans can be as low as between 2.98% and 3.55% and as high as between 9.50% and 19.0%.[111] The average rate in 2011 for a private student loan according to this data was 7.8%.[112] For those lenders that offered fixed rate loans, the range was anywhere from 3.4% to 13.99%.[113]

When it comes to private student loan repayment, there are no comparable market-wide norms for deferment, forbearance, or income-based repayment.[114] Financial hardship or other life circumstances do not change the obligation to repay or the amount that must be repaid.[115] While

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102. *Id.* at 10, 50–52.
103. *Id.* at 12; OCC STUDENT LENDING, *supra* note 55, at 7.
104. CFPB, PRIVATE STUDENT LOANS, *supra* note 70, at 12.
105. *Id.* at 12; OCC STUDENT LENDING, *supra* note 55, at 7.
106. CFPB, PRIVATE STUDENT LOANS, *supra* note 70, at 3.
107. *See infra* Section III.A; *see also* OCC STUDENT LENDING, *supra* note 55, at 22.
108. CFPB, PRIVATE STUDENT LOANS, *supra* note 70, at 12.
109. *Id.*
110. *Id.*
111. *Id.*
112. *Id.*
113. *Id.*
114. *Id.* at 12–13.
115. *Id.* at 13.

DOE's policies provide that a federal student loan is not in default until it has been 270 since payment was due, private student loans are generally deemed to be in default after 120 days of nonpayment.[116] Many private lenders do, however, excuse the borrower from making payments while enrolled and for six months after leaving the institution.[117] But most significantly, student loans—unlike all other forms of unsecured consumer debt—are not generally dischargeable in bankruptcy.[118]

As of March 2019, the total amount of federal student loan debt was $1.6 trillion comprised of about 43 million borrowers (about 92% of all student loan debt) and the total amount of private student loan debt was $119.31 billion (about 7.65% of the total).[119] Of late, there are some signs of loan performance trouble in the private market.[120] In 2018, about 23% of all private student loans were in deferment, forbearance, or were more than ninety-days past due.[121]

As noted above, much of the traditional private student lending in the U.S. was done in the past by commercial banks.[122] These loans were funded by asset-backed securitizations, with similar structural concerns as those that existed in the private label market for the securitization of subprime mortgage loans pre-2008.[123] As the CFPB noted in its study of private student loans, "a [private student loan] lender had an incentive to

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116. OCC STUDENT LENDING, *supra* note 55, at 7.

117. *Id*. at 8.

118. *Id.*; *see also* 11 U.S.C. 523(a)(8) (2018). Federal student loans are also subject to this anti-discharge policy unless forcing the borrower to pay would cause an "undue hardship." Courts have not, however, been willing to find many instances of such a condition being met. For more on this topic, see generally Alexei Alexandrov & Dalié Jiménez, *Lessons from Bankruptcy Reform in the Private Student Loan Market*, 11 HARV. L. & POL'Y REV. 175 (2017) (arguing, among other things, that private student loans should be automatically dischargeable in bankruptcy because nondischargeability has failed to lower private loan costs or incentivize student enrollment); Dalié Jiménez et al., *Comments of Academics to Department of Education's RFI Regarding Evaluating Undue Hardship Claims in Adversary Actions Seeking Student Loan Discharge in Bankruptcy Proceedings (Docket No. Ed–2017–Ope–0085)* (Ind. Legal Studies Research Paper No. 404, 2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3183893 (proposing that the Department of Education should "define ten categories of easy-to-verify personal circumstances in which the Department will not challenge a borrower who seeks an undue hardship discharge" in order to increase access to justice and reduce taxpayers' costs).

119. Teddy Nykiel, *2019 Student Loan Debt Statistics*, NERDWALLET (June 24, 2019), https://www.nerdwallet.com/blog/loans/student-loans/student-loan-debt.

120. *See id.; see also* JUDITH SCOTT-CLAYTON, BROOKINGS INST., THE LOOMING STUDENT LOAN DEFAULT CRISIS IS WORSE THAN WE THOUGHT 1 (2018), https://www.brookings.edu/wp-content/uploads/2018/01/scott-clayton-report.pdf (predicting that by 2023 the 2004 college entry cohort will default on nearly 40% of their student loans).

121. Nykiel, *supra* note 119.

122. CFPB, PRIVATE STUDENT LOANS, *supra* note 70, at 11, 18.

123. *Id.* at 18.

increase loan volumes made for such a sale, with less incentive to assure the creditworthiness of those loans."[124] When the capital markets contracted after the 2008 financial crisis, investor demand for private student loan securitizations completely disappeared.[125] This, in turn, caused a contraction in the private student loan market.[126] In one sampling of private lenders, student loan volumes went from $5 billion in 2001 up to $20 billion in 2008 at the time of the crisis, down to $6 billion in 2011.[127] After the crash, many banks withdrew from the student loan market or shrank their student loan portfolios.[128] This resulted in market consolidation leaving only a small number of banks in the student lending business.[129] Fintech firms, as detailed below, have stepped in to fill this void.

II. THE RISE OF FINTECH IN STUDENT LENDING

Since its inception, the financial technology sector has enjoyed tremendous hype. From Wall Street to Silicon Valley, fintech is heralded as the future of finance.[130] Founders and advocates breathlessly claim that their platforms will change or "disrupt" everything,[131] and that banking and financial services will never be the same.[132] In terms of market growth, the fintech sector's evolution has been and continues to be robust.[133] In the first half of 2018, total investment in fintech worldwide was $57.9 billion.[134] That number, even at midyear, already surpassed the total annual investment in fintech for 2017.[135] Most of the investment has been

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124. *Id.*

125. *Id.*; OCC STUDENT LENDING, *supra* note 55, at 4.

126. CFPB, PRIVATE STUDENT LOANS, *supra* note 70, at 17.

127. *Id.*

128. OCC STUDENT LENDING, *supra* note 55, at 4.

129. *Id.*

130. *See* Carmelo Barbagallo, Dir. Gen. for Fin. Supervision & Regulation, Bank of It., Fintech and the Future of Financial Services, Speech at the International Summer School, Banking & Capital Markets Law, Università Cattolica del Sacro Cuore 5–7 (July 23, 2018) (available at https://www.ban caditalia.it/pubblicazioni/interventi-vari/int-var-2018/barbagallo-20180723.pdf); Peter High, *The CIO of the First Global Fintech Company on the Future of Finance*, FORBES (Mar. 12, 2018, 9:23 AM), https://www.forbes.com/sites/peterhigh/2018/03/12/the-cio-of-the-first-global-fintech-company-on-the-future-of-finance/#6ed4a3612928.

131. *See, e.g.*, Nina Gass, *6 Disruptive Fintech Companies Disrupting the Investment and Lending Landscape*, DUE (Oct. 6, 2017), https://due.com/blog/disruptive-fintech-companies.

132. Marguerita M. Cheng, *How Fintech Is Changing Everything*, EUR. FIN. REV. (Apr. 23, 2018), http://www.europeanfinancialreview.com/?p=23023.

133. *See* KPMG, THE PULSE OF FINTECH 2018, at 5–7 (2018), https://assets.kpmg.com/content/ dam/kpmg/xx/pdf/2018/07/h1-2018-pulse-of-fintech.pdf [hereinafter KPMG REPORT].

134. *See id.* at 4–5.

135. *See id.* at 5.

concentrated in the United Kingdom, the United States, and certain parts of Europe where the fintech sector is viewed as most mature.[136] In the United States alone, fintech firms garnered $14.2 billion in investment, with roughly $5 billion consisting of venture capital.[137]

A. THROUGH ECONOMIC SHIFTS AND NEW ENTRANTS

Organizationally, fintech firms can often be divided into three categories.[138] First are *fintech payment and settlement companies* that facilitate the movement of money or assets from one party to another in various types of consumer and commercial transactions.[139] These include firms like Venmo and Square, as well as distributed ledger technology companies built on blockchain-like technology, such as Ethereum and IOTA.[140] Second are *fintech investment companies* that help individuals make investment decisions, such as for savings or retirement, based on automated technologies. Acorns, Betterment, and Bloom are examples of these companies.[141] Lastly are the *fintech credit firms* that help facilitate the spread of borrowed capital to various types of borrowers.[142] Fintech credit firms are the focus of this Article, and the following sections provide an overview of these firms, with emphasis on their activities in the student lending space.

Fintech credit firms ("fintech lenders")[143] connect borrowers and lenders through the use of online platforms, without the use of a traditional bank intermediary.[144] Fintech lenders tout their ability to provide borrowers

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136. *Id.*

137. *Id.* at 3.

138. *Examining Opportunities and Challenges in the Financial Technology ("Fintech") Marketplace: Hearing Before the Subcomm. on Fin. Insts. & Consumer Credit of the H. Comm. on the Fin. Servs.*, 115th Cong. 4 (2018) [hereinafter Levitin Testimony] (statement of Professor Adam J. Levitin, Georgetown University Law Center). Professor Levitin divides fintech firms into payment and credit firms, but, for the purposes of this Article, I have added a third category to capture those dealing with robo-advising and other investment functions. *Id.*

139. *Id.*

140. Andrew Tar, *Top 10 Companies of the Blockchain Industry in 2017*, COINTELEGRAPH (Dec. 30, 2017), https://cointelegraph.com/news/top-10-companies-of-the-blockchain-industry-in-2017.

141. Barbara A. Friedberg, *2019 List of Robo-Advisors – Top 32 Digital Investment Managers*, ROBO-ADVISOR PROS, https://www.roboadvisorpros.com/2017-robo-advisor-list-top-28-digital-invest ment-managers (last updated Aug. 29, 2019); Kristen Stoller, *Forbes Fintech 50 2018: The Future of Investing*, FORBES (Feb. 13, 2018, 9:45 AM), https://www.forbes.com/sites/kristinstoller/2018/02/13/ forbes-fintech-50-2018-the-future-of-investing.

142. Levitin Testimony, *supra* note 138, at 4.

143. Fintech credit firms were first known as "peer-to-peer" or "P2P" lenders and are often called "marketplace lenders" or what I refer to here as "fintech lenders."

144. Angela M. Herrboldt, *Marketplace Lending*, 12 SUPERVISORY INSIGHTS, Winter 2015, at 12, 12 [hereinafter *FDIC Commentary*]; *see also* Odinet, *supra* note 17, at 795. For a theorizing of the role

with quicker and easier access to credit, which they argue is a significant departure from the old process involving face-to-face exchanges, the mailing of documents, and lengthy loan applications.[145] Fintech lenders can usually get back to a borrower in times ranging from just a few hours to forty-eight hours, while the traditional bank process can take days or weeks.[146] The loan application is done completely online, and there are no physical retail branch locations.[147]

The total loans made by fintech credit firms in 2016 made up about one-third of all unsecured consumer lending in the United States.[148] Their revenues are expected to increase 20% per year for the next few years.[149] Using data from Bloomberg and the analytics firm PeerIQ, Figure 1 shows loan securitizations by fintech lenders from the period between September 2013 and the fourth quarter of 2018.[150] Since many fintech loans are securitized, these numbers are fairly representative of the sector's origination growth over time.[151] Total market securitization as of the fourth quarter of 2018 was $44.5 billion, which was derived from 142 separate transactions.[152]

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of intermediaries, see generally Kathryn Judge, *Intermediary Influence*, 82 U. CHI. L. REV. 573 (2015) (using case studies to illustrate how intermediaries have wielded their increasing influence on modern markets to promote high-fee arrangements, creating implications for policy and theory); Charles K. Whitehead, *Reframing Financial Regulation*, 90 B.U. L. REV. 1, 8 (2010) (discussing how the of traditional intermediaries and new market entrants has created the need for regulatory reform).

145. U.S. DEP'T OF THE TREASURY, OPPORTUNITIES AND CHALLENGES IN ONLINE MARKETPLACE LENDING 5 (2016), https://www.treasury.gov/connect/blog/documents/opportunities_and_challenges_in_online_marketplace_lending_white_paper.pdf [hereinafter TREASURY REPORT]. *See generally* Andrew Verstein, *The Misregulation of Person-to-Person Lending*, 45 U.C. DAVIS L. REV. 445 (2011) (explaining the early threats to fintech lending as a result of actions by the Securities and Exchange Commission starting in November 2008 against the firm Prosper).

146. *See* TREASURY REPORT, *supra* note 145, at 5; *see also* Dori Zinn, *How Long It Really Takes to Get Approved for a Personal Loan*, STUDENT LOAN HERO, https://studentloanhero.com/featured/how-long-does-it-take-to-get-approved-for-a-personal-loan (last updated June 5, 2018) (noting how fintech lenders approval times are generally much faster than banks and credit unions' timeframes).

147. TREASURY REPORT, *supra* note 145, at 5.

148. *See* Boris Vallee & Yao Zeng, *Marketplace Lending: A New Banking Paradigm?*, 32 REV. FIN. STUD. 1939, 1940 (2019).

149. *Id.*

150. For the PeerIQ report containing the data used in Figure 1, see generally RAM AHLUWALIA ET AL., PEERIQ, MARKETPLACE LENDING SECURITIZATION TRACKER Q4 2018 (2019), https://www.peeriq.com/wp-content/uploads/2019/01/PeerIQ-MPL-Securitization-Tracker-4Q2018.pdf [hereinafter PEERIQ, Q4 2018 REPORT].

151. Jeff Cox, *Does This Sound Familiar? Peer Lenders Are Packaging Loans and Selling Them to Wall Street*, CNBC: FINANCE, https://www.cnbc.com/2017/02/09/peer-lenders-packaging-loans-and-selling-to-wall-st-in-big-numbers.html (last updated Feb. 9, 2017, 4:50 PM).

152. PEERIQ, Q4 2018 REPORT, *supra* note 150, at 3.

FIGURE 1. Cumulative Fintech Lending Securitizations (All Loan Types)

Note: All dollar figures are in billions.

In terms of market participants, there are approximately 111 fintech lenders in the United States.[153] The sector is dominated by several very large players such as Prosper and Lending Club, which are the biggest.[154] Bond ratings agencies and investment professionals project 2019 to see new fintech lending firms come online and existing firms continue to grow in scale.[155]

Fintech lenders generally serve as platforms that match investors and borrowers.[156] Despite their name, however, these firms often do not themselves lend money.[157] Rather, funds are advanced sometimes directly

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153.   DAVID W. PERKINS, CONG. RESEARCH SERV., MARKETPLACE LENDING: FINTECH IN CONSUMER AND SMALL-BUSINESS LENDING 5 (2018), https://fas.org/sgp/crs/misc/R44614.pdf [hereinafter PERKINS, CRS].

154.   Oliver Garret, *The 4 Best P2P Lending Platforms for Investors In 2017—Detailed Analysis*, FORBES (Jan. 29, 2017, 1:00 PM), https://www.forbes.com/sites/oliviergarret/2017/01/29/the-4-best-p2p-lending-platforms-for-investors-in-2017-detailed-analysis/#56f2dbf152ab. Although Lending Club is the largest fintech lender, Prosper was the first to operate in the United States. *See id.* Other firms include Upstart, LendUp, SoFi, and Avant. *See* Odinet, *supra* note 17, at 797.

155.   *See, e.g.*, KROLL BOND RATING AGENCY, 2018 CONSUMER LOAN MARKETPLACE LENDING YEAR IN REVIEW AND 2019 OUTLOOK 1 (2019); *see also 2019 Online Lending Outlook*, MAYAVA, https://www.mayavacapitalfunding.com/online-small-business-loan-guide/marketplace-lending-outlook (last visited Sept. 10, 2019).

156.   *See* KPMG REPORT, *supra* note 133, at 6-7, 57.

157.   DELOITTE, A TEMPORARY PHENOMENON? MARKETPLACE LENDING: AN ANALYSIS OF THE UK MARKET 4 (2016), https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/financial-services/deloitte-uk-fs-marketplace-lending.pdf.

by investors but most often by a bank with which the firm partners.[158] Income for fintech lenders is not derived from interest rate spreads—as with bank lenders—but rather through commissions and fees that are collected at the time of loan origination and later as a result of loan servicing.[159]

The business model for fintech lenders can come in different forms[160] but is generally bifurcated into two categories.[161] First are what have been called "balance-sheet lenders" or "direct funding lenders."[162] These are online companies that originate loans in-house and make them directly to borrowers.[163] These lenders keep the loans on their books until the debt is repaid. Balance-sheet lenders often obtain the funds to make these loans from their own borrowed capital—such as through wholesale market lenders—or from outside investors.[164]

The business model for the second group of fintech lenders is the dominant one. In this structure, the fintech lender enters into a legal relationship with a regulated state or national bank.[165] The bank then makes the loan to the borrower.[166] Banks have been eager to take advantage of the

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158. *See id.*

159. *See id.*

160. For a depiction of these business models, see generally PERKINS, CRS, *supra* note 153, at 4 (providing three different examples of marketplace lender business models).

161. Gerald Tsai, Dir., Fintech & Applications, Fin. Insts. Supervision & Credit, Fed. Reserve Bank of S.F., Remarks at the 4th Bund Summit on Fintech, Shanghai, China: Fintech and the U.S. Regulatory Response 2–3 (July 9, 2017) (available at https://www.frbsf.org/our-district/files/Tsai-Shanghai-Speech-Fintech-US-Regulatory-Response.pdf) (describing the role of fintech in the provision of services to consumers as well as partnerships between fintech firms and banks).

162. These lenders are said to utilize the "direct funding model." *FDIC Commentary*, *supra* note 144, at 13 fig.1.

163. *Id.* at 12–13.

164. *See id.* at 12. For a discussion of warehouse and other forms of short-term lending, see You Suk Kim et al., *Liquidity Crisis in the Mortgage Market,* BROOKINGS PAPERS ON ECON. ACTIVITY, Spring 2018, at 347, 383–87.

165. *FDIC Commentary*, *supra* note 144, at 12–14; *see also* KPMG, THE PULSE OF FINTECH Q1 2016, at 2 (2016), https://www.agefi.fr/sites/agefi.fr/files/fichiers/2016/06/barometre_kpmg_-_pulse_of _fintech_-_q1_2016.pdf ("Over the quarter, we saw continued collaboration between the fintech sector and corporate players, with an increasing number of banks, financial institutions and insurance companies forging partnerships with fintech companies, accelerators and incubators in order to drive innovation within their own organizations."); RYAN M. NASH & ERIC BEARDSLEY, GOLDMAN SACHS, THE FUTURE OF FINANCE PART 1: THE RISE OF THE NEW SHADOW BANK 9 (2015), http://www. betandbetter.com/photos_forum/1425585417.pdf ("To facilitate the origination of loans and compliance with bank regulations, many P2P lenders partner with little known WebBank, for instance . . . . WebBank was founded in 1997, has about 38 full time employees, and in 2014 ranked in the 99th percentile for bank profitability per head . . . ."). Lenders in this category are said to use the "bank partnership model." *FDIC Commentary*, *supra* note 144, at 13 fig.2.

166. *See FDIC Commentary*, *supra* note 144, at 13 fig.2.

technological advances that fintech credits firms offer—advances that can lead to efficiencies, lower transaction costs, simplification of processes, and ultimately higher profits.[167] Rather than banks trying to build the technology themselves or purchase fintech companies to hold as subsidiaries, partnerships with existing fintech credit firms have proven very popular.[168] In the United States, the fintech lender Avant is in partnership with Regions Bank, and the fintech giants Lending Club and Prosper have partnered with Utah-based WebBank, to name a few.[169] Through these collaborations, fintechs and banks argue that they now have greater capacity to provide products that are tailored to specific borrower needs, can offer greater loan choice, have more flexibility in providing services, enjoy a heightened level of competitiveness and consumer satisfaction, and can increase credit access across the spectrum.[170]

Although the partner-bank makes the loan, borrowers complete the loan application using the fintech lender's website or smartphone app, entering information about themselves[171] and the credit product they desire.[172] All underwriting and processing of the loan application are done by the fintech lender.[173] The bank-partner, however, does not keep the loan on its balance sheet.[174] Shortly after the origination, the loan is either sold to the fintech lender itself, or to a prearranged investor.[175] The fintech lender's capital to purchase the loan comes from warehouse lines of credit or other forms of short-term or overnight financing.[176] Once the fintech lender purchases the loan, it is bundled with other purchased loans and either sold to a prearranged wholesale buyer or, as is more common, securitized in a pool with other loans.[177] Investors purchase the related securities, which in turn entitle them to the interest and principal payments

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167. Ryan Lichtenwald, *Banks and Marketplace Lending Platforms: Ideal Partners?*, LEND ACADEMY: LENDIT FINTECH NEWS (Aug. 17, 2016), https://www.lendacademy.com/bank-partnerships-marketplace-lenders.

