(DIS)CREDITING CLAIMS OF FINANCIAL INCLUSION: THE INTEGRATION OF ARTIFICIAL INTELLIGENCE IN CONSUMER CREDIT MARKETS IN THE UNITED STATES AND KENYA

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Abstract: In recent decades, a "financial inclusion assemblage" led by international development agencies, private foundations, industry, regulators, governments and academia has invested in developing initiatives to expand global participation in the formal financial sector. Increasingly, financial technology (fintech) firms promise that their platforms provide the most expeditious path to democratic access to financial markets and, consequently, digital financial inclusion.

This article discusses artificial intelligence tools integrated into consumer mobile payment platforms that facilitate micro-lending in Kenya and alternative lending in the United States. Proponents suggest that these digital platforms are more efficient and engender less bias than conventional approaches. Evidence increasingly demonstrates, however, that these technologies may not be neutral and may, in fact, replicate or amplify bias.

In this article, we examine the myths and misperceptions of financial inclusion and the limitations of the fractured regulatory environment in many countries integrating fintech in underbanked communities. We explore how financial inclusion may not only create channels for prosperity and improvement but also engineer debilitating and sometimes precarious financial circumstances for users. Regulators have taken steps towards addressing concerns, but consumer protection requires greater focus to create lasting and significant welfare reforms. Arguably, the solution may not be a specific regulatory action, but rather reforms aimed to address the underlying causes of financial exclusion.

Keywords: *financial inclusion; fintech; credit scoring; machine learning; artificial intelligence; mobile money; payment systems; financial regulation; credit; lending*

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I. Introduction

Aided by innovation, financial technology ("fintech") firms increasingly displace legacy financial service firms around the world. The World Bank's Global Findex Report 2017 asserted that digital technology facilitates solutions that could mediate financial hardship.[1] Similarly, fintech firms frequently assert that technology enables universal access to financial services, allowing many to invest in their futures. According to the Findex Report and these firms, the integration of new technologies will enable the nearly 2 billion individuals and families globally who have limited or lack of access to conventional financial products offered by legacy banking and financial institutions[2] and the 33 million unbanked and underbanked households in the United States[3] access to mainstream-equivalent financial services, reducing reliance on expensive and, in some instances, predatory financial practices.[4] While admirable, this promise is too often aspirational. Careful evaluation reveals how some technologies adopted by fintech firms may engender reliance on technological

1 Asli Demirgüç-Kunt, Leora Klapper, Dorothe Singer, Saniya Ansar and Jake Hess, *The Global Findex Database 2017* (Washington, DC: World Bank Group, 2018).

2 *Ibid*., ix, 4, 5, 35 (indicating that "about 1.7 billion adults remain unbanked—without an account at a financial institution or through a mobile money provider").

3 See, eg, Federal Deposit Insurance Corporation, *2017 FDIC National Survey of Unbanked and Underbanked Households* (Arlington, VA: FDIC, 2018) p. 1 (indicating that 6.5 per cent of US households (or 8.4 million households) were unbanked in 2017 and 18.7 per cent of US households (24.2 million) were underbanked, meaning that the household not only had a checking or savings account but also obtained financial products and services outside of the banking system). See generally Louise Seamster, "Black Debt, White Debt" (2019) 18:1 *Contexts* 30. Chief among these services is expanding the provision of credit, a financial asset that governments and market participants have historically touted as a vehicle for socioeconomic mobility: see further Abbye Atkinson, "Rethinking Credit as Social Provision" (2019) 71 *Stan L Rev* 1093.

4 A report from the University of North Carolina at Chapel Hill's Center for Community Capital commissioned by JP Morgan Chase suggests that expanding access to emerging technologies can lead to better financial health and inclusion in the Global South. See Lucy Gorham and Jess Dorrance, *Catalyzing Inclusion: Financial Technology & the Underserved* (Chapel Hill, NC: Center for Community Capital, 2017). This logic persists in literature from dominant financial technological industry institutions, frequently surfacing in CEO statements or think-tank perspectives. *Consider,* eg: Rik Kirkland, "How Digital Financial Inclusion Is at the Center of PayPal's Strategy" *McKinsey & Company* (5 October 2018), available at https://www.mckinsey.com/industries/financial-services/our-insights/democratizing-digital-finance-an-interview-with-paypal-ceo-dan-schulman# (visited 9 July 2021); Annie DeStefano, "Can Fintech Boost the Economy and Reduce Inequality?" *Silicon Valley Bank* (1 March 20201), available at https://www.svb.com/blogs/annie-destefano/can-fintech-boost-the-economy-and-reduce-inequality (visited 9 July 2021).

Despite the popularity of this discussion, scholars have also critiqued its logic. See, eg, Mehrsa Baradaran, *How the Other Half Banks: Exclusion, Exploitation, and the Threat to Democracy* (Cambridge, MA: Harvard University Press, 2015) (arguing for a "public option" in consumer banking); E Gerald Corrigan, *Annual Report 1982: Are Banks Special?* (Minneapolis: Federal Reserve Bank of Minneapolis, 1982) (raising fundamental questions regarding the role of banks and discussing their prudential regulation). A regression analysis using Global Findex data is a more recent middle ground. Researchers had discovered positive impacts of fintech on financial inclusion but found that these were more concentrated in high-income countries. Ayse Demir, Vanesa Pesqué-Cela, Yener Altunbas and Victor Murinde, "Fintech, Financial Inclusion and Income Inequality: A Quantile Regression Approach" (2020) *The European Journal of Finance* (online publication).

tools that may engage in concerning data storage and use policies. Without adequate guardrails, these technologies may amplify discriminatory practices.

These concerns arise, in part, due to the integration of certain features in technologies adopted by fintech firms. For example, many fintech firms adapt machine learning (ML) algorithms to consider non-traditional data in assessing an individual's creditworthiness.[5]

In this article, we focus on digital financial inclusion tools for consumer credit, from mobile micro-lending programmes in Kenya to alternative lending and credit scoring schemes in the United States. In doing so, we consider how digital financial inclusion processes are fraught with real and potential dangers for consumers. Insofar as financial inclusion advocates pin their hopes on fintech, the efficacy of these technological integrations for achieving greater accessibility—whether through mobile money and micro-lending or alternative credit scoring—cannot be assumed. Rather, fintechs must generate evidence that their practices are not, in fact, simply rewriting the terms of financial exclusion via alternative means.