168. *See id.*

169. *Id.*

170. Spencer White, *Fintech Lender Avant Courts Big Banks with Launch of SaaS Business*, BENZINGA: FINTECH FOCUS (Sept. 24, 2018, 10:59 PM), https://www.benzinga.com/fintech/18/09/12397380/fintech-lender-avant-courts-big-banks-with-launch-of-saas-business.

171. CHAPMAN & CUTLER LLP, THE REGULATION OF MARKETPLACE LENDING: A SUMMARY OF THE PRINCIPAL ISSUES (2016 UPDATE) 10–11 (2016) [hereinafter CHAPMAN & CUTLER REPORT].

172. *See* TREASURY REPORT, *supra* note 145, at 6–8.

173. *Id.* at 8; *see also* PERKINS, CRS, *supra* note 153, at 2–3.

174. TREASURY REPORT, *supra* note 145, at 6.

175. *Id.*

176. *Id.*

177. Odinet, *supra* note 17, at 788.

made by the borrowers.[178] The fintech lender uses the purchase of these notes to pay off its short-term debt. Both the promissory note signed by the borrower and the resulting securities are in digital form.[179] An electronic ledger maintains a record of the ownership of the securities by the investors.[180] The fintech lender charges a fee or commission for arranging the deal and then later servicing the loans.[181]

B. THROUGH MARKET SEGMENTATION

In terms of loan products, the fintech credit market can be segmented into three categories: consumer loans, small business loans, and student loans.[182] Consumer loans were at the heart of the industry's early stages as banks moved away from loans to individuals in preference to credit cards[183] and home equity lines of credit that entail higher interest rates and thus higher returns.[184] Not far behind online consumer loans, however, have come student loans.[185]

For the most part, the online marketplace is serving students who seek to consolidate and refinance their student loan debt, although some lenders are in the business of making first instance loans.[186] There are a number of prominent fintech lenders that have or are currently engaging in the making of education loans. Table 2 shows such fintech companies.[187]

178.	*See* TREASURY REPORT, *supra* note 145, at 6; *see also* CHAPMAN & CUTLER REPORT, *supra* note 171, at 11–12.

179.	CHAPMAN & CUTLER REPORT, *supra* note 171, at 12.

180.	*See id*.

181.	TREASURY REPORT, *supra* note 145, at 6–8; *see also FDIC Commentary*, *supra* note 144, at 14. For a comparison to a similar structure of loan servicing involving mortgages, *see generally* CHRISTOPHER K. ODINET, FORECLOSED: MORTGAGE SERVICING AND THE HIDDEN ARCHITECTURE OF HOMEOWNERSHIP IN AMERICA (2019).

182.	*See* Odinet, *supra* note 17, at 804–07.

183.	Todd J. Zywicki, *The Economics of Credit Cards*, 3 CHAP. L. REV. 79, 83 (2000) (describing the functions of credit cards).

184.	Nick Clements, *Led by Student Loans, Marketplace Lending Securitization Volume Soars*, FORBES (Oct. 21, 2016, 5:25 PM), https://www.forbes.com/sites/nickclements/2016/10/21/led-by-stud ent-loans-marketplace-lending-securitization-volume-soars/#44fca7743c23; *see also* Odinet, *supra* note 17, at 805.

185.	Clements, *supra* note 184.

186.	Odinet, *supra* note 17, at 807.

187.	All funding amounts in Table 2, with the exception of the amount listed for SoFi, were found using Crunchbase, a widely-used market research database. To access this database, see CRUNCHBASE, https://www.crunchbase.com/search/organization.companies (last visited Sept. 10, 2019). SoFi recently issued a press release indicating that it has a total funding amount of $3 billion. Press Release, SoFi, Leading Marketplace Lender SoFi Announces $3 Billion Funding Milestone, https://www.sofi. com/press/leading-marketplace-lender-sofi-announces-3-billion-funding-milestone (last visited Oct. 28, 2019). For related funding news on Climb Credit and Zopa, see Jim Bruene, *First Look: Zopa Opens in the United States with Depository Model*, FINOVATE (Dec. 2, 2007), https://finovate.com/first_

TABLE 2. Major Fintech Student Lending Firms

Company	Year Founded	Loan Originator	Funding Amount
Climb Credit	2014	Investor Funds	$65.8 Million
Common Bond	2011	Investor Funds	$1.6 Billion
Earnest	2013	Investor Funds	$119.1 Million
Lending Club	2007	WebBank	$392.2 Million
SoFi	2011	Investor Funds	$3 Billion
Upstart	2012	CrossRiver Bank	$144.1 Million
Zopa[a]	2005	Credit Unions	$296.7 Million
College Ave Student Loans	2014	Firstrust Bank	$125 Million

Note: [a] In 2008, Zopa announced that it would no longer make student loans in the United States due to adverse economic conditions. *See Zopa U.S.*, ZOPA BLOG (Oct. 9, 2008), https://blog.zopa.com/2008/10/09/zopa-us.

An overview of some of these fintech lenders and what they offer is helpful in understanding how they fit into the larger student loan arena and, importantly, how they use education-based data in their credit scoring. First, Climb Credit, which is based in New York City and privately-held, promises student loans for quality programs.[188] The website cautions that "[n]ot all schools deliver equal value to students" and that it only partners with schools that "consistently improve graduates' earning potential."[189] To do this, the fintech lender looks at the net cost of enrolling in a program at a given institution and compares that number to the expected annual salary and its growth over time.[190] As an example, Climb states that a $10,500 loan (including the origination fee) with an interest rate of 8.40% and an APR of 10.99% would provide an initial payment of $73.50 per month for six months and then $330.97 per month for the remaining thirty-six months

look_zopa_opens_in_the_united_states_using_deposit_model; *Climb Credit Enters into $130 Million Loan Purchase Agreements*, PR NEWSWIRE: CISION (Oct. 19, 2017), https://www.prnewswire.com/news-releases/climb-credit-enters-into-130-million-loan-purchase-agreements-300539592.html.

188.   *Our Student Loans Help Build Careers.*, CLIMB, https://climbcredit.com (last visited Oct. 28, 2019).

189.   *Education Is an Investment. We Help You Invest Wisely*, CLIMB, https://climbcredit.com/student-info?school=all (last visited Oct. 28, 2019).

190.   *ROI Calculation*, CLIMB, https://climbcredit.com/roi (last visited Oct. 28, 2018). The firm looks to program cost, graduation rate, cost of borrowing, borrowers' income prior to enrolling, job placement, and post-graduation income. *See id*.

when the rate evidently resets.[191] The term of the loan varies depending the school and educational program.

The lender Earnest, headquartered in San Francisco, provides refinancing options for student loans as well as parent PLUS loans.[192] The platform offers a customized loan by using, in part, the student's budget to determine the interest rate and payment term, alongside "insightful data science [and] elegant design" that looks past credit scores.[193] One borrower featured on Earnest's website with an masters in fine arts degree from New York University purports to have saved $38,000 by refinancing $85,900 worth of student debt.[194] As with many other online lenders, these loans are limited by a number of borrower-related factors. Earnest will only lend to student borrowers who are currently "less than half-time"—which means the borrower is an undergraduate student enrolled in less than six units, or will complete his or her degree at the end of the semester in which the funds are borrowed.[195]

Loans by Earnest for refinancing existing student loans and parent PLUS loans are offered with adjustable rates starting at 2.05% APR and with fixed rate rates starting at 3.45% APR.[196] The company allows early payments without penalty and forbearance options. The minimum amount to be refinanced is also $5000. In terms of funding, Earnest has been the recipient of venture capital—some equity and some lending.

Lastly, Social Finance (called "SoFi")—one of the most prominent U.S. fintech student lenders—offers student loan refinancing options, in addition to a variety of other credit products. The company states that it has helped over 300,000 individuals refinance their student debt.[197] SoFi boasts no origination fees or pre-penalties for early payment, and a "simple online application . . . ."[198] However, SoFi cautions that only borrowers with credit scores of 650 or above can apply[199] and any student loans to be

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191.   *Education Is an Investment. We Help You Invest Wisely*, *supra* note 189.

192.   EARNEST, https://www.earnest.com (last visited Oct. 28, 2018).

193.   *Id.*

194.   Catherine New, *How This MFA Built Her Own Production Company While Managing Her Student Loans*, EARNEST: PEOPLE (Feb. 16, 2016), https://www.earnest.com/blog/how-this-mfa-built-her-own-production-company-while.

195.   *Eligibility Guide*, EARNEST, https://www.earnest.com/eligibility (last visited Oct. 28, 2018).

196.   *Parent Plus Loan Refinancing*, EARNEST, https://www.earnest.com/parent-loan-refinancing (last visited Oct. 28, 2019); *Refinance Student Loans*, EARNEST, https://www.earnest.com/refinance-student-loans (last visited Oct. 28, 2019).

197.   *Refinance Student Loans*, SOFI, https://www.sofi.com/refinance-student-loan (last visited Oct 28, 2019).

198.   *Id.*

199.   Donna Fuscaldo, *SoFi Student Loan Review*, FORBES, https://www.forbes.com/advisor/loans/

refinanced must come from a Title IV school and must be at least $5000.[200] The company also offers a special refinancing program to cover the refinancing of student loans related to a medical residency.[201]

The fintech student loan firms described above are fairly representative of others operating in this market. Commonalities include promises of low-cost credit, flexible repayment terms and options, ease of process, choice, and quick delivery of funds. The interaction between credit firm and borrower is conducted entirely online and the aesthetic is sleek and clean—often featuring photos of millennials perched at coffee shop tables or visiting with friends—accompanied by corporate statements about business philosophies and promises to be a "force for good."[202] On its website, one firm describes its office culture as one of a "home-away-from-home" equipped with not only shared office spaces but also a "ping pong table, cold brew on tap, and monthly happy hours . . . ."[203]

A number of these firms even market how their business plans are linked to philanthropy and corporate responsibility. For instance, Common Bond boasts its partnership with the nongovernmental organization Pencils of Promise in providing resources to teachers and students in developing countries—purportedly donating $1 million to students in need and building 470 school classrooms in disadvantaged parts of Africa.[204] Pave, before it faded out in 2017, promised to use technology to improve access to funding.[205] To do this, the it hoped that its own global credit profile program would have provided "a richer picture of an individual's financial health" to creditors.[206]

The fintech student loan market has also seen its share growth as a subset of overall fintech lending securitizations. Total issuances for student loan securitizations according to PeerIQ data were at $16.67 billion as of the fourth quarter of 2018, as shown on Figure 2.[207]

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sofi-student-loan-review (last updated Oct. 10, 2019, 8:00 AM).

200.   *Eligibility Criteria*, SoFi, https://www.sofi.com/eligibility-criteria#eligibility-refi (last visited Oct. 28, 2018).

201.   *Medical and Dental Resident Student Loan Refinancing*, SoFi, https://www.sofi.com/medical-resident-refinance (last visited Oct. 28, 2019).

202.   CommonBond, https://www.commonbond.co (last visited Oct. 28, 2019).

203.   *About*, CommonBond, https://www.commonbond.co/about (last visited Oct. 28, 2019).

204.   *Id.*

205.   See Pave, A Decentralized Credit Bureau 3 (2017) (on file with author).

206.   *Id.* at 18.

207.   For the report containing the information used in Figure 2, see PeerIQ, Marketplace Lending Securitization Tracker Q4 2018 (2019), http://www.peeriq.com/wp-content/uploads/2019/01/PeerIQ-MPL-Securitization-Tracker-4Q2018.pdf [hereinafter PeerIQ, Q4 2018 Report].

FIGURE 2. Total Loan Securitizations by Loan Type (2013–2018)

Small Business Loans — $2.50

Student Loans — $16.67

Consumer Loans — $25.30
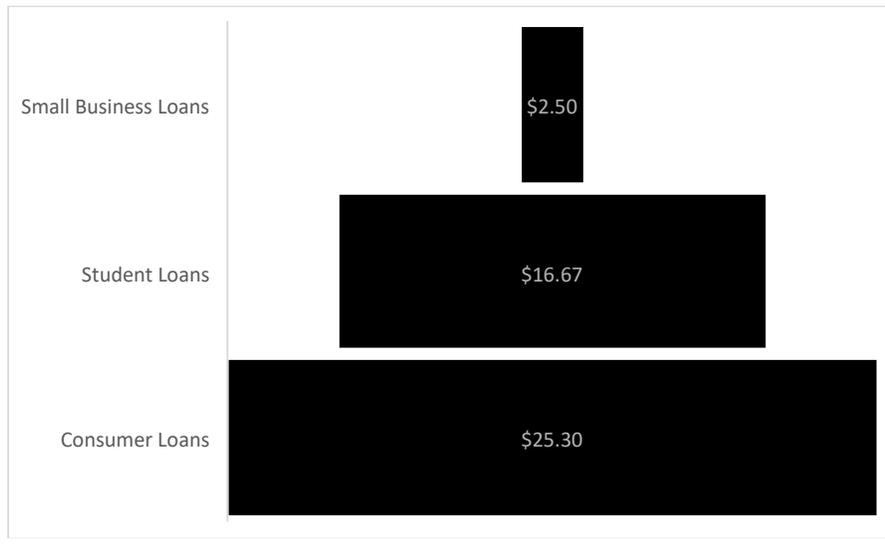
Note: All dollar figures are in billions.

C. THROUGH BIG (ED) DATA UNDERWRITING

The U.S. Department of Education notes that: "[y]ou don't need to get a credit check to qualify for federal student loans . . . ."[208]

Private student loans, however, do entail underwriting. Most run-of-the-mill private student lenders use the FICO score to determine a borrower's ability to repay.[209] However, as noted above, fintech lenders are unique for their underwriting process, which they purport to have significantly greater reliability in predicting a borrower's creditworthiness.[210] The basis for this assertion is that nontraditional data

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208.   U.S. Dep't of Educ., *Federal Versus Private Loans*. FED. STUDENT AID, https://studentaid. ed.gov/sa/types/loans/federal-vs-private (last visited Oct. 28, 2019). The only exception to this is the PLUS loan, which is geared for graduate and professional school students as well as parents of students. *See id.* For these loans, credit history is a factor, although an adverse credit history can be overcome by obtaining a guarantor or providing an explanation to the Department of Education as to why the negative indication will not cause a repayment problem. *See* U.S. Dep't of Educ., *Direct Plus Loans*, FED. STUDENT AID, https://studentaid.ed.gov/sa/types/loans/plus/grad-professional#adverse-credit (last visited Oct. 28, 2019).

209.   *See* AEI REPORT, *supra* note 1, at 6; *see also* Christine DiGangi, *Do I Need a Good Credit Score to Get Student Loans?*, CREDIT.COM, https://blog.credit.com/2018/10/good-credit-score-to-get-student-loans-69863 (last updated Oct. 29, 2018) ("While some private loans do not look at credit scores in the application process, most do, and borrowers could have a tough time getting one with a FICO score below 650 . . . .").

210.   *See supra* Section II.A.

allows fintech lenders to see a more accurate picture of a borrower's financial capacity, a view that is often in the blind spot of banks.[211] Moreover, artificially intelligent underwriting algorithms[212] process this data in ways that reveal correlations between seemingly irrelevant data points about a borrower and that borrower's ability to repay—something that a simple human analysis would not be able to do.[213]

More broadly, fintech lenders use traditional indicators of creditworthiness, such as income levels, reoccurring liabilities, and credit scores,[214] but other nontraditional factors play a significant part in informing the lending decision.[215] For example, fintech lenders use information like where borrowers live, what clubs they belong to, their text messaging habits, their health records, and even their social media activity.[216] One credit industry executive noted that "how many times a person says 'wasted' in their [social media] profile . . . has some value in predicting whether they're going to repay their debt . . . ."[217] And as a certain fintech lender declared on its website: "[A]ll data is credit data."[218]

These data are collected and processed using machine learning

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211. Odinet, *supra* note 17, at 804, 848.

212. For an explanation of the basics of algorithms, see Andrew Tutt, *An FDA for Algorithms*, 69 ADMIN. L. REV. 83, 92–94 (2017).

213. *See* Chris Anderson, *The End of Theory: The Data Deluge Makes the Scientific Method Obsolete*, WIRED: SCIENCE (Jun. 23, 2008, 12:00 PM), https://www.wired.com/2008/06/pb-theory; *see also* David Weinberger, *Our Machines Now Have Knowledge We'll Never Understand*, WIRED: BACKCHANNEL (Apr. 18, 2017, 8:22 PM), https://www.wired.com/story/our-machines-now-have-knowledge-well-never-understand.

214. This most significant credit score is the FICO score. THOMAS P. LEMKE ET AL., MORTGAGE-BACKED SECURITIES § 3:6 (2018). The word FICO is an abbreviation for the "Fair Isaac Corporation," which is the company that created method of taking consumer credit reports (produced by companies like TransUnion, Equifax, and Experian) and turning that information into a score that reflects an individual's creditworthiness. *Id.* The FICO method assigns certain percentage weights to different types of information from a consumer's credit profile. *Id.* Specifically, payment history accounts for about 35%, the consumer debt of the individual is about 30%, the duration of a person's credit history is another 15%, and finally the different types of credit that the individual used or acquired over time is about 10%. *See id.* Using this formula, FICO assigns the person a score anywhere from 300 to 850. *Id.* Individuals who are offered so-called "subprime loans" generally have scores below 660, and those who are offered "prime loans" have scores above 700. *See id.; see also* Odinet, *supra* note 17, at 853.

215. TREASURY REPORT, *supra* note 145, at 5; Odinet, *supra* note 17, at 853–54.

216. *See* Odinet, *supra* note 17, at 853–54; *see also* SMITTIPON SRETHAPRAMOTE ET AL., MORGAN STANLEY, GLOBAL MARKETPLACE LENDING: DISRUPTIVE INNOVATION IN FINANCIALS 11 (2015), http://bebeez.it/wp-content/blogs.dir/5825/files/2015/06/GlobalMarketplaceLending.pdf [hereinafter MORGAN STANLEY REPORT].

217. Ben McLannahan, *Being 'Wasted' on Facebook May Damage Your Credit Score*, FIN. TIMES (Oct. 15, 2015), https://www.ft.com/content/d6daedee-706a-11e5-9b9e-690fdae72044; *see also The Surprising Ways That Social Media Can Be Used for Credit Scoring*, KNOWLEDGE@WHARTON: FIN. (Nov. 5, 2014), http://knowledge.wharton.upenn.edu/article/using-social-media-for-credit-scoring.

218. CATHY O'NEIL, WEAPONS OF MATH DESTRUCTION 158 (2016).

algorithms developed or licensed by the fintech lender.[219] "Machine learning" as a concept can be thought of as a subset of "artificial intelligence" or "AI," which is the broader field that embodies the idea that complex machines can exhibit human intelligence characteristics.[220] Machine learning, as a subfield of AI, focuses on programming algorithms to analyze data, internalize that data, and then perform a task that is commonly associated with intelligence, such as "recognition, diagnosis, planning, robot control, prediction," and so forth.[221] Through this process, the computer program "learns whenever it changes its structure, program, or data (based on its inputs or in response to external information) in such a manner that its expected future performance improves."[222]

The upside of machine learning algorithms is that they can find hidden relationships among loads of data that are too large for individuals to process.[223] The design of a machine learning program involves training[224] the algorithm to achieve a certain result—this is called the target variable.[225] For instance, the target variable for an underwriting algorithm would be the likelihood of full repayment of a loan. The so-called "training data" fed to the algorithm might be the profiles of borrowers who have been shown to fully and timely repay their debts in the past. The algorithm would then analyze the training data and find attributes of those borrowers that appear to correlate with (but not necessarily cause) repayment.[226] The algorithm is not concerned with why certain borrower attributes are or are

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219.   *See* Anthony J. Casey & Anthony Niblett, *Self-Driving Laws*, 66 U. TORONTO L.J. 429, 431−32 (2016) ("Innovations in big data and artificial intelligence will make it increasingly easy to predict outcomes. The costs of collecting, storing, processing, and analyzing data will fall. New machine-learning techniques are outperforming traditional regression approaches to prediction. Algorithms based on these approaches, using big data, will form the backbone of . . . laws." (footnote omitted)).