With unrestricted opportunity to borrow via ever-expanding expedited loan options provided by fintechs, predatory lending practices and never-ending debt cycles may proliferate. Consider the disturbing tales emerging of digital debt platforms peddling payday loan-style arrangements masked by the opaque and unassailable shroud of innovation and financial inclusion.[6] Kevin Donovan and Emma Park share harrowing narratives of aggressive marketing campaigns by text message that entice Kenyan borrowers already consumed by "perpetual debt" to

5 *Examining the Use of Alternative Data in Underwriting and Credit Scoring to Expand Access to Credit: Hearing Before the H. Comm. on Fin. Servs*., 116th Cong. 4–6_(2019) (statement of Kristin N Johnson, McGlinchey Stafford Professor of Law and Associate Dean of Faculty Research, Tulane University Law School), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3481102 (visited 31 August 2021); See also Julapa Jagtiani and Catharine Lemieux, "The Roles of Alternative Data and Machine Learning in Fintech Lending: Evidence from the LendingClub Consumer Platform" (2019) 48:4 *Financial Management* 1009.

6 See, eg: "Wonga's Woes Spell the End of the Payday-Loan Era" *The Economist* (30 August 2018), available at https://www.economist.com/britain/2018/08/30/wongas-woes-spell-the-end-of-the-payday-loan-era (visited 9 July 2021) (describing the fall of the British payday lender Wonga); Brian T Melzer, "The Real Costs of Credit Access: Evidence from the Payday Lending Market" (2011) 126:1 *Quarterly Journal of Economics* 517, 522 (indicating that loans give low-income families flexibility "in managing consumption over time" and yet may create "substantial debt service burdens").

The concept of "predatory inclusion" has been used by Keeanga-Yamahtta Taylor to describe a long-term predatory lending programme that aims to include ethnic minorities in the housing market. Subprime loans were often over-extended in the latter half of the twentieth century, but with the expectation that borrowers would frequently fail on repayments, leading to foreclosures or extensive debt owed to lenders: Keeanga-Yamahtta Taylor, *Race for Profit: How Banks and the Real Estate Industry Undermined Black Homeownership* (Chapel Hill, NC: University of North Carolina Press, 2019). See also*:* Mary Ager Caplan, "Communities Respond to Predatory Lending" (2014) 59 *Social Work* 149; Raphaël Charron-Chénier, "Predatory Inclusion in Consumer Credit: Explaining Black and White Disparities in Payday Loan Use" (2020) 35:2 *Sociological Forum* 370; Louise Seamster and Raphaël Charron-Chénier, "Predatory Inclusion and Education Debt: Rethinking the Racial Wealth Gap" (2017) 4:3 *Social Currents* 199, 199–200 (describing the targeting of minority homebuyers and students who borrow to fund mortgage or education debt as predatory inclusion).

borrow at expensive, ballooning interest rates.[7] Cash-strapped borrowers who lack the resources to meet their daily expenses enter a downward spiral of indebtedness. If they fail to repay their loans, some fintech firms bombard overextended borrowers with continuous and embarrassing payment alerts. Borrowers on the debt treadmill intensify efforts to earn money only to face a "wageless life"—enslaved by and labouring to repay outstanding digital debt.[8]

This article proceeds as follows. Section II describes the basis for and concerns that arise from fintech claims that technology enhances financial inclusion. Section III sketches historical and emerging regulatory landscapes, comparing regulatory concerns between Kenya and the United States. Section IV highlights additional questions and reflections emerging from the discussion in earlier sections of the article and identifying routes for further study and consideration.

II. Financial Inclusion: Histories and Current State of Play

A. Introduction to financial inclusion

Financial inclusion emerged as an important philanthropic and development agenda at the turn of the 21st century with a relatively simple premise: in the mid-2000s, 2.5 billion adults (53 per cent of the world's population) did not use formal or semi-formal financial services.[9] This was not by choice. Rather, these individuals were often systematically excluded from the world's formal banking and credit systems for several reasons, including, among them, lack of effective infrastructure; discrimination based on race, gender and class; informal redlining practices and other challenges. Exclusion from formal financial systems has been shown to correlate with chronic and extreme poverty.[10] The financial inclusion hypothesis, then, is that more accessible financial services will have a net positive effect on global poverty.

Over the past two decades, a "financial inclusion assemblage"[11] made up of international development and aid agencies, private foundations, industry,

7 For some examples of fintech firms offering payday-style loans, see, eg: CashNetUSA, available at https://www.cashnetusa.com/ (visited 30 September 2019); Sean Farrell, "Where Did It All Go Wrong for Wonga?" *The Guardian* (7 August 2018), available at https://www.theguardian.com/business/2018/aug/07/wonga-loans-where-did-it-all-go-wrong (visited 9 July 2021).

8 Kevin P Donovan and Emma Park, "Perpetual Debt in the Silicon Savannah" *Boston Review* (20 September 2019), available at http://bostonreview.net/class-inequality-global-justice/kevin-p-donovan-emma-park-perpetual-debt-silicon-savannah (visited 9 July 2021) (exploring fintech platforms in Kenya that offer access to credit "with speed and ease" to "millions of Kenyans in need").

9 Alberto Chaia, Aparna Dalal, Tony Goland, Maria Jose Gonzalez, Jonathan Morduch and Robert Schiff, *Half the World is Unbanked* (New York: Financial Access Initiative, 2009) p. 1.

10 See, eg: Gregor Engelmann, Gavin Smith and James Goulding, "The Unbanked and Poverty: Predicting Area-Level Socio-Economic Vulnerability from M-Money Transactions" (IEEE International Conference on Big Data, Seattle, 10–13 December 2018).