220.   *See generally* IAN GOODFELLOW ET AL., DEEP LEARNING: ADAPTIVE COMPUTATION AND MACHINE LEARNING SERIES (2016) (explaining the mechanics of the concept); STUART RUSSELL, ARTIFICIAL INTELLIGENCE (3d ed. 2009) (same).

221.   Nils J. Nilsson, Introduction to Machine Learning 1 (Nov. 3, 1998) (unpublished manuscript) (available at http://robotics.stanford.edu/people/nilsson/MLBOOK.pdf).

222.   *Id.*; *see also* Ryan Calo, *Artificial Intelligence Policy: A Primer and Roadmap*, 51 U.C. DAVIS L. REV. 399, 405–10 (2017).

223.   *See* Anya Prince & Daniel Schwarcz, *Proxy Discrimination in the Age of Artificial Intelligence and Big Data*, 105 IOWA L. REV. (forthcoming 2020).

224.   *See* W. Nicholson Price II, *Regulating Black-Box Medicine*, 116 MICH. L. REV. 421, 429−31 (2017) (discussing training data in the context of medical algorithms).

225.   Andrew D. Selbst & Solon Barocas, *The Intuitive Appeal of Explainable Machines*, 87 FORDHAM L. REV. 1085, 1131 (2018) (explaining the target variable concept).

226.   David Lehr & Paul Ohm, *Playing with the Data: What Legal Scholars Should Learn About Machine Learning*, 51 U.C. DAVIS L. REV. 653, 655 (2017); *see also* Prince & Schwarcz, *supra* note 223.

not predictive—it just cares that they are.[227]

In the context of loan underwriting, a fintech lender's machine learning algorithm would generally operate as follows. (1) The lender collects data about a borrower.[228] These could come from the borrower, as well as publicly available sources, web crawling, government records, credit reporting agencies, national databases, and data brokers/aggregators.[229]   (2) The data is organized, normalized, and formatted for processing. (3) The algorithm then processes the data, which begins the "learning" as the program analyzes the new data alongside existing data already in the system from a prior input. In doing so, the program "learns" and perfects how it processes borrower information. Finally, the program assigns a score or grade to the loan application that reflects, at least in theory, the creditworthiness of the individual.[230]

The nontraditional data used by fintech lenders in the student loan space, however, is quite distinctive. Aside from broader nontraditional factors, fintech lenders also use educational data. For example, the fintech lender Earnest notes that it "go[es] beyond credit scores to evaluate applicants more comprehensively," declaring that it "take[s] on only the most financially responsible applicants."[231] To arrive at such an evaluation, the firm considers the borrower's "savings patterns" and "career trajectory . . . ."[232] Climb Credit likewise states on its website that it "think[s] you're more than just your credit score," and that "*[b]y taking more into consideration*, [it] offer[s] better rates."[233]

Other alternative data points that are publicly acknowledged include a

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227.   Selbst & Barocas, *supra* note 225, at 1097–98; *see also* Prince & Schwarcz, *supra* note 223.

228.   *See* Odinet, *supra* note 17, at 821–22.

229.   Mikella Hurley & Julius Adebayo, *Credit Scoring in the Era of Big Data*, 18 YALE J.L. & TECH. 148, 164-65 (2016).

230.   The data used to make predictive decisions about an individual's future actions and habits is sometimes quite counterintuitive. For instance, BuzzFeed has started using consumer quiz data (for example, asking questions like the following: Which Disney Princess are you?; To which Harry Potter House do you belong?) to make predictions about consumer spending habits for purposes of targeted advertising. While BuzzFeed says it does not sell this data to third parties (like lenders), there is little reason to believe that this may not change in the future. *See* Kara Bloomgarden-Smoke, *BuzzFeed Isn't Selling Your Data from All Those Quizzes*, OBSERVER (Mar. 21, 2014, 2:15 PM), https://observer.com/2014/03/buzzfeed-could-monetize-your-data-from-all-those-quizzes. BuzzFeed's privacy policy already states: "We may share your personal data with third parties who use it for their own purposes if you have provided consent." *Privacy Policy 9.3*, BUZZFEED, https://www.buzzfeed.com/about/privacy (last visited Sept. 10, 2019).

231.   *How We're Different*, EARNEST, https://www.earnest.com/how-it-works (last visited Oct. 28, 2019).

232.   *Id.*

233.   *Education is an investment. We help you invest wisely.*, *supra* note 189 (emphasis added).

"recent graduates' educational transcripts, standardized test scores, college majors and even the prestige of their degree."[234] Earnest cofounder Paul Gu noted in a 2015 interview that because "[t]here are certain types of resumes that help you get a great job," giving preferential treatment to those borrowers means it is less likely they will default on theirs loans due to long periods of unemployment.[235] On its website, this online student lender notes that "[a] single credit score can only tell one part of your financial story" and that "[i]t takes every part of [a borrower's] profile to gain an understanding of who [they] are."[236]

SoFi's underwriting program relies in part on the relative ranking of the educational program that the student undertakes. For example, it mines data from student loans and refinancings on its platform to determine "which MBA programs offer the best return on investment."[237] Doing so allows it to determine "which MBA programs are most likely to lead to a high salary—or a future with a great salary-to-debt ratio."[238] On its website, SoFi states that it looks to "education history and career path" to determine creditworthiness.[239] Similarly, College Ave Student Loans states that its loans are "designed for students enrolled in career focused programs at select colleges and universities, including a limited number of community colleges."[240]

The former[241] fintech student lender PAVE brandished its innovative credit scoring process by stating that, aside from a person's credit score, the company "incorporate[d] additional factors like use of funds, work history, current employment, education and future earning potential."[242] And

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234. Kelly Dilworth, *Alternative Lenders Offer Cheaper Loans for More of Your Data*, CREDITCARDS.COM (Apr. 20, 2015), https://www.creditcards.com/credit-card-news/alternative-lenders-startups-loans-data-1273.php.

235. *Id.*

236. *Principles of Underwriting*, EARNEST, https://www.earnest.com/principles-of-underwriting (last visited Oct.. 28, 2019).

237. Bea Bischoff, *SoFi's Annual "No BS" 2018 MBA Rankings*, SOFI (Feb. 5, 2018), https://www.sofi.com/blog/sofis-annual-no-bs-2018-mba-rankings.

238. *Id.*

239. *How It Works: Credit Scores and Our Lending Decisions*, SOFI (Feb. 20, 2018), https://www.sofi.com/blog/credit-scores-lending-decisions [hereinafter *SoFi: How It Works*].

240. *Frequently Asked Questions*, C. AVE STUDENT LOANS, https://www.collegeavestudentloans.com/faqs (last visited Aug. 19 2019). Notably, College Ave appears to be less reliant on alternative data than the other fintech student lenders. It still relies heavily on credit scores and co-signers. *See id.*

241. The company mysteriously announced in summer 2017 that it would stop making loans. Kevin Wack, *Online Lender Pave Closes to New Customers, Explores Strategic Options*, AM. BANKER (June 29, 2017, 6:35 AM), https://www.americanbanker.com/news/online-lender-pave-closes-to-new-customers-explores-strategic-options.

242. DJ Wetzel, *5 Student Loan Alternatives Revolutionizing Student Debt*, C. INVESTOR, https://thecollegeinvestor.com/17824/5-student-loan-alternatives-revolutionizing-student-debt (last

Upstart asserts that it is "the first lending platform to leverage artificial intelligence . . . and machine learning . . . to price credit and automate the borrowing process . . . ."[243] Moreover, the company states that it uses "non-conventional variables at scale in an underwriting model that improves constantly" largely by using "variables that no other lender considers."[244]

Unfortunately, there is little publicly available information aside from those described above relative to what kind of educational data points are being used by private student lenders. This is due to the fact that what goes into these machine learning algorithms is proprietary and thus not revealed to the public.[245] What we do know is that education-related data broadly is forming a core part of how financial technology lenders (and increasingly even incumbent lenders) operate in the student loan space.[246]

To further explore the policy and legal ramifications of using education-based data to underwrite student loans, I look to social science research that has studied certain social indicators that correlate, to varying degrees, with college completion or employment success. Table 3 below lists a number of these nontraditional data points identified in a co-authored report by children and family researchers Daniel Princotta, Laura Lippman, Renee Ryberg, Hannah Schmitz, David Murphey, and Mae Cooper.[247]

updated May 23, 2019).

243.   These statements come from a job advertisements on Upstart's website for data scientist and machine learning specialist positions. To visit Upstart's career page, see *Careers*, UPSTART, https://www.upstart.com/careers/department/data_science (last visited Sept. 10, 2019).

244.   *Id.*

245.   Odinet, *supra* note 17, at 792; *see also* Matthew Adam Bruckner, *The Promise and Perils of Algorithmic Lenders' Use of Big Data*, 93 CHI.-KENT L. REV. 3, 13 (2018).

246.   *See* AEI REPORT, *supra* note 1, at 2; *see also* TREASURY REPORT, *supra* note 145, at 13; Eric Blattberg, *When Harvard Helps: Upstart Digs Through Your Ed Background Before Giving You a Loan*, VENTURE BEAT (Apr. 24, 2014, 9:24 AM), https://venturebeat.com/2014/04/24/when-harvard-helps-upstart-digs-through-your-ed-background-before-giving-you-a-loan.

247.   *See* DANIEL PRINCIOTTA ET AL., SOCIAL INDICATORS PREDICTING POSTSECONDARY SUCCESS 56–58 (2014), https://www.childtrends.org/wp-content/uploads/2014/05/2014-21SocialIndicat orsLumina.pdf [hereinafter CHILD TRENDS]; *see also* AEI REPORT, *supra* note 1, at 11 (providing an initial review of these factors in the context of discriminatory lending broadly).

TABLE 3. Variable Predictors of Postsecondary Completion

Parental Educational Attainment	Student's High School GPA
Student's ACT or SAT Score	Whether student took remedial classes
Whether student worked during HS	Change in Family Situation
Whether student married in HS	Extracurricular Involvement
Teacher Evaluations of Student	Number of Colleges Applied To
Involvement in Social Clubs	Whether Student Transferred Schools
Student Ever Took Time Off	Number of Schools Visited with Parent

The research indicates that the factors above, in addition to others, map on to whether a student is more or less likely to complete a postsecondary education. For example, involvement in social clubs like fraternities or sororities or receiving formal tutoring increases the odds of postsecondary completion.[248] By comparison, activities that lowered the odds of completion included going to school part-time, taking time off from school, needing to raise a child while in school, and being enrolled in a remedial course in either math or English.[249] Additionally, having parents with a college degree, having married parents, and having greater household income were all associated with higher college completion rates.[250]

Exactly what kinds of education-based data points are being used in student lending is unknown aside from a few. But since "career trajectory,"[251] "transcripts," "degree prestige," and the contents of one's "resume" are publicly acknowledged factors, we can hypothesize that at least some of the data points reviewed by Princiotta and colleagues and similar research studies are representative of those used in such underwriting or that may be used in the future. This is particularly so as financial technology credit markets (particularly in the student loan space) focus on so-called "results-based lending . . . ."[252]

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248. CHILD TRENDS, *supra* note 247, at 22.

249. *Id.* at 22–23.

250. *Id.* at 23.

251. *How We're Different*, *supra* note 231.

252. Peter Renton, *Fintech Predictions for 2019*, LEND ACADEMY: LENDIT FINTECH NEWS (Jan. 3, 2019), https://www.lendacademy.com/fintech-predictions-for-2019.

D. THROUGH THE PROMISE OF FINANCIAL INCLUSION

Lastly, when it comes to fintech (not just student lending, but rather all kinds of fintech credit services and products), one of the things that has captured the attention of commentators and policymakers alike is the industry's promise to expand access to credit.[253] Specifically, many have become enamored by what big data will do to revolutionize the way we access credit.[254] One commentator, upon leaving a fintech conference in the spring of 2018, spoke glowingly about a number of fintech credit firms: "These companies are providing services to underserved clients and have strong business goals and management teams."[255] For the betterment of all, so the argument goes, these fintech companies "seek to include those who have been left out of the financial space in innovative, profitable ways."[256] An Obama Administration Comptroller of the Currency proclaimed in late 2016 that "[t]echnology-based products and services are the future of banking and the economy."[257]

It's really no surprise that the prospect of fintech's ability to bring financial services to the underserved has captured the attention of so many. The issue of financial inclusion has long plagued the American economy. As of its 2015 study, the FDIC reports that about 7% of the U.S. population is unbanked—meaning they lack access to a bank account.[258] Additionally,

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253. Penny Crosman, *Is It OK for Lending Algorithms to Favor Ivy League Schools?*, AM. BANKER (Mar. 9, 2017, 3:33 PM), https://www.americanbanker.com/news/is-it-ok-for-lending-algorithms-to-favor-ivy-league-schools.

254. *See, e.g.*, Randy Bean, *How FinTech Initiatives Are Driving Financial Services Innovation*, FORBES (July 10, 2018, 6:01 PM), https://www.forbes.com/sites/ciocentral/2018/07/10/how-fintech-initiatives-are-driving-financial-services-innovation.

255. Sarah Hsu, *These Fintech Firms Are Succeeding by Making Finance More Accessible to Everyone*, FORBES (Apr. 30, 2018, 4:36 AM), https://www.forbes.com/sites/sarahsu/2018/04/30/these-fintech-firms-are-succeeding-by-making-finance-more-accessible-to-everyone.

256. *Id.*

257. Patrick Rucker & Anna Irrera, *U.S. Regulator Clears Way for Online Lenders to Have National Charter*, REUTERS (Dec. 2, 2016, 7:20 AM), https://www.reuters.com/article/us-usa-banks-fintech-idUSKBN13R1TQ?. It should be noted that much of this promise remains understudied, and new data are only now becoming available. *See, e.g.*, Julapa Jagtiani & Catharine Lemieux, *Fintech Lending: Financial Inclusion, Risk Pricing, and Alternative Information* 26–28 (Fed. Res. Bank of Phila., Working Paper No. 17-17, 2017), https://www.philadelphiafed.org/-/media/research-and-data/publications/working-papers/2017/wp17-17.pdf (finding that in a dataset of Lending Club loans, borrowers with otherwise subprime lending profiles were given better and less expensive loans). However, the authors caution against the ability to extrapolate these results to all fintech lenders and note that only a handful of firms have made their loan-level data available. *See id.* at 4–5. Conversely, another study of loan level data by the fintech lender Prosper revealed that the firm caters to consumers who already have access to loans through traditional financing channels. *See* Seth M. Freedman & Ginger Zhe Jin, *Learning by Doing with Asymmetric Information: Evidence from Propser.com* 3 (Nat'l Bureau of Econ. Research, Working Paper No. 16855, 2011), http://www.nber.org/papers/w16855.

258. FED. DEPOSIT INS. CORP., 2015 FDIC NATIONAL SURVEY OF UNBANKED AND

20% of the population is underbanked, meaning they have a bank account but must supplement that access with a variety of other financial services that exist outside the traditional banking system—such as by going to check-cashing companies and payday lenders.[259]

But aside from merely having access to a checking account, the unbanked and underbanked struggle to access affordable credit. Even in recent years when the availability of consumer credit has somewhat improved, the market remains in constant flux.[260] The Urban Institute reported that by the second quarter of 2016, the mortgage "market was taking less than half the credit risk it was taking in 2001, a period of reasonable lending standards."[261] Indeed, as of March 2018, the Mortgage Bankers Association reported the second straight month of mortgage credit tightening.[262] And with interest rates climbing, financial industry watchers note that the standards for credit card applications have tightened[263] and that traditional lenders are likely to continue to focus on credit scores like FICO and Vantages for underwriting purposes[264] (a practice that hurts the creditworthiness profile of lower income and younger Americans[265]).

Yet, even with the lending window variously opening and closing, access to credit has always been particularly problematic for communities

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UNDERBANKED HOUSEHOLDS 1–2 (2015), https://www.economicinclusion.gov/surveys/2015household/documents/2015_FDIC_Unbanked_Underbanked_HH_Survey_ExecSumm.pdf.

259.   *Id.*

260.   *See The January 2018 Senior Loan Officer Opinion Survey on Bank Lending Practices*, BOARD GOVERNORS FED. RES. SYS., https://www.federalreserve.gov/data/sloos/sloos-201802.htm (last updated Feb. 5, 2018).

261.   Laurie Goodman, *Quantifying the Tightness of Mortgage Credit and Assessing Policy Actions* 5 (Urban Inst. Working Paper, 2017), https://www.urban.org/sites/default/files/publication/88826/quantifying_tightness_of_credit.pdf.

262.   Jann Swanson, *Lenders Tightening Credit Access; Index Down for Second Month*, MORTG. NEWS DAILY (Apr. 5, 2018, 10:41 AM), http://www.mortgagenewsdaily.com/04052018_mba_mcai.asp.

263.   *2019 US Economy and Consumer Credit Outlook*, FINEX ASIA (Dec. 19, 2018), https://finexasia.com/en/blog/2019-us-economy-and-consumer-credit-outlook.

264.   BRIAN RILEY, MERCATOR ADVISORY GRP., 2019 OUTLOOK: U.S. CREDIT CARDS 5 (2018), https://www.mercatoradvisorygroup.com/uploadedFiles/2019%20Credit%20Outlook-FINAL.pdf.

265.   Laurie Goodman et al., *Tight Credit Has Hurt Minority Borrowers the Most*, URB. INST.: URB. WIRE (Apr. 8, 2015), https://www.urban.org/urban-wire/tight-credit-has-hurt-minority-borrowers-most; *see also* Sarah Ludwig, *Credit Scores in America Perpetuate Racial Injustice. Here's How*, THE GUARDIAN (Oct. 13, 2015), https://www.theguardian.com/commentisfree/2015/oct/13/your-credit-score-is-racist-heres-why; *10 Ways Young People Can Build a Strong Credit Record*, FORBES (Jan. 23, 2018), https://www.forbes.com/sites/forbesfinancecouncil/2018/01/23/10-ways-young-people-can-build-a-strong-credit-record ("Building a strong credit history is the cornerstone of financial freedom and spending power. For young people, it can be difficult to establish a strong credit score out of the gate and show a solid credit history that lenders take seriously.").

of color and low-to-moderate incomes.[266] So-called fringe economy financial companies are the principal source of credit for these groups. Payday lenders are probably the most stereotypical of these firms. They provide small dollar loans, typically in the range of $100 to $500 (and even up to $1000), with a repayment term between two weeks to one month.[267] Funds are normally used for a variety of needs, such as medical expenses, car repairs, food, and rent.[268] The CFPB reports that roughly twelve million Americans use payday loans in an average amount of $375.[269] Further, the average annual income of individuals using payday loans is around $30,000.[270]

Payday loans are routinely decried by consumer advocates. The payday loan business model depends upon a consumer's *inability* to afford his or her loan and the subsequent need to borrow (and pay additional fees) over and over again.[271] These loan fees tend to be quite high, yielding an average annual percentage rate of 400% or higher.[272] The confluence of these events creates a debt trap, whereby a borrower who intends to take out only one payday loan ends up trapped in an endless cycle of debt.[273] A payday loan borrower on average takes out eight loans of about $375 annually and spends about $520 on interest.[274] This means that by some estimates an average payday borrower is indebted for 199 days annually—roughly 55% of the year.[275]

266.   *See* Willy E. Rice, *Race, Gender, "Redlining," and the Discriminatory Access to Loans, Credit, and Insurance: An Historical and Empirical Analysis of Consumers Who Sued Lenders and Insurers in Federal and State Courts, 1950-1995*, 33 SAN DIEGO L. REV. 583, 590–91 (1996) ("Quite simply, grassroots activists adopt the view that women, low-to-moderate income consumers, singles, and racial 'minorities face double jeopardy with banks and insurance companies . . . . If these consumers cannot insure their property, their loan application will be rejected.'" (alteration in original) (citations omitted)).

267.   *See* Michael H. Anderson, *An Economic Perspective on Subprime Lending*, 89 CHI.-KENT L. REV. 53, 57–59 (2014).

268.   MEHRSA BARADARAN, HOW THE OTHER HALF BANKS 116 (2015).

269.   PEW CHARITABLE TR., PAYDAY LOAN FACTS AND THE CFPB'S IMPACT 1 (2016), https://www.pewtrusts.org/-/media/assets/2016/06/payday_loan_facts_and_the_cfpbs_impact.pdf.

270.   *Id.* at 2

271.   SUSANNA MONTEZEMOLO, CTR. FOR RESPONSIBLE LENDING, PAYDAY LENDING ABUSES AND PREDATORY PRACTICES 2 (2013), http://www.responsiblelending.org/state-of-lending/reports/10-Payday-Loans.pdf.

272.   Leonhardt, *supra* note 14.

273.   Sumit Agarwal et al., *How Did the Great Recession Affect Payday Loans?*, ECON. PERSPS., no. 2, 2016, at 1, 3.

274.   PEW CHARITABLE TR., PAYDAY LENDING IN AMERICA: WHO BORROWS, WHERE THEY BORROW, AND WHY? 4 (2012), https://www.pewtrusts.org/-/media/legacy/uploadedfiles/pcs_assets/2012/pewpaydaylendingreportpdf.pdf.

275.   BARADARAN, *supra* note 268, at 111.

The profile of payday loan borrowers is also significant. The average borrower is a divorced or separated white woman between twenty-five and forty-five years old who lacks a college degree.[276] In a 2012 FDIC report, the average borrower (roughly 75%) had a high school diploma or some college education, and some had incomes that would be considered middle class.[277] This drives home the point that it is not just the poor that lack access to credit but also groups that many consider moderate-income.

At other times, the lack of affordable credit access is related to discrimination. In a 2016 study by the National Fair Housing Alliance, researchers analyzed auto loan data and discovered pervasive discrimination in lending practices.[278] In their pair-testing study using white and nonwhite auto buyers, or borrowers, the research showed that nonwhite testers were given a more expensive auto loan 62.5% of the time compared to white testers who were less qualified. The additional cost would have resulted in the non-white tester paying roughly $2662 more over the term of the loan than the less-qualified white tester. Additionally, 75% of the time white testers were accorded more loan options than nonwhite testers. White testers were also offered more soft benefits, such as the dealer making phone calls to personal contacts and trying to work out special deals. Other studies have found similar discrimination in the provision of mortgage loans, with one 2018 study showing that even five decades after federal law banned race-based discrimination in lending, black and Latino families continue to be routinely denied mortgage loans at rates much higher than similarly situated whites.[279]

Thus, actual discrimination or structural discrimination keeps many Americans—particularly people of color—from obtaining credit or obtaining it on terms that are affordable.[280] When you need money and have no other choices, even an expensive loan from a predatory lender starts to look like a good option. Despite the dangers of accessing credit through the fringe economy, many Americans continue to do so. They seek

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276. *Id.* at 115.

277. *Id.* (citing the 2012 unbanked and underbanked FDIC national survey).

278. LISA RICE & ERICH SCHWARTZ, JR., NAT'L FAIR HOUSING ALLIANCE, DISCRIMINATION WHEN BUYING A CAR 5 (2018), http://nationalfairhousing.org/wp-content/uploads/2018/01/Discrimination-When-Buying-a-Car-FINAL-1-11-2018.pdf.

279. *See, e.g.*, STEPHEN L. ROSS & JOHN YINGER, THE COLOR OF CREDIT 95–106 (2002) (collecting empirical studies showing mortgage discrimination); Aaron Glantz & Emmanuel Martinez, *Kept Out: For People of Color, Banks Are Shutting the Door to Homeownership*, REVEAL (Feb. 15, 2018), https://www.revealnews.org/article/for-people-of-color-banks-are-shutting-the-door-to-homeownership.

280. *See* Citron & Pasquale, *supra* note 16, at 14–15 (discussing how credit scores disadvantage various minority communities and women).

access to money in this corner of the credit market—often after having researched at least five other possible options[281]—because banks, credit unions, and other traditional lenders have chosen not to do so.[282]

In the face of these issues of financial inclusion, the fintech industry and its advocates argue that a revolution is afoot, often repeating the popular mantra that fintech is "disrupting" everything from banking to our very idea of money.[283] Pro-fintech think tanks assert that "[i]nnovations in non-bank lending . . . have the potential to make lending more inclusive, providing credit to borrowers who might otherwise be excluded."[284] The technological advances hold the promise of a "financial system [that is] more efficient, and inclusive, and safe."[285] The World Bank has described the kind of mobile and digital innovations that characterize fintech as being a "game-changer in global financial inclusion efforts."[286] News outlets declare that "[f]intech is changing the way people carry out everyday transactions, and this is set to become one of the most significant changes to the industry over the next few years."[287] They state that "it has never been easier to obtain funds for a range of things."[288] Leading academics declare that "waves of innovative fintech technologies are going to fundamentally transform the financial services industry over the next decade."[289]

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281. BARADARAN, *supra* note 268, at 116; *see also* Neil Bhutta et al., *Payday Loan Choices and Consequences*, 47 J. MONEY, CREDIT & BANKING 223, 224–25 (2015).

282. BARADARAN, *supra* note 268, at 117–18.

283. DELOITTE, FINTECH: DISRUPTING THE WAY WE BANK 2–5 (2015), https://www2. deloitte.com/content/dam/Deloitte/au/Documents/financial-services/deloitte-au-fs-fintech-disrupting-the-way-we-bank-201015.pdf; Miklos Dietz et al., *Bracing for Seven Critical Changes as Fintech Matures*, MCKINSEY & CO. (Nov. 2016), https://www.mckinsey.com/industries/financial-services/our-insights/bracing-for-seven-critical-changes-as-fintech-matures; *Adena Friedman: The Future of FinTech*, GOLDMAN SACHS: TALKS AT GS (Jan. 19, 2017), https://www.goldmansachs.com/insights/talks-at-gs/adena-friedman.html; Nigel Green, *The Fintech Revolution: A Positive Force*, FORBES (Oct. 9, 2017, 9:00 AM), https://www.forbes.com/sites/forbesfinancecouncil/2017/10/09/the-fintech-revolution-a-positive-force. For a discussion of how tech platforms impact areas outside financial services, such as trademark law, see generally Sonia K. Katyal & Leah Chan Grinvald, *Platform Law and the Brand Enterprise*, 32 BERKELEY TECH. L.J. 1135, 1135 (2017).

284. BRIAN KNIGHT, REGULATORY TRANSPARENCY PROJECT, CREATING PRO-INNOVATION FINTECH REGULATION 4 (2018), https://regproject.org/wp-content/uploads/RTP-Financial-Services-Corporate-Governance-Working-Group-Paper-Fintech.pdf.

285. *Id.* at 3.

286. WORLD BANK GRP., FINTECH AND FINANCIAL INCLUSION 4, http://pubdocs.worldbank.org/en/877721478111918039/breakout-DigiFinance-McConaghy-Fintech.pdf (last visited Oct. 29, 2019).

287. *How Fintech Is Changing the Financial Services Landscape*, INTELLIGENTHQ (Mar. 31, 2018), https://www.intelligenthq.com/technology/fintech-changing-financial-services-landscape.

288. *Id.*

289. Marilyn Harris, *The Fintech Revolution*, STERN BUS. MAG., Spring 2017, at 22, 25.

Public officials are also on-board. In a 2016 report, the U.S. Department of the Treasury concluded that fintech credit firms provided an "opportunity to expand access to credit," and the agency encouraged more partnerships between banks and fintech firms to help "leverage technology to expand access to credit further into underserved communities."[290] In March 2017, an Obama administration Comptroller of the Currency explained that "[t]he OCC agrees that many fintech companies have significant potential to expand access to financial services."[291] President Trump's newly appointed vice chair for supervision of the Board of Governors of the Federal Reserve, Randy Quarles, observed to a group of community development advocates and professionals that "[t]he use of fintech to expand access to credit has great promise . . . ."[292]

The private sector has also championed the promise of fintech in financial inclusion efforts. The global consulting firm Deloitte stated that fintech firms are "forcing incumbents to rethink their core business models" and that there are "no signs of the industry's growth abating."[293] The world-wide retail giant Amazon is embracing fintech innovations through its Amazon Cash product that has been argued by some as a way to "move the unbanked into a quasi bank account that could be used at places beyond Amazon."[294] Google hopes to ease the cost of making payments through Android pay and its venture capital investments in fintech startups.[295]

Even the media has become enchanted by fintech's promise of access. *Forbes* publishes articles listing "5 Ways Fintech Is Changing Wall Street,

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290.   TREASURY REPORT, *supra* note 145, at 1.

291.   OFF. OF THE COMPTROLLER OF THE CURRENCY, OCC SUMMARY OF COMMENTS AND EXPLANATORY STATEMENT: SPECIAL PURPOSE NATIONAL BANK CHARTERS FOR FINANCIAL TECHNOLOGY COMPANIES 9 (2017), https://www.occ.gov/topics/responsible-innovation/summary-explanatory-statement-fintech-charters.pdf.

292.   Randal K. Quarles, Vice Chairman for Supervision, Fed. Reserve Bd., Speech to the HOPE Global Forums Annual Meeting, Atlanta, Ga.: The Roles of Consumer Protection and Small Business Access to Credit in Financial Inclusion (Mar. 26, 2018), https://www.federalreserve.gov/newsevents/speech/quarles20180326a.htm. Vice Chair Quarles also noted that fintech's operation in the credit space involved "associated risks." *See id*.

293.   Miklos Dietz et al., *Bracing for Seven Critical Changes as Fintech Matures*, MCKINSEY & CO. (Nov. 2016), https://www.mckinsey.com/industries/financial-services/our-insights/bracing-for-seven-critical-changes-as-fintech-matures.

294.   Peter Renton, *Amazon and Their Push into Fintech*, LEND ACADEMY: LENDIT FINTECH NEWS (June 26, 2018), https://www.lendacademy.com/amazon-and-their-push-into-fintech ("Many surveys have said how much the public trusts Amazon and they could really make a difference for financial inclusion by developing this product.").

295.   *What Is Google Doing in FinTech?*, MEDICI (Feb. 10, 2016), https://gomedici.com/what-is-google-doing-in-fintech.

Main Street And Everything In Between."[296] Headlines read "The Fintech Revolution: A Positive Force"[297] and "FinTech Could Help Achieve Full Financial Inclusion."[298]

To justify these assertions of financial inclusion, fintech credit firms claim, in large part, that their automated underwriting processes that use alternative data ease not only the credit scoring process but also provide access where traditional financial institutions have not.[299] Fintech lender CEO and former PayPal executive Max Levchin asserts that by casting a wider alternative data net, fintech lenders are able to service those "underbanked" individuals that traditional lenders shut out.[300]

In the student lending space, the financial inclusion refrain has proven particularly popular. SoFi declares that it is always striving "to innovate . . . and optimize [its] algorithms" so as to gain a better "understanding [of] someone's holistic financial picture" without resorting to merely the same old traditional factors.[301] In a 2017 letter to the Office of the Comptroller of the Currency, SoFi stated that it has a strong "commitment to financial inclusion by expanding access to historically underserved market segments," chiefly by providing consumers "with the ability to consolidate and refinance high interest private and Federal student loans . . . ."[302]

Similarly, Earnest declares on its website that its "mission is to make credit more accessible by reducing the costs and barriers faced by millions

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296.   Ed O'Brien, *5 Ways Fintech Is Changing Wall Street, Main Street and Everything in Between*, FORBES (Aug. 23, 2017, 3:01 PM), https://www.forbes.com/sites/edobrien/2017/08/23/5-ways-fintech-is-changing-wall-street-main-street-and-everything-in-between/#36df1af268d8.

297.   Green, *supra* note 283.

298.   Javier Saade, *FinTech Could Help Achieve Full Financial Inclusion*, HUFFINGTON POST, https://www.huffingtonpost.com/javier-saade/fintech-could-help-achiev_b_9542532.html (last updated Mar. 25, 2017).

299.   *See* TREASURY REPORT, *supra* note 145, at 5; *see also* KNIGHT, *supra* note 284, at 4–5; MORGAN STANLEY REPORT, *supra* note 216, at 11; Odinet, *supra* note 17, at 849–50.

300.   Peter Rudegeair, *Silicon Valley: We Don't Trust FICO Scores*, WALL ST. J. (Jan. 11, 2016, 9:58 PM), https://www.wsj.com/articles/silicon-valley-gives-fico-low-score-1452556468. It should be noted that as of 2017 FICO has started offering another credit score category called the XD score. This score uses not only the traditional data that goes into creating a FICO score, but also alternative data. However, the new score has not been widely picked up by credit institutions yet. *See* Suman Bhattacharyya, *Three Ways Alternative Data Will Become More Mainstream in 2018*, TEARSHEET (Dec. 19, 2017), https://www.tearsheet.co/data/three-ways-alternative-data-will-become-mainstream-in-2018.

301.   *SoFi: How It Works*, *supra* note 239.

302.   Robert S. Lavet, Gen. Counsel, SoFi, Comment Letter on Draft Licensing Manual Supplement for Evaluating Charter Applications from Financial Technology Companies 3 (Apr. 13, 2017), https://www.occ.treas.gov/topics/responsible-innovation/comments/comment-social-finance.pdf.

of financially responsible people."[303] Upstart requires that its new marketing employees have a "[p]assion for financial inclusion"[304] and the lender's CEO and founder said in a March 2018 interview that his company seeks to improve and expand the system "of who gets access to credit and on what terms."[305] And the self-declared "student loan fintech lender,"[306] College Ave Student Loans, asserts that the company was founded "to flip the script on student loans and make getting a private student loan for college better."[307]

But putting aside the soaring rhetoric from the fintech industry, policymakers must be cautious about both the promise and the peril of what the use of alternative data—particularly education-based data—can mean for consumer credit markets. The following Part seeks to look beyond the hype and offers a more serious analysis of what the use of education-based data means in student loan underwriting.

III. A CRITIQUE OF BIGDATA'S PROMISE IN EDUCATIONAL CREDIT

My prior work and the work of others have explored the use of alternative data and machine learning in the underwriting of loans by fintech firms more broadly.[308] However, scholarly attention has not been paid to the AI and alternative data ramifications in student lending. This Part unpacks this the issue, pointing to the positives and the negatives that

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303. *About Us*, EARNEST, https://www.earnest.com/about-us (last visited Oct. 29, 2019).

304. *Community Marketing Associate*, APPLICATION CAREERS (Dec. 18, 2018), https://www. application.careers/jobs/upstart-community-marketing-associate-40593947.

305. *How Upstart Is Helping Increase Access to Credit*, BLOOMBERG (Mar. 7, 2018, 10:16 AM), https://www.bloomberg.com/news/videos/2018-03-07/how-upstart-is-helping-increase-access-to-credit-video.

306. Press Release, Coll. Ave Student Loans, College Ave Student Loans Completes Successful Second Securitization (Sept. 11, 2018), https://www.collegeavestudentloans.com/press/college-ave-stud ent-loans-completes-successful-second-securitization.

307. *About Us*, C. AVE STUDENT LOANS, https://www.collegeavestudentloans.com/about-us (last visited Sept. 11, 2019).

308. For other scholarly work on this topic, see generally O'NEIL, *supra* note 218; EVA WOLKOWITZ & SARAH PARKER, CTR. FOR FIN. SERVS. INNOVATION, BIG DATA, BIG POTENTIAL: HARNESSING DATA TECHNOLOGY FOR THE UNDERSERVED MARKET (2015), https://s3.amazonaws.com/ cfsi-innovation-files/wp-content/uploads/2017/02/13062352/Big-Data-Big-Potential-Harnessing-Data-Technology-for-the-Underserved-Market.pdf; Solon Barocas & Andrew D. Selbst, *Big Data's Disparate Impact*, 104 CALIF. L. REV. 671 (2016); Bruckner, *supra* note 245; Chris Brummer & Yesha Yadav, *Fintech and the Innovation Trilemma*, 107 GEO. L.J. 235 (2019); Hurley & Adebayo, *supra* note 229, at 155; William Magnuson, *Regulating Fintech*, 71 VAND. L. REV. 1167 (2018); Saule T. Omarova, *New Tech v. New Deal: Fintech as a Systemic Phenomenon*, 36 YALE J. ON REG. 735 (2019); Andrew Verstein, *The Misregulation of Person-to-Person Lending*, 45 U.C. DAVIS L. REV. 445 (2011); Jagtiani & Lemieux, *supra* note 257, at 1, 7–17; Prince & Schwarcz, *supra* note 223.

can come from the use of education-based data in private student loan underwriting.[309]

A. CREDIT SCORING AND SOCIAL MOBILITY

To the larger benefit, the use of alternative data has great promise for seeing the blind spots that plague traditional credit scoring. Mainstream American lending—including private student lending—relies heavily (if not almost exclusively) on a borrower's credit score (with the most prominent being the FICO score)[310] to determine whether one should receive credit and on what terms.[311]

FICO is an abbreviation for the "Fair Isaac Corporation," which is the company that created a method of using credit reports (generated by businesses like TransUnion, Equifax, and Experian) to create scores that attempt to reflect consumers' individual creditworthiness.[312] The FICO method assigns weights to certain groups of information from a consumer's credit profile.[313] For instance, factors that are given salience include payment history, overall debt, past credit history, and diversity of credit products.[314] Using this method, FICO assigns the consumer a score somewhere between 300 to 850.[315] More risky borrowers have scores below 660 and highly desirable borrowers have scores above 700.[316]

However, FICO's method, like those of other credit scores, is significantly limited. For example, communities of color are often severely disadvantaged by FICO. This is because black borrowers have been historically targeted for predatory, unaffordable mortgage loans, and thus they have more foreclosures and adverse notations on their credit reports.[317] This means that their future credit score will always be haunted

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309.   *See* Jonathan D. Glater, *The Unsupportable Cost of Variable Pricing of Student Loans*, 70 WASH. & LEE L. REV. 2137, 2142 (2013) (describing the difficulty in actually predicting whether a student will seek or obtain certain employment in the future and using that prediction as a basis for loan underwriting).

310.   Another credit score that is commonly used is the Vantage Score. Although this paper focuses the discussion on the FICO score, the Vantage Score is very similar and also ranges from 300 on the low side and 850 on the high side. *See Average Credit Score in America: 2019 Report*, VALUE PENGUIN, https://www.valuepenguin.com/average-credit-score (last visited Oct. 29, 2019).

311.   Bruckner, *supra* note 245, at 37; Hurley & Adebayo, *supra* note 229, at 155 ("[O]ver 90 percent of lenders used FICO scores to make lending decisions.").