11 Term used by Anke Schwittay, "The Financial Inclusion Assemblage: Subjects, Technics, Rationalities" (2011) 31:4 *Critique of Anthropology* 381.

regulators, governments and academia have invested in researching and developing tools, programmes and other initiatives, with the goal of expanding participation in formal financial sectors. Crucially, financial inclusion has primarily followed the market-driven ethos of philanthrocapitalism,[12] articulated well by the Bill and Melinda Gates's Foundation's Deputy Director of Financial Services for the Poor: "Financial inclusion is not about charity—it is about designing a single financial system that serves the poor and provides an opportunity for commercial players to create a business by serving the poor".[13]

Financial inclusion advocates purport that fintech firms not only deliver financial services but also assess consumers' needs and vulnerabilities by collecting and analysing transactional data. In the Global South, digital financial inclusion typically takes the form of mobile money services that makes it possible for unbanked consumers to transfer money quickly and securely using their mobile phones. As mobile money service providers have scaled, mobile network operators and financial service providers have launched microcredit and lending products that "ride the rails" of mobile money platforms.[14]

Financial inclusion also sits at the centre of discourse on economic inequality in the United States. As recently as 2018, the Federal Reserve estimated that 22 per cent of US households were unbanked or underbanked, meaning that they had limited access to consumer financial services.[15] Two-fifths of unbanked US adults use one or a combination of alternative—or "fringe"—financial services, such as pawn shops, payday lenders, paycheck advances and check cashing services.[16] Additionally, as recently as 2015, an estimated 1.5 million US households had incomes totalling less than $2 a day.[17] Statistics like these have prompted renewed calls to expand access to safe, affordable and reliable financial services, including credit, in the United States.[18]

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12 See, eg, Arjuna Costa and Tilman Ehrbeck, "A Market-Building Approach to Financial Inclusion" (2015) 10:1 *Innovations* 53; Jan Bellens, "How Banks Can Play a Stronger Role in Accelerating Financial Inclusion" *EY* (25 April 2018), available at https://www.ey.com/en_gl/trust/can-inclusive-banking-drive-economic-growth-in-emerging-markets (visited 25 June 2021).

13 Kosta Peric, "Digital Financial Inclusion" (2015) 9:3 *Journal of Payments Strategy & Systems* 212, 213.

14 See Stephen C Rea, Ursula Dalinghaus, Taylor C Nelms and Bill Maurer, "Riding the Rails of Mobile Payments: Financial Inclusion, Mobile Phones, and Infrastructure" in Larissa Hjorth, Heather Horst, Anne Galloway and Genevieve Bell (eds), *The Routledge Companion to Digital Ethnography* (New York: Routledge, 2017).

15 Number reported by the Board of Governors of the Federal Reserve System: Lisa Chen and others, *Report on the Economic Well-Being of U.S. Households in 2018* 25 (No. 4655. Board of Governors of the Federal Reserve System (US), 2019).

16 See Nakita Q Cuttino, "The Rise of 'Fringetech': Regulatory Risks in Earned Wage Access" (2021) 115 *Nw U L Rev* 1505.

17 See Kathryn J Edin and H Luke Shaefer, *$2.00 A Day: Living on Almost Nothing in America* (Boston: Houghton Mifflin Harcourt, 2015).

18 See generally Jason Furman, "Financial Inclusion in the United States" *The White House* (10 June 2016), available at https://obamawhitehouse.archives.gov/blog/2016/06/10/financial-inclusion-united-states (visited 25 June 2021); Rachel Morpeth, "Financial Inclusion in the U.S. – Are We Making Progress?" *Center for Financial Inclusion* (18 April 2018), available at https://www.centerforfinancialinclusion.

B. Predatory lending credit–debt cycles in Kenya

Consider the establishment and rapid uptake of mobile money in Kenya, an oft-cited case study offered to illustrate fintech's potential to enhance financial inclusion and alleviate poverty.[19] In 2007, Kenya's largest mobile network operator Safaricom launched a mobile phone payment platform: M-Pesa. M-Pesa made it possible for Kenyans to conduct peer-to-peer (P2P) money transfers quickly and securely outside of the country's formal banking system. A user deposits cash with an M-Pesa agent, who then converts that value into "e-money", credited to the user's mobile money account. This e-money can be transferred to others via text message. By 2018, over half of Kenya's gross domestic product flowed through mobile money platforms, primarily M-Pesa.[20] Mobilising so many unbanked Kenyans within an accountable infrastructure, the platform quickly came to be seen as a financial inclusion success story, representing a vanguard of innovation potential and practice.[21]

Both Safaricom and the Kenyan government required formal registration of all mobile phone and M-Pesa users, utilising the platform to detect "fraudulent and

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org/financial-inclusion-in-the-u-s-are-we-making-progress (visited 25 June 2021); *Cf*. Brian Johnson, "Consumer Protection and Financial Inclusion" *CFPB* (12 June 2019), available at https://www.consumerfinance.gov/about-us/newsroom/consumer-protection-and-financial-inclusion/ (visited 25 June 2021).

19 Many reports and articles have focused on the success of mobile money in Kenya as a paragon for fintech production capacity. See, eg, David Yermack, *Fintech in Sub-Saharan Africa: What Has Worked Well, and What Hasn't* (Cambridge, MA: NBER, 2018); Brian Muthiora, *Enabling Mobile Money Policies in Kenya: Fostering a Digital Financial Revolution* (London, United Kingdom: GSMA Mobile Money for the Unbanked, 2015); Benjamin Ngugi, Matthew Pelowski and Javier Gordon Ogembo, "M-pesa: A Case Study of the Critical Early Adopters' Role in the Rapid adoption of Mobile Money Banking in Kenya" (2010) 43:1 *The Electronic Journal of Information Systems in Developing Countries* 1–16.

20 Alex Rolfe, "Mobile Money Transactions Equivalent of Half of Kenya's GDP" *Payments Cards and Mobile* (25 January 2019), available at https://www.paymentscardsandmobile.com/mobile-money-transactions-half-of-kenyas-gdp/ (visited 25 June 2021).