312.   LEMKE ET AL., *supra* note 214, § 3:6.

313.   *See id.*

314.   Odinet, *supra* note 17, at 787 n.25.

315.   *See id.*

316.   *Id.*

317.   KATHLEEN C. ENGEL & PATRICIA A. MCCOY, THE SUBPRIME VIRUS: RECKLESS CREDIT, REGULATORY FAILURE, AND NEXT STEPS 3, 6 (2011).

by past defaults.[318] Latino families suffer from a similar FICO blind-spot since they are more likely to pay for things in cash rather than through credit cards or with bank cards.[319] This means that the FICO method will not account for their otherwise extensive payment histories. Latino households usually have extended family members living under one roof with the benefit of pooling resources.[320] Despite the possibility of ample availability of cash-on-hand, FICO does not have a way to capture this borrowing (and paying) capacity. Even small business entrepreneurs are disadvantaged under traditional credit underwriting since they lack a W2 tax form.[321] As one realtor in Chicago noted, "[t]he current (credit) models established in the 1980s and early '90s really don't account for those methods of payment . . . . Unfortunately that limits the access to loan products, especially for those of minority descent."[322] In essence, as the notable social scientist Virginia Eubanks observed, these individuals— because of their unique life circumstances—are left in the "digital poorhouse."[323]

Young consumers suffer from a similar but slightly different problem. Because they have no past credit histories, their FICO score is very low and makes them appear like a poor credit risk even if they are indeed very likely to repay a loan based on other factors.[324] According to data compiled by the personal financial management company Credit Karma, there is a robust relationship between credit score and age.[325] Americans between the

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318. Ludwig, *supra* note 265. A foreclosure remains on one's credit report for a period of seven years. *See* Stacy Smith, *Am I Able to Get an Old Foreclosure Taken Off My Credit Report?*, EXPERIAN (June 8, 2017), https://www.experian.com/blogs/ask-experian/am-i-able-to-get-an-old-foreclosure-taken-off-my-credit-report.

319. Kevin G. Hall, *Hispanics Face Hurdles in Access to Credit, Mortgages*, CHARLOTTE OBSERVER, http://www.charlotteobserver.com/news/local/article28765174.html (last updated July 27, 2015, 2:15 AM).

320. *Id.*

321. Robyn A. Friedman, *Self-Employed Workers Face Mortgage Hurdles*, WALL ST. J. (Feb. 7, 2018, 10:54 AM), https://www.wsj.com/articles/self-employed-workers-face-mortgage-hurdles-1518018851.

322. Hall, *supra* note 319.

323. VIRGINIA EUBANKS, AUTOMATING INEQUALITY: HOW HIGH-TECH TOOLS PROFILE, POLICE, AND PUNISH THE POOR 193–201 (1st ed. 2018).

324. Tatiana Homonoff, Rourke O'Brien & Abigail B. Sussman, *Does Knowing Your FICO Score Change Financial Behavior? Evidence from a Field Experiment with Student Loan Borrowers* 8 (N.Y. Univ. Wagner Working Paper, 2018), https://wagner.nyu.edu/files/faculty/publications/Homonoff%2C%20O%27Brien%2C%20and%20Sussman%202-23-17.pdf; Brady Porche, *Sally Taylor-Shoff: Trended Data a No-Go for FICO*, CREDITCARDS.COM (June 26, 2017), https://www.creditcards.com/credit-card-news/fico-sally-taylor-shoff-trended-data-a-no-go.php.

325. *Credit Trends*, CREDIT KARMA, https://www.creditkarma.com/trends/age (last visited Nov. 3, 2019).

ages of eighteen and twenty-four have an average credit score of 630.23.[326] The average score climbs with age, with those above fifty-five years having an average score of 696.57.[327] What makes this worse is that few young Americans even understand or are aware of their credit score.[328] A 2015 survey by the credit bureau Experian found that 29% of millennials overestimate their credit score and 67% do not understand how their score is calculated.[329]

A recent trend among young Americans that is making the credit scoring process even more problematic is their preference for access over ownership.[330] In the age of ride sharing through Uber and Lyft and short-term rentals like Airbnb and VRBO, millennials and similar cohorts are not purchasing cars and homes at the rates of their predecessors.[331] This means that they are taking out fewer auto loans and mortgage loans compared to historical norms for this age group.[332] In fact, a 2016 white paper released by Facebook reported that young Americans actually shun credit, with nearly half of millennials stating that financial success means having no debt.[333]

Moreover, many young Americans spurn checks and credit cards as a form of payment device in preference for mobile payment apps like Venmo, Apple Pay, and Google Pay.[334] The 2016 Facebook study found that 57% of millennials reported preferring to pay with cash rather than a credit card,[335] and a 2017 Accel + Qualtrics study on millennials stated that this cohort is sixteen times more likely to pay using alternative methods like Apple Pay than are baby boomers.[336] Although only 21% of the American population lacks a credit card, 35% of young adults lack this credit and payment device.[337] Yet, young adults are in need of credit and

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326. *Id.*

327. *Id.*

328. *Millennials and Credit: Survey Results*, EXPERIAN, https://www.experian.com/blogs/ask-experian/millennials-and-credit-survey-results (last visited Oct. 29, 2019).

329. *Id.*

330. Dara Duguay, *How Young Adults Can Build Credit, Without Going into Debt*, EXPERIAN (Feb. 14, 2018), https://www.experian.com/blogs/ask-experian/how-young-adults-can-build-credit-with out-going-into-debt.

331. *Id*.

332. *Id.*

333. FACEBOOK IQ, MILLENNIALS + MONEY: THE UNFILTERED JOURNEY 4 (2016), https://fb insights.files.wordpress.com/2016/01/facebookiq_millennials_money_january2016.pdf.

334. Duguay, *supra* note 330.

335. FACEBOOK IQ, *supra* note 333, at 5.

336. *Millennial Cash*, QUALTRICS, https://www.qualtrics.com/millennials/millennial-cash (last visited Oct. 29, 2019).

337. Duguay, *supra* note 330.

are finding ways to access it—albeit in high cost ways. Consider that a 2012 study by the Pew Charitable Trusts found that those between the ages of eighteen and twenty-nine comprise about 30% of all payday loan borrowers.[338] Yet, even this is problematic for a young American's credit score, as payday loan activity is not reported to the big three credit reporting agencies.[339] Thus, because none of these credit and payment products and services appear on the credit reports of young adults, they become so-called "credit invisible[s]"[340] even if they make payments timely. Credit invisibles are those "consumers whose documented credit history is so limited that they don't have credit scores or their credit scores are not based on a complete history of debt repayment."[341]

In a 2015 study conducted by the CFPB, the federal agency found that over 80% of young adults ages eighteen and nineteen are credit invisible or, in the alternative, have records that are not scored.[342] That percentage drops to about 40% when consumers reach between twenty and twenty-four years of age.[343]

Since private student lenders largely rely on credit scores, young adults seeking student loans are systemically disadvantaged. Further, being young, combined with being from a low-income household (and even a moderate to middle income household), also has a statistically negative impact on one's credit score.[344] The 2015 CFPB study found that 30% of individuals living in low-income neighborhoods (defined by census tract) were credit invisible while 15% had unscored records.[345] Even those living in moderate income areas had a combined invisible or unscored percentage of nearly 30% with middle income households coming in around 20%.[346]

The conclusion, then, is that credit scores have significant flaws, particularly when it comes to young adults and especially when household income levels come into play. This is where the use of alternative data and machine learning might significantly improve the credit outcomes for many

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338. *See* PEW CHARITABLE TR., *supra* note 274, at 35.

339. Kim Porter, *Understanding Payday Loans and Your Options*, CREDIT KARMA, https://www.creditkarma.com/advice/i/payday-loans (last updated Aug. 12, 2019).

340. Duguay, *supra* note 330.

341. NAT'L CREDIT UNION ADMIN., SERVING THE CREDIT-INVISIBLE 1 (2016), https://www.ncua.gov/files/publications/serving-credit-invisibles.pdf.

342. OFFICE OF RESEARCH, CONSUMER FIN. PROT. BUREAU, DATA POINT: CREDIT INVISIBLES 12 (2015), https://files.consumerfinance.gov/f/201505_cfpb_data-point-credit-invisibles.pdf [hereinafter CFPB, CREDIT INVISIBLES].

343. *Id.*

344. *Id.* at 15.

345. *Id.* at 6.

346. *Id.* at 15.

young Americans—perhaps to such an extent that a FICO or Vantage score will no longer be needed. Indeed, SoFi CEO Mike Cagney stated that his company's underwriting method is so forward-looking that it no longer uses the FICO score at all.[347] Some technology industry watch groups have declared that "online lenders are using alternative data and mobile to reshape credit."[348]

To understand the potential that the use of alternative data can provide in credit scoring, consider the many ways that consumers show responsible financial behavior that does not get reported to credit bureaus. A 2017 white paper by the credit and fraud risk management company, ID Analytics, stated that although only 33% of young adults ages eighteen to twenty-nine had a credit card in 2016, roughly 98% had a mobile phone.[349] Although a history of making timely payments on a cell phone bill can serve as evidence of financial responsibility, this type of data is not part of the traditional credit-scoring model.[350] Other types of alternative data that could be used to show financial responsibility but that is not currently contemplated by extant credit scoring include cable and utility account payments, payday and other forms of fringe lending, and deposit account activity.[351] When using this type of data, the ID Analytics study was able to score 75% of a dataset of so-called "no-hit and thin-file" consumers.[352] The study group came from a sampling of credit card applications provided by a top-ten U.S. credit card issuer. The study showed that of roughly 5.6 million credit card applications that the issuer received annually, 224,000 applications that were otherwise unscoreable using traditional methods would have been approved using alternative data to underwrite the application.[353] The results underscore the significant blind-spot of traditional credit scoring methods and how the *responsible* use of alternative data can improve credit outcomes significantly.[354]

But it's not merely the use of alternative data that can improve credit outcomes for young adults seeking to finance their education. Machine

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347.   *See id.*

348.   *Online Lenders Are Using Alternative Data and Mobile to Reshape Credit*, CBINSIGHTS (July 12, 2016), https://www.cbinsights.com/research/online-lending-consumer-credit-trends.

349.   ID ANALYTICS, ALTERNATIVE CREDIT SCORES: THE KEY TO FINANCIAL INCLUSION FOR CONSUMERS 6 (2017), http://www.idanalytics.com/media/WP_Consumer-Inclusion-Study_FINAL_WEB_0060617.pdf.

350.   *Id.*

351.   *Id.* at 4.

352.   *Id.* at 6.

353.   *Id.* at 6–7.

354.   *See id.*

learning systems that process this data can play a significant part in widening the affordable credit box. As described more fully in Section II.C., machine learning more broadly is a technique built to provide a maximum degree of predictive effect for a given problem.[355] In this case, the problem is judging how likely—based on a set of data—an individual is to repay a loan. But, unlike with humans, machine learning has the capacity to deal with large amounts of data that are so unconventional and so multidimensional that calculations based on it can be tremendously difficult or impossible for humans.[356] Such data can be of a nature that human language and image comprehension cannot conceive of or manipulate it as workable information.[357] For instance, researchers Dave Donaldson and Adam Storeygard showed how machine learning can be used to analyze luminosity levels from night-time satellite imagery to predict crop yields.[358] The conversion of these images to predictive data is the value-add of machine learning—something a human would not be able to do alone.[359]

Machine learning also assists in situations where the scale of the data is significant.[360] Researchers Joshua Blumenstock, Gabriel Cadamuro, and Robert On used a machine learning algorithm to process cell phone data to measure individual poverty in Rwanda.[361] These artificially intelligent processes can also generate information that would be seemingly irrelevant or innocuous to human comprehension and use it to make correlative predictions to answer concrete research questions.[362] For instance, one study used machine learning to analyze online restaurant reviews on Yelp to predict the results of health inspections.[363] Machine learning can even be used to analyze large amounts of intuitive data that would otherwise be too time-consuming for humans to undertake.[364]

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[355].   Jon Kleinberg et al., *Prediction Policy Problems*, 105 AM. ECON. REV. 491, 491–93 (2015).

[356].   Sendhil Mullainathan & Jann Spiess, *Machine Learning: An Applied Econometric Approach*, 31 J. ECON. PERSPS. 87, 99 (2017).

[357].   *Id.*

[358].   Dave Donaldson & Adam Storeygard, *The View from Above: Applications of Satellite Data in Economics*, 30 J. ECON. PERSPS. 171, 171 (2016). *See generally* David B. Lobell, *The Use of Satellite Data for Crop Yield Gap Analysis*, 143 FIELD CROPS RES. 56 (2013).

[359].   Mullainathan & Spiess, *supra* note 356, at 99.

[360].   *Id*.

[361].   Joshua Blumenstocket al., *Predicting Poverty and Wealth from Mobile Phone Metadata*, 350 SCI. MAG, Nov. 27, 2015, at 1073, 1073.

[362].   Mullainathan & Spiess, *supra* note 356, at 100.

[363].   Jun Seok Kang et al., *Where* Not *to Eat? Improving Public Policy by Predicting Hygiene Inspections Using Online Reviews*, 2013 CONF. ON EMPIRICAL METHODS IN NAT. LANGUAGE PROCESSING 1443, 1444.

[364].   *See, e.g.*, James J. Feigenbaum, A Machine Learning Approach to Census Record Linking 2–3 (Mar. 28, 2016) (unpublished manuscript) (available at https://scholar.harvard.edu/files/jfeigenbaum

Thus, if private student loan underwriting can be improved so as to more accurately assesses a student's ability to repay beyond the mere traditional credit scoring model by using alternative data and machine learning, then private student loans can become more affordable and available to those seeking to finance their education over and above what federal support will allow.

This affordable access outcome is important because a college education has significant impacts on social mobility. In general, postsecondary education—from an associate's degree all the way up to a professional degree—continues to be a good investment that leads to superior financial outcomes.[365] Even when accounting for student debt loads, college graduates enjoy higher incomes and have a greater chance of saving for retirement than those who lack a postsecondary education.[366] Some studies even show that college graduates are significantly better able to weather larger economic downturns.[367] Even homeownership has a connection to postsecondary education. Young adults with a college education (even with student debt) owned their homes at a slightly higher rate in 2017 than did the baby boomers in 1989.[368] In contrast, young adults with only a high school diploma or less saw their homeownership rate decline by between 1989 and 2013 by 22%.[369]

But again, this upward mobility depends on actually obtaining a postsecondary education, which entails being able to pay for it. Even without a federal policy change that would augment the role of private lenders in the student debt space, private student lenders already play an important role in how American's pay for their education. For the class of 2017, U.S. public and nonprofit colleges and universities reported that 15% of the loan dollars held by them were from private student lenders.[370]

/files/feigenbaum-censuslink.pdf); James J. Feigenbaum, Intergenerational Mobility During the Great Depression 2–3 (Dec. 1, 2015) (unpublished manuscript) (available at http://scholar.harvard.edu/jfeigenbaum/publications/jmp) (analyzing census data to show links between fathers and sons in order to measure social mobility during the period of the Great Depression); *see also* Mullainathan & Spiess, *supra* note 356, at 100.

    365.   Young Invincibles, Financial Health of Young America 5 (2017), https://younginvincibles.org/wp-content/uploads/2017/04/FHYA-Final2017-1-1.pdf.

    366.   *Id.* at 5–7, 10–11; *see also* Glater, *supra* note 12, (manuscript at 4) (describing how law students who go on to work at elite law firms pose a rationally lower credit risk, although such an observation belies other implications).

    367.   Young Invincibles, *supra* note 365, at 5.

    368.   *Id.*

    369.   *Id.*

    370.   Inst. for Coll. Access & Success, Student Debt and the Class of 2017, at 12 (2018), https://ticas.org/sites/default/files/pub_files/classof2017.pdf.

Roughly 16% of students that graduated in 2016 with a bachelor's degree had private student loans at an average of $18,550.[371] As noted in Part I of this Article, federal student loans have limits and therefore do not cover the full cost of attendance. For instance, many students find that their federal loans are exhausted in a given academic year such that there is no money left to pay for a summer session course.[372] Summer courses add value and can help a student complete a degree program more quickly, but like courses in the regular semesters, entail the payment of tuition and fees. Private student loans also help cover shortfalls in cases of unexpected life changes that bring new or higher expenses.

Thus, a private student loan market that harnesses alternative data in a safe and responsible way can make credit more widely available. More affordable credit can have a meaningful impact on the ability of many Americans to use a postsecondary education to achieve upward social mobility—without going broke.

B. EDUCATION-BASED DATA AND CREDIT STRATIFICATION

But, there are significant downsides to the use of alternative education-based data for student lending purposes—chiefly that it can lead to a greater class divide.[373] Access to affordable credit, as noted above, is a struggle for many families. As explained in Section II.C, the fringe economy is where many low- to moderate-income Americans turn when they do not have access to affordable loan options from more traditional financial institutions like banks and credit unions. Yet, accessing these products comes at a high cost. In July 2018, the national average annual percentage rate on a credit card was 16.96% while the average annual percentage rate for a payday loan was nearly 400%.[374]

And it's not just the very poor that turn to expensive credit when times get hard. The cost of borrowing money hits particularly hard on those working minimum-wage jobs with unpredictable schedules. An illuminating example of this comes in the form of the work of Barbara

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371. *Id.*

372. *See 7 Options to Consider if You Didn't Receive Enough Financial Aid*, U.S. DEP'T OF EDUC.: HOMEROOM BLOG (Aug. 7, 2015), https://blog.ed.gov/2015/08/7-options-to-consider-if-you-didnt-receive-enough-financial-aid.

373. *See generally* NAT'L CONSUMER LAW CTR., CREDIT INVISIBILITY AND ALTERNATIVE DATA: THE DEVIL IS IN THE DETAILS (2015), https://www.nclc.org/images/pdf/credit_reports/ib-credit-invis ible-june2015.pdf (describing how the use of alternative measures such as rental data, gas and electric bills data, and telecommunications data to determine credit worthiness potentially "perpetuates and reinforces [an] unlevel playing field" for minority and low-income consumers).

374. Leonhardt, *supra* note 14.

Ehrenreich.[375] She studied the entry-level jobs most readily available to uneducated women in the United States—restaurant server, Wal-Mart associate, house-cleaner, hotel maid, and nursing home attendant.[376] Ehrenreich reported that the wages paid for these jobs did not amount to enough money to save even a few hundred dollars, often entailing erratic work schedules that caused major challenges for childcare or taking on additional work.[377] Further, the physical labor required of these jobs brought about back and knee issues that soon made the actual work physically taxing or painful.[378] Moreover, the lack of money and shifting hourly work schedule made meeting rental obligations difficult.[379] She noted that staying home with sick children or taking a loved one to the doctor can result not only in the loss of wages but also in the loss of a job, causing a paycheck-to-paycheck tenant to miss rent and be evicted.[380] To put down a new deposit or to stay at a motel for a few nights causes the individual to reach for high-cost borrowing.[381] When appliances break or are unavailable, surprisingly expensive gas station food becomes the fallback.[382] Broken down cars, medical emergencies, and other unexpected expenses force these working Americans to turn to high cost credit. Harassing calls from debt collectors at one's work can lead, in turn, to the loss of a job and a further need to borrow to make even the barest of ends meet.[383]

Indeed, the country truly saw how close so many Americans are to poverty during the shutdown of the federal government in January 2019. During this period, the inability of Congress and President Trump to come to an agreement on extending the federal budget caused most federal workers (roughly 800,000) to be furloughed without pay for thirty-five days, causing them to miss two paychecks.[384] Facing the need to pay mortgage, auto, student, and other loan obligations, many turned to

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375.	BARBARA EHRENREICH, NICKEL AND DIMED (Holt Paperbacks 2002).

376.	Barbara Ehrenreich, *It Is Expensive to Be Poor*, THE ATLANTIC (Jan. 13, 2014), https://www.theatlantic.com/business/archive/2014/01/it-is-expensive-to-be-poor/282979.

377.	*Id.*

378.	*Id.*

379.	*Id.*

380.	*Id*.

381.	*Id*.

382.	*Id.*

383.	Anne Fisher, *Bill Collectors Calling Your Boss? Here's What to Do*, FORTUNE (Aug. 28, 2014), http://fortune.com/2014/08/28/bill-collectors-boss-workplace.

384.	Michael Collins et al., *Today Should Be Payday for Hundreds of Thousands of Government Workers. But the Shutdown Means They're Not Getting Paid*, USA TODAY, https://www.usatoday.com/story/news/politics/2019/01/11/government-shutdown-paychecks-hold-thousands-federal-workers/2538807002 (last updated Jan. 11, 2019, 12:26 PM).

emergency loans to cover expenses.[385] This is driven largely by the simple fact that most Americans do not have sufficient savings to cover unexpected losses of income.[386] The average savings rate, once around 10% of personal disposable income back in the 1960s and 1970s, sat at 3% in 2018.[387] This, yet again, causes many Americans—many middle and moderate income Americans, to say nothing of the poor—into the arms of high cost credit.[388]

Students in particular already suffer from high debt loads. If one cannot afford (or one's parents cannot afford) the cost of tuition, fees, and living expenses to attend college, then the only route to a higher education is through debt. Since 2004, the amount of student debt nationally has tripled and is now $1.48 trillion as of the second quarter of 2019.[389] To put that in perspective, the only other debt category that is higher is mortgage debt.[390] Much of this has been driven by the fact that college tuition and fees (the cost of attendance) has risen precipitously. Since 1985, the cost of attending college has overtaken the Consumer Price Index by a multiple of four.[391] Because of this, most students in the United States have to borrow money to go to college—and the less affluent one's background the more one has to borrow.[392] Most graduates in 2018 came out of college with an average debt of $37,000.[393] That amount gets bigger if graduate or professional school is undertaken.

This stated amount of $37,000, although quite high for someone with

385.   Yuka Hayashi, *Government Workers Idled by Shutdown Turn to Emergency Loans*, WALL ST. J., https://www.wsj.com/articles/government-workers-idled-by-shutdown-turn-to-emergency-loans-11547246027 (last updated Jan. 12, 2019, 2:48 PM); *see also* Liz Frazier, *The Real Financial Impact of the Government Shutdown on Workers*, FORBES (Jan. 14, 2019, 11:20 AM), https://www.forbes.com/sites/lizfrazierpeck/2019/01/14/the-real-financial-impact-of-the-government-shutdown-on-workers.

386.   A 2018 Bankrate survey found that six out of ten Americans do not have enough savings to cover an unexpected $1000 expense. *See* Adrian D. Garcia, *Survey: Most Americans Wouldn't Cover a $1K Emergency with Savings*, BANKRATE (Jan. 16, 2019), https://www.bankrate.com/banking/savings/financial-security-january-2019.

387.   Bob Sullivan, *Once Again, Americans Are Not Saving Enough*, MARKETWATCH (Aug. 28, 2018, 4:59 AM), https://www.marketwatch.com/story/once-again-americans-are-not-saving-enough-2018-08-28.

388.   BARADARAN, *supra* note 268, at 102–18.

389.   *The Student Debt Crisis: Could It Slow the U.S. Economy?*, KNOWLEDGE@WHARTON (Oct. 22, 2018), http://knowledge.wharton.upenn.edu/article/student-loan-debt-crisis [hereinafter *The Student Debt Crisis*].

390.   CTR. FOR MICROECONOMIC DATA, FED. RESERVE BANK OF N.Y., HOUSEHOLD DEBT AND CREDIT REPORT 2 (Feb. 2019), https://www.newyorkfed.org/medialibrary/interactives/householdcredit/data/pdf/hhdc_2018q4.pdf.

391.   *The Student Debt Crisis*, *supra* note 389.

392.   *Id.*

393.   *Id*.

only a bachelor's degree in hand, belies a deeper (and darker) narrative. This debt has a significant effect on the future financial lives and major life decisions of many young Americans.[394] For instance, student debt is causing many individuals to delay getting married and having children.[395] A 2017 study by the Federal Reserve found that for every $1000 in student loan debt there is a 1.5% reduction in the homeownership rate for college students attending public four-year colleges.[396] Estimates suggest that this calculation results in a two-and-a-half month delay in an eventual home purchase for every $1000 of debt.[397] To make matters worse, the job market has not kept up with the rising cost of college. Entry-level jobs for college students do not pay enough to support student debt obligations and provide a reasonable quality of life.[398]

Students from low to moderate income families often find themselves in difficult financial situations where the need for funds is particularly acute. A 2018 study by Georgetown researchers Anthony Carnevale and Nichole Smith is particularly illuminating.[399] Of those upper-income students that choose to work during college, about 14% end up with high-paying jobs in STEM fields or business and healthcare.[400] Only 6% of low-income students obtain these lucrative positions during college.[401] They are more likely to work in lower-income jobs like foods service, clerical support, and retail.[402] And even when students work through college, they invariably cannot make enough to afford the cost of attendance because, as Carnevale and Smith note, "their wages are lower in real terms than those of previous generations and because the cost of college has skyrocketed."[403]

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394.   Mitchell E. Daniels, *How Student Debt Harms the Economy*, WALL ST. J. (Jan. 27, 2015, 6:34 PM), https://www.wsj.com/articles/mitchell-e-daniels-how-student-debt-harms-the-economy1422 401693.

395.   *The Student Debt Crisis*, *supra* note 389.

396.   Alvaro A. Mezza et al., *Student Loans and Homeownership* 3 (Fed. Reserve Sys., Finance & Economics Discussion Series, Working Paper No. 2016-010, 2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2732030.

397.   *Id*.

398.   Erik Sherman, *Why Student Loans Swamp Millennials: Job Pay Hasn't Kept Up with School Costs*, FORBES (Sept. 4, 2018, 4:30 AM), https://www.forbes.com/sites/eriksherman/2018/09/04/why-student-loans-swamp-millennials-job-pay-hasnt-kept-up-with-school-costs.

399.   ANTHONY P. CARNEVALE & NICOLE SMITH, GEORGETOWN UNIV. CTR. ON EDUC. & THE WORKFORCE, BALANCING WORK AND LEARNING: IMPLICATIONS FOR LOW-INCOME STUDENTS (2018), https://1gyhoq479ufd3yna29x7ubjn-wpengine.netdna-ssl.com/wp-content/uploads/Low-Income-Working-Learners-FR.pdf.

400.   *Id*. at 3.

401.   *Id*.

402.   *Id*.

403.   *Id.* at 6.

And lastly, low-income students that work during college are less likely overall to actually earn their degree when compared to similarly situated high-income students.[404] In one analysis, data showed that while 37% of high-income working students earned their bachelor's degree over a six-year period, only 22% of low-income working students were similarly successful.[405] That means that the latter have more limited chances in the job market, coupled with significant student debt. This leaves them worse off for ever having tried to obtain a postsecondary education in the first place.[406] Moreover, when low-income working students do complete their degrees, they are more likely to have enrolled in a program that is below the baccalaureate level.[407] This, in turn, can lead to more limited job opportunities and thus more limited future income since the American job market so highly values the bachelor's degree.[408]

It is against this backdrop that we should be mindful of how the use of alternative, education-based data can exacerbate existing credit inequalities—inequalities, as I have explained above, that are already pervasive in the wider economy.[409] Consider an underwriting factor that looks to the number of times a student visited a college with a parent. This was identified in the Princiotta study as being significant in increasing the odds of completing a post-secondary degree.[410] A lender looking at nontraditional data might find this information useful. A student that completes a degree program is more likely to earn a higher income in the job market and thus be better able to repay a private student loan.

At first blush, this may seem like a facially neutral data point, but it can belie issues related to class. For example, some students do not live in areas near many postsecondary institutions that can be visited easily. This means the parent and the child will have to travel some significant distance and incur some level of meaningful expense in order to tour one or more campuses or visit with admissions officers. That may not even be possible for a student of modest means or one with parents who do not have the time or resources to take off work and make these journeys. The key to this observation, however, is to understand who exactly lives in areas where there exist few postsecondary institutions. In other words, who lives in an

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404. *Id.* at 8.
405. *Id.*
406. *Id.*
407. *Id.* at 4.
408. *Id.* at 4.
409. Citron & Pasquale, *supra* note 16, at 15; *see also* Dehoyos v. Allstate Corp., 345 F.3d 290, 299 (5th Cir. 2003); Dehoyos v. Allstate, 240 F.R.D. 269, 275 (W.D. Tex. 2007).
410. CHILD TRENDS, *supra* note 247, at 22.

"education desert?"[411] In a 2018 study, *The Chronicle of Higher Education* identified 1500 two- and four-year public colleges and universities, excluding those with low acceptance rates that would likely not be an option for many local students.[412] To determine the location of so-called education deserts, the researchers determined the sixty-minute driving radius from each of the identified initiations.[413] The sixty-minute unreachable areas were then overlaid with census tract data, with the result being the creation of "education deserts."[414]

The results of the study revealed that roughly 11.2 million individuals (about 3.5% of the American population) live in education deserts.[415] That alone might not seem significant, but the demographics of this group are noteworthy. Many education deserts had large Native Americans populations since these groups were historically forced to settle in parts of the country far removed from highly populated areas.[416] Indeed, the report found that almost 30% of all Native Americans in the United States live in an education desert.[417] Native Americans on average suffer from significant levels of poverty. In fact, two of the five poorest counties in the country (out of 3142) are located on tribal reservations.[418] According to 2012 census data, Native Americans have the lowest employment rate of any other minority group in the United States.[419] Some tribes report that their individual unemployment rate is near 85%.[420] When it comes to credit, the Federal Reserve Bank of New York reports that Native Americans turn to payday loans at a higher rate than white households.[421] Accessing credit for tribal peoples is difficult because native land laws and related legal issues

411.   Ben Myers, *Who Lives in Education Deserts? More People Than You Think*, CHRON. HIGHER EDUC. (July 17, 2018), https://www.chronicle.com/interactives/education-deserts.

412.   *Id.*

413.   *Id.*

414.   *Id.*

415.   *Id.*

416.   *Id*. For a discussion of the difficulties faced by Native Americans in transitioning to college, see generally Kelly Field, *Fighting Long Odds: What One Semester Reveals About Native American Students' Struggle to Succeed in College*, CHRON. HIGHER EDUC. (Jan. 8, 2017), https://www.chronicle.com/article/Fighting-Long-Odds/238825; Kelly Field, *For Native Students, Education's Promise Has Long Been Broken*, CHRON. HIGHER EDUC. (July 26, 2016), https://www.chronicle.com/article/For-Native-Students/237210?cid=cp48.

417.   Myers, *supra* note 411.

418.   *The Poverty Cycle*, RUNNING STRONG FOR AM. INDIAN YOUTH, http://indianyouth.org/american-indian-life/poverty-cycle (last visited Oct. 29, 2018).

419.   *Id.*

420.   *Id.*

421.   COLIN MORGAN-CROSS AND MARIEKA KLAWITTE, UNIV. OF WASH., MARKET-BASED ALTERNATIVES TO PAYDAY LOANS 8–9 (2012), https://evans.uw.edu/sites/default/files/public/Alternatives%20to%20AFS%205_23_12.pdf.

discourage banks and more traditional financial institutions from having locations on Indian Reservations.[422] This makes Native American households a target for fringe economy, high cost lending.[423]

Further, rural Americans, a notoriously hard-hit population in terms of health and wealth since the Great Recession[424]—were also observed to live in education deserts.[425] About 12.8% of adults who reside in education deserts live below the poverty line.[426] This is compounded by their inability to access credit easily. In the decade preceding 2014, the United States saw over half of its banks close, and the percentage of these closures was particularly high in rural America.[427] Many small community banks are located in and service rural Americans, yet 96% of the bank closures were of small and community banks.[428] In rural states like Mississippi and Arkansas, more than 32% and 25% of households, respectively, use nontraditional financial services like payday loans to meet expenses.[429] High-priced credit, therefore, already plays a large role in the lives of America's rural population.

Taking this data into account, an underwriting algorithm that gives preferential scoring to students who have visited a number of colleges with a parent would necessarily disadvantage a student who lives in one of these education deserts. Therefore, to access credit, this student will actually pay more, making the climb up the social ladder all the more difficult. And again, the use of factors like this to make credit decisions will likely result in favorable credit terms for borrowers that already have considerable access to credit under traditional underwriting models.[430] The structural inequities of American society may very well only be reified through the use of "highly predictive" education-based data, and this is something for which policymakers should be deeply concerned as the data economy and

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422. *Id.*

423. *Id.*

424. SONNY PERDUE, U.S. DEP'T OF AGRIC., REPORT TO THE PRESIDENT OF THE UNITED STATES FROM THE TASK FORCE ON AGRICULTURE AND RURAL PROSPERITY 3 (2017), https://www.usda.gov/sites/default/files/documents/rural-prosperity-report.pdf ("While other sectors of the American economy have largely recovered from the Great Recession, rural America has lagged in almost every indicator.").

425. Myers, *supra* note 411.

426. *Id.*

427. *Banking in Rural America: Insight from a CDFI*, S. BANCCORP COMMUNITY PARTNERS: PUB. POL'Y BLOG (Dec. 19, 2014), https://southernpartners.org/public-policy/banking-in-rural-america-insight-from-a-cdfi.

428. *Id*.

429. *Id.*

430. Glater, *supra* note 12, (manuscript at 6).

the credit economy (particularly education credit) become ever more intertwined.[431]

C. ALGORITHMIC RISK AND FAIR LENDING

Setting aside the problems of class stratification, the issue of discrimination based on legally protected class—such as race, ethnicity, sex, or marital status—looms large with the use of education-based data in private student loan underwriting.[432]

Race and ethnicity are already major issues in higher education policymaking. In a 2014 study looking at the student bodies of top public research universities, enrollment by black students was only 9% and only 12% for Latino students.[433] These numbers are out of alignment with the incidence of black and Latino individuals in the overall U.S. population (13.4 and 18.3% respectively).[434] Moreover, while 43% of white young adults have a bachelor's degree, only 21% of black and only 16% of Latino young adults have obtained this distinction.[435]

Access to affordable credit is an important part of opening the doors of America's higher education institutions to black and Latino students. This is particularly true when surveying the current state of student debt for these demographic groups. In a study of college graduate cohorts between 1993 and 2008 and again between 1997 and 2012, researchers observed that 48% of black college graduates owed more on their federal student loans four short years after graduation than they did at the time of graduation.[436] This is compared to only 17% of white graduates dealing with similar debt growth.[437] At the four-year mark after graduation, the study revealed that black graduates carried an average of $52,726 in student loan debt versus $28,006 for white graduates.[438]

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431.   Christopher G. Bradley, *Fintech's Double Edges*, 93 CHI.-KENT L. REV. 61, 62 (2018) ("[T]he development of financial technological tools is unpredictable and path-dependent, contingent both on technological developments as well as the social contexts in which tools are developed and used.").

432.   For a preliminary discussion, see generally AEI REPORT, *supra* note 1.

433.   ELIZABETH BAYLOR, CTR. FOR AM. PROGRESS, CLOSED DOORS: BLACK AND LATINO STUDENTS ARE EXCLUDED FROM TOP PUBLIC UNIVERSITIES 2–3 (2016), https://cdn.americanprogress. org/wp-content/uploads/2016/10/13000151/ClosedDoors-brief.pdf [hereinafter CAP: CLOSED DOORS].

434.   These percentages are current as of July 1, 2017. *See QuickFacts: United States*, *supra* note 22.

435.   CAP: CLOSED DOORS, *supra* note 433, at 1.

436.   BROOKINGS DISPARITY STUDY, *supra* note 25, at 2–3.

437.   *Id.*

438.   *Id.* at 2.

Also, study after study shows that, on average, black student borrowers default more than other students seeking the same degree.[439] And this is true even when controlling for family income and other wealth variables.[440]

The use of education-based data in the making of private student loans has the potential to continue or even augment these disparities.[441] Consider, for example, the use of test scores in the underwriting process. Recall that in the study by Princiotta and colleagues, standardized test scores were shown to be highly correlated to postsecondary completion rates.[442] It is well-documented that students of color score significantly lower than white students on standardized tests.[443] Black students in the United States score lower on subjects such as math, reading, and vocabulary, in addition to tests that purport to assess intelligence and academic ability, than white students.[444] In 1998, most standardized tests had black students scoring 75% lower than white students.[445] Although there has been improvement, disparities are still stark. National data shows that for fourth-graders in 2017 there was a 25-point gap between white and black students in math and a 26-point gap between the two in reading.[446]

The use of a borrower's grade point average ("GPA") is also problematic. GPA is highly correlated to the completion of a postsecondary

439. Sara Goldrick-Rab et al., The Color of Debt: Implications of Federal Loan Program Reforms for Black Students and Historically Black Colleges and Universities 12 (Sept. 2, 2014) (unpublished manuscript) (available at https://news.education.wisc.edu/docs/WebDispenser/news-connections-pdf/thecolorofstudentdebt-draft.pdf?sfvrsn=4); *see also* Kavya Vaghul & Marshall Steinbaum, *How the Student Debt Crisis Affects African Americans and Latinos*, WASH. CTR. FOR EQUITABLE GROWTH (Feb. 17, 2016), https://equitablegrowth.org/how-the-student-debt-crisis-affects-african-americans-and-latinos.

440. Fenaba R. Addo et al., *Young, Black, and (Still) in the Red: Parental Wealth, Race, and Student Loan Debt*, 8 RACE & SOC. PROBS. 64, 65 (2016).

441. Jonas Lerman, *Big Data and Its Exclusions*, 66 STAN. L. REV. ONLINE 55, 57 (2013) (discussing the ability of alternative data to harm disenfranchised groups).

442. CHILD TRENDS, *supra* note 247, at 8, 15.

443. CHRISTOPHER JENCKS & MEREDITH PHILLIPS, THE BLACK-WHITE TEST SCORE GAP 1–15 (1998); *see also* Jacqueline Fleming & Nancy Garcia, *Are Standardized Tests Fair to African Americans?: Predictive Validity of the SAT in Black and White Institutions*, 69 J. HIGHER EDUC. 471, 471 (1998); Dan Hardy, *How Race and Class Relate to Standardized Tests*, PHILA. PUB. SCH. NOTEBOOK (Nov. 24, 2015, 9:47 AM), https://thenotebook.org/articles/2015/11/24/how-race-and-class-relate-to-standardized-tests (summarizing data from the National Assessment of Educational Progress); Richard V. Reeves & Dimitrios Halikias, *Race Gaps in SAT Scores Highlight Inequality and Hinder Upward Mobility*, BROOKINGS (Feb. 1, 2017), https://www.brookings.edu/research/race-gaps-in-sat-scores-highlight-inequality-and-hinder-upward-mobility.

444. JENCKS & PHILLIPS, *supra* note 443, at 1.

445. *Id*.

446. *National Student Group Scores and Score Gaps*, NATION'S REP. CARD (2017), https://www.nationsreportcard.gov/math_2017/nation/gaps?grade=4.

degree.[447] Indeed, some studies show that GPA is an even better predictor of postsecondary completion than standardized tests scores.[448] Yet, GPAs largely track race. DOE data looking at college students during the 2007–2008 academic year found that about 75% of white baccalaureate graduates had an average GPA of 3.0 or higher, while only 55.3% of black students had the same.[449] More starkly, "[t]wo out of every five White graduates but less than one in five Black graduates achieved a GPA greater than 3.5."[450] Conversely, black students were about three times as likely as white students to have an overall GPA of 2.5 or less at the time of graduation.[451] Consistent with these findings, the use of GPA as an underwriting tool will invariably map on to a borrower's race.

The testing gap not only relates to race and ethnicity, but also to class. The gap has been correlated with multiple factors, many of which are connected to a student's family resources, such as parental income and levels of education, as well as other familial socio-economic factors.[452] Correlations also exist in relation to a student's surrounding environment, such as living in deeply segregated neighborhoods that are the result of decades of predatory and discriminatory housing policies.[453] These community conditions are connected to the school environment, which in turn has an impact on test performance.[454] Factors within the school environment can relate to teacher quality, curricular focus, the condition of facilities, and student expectations, among others.[455] Thus, the use of alternative data like test scores in order to judge student loan creditworthiness—in other words, in the lending of the funds that can ultimately result in upward social mobility—can have the effect of merely

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447. CHILD TRENDS, *supra* note 247, at 8; *see also* JOHN BOUND ET AL., POPULATION STUDIES CTR., RESEARCH REPORT NO. 07-626, UNDERSTANDING THE DECREASE IN COLLEGE COMPLETION RATES AND THE INCREASED TIME TO THE BACCALAUREATE DEGREE 25 (2007); Carol Mulford Albrecht & Don E. Albrecht, *Social Status, Adolescent Behavior, and Educational Attainment*, 31 SOC. SPECTRUM 114, 127 (2010).