21 M-Pesa has gathered labels in popular media discussions such as a "perfect example of a viable financial ecosystem based on rules unthinkable before". Anna Kuzmina, "Kenya Case Study Part I: M-PESA Story" *What the Money?* (21 September 2018), available at https://medium.com/what-the-money/kenya-case-study-part-i-m-pesa-story-fb243fd56865 (visited 9 July 2021). See also Thierry Tressel, Jeanne Emma Verrier and Nan Zhou, *The Little Data Book on Financial Development 2015/16* (Washington, DC: World Bank Group, 2015); Stella Dawson, "Why Does M-PESA Lift Kenyans Out of Poverty?" *CGAP blog* (18 January 2017), available at https://www.cgap.org/blog/why-does-m-pesa-lift-kenyans-out-poverty (visited 9 July 2021); Claudia McKay and Rafe Mazer, "10 Myths About M-PESA: 2014 Update" *CGAP blog* (1 October 2014), available at https://www.cgap.org/blog/10-myths-about-m-pesa-2014-update. (visited 9 July 2021). Scholars have also discussed the power and prevalence of these labels. See, eg, Sibel Kusimba, "Money, Mobile Money and Rituals in Western Kenya: The Contingency Fund and the Thirteenth Cow" (2018) 61 *African Studies Review* 158; Bill Maurer, "Mobile Money: Communication, Consumption and Change in the Payments Space" (2012) 48 *The Journal of Development Studies* 589; Viviana AR Zelizer, *The Social Meaning of Money: Pin Money, Paychecks, Poor Relief, & Other Currencies* (Princeton: Princeton University Press, 2017); Keith Hart (ed), *Money in a Human Economy* (New York: Berghahn, 2017).

criminal activities".[22] While the information itself remained the property of Safaricom, it was readily available for government consultation. It did not take long for Safaricom to offer their own microloan services that are easily accessible to any registered M-Pesa user. Most notably, mobile credit products ride M-Pesa's rails, as their value is virtually added to users' M-Pesa balances. Digital lending platforms quickly multiplied. Today, over 50 digital lenders operate in Kenya.

Two distinct, but concurrent, types of technology operate via mobile money platforms. First, M-Pesa offers payment and transfer services that collect fees for each transaction made from one user's account to another user's account. Second, a micro-lending platform permits loans distributed to an individual user's account, charging interest based on the user's creditworthiness. While these fintech platforms revolutionised financial access in the country, they also simultaneously pushed many into poverty.[23]

Microloans represent an easily accessible but aggressive form of credit, with high interest rates and harsh penalties for defaulting. With transactional fees on individual payments and added interest rate charges from credits received, many users will maintain high cumulative expenses simply through using these systems. Rather than mobilising thin-file borrowers in new digital financial infrastructures, most new mobile money users in Kenya were instead no-file, with no pre-existing accountable formal records of their wealth.[24] Since 2009, a Kenyan credit information sharing (CIS) programme has been constructing credit reports for no-file mobile finance users.[25] Commercial and microfinance banks are under a mandatory requirement to report full-file credit information, while reporting from other credit providers is voluntary.[26] These credit scores affect credit and reasonable repayment options. With so many newly created credit report files in a country which had mostly not used the metric, many of these consumers are unaware of their credit scores or relative disempowerment. Inconsistent data submission in CIS had led to unreliable and unusable credit reports.[27] Consumers' lack of information

22 Leah Jerop Komen, "M-PESA: A Socio-Economic Assemblage in Rural Kenya" (2016) 9:5 *Networking Knowledge* 1.

23 Elijah Kimani, "Fin-Tech in Kenya Should Not Cause Poverty in Pursuit of Financial Inclusion" *Africa at LSE* (20 January 2020), available at https://blogs.lse.ac.uk/africaatlse/2020/01/20/fin-tech-kenya-poverty-financial-inclusion-gambling-mpesa/ (visited 25 August 2021).

24 See, eg, Arjuna Costa, Anamitra Deb and Michael Kubzansky, "Big Data, Small Credit: The Digital Revolution and Its Impact on Emerging Market Consumers" (2015) 10:3–4 *Innovations* 49.

25 See, eg, Samuel Omukoko, *The Effect Of Credit Information Sharing On Non-Performing Loans Of Commercial Banks In Kenya* (Dissertation, University Of Nairobi, 2016); Michelle Noelle Ochieng, *Evaluation of Market Awareness of Credit Referencing In Kenya among Small and Medium Enterprises: A Case of Business Network International Kenya* (Thesis, United States International University-Africa, 2017); Lelaono Alois Saruni and Jeremiah Koori, "Credit Information Sharing and Default Rate of Loans Issued by Commercial Banks Listed at the Nairobi Securities Exchange" (2020) 4:5 *Journal of Finance and Accounting* 1.

26 *Ibid*., 31.

27 See Central Bank of Kenya, Kenya National Bureau of Statistics and Kenya FSD, *The 2016 FinAccess Household Survey* (Nairobi: Kenya FSD, 2016).

or understanding regarding the scoring process may facilitate errors or severely impede correction of errors in their credit reports. Coupled with a lack of awareness of credit scores among users, credit reporting in Kenya can therefore easily miscategorise consumers and their creditworthiness.

In January 2019, Safaricom rolled out the Fuliza overdraft system for M-Pesa.[28] The intention was to provide a system allowing users to complete transactions when they have insufficient funds in their accounts.[29] The service offers instant overdraft loans from Safaricom, but registering allows Safaricom to send overdraft offers to borrowers via text message. These messages are triggered whenever the user's mobile wallet balance falls below a certain threshold.[30] In just under six months, over $252 million was withdrawn through Fuliza, securing the dominance of the service among other microloan providers already operating in the country.[31] Fuliza charges daily interest rates between 1 and 5 per cent.[32] Annualised, these payments come to at least three times as much as other loan providers.[33] When compounded, charges can amount to thousands of times more than the original loan.[34]

Supporters argue that Fuliza should be used as an overdraft service rather than as a loan.[35] As of September 2020, Fuliza is one of the two most dominant loan services used in Kenya, with its loan volume having ballooned to $2.2 billion over 2020.[36] Safaricom's 2020 Sustainable Business Report attributed this

28 Constant Munda, "Safaricom Introduces M-Pesa Transaction Overdraft 'Fuliza'" *Business Daily* (3 November 2018), available at https://www.businessdailyafrica.com/bd/corporate/companies/safaricom-introduces-m-pesa-transaction-overdraft-fuliza--2226078 (visited 9 July 2021).

29 *Ibid*.