448. *See* JENNY NAGAOKA ET AL., CTR. FOR AM. PROGRESS, BARRIERS TO COLLEGE ATTAINMENT 7 (2009), https://cdn.americanprogress.org/wp-content/uploads/issues/2009/01/pdf/ChicagoSchools.pdf.

449. U.S. DEP'T OF EDUC., PROFILE OF 2007-08 FIRST-TIME BACHELOR'S DEGREE RECIPIENTS IN 2009, at tbl.2.3 (2012), https://nces.ed.gov/pubs2013/2013150.pdf.

450. *New Data Shows a Wide Racial Disparity in the GPAs of College Graduates*, J. BLACKS HIGHER EDUC. (Nov. 5, 2012), https://www.jbhe.com/2012/11/new-data-shows-a-wide-racial-disparity-in-the-gpas-of-college-graduates.

451. *Id.*

452. Sean F. Reardon et al., *The Geography of Racial/Ethnic Test Score Gaps*, 124 AM. J. SOC. 1164, 1164–67 (2019).

453. *Id.*

454. *Id.*

455. *Id.*

reifying existing barriers by denying or outpricing black would-be student borrowers.

Additionally, households of color already come to the big data lending space with a history of being manipulated by the larger, more traditional credit economy. With respect to minority groups, studies find that payday lenders locate disproportionately in areas with large black and Hispanic populations,[456] suggesting that such lenders target communities of color.[457] A 2007 study drawing from data collected as part of the Federal Reserve's periodic Survey of Consumer Finances showed that black families were twice as likely to be denied credit as similarly situated white families.[458] The use of alternative data is important in the credit lives of many American communities of color. Black and Hispanic Americans are more likely than Asian or white Americans to be credit invisible or to have credit records that are unscorable.[459] The CPFB reported in a 2015 study that "[a]bout 15 percent of Blacks and Hispanics are credit invisible (compared to 9 percent of Whites and Asians) and an additional 13 percent of Blacks and 12 percent of Hispanics have unscored records (compared to 7 percent of Whites)."[460] Moreover, "[t]hese differences are observed across all age groups, suggesting that these differences materialize early in the adult lives of these consumers and persist thereafter."[461]

Against this backdrop, one moves beyond mere policy concerns about credit stratification, as discussed in Section III.B, and toward the very real liability issues that flow from fair lending laws. Specifically, the Equal Credit Opportunity Act ("ECOA")[462] and Regulation B[463] make it illegal for creditors to use a borrower's race, color, religion, national origin, sex, age, marital status, or receipt of public assistance as motivating factors in

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456. *See generally* Robin A. Prager, *Determinants of the Locations of Payday Lenders, Pawnshops and Check-Cashing Outlets* (Fed. Res. Board., Fin. & Econ. Discussion Series, Working Paper No. 2009-33, 2009), https://www.federalreserve.gov/pubs/feds/2009/200933/200933pap.pdf (collecting research on payday lender locations).

457. Desiree Evans, *Predatory Payday Lenders Target Black and Latino Communities*, FACING S. (Mar. 27, 2009), https://www.facingsouth.org/2009/03/predatory-payday-lenders-target-black-and-latino-communities.html; Ashlee Kieler, *Report Spotlights Impact of Payday Lenders on Most Vulnerable Communities*, CONSUMERIST (Jan. 30, 2015, 11:44 AM), https://consumerist.com/2015/01/30/report-spotlights-impact-of-payday-lenders-on-most-vulnerable-communities.

458. CHRISTIAN E. WELLER, CTR. FOR AM. PROGRESS, ACCESS DENIED: LOW-INCOME AND MINORITY FAMILIES FACE MORE CREDIT CONSTRAINTS AND HIGHER BORROWING COSTS 2 (2007), https://www.americanprogress.org/wp-content/uploads/issues/2007/08/pdf/credit_access.pdf.

459. CFPB, CREDIT INVISIBLES, *supra* note 342, at 6.

460. *Id.*

461. *Id.*

462. 15 U.S.C. § 1691 (2018).

463. 12 C.F.R. § 202.1–.17 (2019). Regulation B interprets the provisions of the federal statute.

making credit decisions.[464] The ECOA includes advertising and marketing loan products and the application, underwriting, and approval process.[465]

The potential for discriminatory underwriting comes into play with fintech lenders in the way they use big data to make credit decisions by finding hidden correlations.[466] While it may be true that GPA, standardized test scores, a parent's level of educational attainment, whether a student worked during high school, and the number of colleges a student visited with a parent are all highly predictive of college completion or postgraduate income,[467] they can also be highly correlative to legally protected classes. As I have written in a prior piece, this raises complex issues related to intent and effect.[468] For instance, one can prevail in an ECOA claim by proceeding under a disparate impact theory or by proving actual intent to discriminate.[469] It may be true that the actual management of the lending company had no actual intent to discriminate,[470] but if the machine learning algorithm has determined to use, for instance, race as a proxy for GPA or another data point when said data about a borrower is not available, then the question of intent becomes more thorny.[471] As Matthew Bruckner noted, "once biases are embedded in the code (or the algorithm learns to be biased based on its training data), it may draw inferences that appear objective but are actually biased."[472] In testimony before a House Financial Services Committee fintech taskforce in July 2019, the CEO of the prominent online lender, Upstart, stated the following: "The concern that the use of alternative data and algorithmic decisioning can replicate or even amplify human bias in lending is well-founded."[473]

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464.   15 U.S.C. § 1691(a)(1).

465.   Odinet, *supra* note 17, at 820.

466.   *Id.* at 139; *see also* Kate Crawford & Jason Schultz, *Big Data and Due Process: Toward a Framework to Redress Predictive Privacy Harms*, 55 B.C. L. REV. 93, 96 (2014); Nilsson, *supra* note 221, at 3.

467.   CHILD TRENDS, *supra* note 247 at 4–9.

468.   Odinet, *supra* note 17, at 848–52. For a discussion of the ability of big data to cause disparate impact in the employment discrimination context, see generally Barocas & Selbst, *supra* note 308; Pauline T. Kim, *Data Driven Discrimination at Work*, 58 WM. & MARY L. REV. 857 (2017).

469.   15 U.S.C. § 1691(a)(1).

470.   Rachel F. Moran, *Whatever Happened to Racism?*, 79 ST. JOHN'S L. REV. 899, 917–19 (2005) (discussing the decline of intentional discrimination cases and the rise of disparate impact claims).

471.   Barocas & Selbst, *supra* note 308, at 677–78; Odinet, *supra* note 17, at 848–52; *see also* Kim, *supra* note 468, at 878.

472.   Bruckner, *supra* note 245, at 28.

473.   *Examining the Use of Alternative Data in Underwriting and Credit Scoring to Expand Credit Access: Hearing Before the H. Comm. on Fin. Servs.*, 116th Cong. 2 (2019) (testimony of Dave Girouard, CEO and Co-Founder, Upstart Network, Inc.).

Even more problematic and likely is the disparate impact method for when, regardless of intent, the net effect of a lender's credit activities is to disproportionately discriminate based on one of the protected classes in the aggregate.[474] Even if the underwriting program is designed so as to be prohibited from looking at, for instance, race when making an underwriting decision, it may do so regardless by using proxies for race.[475] Much else has been written and continues it be written about big data and discrimination,[476] but my focus here is on the use of education-based alternative data in loan underwriting. For example, this data has such strong correlations to race, it's hard to imagine that an underwriting algorithm would not, left to its own devices, eventually use race as a proxy for a given education-based attribute.[477] Thus, as Sonia Katyal has noted, the issue of bias in algorithmic decisionmaking raises a host of civil rights concerns, wholly different than those that have previously existed.[478]

If the assertion that alternative educational data can lead to lending discrimination seems too speculative—particularly in the student loan space—one should consider an example in which this has already occurred. It involved the use of so-called cohort-default rate data by private student lenders over the past few years in making underwriting decisions. A cohort-default rate is a term defined by DOE to mean the percentage of a school's student borrowers in a given "cohort" who enter into repayment of a federal student loan during a given federal fiscal year but then default within the next one to two years thereafter.[479] The data are collected as part of DOE's efforts to understand more about who is paying and who is defaulting on federal student loans.[480] This helps DOE in its determination of which schools are eligible to participate in the federal student loan program.[481] For example, in the past DOE has removed a school from participation if its average cohort default rate over the past three years is above 25% or is 40% in any single year.[482] In this way, the data is used to

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474. Odinet, *supra* note 17, at 848–52.

475. *Id.*; *see also* Prince & Schwarcz, *supra* note 223 (providing an extensive explanation of proxy discrimination and its various types).

476. *See supra* note 339.

477. *See* Citron & Pasquale, *supra* note 16, at 14 (discussing the "laundering" of discrimination into algorithmic credit scores that are inscrutable by humans); *see also* Glater, *supra* note 309, at 2152–54.

478. Sonia K. Katyal, *Private Accountability in the Age of Artificial Intelligence*, 66 UCLA L. REV. 54, 99–100 (2019).

479. U.S. Dep't of Educ., *Official Cohort Default Rates for Schools*, FED. STUDENT AID, https://www2.ed.gov/offices/OSFAP/defaultmanagement/cdr.html (last updated Oct. 17, 2018).

480. CFPB, PRIVATE STUDENT LOANS, *supra* note 70, at 79.

481. *Id.*

482. *Id.*

help DOE protect taxpayers, who guarantee federal student loans, from making risky investments.[483]

Cohort-default rates are not, however, meant to be used for underwriting purposes. Nevertheless, over the past several years a number of private student lenders have used this data to make credit decisions. This has resulted in DOE and the CFPB taking action against these lenders because of the implications that the use of such data has on fair lending. The theory raised by the CFPB was that the use of cohort-default rate data can lead to a discriminatory disparate impact on legally sensitive groups.[484] In 2007, a class action suit against Sallie Mae—the nation's largest private student lender—alleged that the company's use of cohort-default rate data in its loan underwriting resulted in discriminatory pricing and eligibility of credit.[485] In that case, a black woman named Cathelyn Gregoire and an Hispanic woman named Sasha Rodriguez alleged that Sallie Mae charged them with unreasonably high interest rates (as much as 18.25%) and extra fees in comparison to the rates and fees paid by similarly situated white borrowers for a private student loan.[486] Sallie Mae used the cohort-default rate, among other factors, to determine the loan terms for its student borrowers.[487] The higher a school's cohort-default rate, the more likely a student attending that school and receiving a loan from Sallie Mae was to pay add-on fees and a higher interest rate.[488]

The issue in the case came down to the fact that a disproportionately large number of schools with large-minority student populations have higher cohort-default rates than schools with small minority populations.[489] Thus, historically black colleges and universities ("HBCUs") have higher cohort-default rates than predominately white institutions ("PWIs").[490] The theory advanced by the plaintiffs, as an example, was that a student

483.   *Id.*
484.   *See* 15 U.S.C. § 1691(a)(1) (2018).
485.   Complaint at 1–2, Rodriguez v. SLM Corp., No. 07cv01866(WWE) (D. Conn. Dec. 17, 2007).
486.   Rodriguez v. SLM Corp., No. 07cv01866 (WWE), 2009 U.S. Dist. LEXIS 52219, at *2–4 (D. Conn. Mar. 6, 2009)
487.   *Id*. at *5–7.
488.   *Id*.
489.   *Id*.
490.   For instance, HBCUs such as Southern University, Alcorn State University, and North Carolina Central had 2014 cohort-default rates of 12.3%, 16.3%, and 10.2%, respectively. PWIs such as Louisiana State University, the University of Mississippi, and the University of North Carolina-Chapel Hill had 2014 cohort-default rates of 5.2%, 8.8%, and 1.8%, respectively. *See* U.S. Dep't of Educ., *Official Cohort Default Rate Search for Postsecondary Schools: Fiscal Years 2014, 2013, 2012*, FED. STUDENT AID, https://nslds.ed.gov/nslds/nslds_SA/defaultmanagement/search_cohort_CY_2014.cfm (last updated Sept. 25, 2017).

attending a high cohort-default rate school would be charged more for a student loan than a student who did not, even if the two would-be borrowers were similarly situated in terms of financial background and other ability to repay factors.[491] In other words, the student would not be scored based on his or her *individual* ability to repay, but rather on *proxies* that may not be at all representative of that individual's personal situation, yet would likely result in illegal discriminatory treatment.

In the litigation, the court dismissed many of Sallie Mae's arguments, including its assertion that the plaintiffs had failed to state sufficient facts to bring a fair lending claim.[492] Whether the fair lending claim would have prevailed in court is unknown, as the parties settled in 2009.[493] But, in 2014 Sallie Mae entered into a consent decree with the Federal Deposit Insurance Corporation ("FDIC") whereby the company agreed to cease using cohort-default rate data in its underwriting model because the FDIC believed it violated the Equal Credit Opportunity Act.[494] And the use of this problematic, alternative education-based data is not limited to just one company. A 2012 CFPB report found multiple other private student lenders were using cohort-default rate data in their underwriting as well.[495]

The impact of the use of cohort-default rate data on students of color is particularly significant because black and Hispanic students are nearly twice as likely to attend a school with a cohort-default rate above 12% than one below that number.[496] This means that students who borrow from private lenders that use cohort-default rate data receive more expensive loans (and therefore pay more over the long-term and potentially default) than what their true, individual ability to repay might merit. I argue here that the use of education-based data, like that outlined in some of the social science literature above as being highly predictive of postsecondary success, could produce a similar discriminatory effect.[497]

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491.   *Rodriguez*, 2009 U.S. Dist. LEXIS 52219, at *5–7.

492.   *Id*. at *7–12.

493.   CFPB, PRIVATE STUDENT LOANS, *supra* note 70, at 80 n.197.

494.   Consent Order, Order for Restitution, and Order to Pay Civil Money Penalty at 19, Sallie Mae Bank, Nos. FDIC-13-0366b, FDIC-13-0367k (Fed. Deposit Ins. Corp. May 13, 2014), https://the studentloanlawyer.com/wp-content/uploads/2014/05/FDIC-v-Sallie-Mae-Bank-Consent-Order.pdf.

495.   CFPB, PRIVATE STUDENT LOANS, *supra* note 70, at 80.

496.   *Id.* at 83.

497.   For a discussion of how the law prohibits the use of certain characteristics (like race) in decisionmaking even when that characteristic has predictive value, see generally Lior Jacob Strahilevitz, *Privacy Versus Antidiscrimination*, 75 U. CHI. L. REV. 363, 365 (2008) ("One premise of this paper is that in modern America, statistical discrimination is more prevalent than animus-based racism.").

IV. POLICY PROPOSAL FOR STUDENT LOAN UNDERWRITING GUIDANCE

To be clear, there are significant reasons why underwriting education credit is problematic at the start. As noted above, education is the way one climbs up the socioeconomic ladder in the United States. Tying the price of doing so to the particular socioeconomic condition of the student is self-defeating (or at least reinforcing). This is the very reason why federal student loans are not underwritten. However, this Article proceeds under the harsh reality that private student loans will continue to play a role in financing education—indeed, political winds suggest that such a role may soon grow. And with private student loans has come the use of education-based data that is increasingly coupled with machine learning innovations, in underwriting student loans. Therefore, with this reality in mind, my argument is that we must develop frameworks that allow for the use of education-based data and attendant automated underwriting in a way that addresses the promises and the perils of doing so. I propose that relevant regulators develop supervisory guidelines for how lenders should use education-based information in a safe and productive way.[498]

As I have written elsewhere, financial technology lenders that use alternative data of the type discussed here are generally categorized by state and federal law as "nonbank[s]."[499] This means they are not chartered under the typical state or federal banking laws.[500] Nevertheless, they are required to be licensed by the states where they operate and are subject to some consumer-facing oversight by the CFPB, the Federal Trade Commission, and others.[501]

Regulators at both the state and the federal levels have an interest in seeing more affordable credit available to Americans seeking to obtain an education.[502] Therefore, the law governing underwriting in this space should aim to facilitate the extension of credit to students on terms that are reasonable and at prices that are affordable while still being profitable for

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498.   Rory Van Loo, *Making Innovation More Competitive: The Case of Fintech*, 65 UCLA L. REV. 232 (2018) (discussing the role of regulators in promoting financial innovation).

499.   Odinet, *supra* note 17, at 803–05; s*ee also* Daniel Schwarcz & David Zaring, *Regulation by Threat: Dodd-Frank and the Nonbank Problem*, 84 U. CHI. L. REV. 1813, 1824 (2017) (discussing nonbank financial institutions in the context of systemic risk).

500.   Odinet, *supra* note 17, at 803–05.

501.   *Id.* at 827–35.

502.   Indeed, some regulators have already shown an interest in better understanding how alternative data is being used in credit models. *See, e.g.*, Request for Information Regarding Use of Alternative Data and Modeling Techniques in the Credit Process, 82 Fed. Reg. 11,183, 11,183 (Consumer Fin. Protection Bureau Feb. 21, 2017).

the lender. From a fairness standpoint, state and federal regulators have a strong interest in guarding against the provision of credit (or the denial thereof) on terms that would harm, deceive, or unjustly target vulnerable or historically excluded portions of society.[503] From the perspective of lenders, they desire to offer products to the public on terms that meet market demand and generate a reasonable return. And, because these fintech lenders originate from Silicon Valley, there's a bit of an ethos to do good[504] (or at least not "to be evil"[505]) as well. Importantly, these firms also want to avoid liability in the way of expensive litigation, costly settlements, and burdensome regulatory investigations.

To accomplish these intersecting and overlapping goals, I suggest that regulatory guidance be issued for student loan underwriting that makes use of education-based or alternative data.[506] This guidance should be flexible enough for student lenders to innovate, but it should be onerous enough to ensure extra precautions are taken by these firms to guard against causing inadvertent discrimination and economic duress.

Such guidance should be issued by the CFPB as part of its formal authority to supervise private student lenders and firms that assist them. This should be done in consultation with the Federal Trade Commission and the state financial services regulators. The selection of these regulators is intentional because their interests most closely align with the concerns described above and because of the specific legal authority at play.

First, the CFPB is charged with enforcement of federal fair lending laws, particularly the Equal Credit Opportunity Act and Regulation B.[507]

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503. *See* Prentiss Cox, *The Importance of Deceptive Practice Enforcement in Financial Institution Regulation*, 30 PACE L. REV. 279, 279–82 (2009); James J. Pulliam, *Good Cop, Bad Cop: Market Competitors, UDAP Consumer Protection Laws, and the U.S. Mortgage Crisis*, 43 LOY. L.A. L. REV. 1251, 1296 (2010); Amy Widman & Prentiss Cox, *State Attorneys General's Use of Concurrent Public Enforcement Authority in Federal Consumer Protection Laws*, 33 CARDOZO L. REV. 53, 56–59 (2011).

504. *See* Rebecca Greenfield, *Silicon Valley Doesn't Want Us to Know the Truth About Its Bro Culture*, THE ATLANTIC (July 10, 2012), https://www.theatlantic.com/technology/archive/2012/07/silicon-valley-doesnt-want-us-know-truth-about-its-bro-culture/326111; Mike Isaac, *Zuckerberg Plans to Integrate WhatsApp, Instagram and Facebook Messenger*, N.Y. TIMES (Jan. 25, 2019), https://www.nytimes.com/2019/01/25/technology/facebook-instagram-whatsapp-messenger.html (quoting Mark Zuckerberg as wanting to "make it easier to reach friends and family across networks")

505. Justin Wm. Moyer, *Alphabet, Now Google's Overlord, Ditches 'Don't Be Evil' for 'Do the Right Thing'*, WASH. POST (Oct. 5, 2015), https://www.washingtonpost.com/news/morning-mix/wp/2015/10/05/alphabet-now-googles-overlord-ditches-dont-be-evil-in-favor-of-do-the-right-thing.

506. *See generally* Omer Tene & Jules Polonetsky, *Taming the Golem: Challenges of Ethical Algorithmic Decision-Making*, 19 N.C. J.L. & TECH. 125, 126 (2017) ("Policy-directed algorithms are purposely engineered to correct for apparent bias and discrimination or to advance a predefined policy agenda.").