30 Samuel Maina, "How to Check Fuliza Limit" *Tuko* (10 December 2019), available at https://www.tuko.co.ke/328887-how-check-fuliza-limit.html (visited 9 July 2021).

31 Kepha Muiruri, "Kenyans "Fuliza" Ksh.140 Billion in 9 Months" *Citizen Digital* (2 November 2019), available at https://citizentv.co.ke/business/kenyans-fuliza-ksh-140-billion-9-months-292061/ (visited 9 July 2021); Samuel Owino, "How Outstanding Fuliza Loans Are Frustrating Kazi Mtaani Recruits" *Nairobi News* (20 August 2020), available at https://nairobinews.nation.co.ke/editors-picks/how-outstanding-fuliza-loans-are-frustrating-kazi-mtaani-recruits (visited 9 July 2021).

32 Mpesa Guide, "Fuliza Mpesa Daily Charges – Check Current Rates & Fees On Fuliza 2021" *Mpesa Guide* (6 August 2020), available at https://mpesaguide.com/fuliza-mpesa-daily-charges/ (visited 9 July 2021).

33 Patricia Angela Koki, @kawkeytrish (Twitter 15 October 2020, 2:10 AM), available at https://twitter.com/kawkeytrish/status/1316652779830677505 (visited 9 July 2021).

34 Francis Waithaka, @waithash (Twitter 28 June 2021, 11:55 AM), available at https://twitter.com/waithash/status/1409571216793473033 (visited 9 July 2021).

35 See, eg, NCBA, "Fuliza M-PESA - NCBA Bank", available at https://ke.ncbagroup.com/fuliza-m-pesa/ (visited 9 July 2021); Kasiva Mutisya, @kasiva_mutisya (Twitter 15 October 2020, 2:39 AM), available at https://twitter.com/kasiva_mutisya/status/1316659985435238400 (visited 9 July 2021); Saruni Maina, "Here's How to Use Fuliza the Right Way To Avoid High Charges" *Gadgets Africa* (16 October 2020), available at https://gadgets-africa.com/2020/10/16/heres-how-to-use-fuliza-the-right-way-to-avoid-high-charges/ (visited 9 July 2021); Safaricom PLC, @SafaricomPLC (Twitter 6 February 2019, 10:36 PM), available at https://twitter.com/SafaricomPLC/status/1093383001508065280 (visited 9 July 2021).

36 Frankline Sunday, "Safaricom Registers Growth during Global Pandemic" *Biztech Africa* (15 October 2020), available at https://www.biztechafrica.com/article/safaricom-registers-growth-during-global-pandemic/16183/ (visited 9 July 2021); Owino, "Outstanding Fuliza Loans" (n. 31).

rise to positive and continued traction of the service since its implementation.[37] With perhaps 1.7 million Kenyans having lost their jobs between April and June 2020,[38] it is, however, more likely that a greater number of Kenyans needed to access these aggressive loan programmes in order to make ends meet.

In the subsequent two years, Kenyan young adults have continued to be adversely affected by predatory micro-lending and the onset of the 2020 global pandemic. They are unable to secure employment, unable to pay school fees and unable to procure aid and assistance from family members who are similarly suffering financial distress. Research has already highlighted how younger generations in Kenya are more likely to mobilise digital financial support. Previous generations preferred social-connected financial support, such as kinship networks or rotating savings groups.[39] Simultaneously, mobile gambling platforms began allowing deposits from mobile money accounts in 2019.

Kenya's youth are particularly vulnerable to these platforms, with many ending up swallowed by cycles of betting, debt and poverty before even getting the chance to start working.[40] Ethnographic research collected by this team indicates that, in 2020, many students utilised micro-lending platforms to pay for gambling and schooling debts.[41] Younger respondents in particular would take out mobile loans and subsequently default with no means of repayment.

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37 Safaricom, *Resilience through Transition: 2020 Sustainable Business Report* (Nairobi: Safaricom, 2020).

38 KTN News Kenya, "Unemployment: 1.7 Million Kenyans Lost Their Jobs between April-June; Youth Are the Most Affected" *YouTube* (1 September 2020), available at https://www.youtube.com/watch?v=DdVEi_ASbFE&ab_channel=KTNNewsKenya (visited 9 July 2021).

39 Donovan and Park, "Perpetual Debt in the Silicon Savannah" (n. 8); Jenna Grzeslo, "A Generation of Bricoleurs: Digital Entrepreneurship in Kenya" (2020) 16:4 *World Journal of Entrepreneurship, Management & Sustainable Development* 403; Kimani, "Fin-Tech in Kenya" (n. 23).

40 Fabo M Ogachi, Muchiri Karega and Eunice Njeri Mvungu, "Prevalence and Factors Associated with Gambling Disorder among Kenyan University Students Involved in Sports Betting" (2020) 8:4 *International Journal of Education and Research* 131; "The Gambling Habit 'Swallowing' Kenya's Youth" *BBC News* (10 May 2019), available at https://www.bbc.com/news/av/world-africa-48231778(visited 9 July 2021).

41 Ethnographic research was collected in Kenya from September 2019 to July 2020 by Farah Qureshi with the assistance of Mwangi Mwaura, a university student. Research collected from students included participant observation, conversation, interviews and anonymised group surveys. The survey collected a large variety of qualitative responses for over 40 questions from university students after the onset of the COVID-19 pandemic in Kenya. The survey was designed with input from Mwangi Mwaura and organised on Survey Monkey. The questions asked respondents to reflect on a number of themes such as familiarity with mobile finance options, their interactions with credit organisations and their general perceptions and relationships with certain banking institutions. All respondents' data were anonymised, but an email link was circulated allowing anyone to respond. Approximately 100 students completed the survey, and most chose to write additional comments reflecting on their experiences and difficulties with using mobile finance services such as credit and loan providers. Additional analysis and dissemination of the survey data are being performed with the assistance of student research assistant William Quigley.

With at least 50 per cent of Kenyan borrowers defaulting on their loans,[42] lenders are earning prodigious profit. But the debt immobilises poor Kenyans more than any form of presumed mobility from digital financial inclusion.[43] With the onset of individual credit reporting through fintech platforms, many of the youth are instead starting their adult lives with negative credit scores, debilitated before they even enter the workforce. As one university student informed us: "I am still in debt, I am avoiding more debt as it becomes a large burden later; it's so tempting and you become a prisoner".[44] Alongside other classmates, this student was overwhelmed by "overcharged" interest rates, which are presented alongside a short payment period and very harsh consequences for not paying on time.[45]

Local criticisms of Kenyan mobile money and micro-lending platforms exist,[46] but their economic discussion is fragmented. The novelty of these fintech innovations coupled with their successful inception in Kenya is a source of national pride.[47] Analysis of M-Pesa's impact suggests that those with access can better deal with livelihood risks.[48] M-Pesa has been credited with helping to lift 2 per cent of Kenyan households above the poverty line.[49] Mobile money services are useful but expensive for users, with each transaction costing money to complete. Under such conditions of use, the guise of financial inclusion is obscured, as users may overall lose money through the use of the payment platform. The poor are disproportionately hit by banded changes for transactions, as frequent smaller transactions end up being more expensive. Users are charged fees to transfer and withdraw funds,

42 Juan Carlos Izaguirre, Michelle Kaffenberger and Rafe Mazer, "It's Time to Slow Digital Credit's Growth in East Africa" *CGAP blog* (25 September 2018), available at https://www.cgap.org/blog/its-time-slow-digital-credits-growth-east-africa (visited 9 July 2021).

43 Milford Bateman, "How the Bank's Push for Microcredit Failed the Poor" *Bretton Woods Project* (8 December 2017), available at https://www.brettonwoodsproject.org/2017/12/banks-push-microcredit-failed-poor/ (visited 13 July 2021); Michelle Kaffenberger, Edoardo Totolo and Matthew Soursourian, *A Digital Credit Revolution: Insights from Borrowers in Kenya and Tanzania* (Washington, DC: CGAP, 2018).

44 Farah Qureshi, Survey response from an anonymous University of Nairobi student, SurveyMonkey.com (Nairobi, July 2020).

45 *Ibid*.

46 See, eg, Mercy W Buku and Michael W Meredith, "Safaricom and M-Pesa in Kenya: Financial Inclusion and Financial Integrity" (2012) 8 *Wash. JL Tech. & Arts* 375; Lucy Wangari Kamau and Assumpta W Kagiri, "Influence of Inventory Management Practices on Organizational Competitiveness: A Case of Safaricom Kenya Ltd" (2015) 1:5 *International Academic Journal of Procurement and Supply Chain Management* 72.

47 See, eg, David Tuwei and Melissa Tully, "Producing Communities and Commodities: Safaricom and Commercial Nationalism in Kenya" (2017) 13:1 *Global Media and Communication* 21; D Ndirangu Wachanga, "Ethnic Differences vs Nationhood in Times of National Crises: The Role of Social Media and Communication Strategies" (2015) 7:3 *Journal of African Media Studies* 281.

48 See Olga Morawczynski and Mark Pickens, *Poor People Using Mobile Financial Services: Observations on Customer Usage and Impact from M-PESA* (Washington, DC: CGAP, 2018); William Jack and Tavneet Suri, *Mobile Money: The Economics of M-PESA* (Cambridge, MA: NBER, 2011).

49 Tavneet Suri and William Jack, "The Long-run Poverty and Gender Impacts of Mobile Money" (2016) 354:6317 *Science* 1288.

and no user may withdraw less than Ksh. 50.[50] With diminishing relative transaction costs on larger sums, Safaricom has a vested interest in promoting more common small transactions.[51] When each transaction costs money, M-Pesa becomes considerably more expensive to use than cash transactions or conventional payment cards.[52]

C. Credit scoring and ML in the United States

Among the digital financial inclusion projects in the United States is the growing alternative lending market—which makes lines of credit available to small and medium businesses and individual consumers outside of traditional bank and credit union settings—and increased interest among financial institutions and credit card issuers in exploring novel ways of assessing creditworthiness. Both alternative lending and alternative credit scoring typically rely upon ML algorithms and the artificial intelligence ("AI") systems that they undergird[53] to identify and on-board would-be borrowers who have been excluded from traditional credit markets.

However, ML/AI technologies do not operate in a vacuum. No matter the specifics of their design or purpose, algorithms and the systems that they support are already embedded in social contexts that affect and are affected by them.[54] ML algorithms can inherit biases encoded in training data, and incomplete or skewed datasets can negatively affect the accuracy of outputs.[55] Training data, by necessity, are drawn from historical datasets, and it is through those datasets that ML techniques "can reproduce existing patterns of discrimination, inherit the prejudice

50 This is equivalent to the average cost of a loaf of bread or single public transport ticket according to Numbeo, "Cost of Living in Kenya" *Numbeo*, available at http://www.numbeo.com/cost-of-living/country_result.jsp?country=Kenya (visited 18 May 2021).

51 This can be up to 66 per cent, as Safaricom charges Ksh. 66 for transfers between Ksh. 101 and Ksh. 500 to an unregistered Safaricom user. See James Wamathai, "New M-Pesa Charges Effective July 1 2018" *HapaKenya* (1 July 2018), available at https://www.hapakenya.com/2014/08/20/new-mpesa-charges/ (visited 25 June 2021).

52 Alternative payment transfer channels involve network-based exchange channels like hawala networks. With no fixed rates, a direct comparison against M-Pesa's charges is difficult to ascertain, but as the point of exchange involves actual people, negotiations could be established, particularly as relationships are established with hawala brokers who often adjust fees for users. See Gianluca Iazzolino, *Contingency Routes: Somali Financial Flows and Transnational Spaces between Kenya and Uganda* (Irvine, CA: IMTFI, 2014).

53 ML algorithms are programmable sets of instructions that can identify non-intuitive patterns in large datasets and refine themselves as they analyse more data. ML algorithms learn how to map from a set of inputs (data) to a desired output (decision); when they are part of an automated decision-making (ADM) process, that output is often a binary "yes/no" determination. Arriving at these kinds of decisions—or "classifications"—involves predictive modelling, that is, calculating the probability that something will occur, for example a borrower defaulting on their loan. Since classifications should be as accurate as possible to be useful, the model making those predictions needs to be given certain parameters that inform its decision-making, and then train itself on actual-world data to continually refine those parameters.