507. *See* Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203,

Pursuant to its ability to police unfair, deceptive, and abusive acts and practices ("UDAAP"),[508] it also has rule-making authority over so-called "covered persons,"[509] which includes most all fintech nonbank lenders.[510] Last and most importantly, the CFPB has supervisory authority over all private student lenders.[511] Through supervision the bureau has the ability to look into the inner workings of a relevant company to ensure compliance with various federal consumer financial protection laws and to prevent the firm from engaging in acts and practices that are considered unfair, deceptive, or abuses.[512] Because of this power, guidance—which need not go through the Administrative Procedures Act—can heavily influence the way a company operates.[513]

Second, the FTC also has some authority here in accordance with its power to police unfair and deceptive acts and practices under section 5 of the Federal Trade Act[514] over non-bank companies, generally. It usually exercises this power jointly and in coordination with the CFPB.

Third and lastly, the state financial services regulators should also be involved in the issuance of the guidance, as they are the entities that license and prudentially supervise these nonbanks for safety and soundness purposes.[515] Since the guidance would need to be nationwide because online lenders operate on a nationwide basis, the National Conference of State Banking Supervisors is the optimal organization to coordinate the

§ 1085, 124 Stat. 1376, 2083 (2010) (codified as amended in scattered sections of 12 U.S.C.) (transferring power over the statute from the Federal Reserve Board to the CFPB); *see also* 12 U.S.C. § 481(14) (2018).

508. 12 U.S.C. § 5531.

509. *Id.* § 5481(6).

510. *Id*. § 5481(15). Fintech lenders that partner with banks to originate loans come under the bureau's authority in a number of ways. First, they service extensions of credit, and thus are covered persons. *See id.* § 5481(15)(i). If the fintech lender makes the loan directly, then it is a covered person by virtue of extending credit itself. *Id.* § 5481(15) In the partnership context, the fintech company is also a broker of the loan, which also makes it a covered person. *See id.* § 5481(15)(i); *Broker*, BLACK'S LAW DICTIONARY (11th ed. 2019) ("An agent who acts as an intermediary or negotiator, esp. between prospective buyers and sellers; a person employed to make bargains and contracts between other persons in matters of trade, commerce, or navigation."). Also, since the fintech company handles marketing, application intake, and underwriting, it is also a "service provider" to a covered person. *See* 12 U.S.C. § 5481(26)(A).

511. *Id*. § 5514(a)(1). With respect to this last power, the bureau has already provided underwriting guidance, albeit minimal, to private student lenders through its *Supervision and Education Manual*. *See* CONSUMER FIN. PROTECTION BUREAU, SUPERVISION AND EXAMINATION MANUAL (2019), https://files.consumerfinance.gov/f/documents/cfpb_supervision-and-examination-manual.pdf.

512. ADAM J. LEVITIN, CONSUMER FINANCE 131–41 (2018).

513. *Id.*

514. 15 U.S.C. § 45 (2018).

515. LEVITIN, *supra* note 512, at 75–77.

state-level aspect of this process.[516] Indeed, such a nationwide effort to ease the regulatory burdens for fintech firms would be in line with the organization's Vision 2020 plan to make supervision of fintech companies more efficient and transparent across the board.[517]

To date, the CFPB (as well as other financial regulators) has not made its views known on the use of alternative data broadly nor on its use by private student lenders more specifically. The proposal below advises the bureau on how to do just that, most appropriately through its newly created Office of Innovation.

The following sets forth the central themes that should animate this joint guidance. For inspiration, it draws upon the much broader work of the European Commission, which established a working group in 2018 to create ethical guidelines for the use of artificial intelligence in any number of settings—ranging from healthcare to transportation.[518] Several of the principles in that document can be used to build a robust set of supervisory guidelines for the narrow space of using education and related alternative data for student loan underwriting. The European Commission's goal, as should be the underwriting goal in the United States, is to develop "trustworthy AI."[519]

Under my proposal, supervisory guidance would be issued by the CFPB for all student lenders and for firms that provide underwriting services to private student lenders. This guidance would provide that—in order to avoid engaging an unfair, deceptive, or abusive act or practice— underwriting programs that use alternative data for private student lending must exhibit three distinct attributes: *principled-by-design*, *responsible-by-construction*, and *auditable-in-effect*. The outlines of these parts are sketched more fully as follows.

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516. For a description of the National Conference of State Banking Supervisors, see CSBS, https://www.csbs.org (last visited Sept. 11, 2019) ("The Conference of State Bank Supervisors is the nationwide organization of financial regulators from all 50 U.S. states, the District of Columbia, Guam, Puerto Rico, American Samoa, and the U.S. Virgin Islands.").

517. *See Vision 2020 for Fintech and Nonbank Regulation*, CSBS (June 7, 2018), https://www.csbs.org/vision2020; *see also* Press Release, CSBS, State Financial Regulators Embrace Recommendations from Fintech Advisory Panel (Feb. 14, 2019), https://www.csbs.org/state-financial-regulators-embrace-recommendations-fintech-advisory-panel.

518. For these guidelines, see generally High-Level Expert Grp. on Artificial Intelligence, *Ethics Guidelines for Trustworthy AI* (Apr. 8, 2019), https://ec.europa.eu/futurium/en/ai-alliance-consultation [hereinafter TRUSTWORTHY AI].

519. *Id.* at 2.

A. PRINCIPLED-BY-DESIGN

The first principle is that the underwriting program should be *principled-by-design*.[520] There are core principles at play in the underwriting of private student loans. These loans are used to supplement and fill the gaps in loans made by the federal government. They are also sometimes used, when appropriate, to refinance existing debt. These loans should also take into account the particular nature of many student loan borrowers who are typically young adults with little to no past credit histories and with little built-up capital. The goal, therefore, should be to use alternative data in a way that helps, rather than economically hurts, these borrowers. This is because there is something fundamentally different about student loan credit compared to consumer credit more broadly. Private lenders in this space should begin the underwriting building process with an understanding of the ethical implications of what they are doing.[521] This is where cognizance of credit stratification should come into play, causing the firm to consider how the programming of its models and the types of data that the models will be fed can either diminish, reinforce, or augment existing inequities.

I note at the front end that there might be an objection to for-profit institutions being charged with larger policy considerations such as income equality and fairness of opportunity. However, this objection can be overcome. The notion that corporations (in other words, private, for-profit entities) should be concerned with such social policy matters embodies the concept of corporate responsibility—the idea that corporations "should be organized and operated to serve the interests of society as a whole . . . ."[522] Also, companies that lend have long been singled out for special treatment, regardless of their corporate, for-profit nature, such as through the requirement that certain lenders affirmatively assess a borrower's ability to repay a loan before advancing funds.[523] And lastly, those who make private student loans are accorded special treatment under the law that advantage them over other types of lenders—namely, the fact that student loan debt is

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520. *See id.* at 20–23.

521. Joshua A. Kroll et al., *Accountable Algorithms*, 165 U. PA. L. REV. 633, 678 (2017).

522. Henry Hansmann & Reinier Kraakman, *The End of History for Corporate Law*, 89 GEO. L.J. 439, 441 (2001).

523. *See* DANIEL IMMERGLUCK, CREDIT TO THE COMMUNITY: COMMUNITY REINVESTMENT AND FAIR LENDING POLICY IN THE UNITED STATES 19–21, 168–171 (2004). *See generally* DAVID GRAEBER, DEBT: THE FIRST 5000 YEARS (2011) (providing an extensive history of lending). For an application of the analysis to the origination of mortgage loans, see 15 U.S.C. § 1640(a), (k) (2018); 12 C.F.R. § 1026.43 (2019). For an application of the analysis to credit cards, see 15 U.S.C. § 1665(e).

not practically dischargeable through the bankruptcy laws.[524] Thus, the special, preferred status of student debt in the hands of a creditor, in addition to the very nature of lending, merits an additional layer of responsibility. Also, such a requirement, I argue, is merely an extension of preventing financial acts and practices that are unfair. Under law, an act is unfair for purposes of the CFPB's power if (1) it causes or is likely to cause substantial injury to consumers, (2) the injury must be not reasonably avoidable by the consumer, and (3) the harm cannot be outweighed by countervailing benefits or increases in competition.[525] Providing student loans on terms that the individual will not be able to repay, having been made using factors that the individual cannot reasonably understand and thus likely compare, and all while yielding little to no long-term benefit could arguably constitute an unfair practice.

Such an ability-to-repay analysis requirement here might also fall under the bureau's ability to prohibit deceptive acts and practices. An act or practice is deceptive when a material representation or omission misleads or is likely to mislead a consumer and reliance thereon is reasonable under the circumstances. I argue that if a student is told through a private student lender's marketing that his or her career choice or degree program will play a role in the loan underwriting, it would be reasonable for the student to believe that the pricing of the loan is calibrated to the individual's future earnings. In fact, the loan may be more expensive (in other words, less aligned with future income) because of this very fact. Thus, coming either under fairness or deception, the CFPB has enough room to require that private student lenders conduct an ability to repay analysis that would, in effect, cause them to consider the role that its lending program would have on wealth inequality more broadly.

A final part of meeting the principled-by-design attribute could be through ensuring that the actual design of the model benefits from a diversity of views.[526] By this I mean that diversity of thought and experience, as well as concerted efforts at inclusion, should form part of the design process. This is important because, as noted above, when a system is fed data that is already biased, it cannot help but produce some level of biased results.[527] Considering different perspectives and needs—both of

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524.   11 U.S.C. § 523(a)(8) (2018); *see also* Thomas v. Dep't of Educ. (*In re* Thomas), No. 18-11091, 2019 U.S. App. LEXIS 225584, at *11 (5th Cir. July 30, 2019) ("[S]tudent loans are not to be discharged unless requiring repayment would impose intolerable difficulties on the debtor.").

525.   12 U.S.C. §§ 5531(c)(1)(A), (B).

526.   TRUSTWORTHY AI, *supra* note 518, at 22.

527.   *See* Bolukbasi et al., *supra* note 15, at 2–3; Bruckner, *supra* note 245, at 28; Katyal, *supra*

which can often only be expressed effectively by representatives of groups first hand—is necessary to guard against bias in the design phase. That means, in additional to various kinds of professional expertise, the principles identifying portion of the designing of the model should include stakeholders with a variety of racial, ethnic, gender, and other attributes.

B. RESPONSIBLE-THROUGH-CONSTRUCTION

The second principle requires that the underwriting model be responsible in its construction. With this concept, the actual technical mechanics of the underwriting program must be built so as to wall off certain kinds of behavior that is deemed to undercut responsible and appropriate lending activity.[528] This involves using the results of the deliberative process described above at the design phase to ferret out those potential risks that might arise from underwriting through the use of alternative data—namely, increasing credit disparities and creating discriminatory results.

Through the risk-identification process, the underwriting algorithm's architecture should be constructed so as to draw lines between permissible and impermissible types of data. This would include best efforts attempts at preventing correlations that would directly or indirectly allow the algorithm to use this type of data in an undesirable way in the aggregate.

An ideal part of the implementation of these responsible architectures is that firms operating within the same space would collaborate with each other in order to standardize some aspects of the underwriting model.[529] This would produce the net positive effect of the market as a whole coalescing around a shared set of boundaries and standards, such as industry best practices or codes of ethics or high standards.[530] Online lenders operating in this space should be inclined to embrace this kind of cooperative behavior because it allows for them to still compete while at the same time agreeing to some level of baseline behavior that is not imposed top-down from a government regulatory body.

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note 478, at 68.

528.   TRUSTWORTHY AI, *supra* note 518, at 19–20.

529.   *Id.* at 21. This of course could raise antitrust issues, but these underwriting baselines could be developed by an industry/trade group. *See Spotlight on Trade Associations*, FED. TRADE COMMISSION, https://www.ftc.gov/tips-advice/competition-guidance/guide-antitrust-laws/dealings-competitors/spotlight-trade (last visited Oct. 29, 2019).

530.   TRUSTWORTHY AI, *supra* note 518, at 22.

C. AUDITABLE-IN-EFFECT

These principled architectures must be designed so that they can be tested and validated—in other words, they must be *effectively auditable*.[531] This should be an iterative process that involves a high degree of human involvement. Monitoring and testing is the best way that the use of education-based data (or any alternative data for that matter) in loan underwriting can be done without causing harm. Leaving the model to perform with minimal human interaction—particularly with AI[532]—is not a responsible way to explore this heretofore uncharted use of counterintuitive data or data that is easily susceptible to preexisting biases. The model must be tested often to ensure that it operates as intended throughout the period of its use. Part of this testing is understanding the decisions yielded from the underwriting algorithm. This does not necessarily mean that, depending on the type of algorithm deployed, one can necessarily always know why an AI underwriting program made a certain decision, but it can provide a way for the firm to understand how that decision was arrived at by tracing the decision's path.[533] One of the admitted challenges to auditing, however, is the ability to understand the borrower on the other end. Knowing whether the borrower belongs to a legally protected class is important in being able to judge whether seemingly innocuous data were used by the underwriting algorithm to make an adverse credit decision because a counterintuitive, predictive correlation was detected. Under current law, lenders may not require that a borrower provide legally sensitive characteristic information when making a loan, and they certainly cannot consider these characteristics in making a lending decision.[534] The only exception to this comes in the way of mortgage lending, as the Home Mortgage Disclosure Act ("HMDA") requires residential mortgage lenders to collect information about a borrower's race, ethnicity, age, and gender.[535] This is so the federal government can detect patterns of discrimination, identifying whether certain lenders covered by the Community Reinvestment Act are meeting the credit needs of the

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531. *Id*. at 20–21.

532. Nicholas W. Mull, *The* Roboticization *of Warfare with Lethal Autonomous Weapon Systems (Laws): Mandate of Humanity or Threat to It?*, 40 HOUS. J. INT'L L. 461, 479 (2018) (explaining unsupervised machine learning).

533. TRUSTWORTHY AI, *supra* note 518, at 21.

534. *Your Equal Credit Opportunity Rights*, FED. TRADE COMMISSION: CONSUMER INFO., https://www.consumer.ftc.gov/articles/0347-your-equal-credit-opportunity-rights (last visited Sept. 11, 2019).

535. 12 U.S.C. §§ 2801–11 (2018); *see also Mortgage Data (HMDA)*, CONSUMER FIN. PROTECTION BUREAU, https://www.consumerfinance.gov/data-research/hmda/learn-more (last visited Oct. 29, 2019).

geographic areas where they are located, and can assist other agencies in making housing policy decisions.[536]

For private student lenders, there is currently no ability to systemically collect data about the legally sensitive characteristics of their borrowers. Borrowers can certainly volunteer this information at the time the loan is made, but many lenders are hesitant to even make the suggestion on account of fears of fair lending litigation.[537] This is all to say that there are some limitations under existing law as to how effective the auditing process can be, but potentially this supervisory guidance might give lenders some comfort to explain to borrowers why they are being asked to volunteer the information at the time the loan is made. A borrower need not comply, but under current law—until there is a HMDA equivalent law that covers consumer credit more broadly—this is the best that can be done.

A final and equally important part of having the ability to audit these underwriting models is implementation, a process that audits the algorithms and responds to errors found in these audits. The guidelines should encourage firms to have formally constituted internal review committees or standing groups charged with periodically examining the underwriting models.[538] This group should be diverse and inclusive. Each lender could have a designated employee in charge of credit ethics and this person's duty would be to ensure that the firm's underwriting and credit processes adhered to the principles set forth in the initial design.[539] The process of auditing should also involve the periodic involvement of stakeholders— actual student loan borrowers—who can speak to the process, the outcomes, and the overall experience. This would involve actively soliciting the input and involvement of others in the iterative process of the firm's efforts to better understand the decisions its credit business makes and how it impacts others.

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536. *Mortgage Data (HMDA)*, *supra* note 535.

537. K&L GATES & CHARLES RIVER ASSOCS., FINTECH REGULATORY AND LITIGATION LANDSCAPE 3 (2017), http://www.klgates.com/files/Publication/fb243904-1ea6-4f6e-a55d-91958b453 381/Presentation/PublicationAttachment/904ed0fb-d139-414b-9a43-9f44ae66c859/Fintech_Regulatory _and_Litigation_Landscape.pdf. Fintech lenders also fear becoming political targets. *See* Kate Patrick, *Lawmaker Questions FinTech Industry over Lending Practices*, GOV'T TECH. (Aug. 21, 2018), http://www.govtech.com/policy/Lawmaker-Questions-FinTech-Industry-Over-Lending-Practices.html.

538. TRUSTWORTHY AI, *supra* note 518, at 22.

539. *Id*.

CONCLUSION

The rise of financial technology firms is a direct result of the 2008 financial crisis.[540] In a world reshaped by new financial regulations and consumer protection regimes, consumer credit drew the attention of emerging technology firms.[541] Indeed, Silicon Valley's forceful move into the financial space has been both significant and fast. Fintech innovations are fundamentally challenging the mainstream banking and financial sector. Along with these changing market dynamics, however, come a new set of challenges for financial regulators as they seek to ensure a stable, safe, and protective market for the public consumption of credit.

As this Article argues, financial technology's activity in the student loan space merits particular attention.[542] The special place reserved for education—particularly higher education—in America has long entailed policymaking that does not always track the policies we use to regulate other parts of the economy.[543] This is mostly due to the role that education plays in advancing one's future in civil society. Education is key to social mobility, breaking intergenerational poverty, and, in the long term, achieving the American dream.[544] It is perhaps one of the most widely-held truisms "that higher education is necessary to increase one's financial prosperity and social standing in America."[545]

Because of this high regard for postsecondary education, policymakers must keep a vigilant eye on how it is financed. Because of the particular issues involved in how alternative, education-based data can be used to facilitate the private student lending process, the government has an incentive to regulate this space carefully. This is particularly true since political winds are constantly blowing in the direction—particularly of late—of expanding the role that the private sector plays in financing

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540.   Odinet, *supra* note 17, at 800.

541.   DIMON, *supra* note 1.

542.   Glater, *supra* note 309, at 2168–77 (describing how an education differs from how society thinks about and treats other forms of investment).

543.   For a fuller discussion, see generally JOSHUA M. DUNN & MARTIN R. WEST, FROM SCHOOLHOUSE TO COURTHOUSE (2009); BERYL A. RADIN & WILLIS D. HAWLEY, THE POLITICS OF FEDERAL REORGANIZATION: CREATING THE U.S. DEPARTMENT OF EDUCATION (1988); *How Are the Local, State and Federal Governments Involved in Education? Is This Involvement Just?*, CTR. FOR PUB. JUST., https://www.cpjustice.org/public/page/content/cie_faq_levels_of_government (last visited Oct. 29, 2019) (providing an overview of how various types of schools interact with the government); Harvey Siegel et al., *Philosophy of Education*, STAN. ENCYCLOPEDIA PHIL. ARCHIVE, https://plato.stan ford.edu/archives/win2018/entries/education-philosophy (last updated Oct. 7, 2018).

544.   *See supra* Section III.A.

545.   Elengold, *supra* note 54, (manuscript at 3).

postsecondary education.[546]

The use of alternative data may indeed prove superior to existing credit scoring models when it comes to student lending, but the use of education-based data without sufficient safeguards can lead to unintended consequences. The supervisory guidance provided above furnishes a way for regulators to move in an incremental and soft-handed way that still allows for innovation in private student lending but nevertheless forces firms to think more critical about their business models and to build some hard edges around their underwriting. When big data and algorithms come to direct students' life decisions related to higher education, students risk losing the opportunity to explore to make mistakes that, in the end, open new doors.

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546.   Michael Simkovic, *The Latest Plan to Make Federal Student Loans Less Appealing: Cut Repayment Period from 25 Years to 10, Draft Employers as Debt Collectors*, BRIAN LEITER'S L. SCH. REP. (Feb. 26, 2019), https://leiterlawschool.typepad.com/leiter/2019/02/the-latest-plan-to-make-federal -student-loans-less-appealing-cut-repayment-period-from-25-years-to-1.html.