54 See Alexandra Mateescu and Madeleine Clare Elish, *AI in Context: The Labor of Integrating New Technologies* (New York: Data & Society, 2019).

55 Solon Barocas and Andrew D Selbst, "Big Data's Disparate Impact" (2017) 104 *Calif L Rev* 671.

of prior decision makers, or simply reflect the widespread biases that persist in society".[56]

For example, the National Fair Housing Alliance documented the long-term effects of the "dual credit market" that grew out of housing segregation and redlining in the United States. As subprime loans have high interest rates, repayment becomes difficult.[57] Failure to make monthly payments on a loan can negatively affect a credit score, which in turn means that those borrowers are ineligible for lower interest rate loans, trapping them in debt cycles from which it can be difficult to escape.[58] In other words, "a borrower may well end up with a damaged credit score not because the borrower was more risky or negligent but rather because the borrower obtained a loan through a broker or received loan terms that increase the likelihood of delinquency and default".[59] Oftentimes the most readily available options for subprime borrowers are payday lenders that charge interest rates as high as 667 per cent[60] and tend to be more concentrated on average in neighbourhoods that disproportionately include people of colour.[61] The same report noted that in the early 2000s, black and Latinx borrowers received high-interest subprime loans at a rate nearly three times that for white borrowers; what is more, non-white borrowers were more likely to be offered subprime loans even if their credit scores qualified them for low-interest loans.[62]

The legacy of racial discrimination embedded in the United States' racial discrimination has ripple effects that inflect data used to train ML algorithms for home loan and credit products, among others. Economic growth in the immediate post–World War II US was driven in large part by government-subsidised credit markets.[63] Faith in credit as a vehicle for socioeconomic mobility has persisted in American policymaking ever since. However, the benefits of that growth and access to affordable credit have not been equally distributed. Beginning in the New Deal era, black Americans were largely excluded from the political and economic mechanisms that made fair, affordable credit available—either through explicit discrimination or through more indirect methods like redlining—leaving these consumers to "make do" with fringe consumer lending services.[64] As wealth, debt and

56 *Ibid*., 674.
57 Lisa Rice and Deidre Swesnik, *Discriminatory Effects of Credit Scoring on Communities of Color* (Washington, DC: CGAP, 2018; National Fair Housing Alliance, 2012).
58 *Ibid*.
59 *Ibid*., 18.
60 Megan Leonhardt, "This Map Shows the States Where Payday Loans Charge Nearly 700 Percent Interest" *CNBC* (3 August 2018), available at https://www.cnbc.com/2018/08/03/states-with-the-highest-payday-loan-rates.html (visited 25 July 2021).
61 Wei Li, Leslie Parrish, Keith Ernst and Delvin Davis, *Predatory Profiling: The Role of Race and Ethnicity in the Location of Payday Lenders in California* (Washington, DC: Center for Responsible Lending, 2009).
62 *Ibid*.
63 Mehrsa Baradaran, *The Color of Money* (Cambridge, MA: Harvard University Press, 2018).
64 Atkinson, "Rethinking Credit" (n. 3).

property are often transferred generationally, these patterns of discrimination persist and affect borrowers' opportunities in the present day.

Keeanga-Yamahtta Taylor describes a concept of "predatory inclusion" when explaining a US-centered project aimed at mobilising low-income black citizens to become homeowners.[65] Buyers were granted access to conventional real estate practices and mortgage financing, but on more expensive and comparatively unequal terms compared to white Americans. Similar to Kenya's no-file mobile debtors, Taylor describes how victims of this scheme were welcomed into institutions and practices from which they had formerly been excluded precisely because there were new ways in which they could be financially exploited.[66]

Alternative credit scoring products are relatively new, but evidence suggests they can more accurately assess risks posed by thin-file borrowers with little-to-no credit histories as traditional scoring techniques.[67] A growing number of fintech lending platforms in the United States use data points such as utility payment and rental histories, debit card transactions, and auto title and payday loan activities—none of which have traditionally been captured by credit scoring services—to develop more inclusive credit scoring algorithms.[68] At the same time, credit scoring platforms may interpret patterns in the data in a manner that leads to discriminatory outcomes or introduce different modes of exclusion.[69]

In an experimental study using US mortgage data, economists found that, although ML models demonstrated improved accuracy in predicting default rates, they also disproportionately rewarded white borrowers with lower predicted default probabilities while penalising black and Latinx borrowers.[70] A study of consumer loan origination platforms found that, while fintech lenders discriminated less often than face-to-face lenders when it came to accepting or rejecting applicants, they performed about the same with respect to discriminatory pricing of loans: both face-to-face and online- or mobile app-based fintech lenders charged black and Latinx borrowers 6–9 basis points higher on their interest rates than white borrowers, resulting in an extra $250 to $500 million per year in interest payments.[71] The study's authors concluded that "[w]ith algorithmic credit scoring, the nature of discrimination

65 Taylor, *Race for Profit* (n. 6).

66 *Ibid*.

67 Jagtiani and Lemieux, "The Roles of Alternative Data" (n. 5).

68 Dawn Burton, "Credit Scoring, Risk, and Consumer Lendingscapes in Emerging Markets" (2012) 44:1 *Environment and Planning A* 111; Julia S Cheney, *Alternative Data and Its Use in Credit Scoring Thin- and No-File Consumers* (Philadelphia: Federal Reserve Bank of Philadelphia, 2008).

69 Mikella Hurley and Julius Adebayo, "Credit Scoring in the Era of Big Data" (2016) 18 *Yale JL & Tech*. 148.

70 Andreas Fuster, Paul Goldsmith-Pinkham, Tarun Ramadorai and Angsar Walther, "Predictably Unequal? The Effects of Machine Learning on Credit Markets" (2021), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3072038 (visited 19 May 2021).

71 Robert Bartlett, Adair Morse, Richard Stanton and Nancy Wallace, *Consumer-Lending Discrimination in the FinTech Era* (Cambridge, MA: NBER, 2018).

changes from being primarily concerned with human biases . . . to being primarily concerned with illegitimate applications of statistical discrimination".[72]

Another way that alternative credit scoring and ML algorithms have produced discriminatory outcomes is through "creditworthiness by association".[73] Relying on data sources such as the retail locations where consumers make card-based transactions, or even social media profiles, credit scorers correlate individual behaviours with broader social patterns. In theory, incorporating such data may afford insights into creditworthiness, creating greater opportunities for unbanked or underbanked individuals. However, as mathematician Cathy O'Neil notes, "Most of us are Facebook friends with a bunch of people from high school. If I went to high school in a poor community but now have the means to pay back my loans, this method could wrongly rule me out".[74] Put another way, "[a]n algorithm that assumes financially responsible people socialise with other financially responsible people may incorporate systemic biases and deny loans to individuals who are themselves creditworthy but lack creditworthy connections".[75]

III. The Regulatory Environment

Understanding digital financial inclusion's impact on vulnerable consumers necessitates an examination of applicable regulatory frameworks, with a particular focus on what they afford fintech firms. Subsequent public incorporation of mobile money infrastructures guaranteed a widespread presence in Kenya. Mobile money became the dominant disbursal platform for government and non-governmental organisation grants.[76] Interrogating historical and contemporary financial regulations helps surface where and how they fall short, and what should be required of fintech firms in future regulations.

A. Kenyan "Test and Learn" fintech regulation

In Kenya, popular discourse promoting digital financial inclusion is instrumental in government's national improvement plan, despite scholars acknowledging that

72 *Ibid*., 2.

73 Hurley and Adebayo, "Credit Scoring in the Era of Big Data" (n 69).

74 Cathy O'Neil, "How to Talk About Big Data and Lending Discrimination" *American Banker* (10 September 2019), available at https://www.americanbanker.com/opinion/how-to-talk-about-big-data-and-lending-discrimination (visited 25 June 2021).

75 Kevin Petrasic, Benjamin Saul, James Greig, Matthew Bornfreund and Katherine Lamberth, "Algorithms and Bias: What Lenders Need to Know" *JDSupra* (23 January 2017), available at https://www.jdsupra.com/legalnews/algorithms-and-bias-what-lenders-need-67308/ (visited 25 June 2021). Other fintech companies have sought to use personal health tracking data, such as data from FitBit or Nike's FuelBand, to better assess consumers' credit risks. See Philipp Kallerhoff, *Big Data and Credit Unions: Machine Learning in Member Transactions* (Madison, WI: Filene Research Institute, 2013). As with social media data, the relationship between health data and creditworthiness rests on rather specious assumptions.

76 Atika Ahmad Kemal, "Mobile Banking in the Government-to-Person Payment Sector for Financial Inclusion in Pakistan" (2019) 25:3 *Information Technology for Development* 475.

M-Pesa's success was an isolated phenomenon that could not be easily replicated.[77] M-Pesa gained prominence as a result of limited regulatory guardrails. Growing quickly in an unregulated environment, M-Pesa flourished with virtually no competitors. This lack of regulation ensured Safaricom's growth and independent power. Over the years, M-Pesa's management developed strong relationships with government officials and regulators.[78] Regulation would require the M-Pesa system to keep these relationships in check.[79]

A significant concern when evaluating mobile money's impact in Kenya is that basic mobile payments are governed by mobile network operators, not formal financial markets regulation nor even a self-regulatory trade organisation.[80] Regulation of M-Pesa and other digital financial services has never been pre-emptive but rather made in response to perceived problems as they arose.[81] This was known as a "Test and Learn" approach.[82]

77 Many scholars, development analysts and economic reviews have praised the conditions and success of M-Pesa. The phenomenon and growth of mobile finance has not been reproduced in any other case to the same degree of success as seen in Kenya. This has encouraged a reflection on the requirements of regulatory practice and corporate innovation. See, eg, Pablo García Arabéhéty, "The Replication Limits of M-Pesa in Latin America" *CGAP blog* (20 July 2016), available at https://www.cgap.org/blog/replication-limits-m-pesa-latin-america (visited 25 August 2021); Violet N Barasa and Charles Lugo, "Is M-PESA a Model for Financial Inclusion and Women Empowerment in Kenya?" in Susanne Moore (ed), *Contemporary Global Perspectives on Gender Economics* (Hershey, PA: IGI Global, 2015); Lauren Dunn, "What Leads to a Mobile Banking Program's Success?: A Comparison of M-Pesa and Eko India Financial Services" (2015) *Journal of Public & International Affairs* (online publication); Angela C Lyons, Josephine Kass-Hanna and Andrew J Greenlee, "Impacts of Financial and Digital Inclusion on Poverty in South Asia and Sub-Saharan Africa" (2020), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3684265 (visited 25 August 2021); Isaac Mbiti and David N Weil, *Mobile Banking: The Impact of M-Pesa in Kenya* (Cambridge, MA: NBER, 2014).

78 Fildes N and J Aglionby, "Vodafone Transfers Stake in Kenya Operator Safaricom to Vodacom" *Financial Times* (15 May 2017), available at https://www.ft.com/content/bbbb386e-3956-11e7-ac89-b01cc67cfeec (visited 15 July 2021).

79 See, eg, Larry Claasen, "African Regulators Set to Tighten up on Mobile Money" *Tech Central* (5 August 2019), available at https://techcentral.co.za/african-regulators-set-to-tighten-up-on-mobile-money/91558/ (visited 15 July 2021); Joshua Masinda, "Kenya's M-Pesa Platform is So Successful Regulators Worry it Could Disrupt the Economy" *Quartz Africa* (28 December 2016), available at https://qz.com/africa/873525/safaricoms-m-pesa-has-kenyas-government-worried-what-happens-in-the-event-of-a-crash/ (visited 15 July 2021); Ignacio Mas, "Why are Banks So Scarce in Developing Countries? A Regulatory and Infrastructure Perspective" (2011) 23:1–2 *Critical Review* 135; Paul Makin, "Regulatory Issues around Mobile Banking" in OECD (ed), *ICTs for Development* (Paris: OECD, 2010).

80 Nofie Iman, "Is Mobile Payment Still Relevant in the Fintech Era?" (2018) 30 *Electronic Commerce Research and Applications* 72.

81 The limitations and practicalities of this remedial regulatory response can be understood in the following texts: Sunduzwayo Madise, *The Regulation of Mobile Money: Law and Practice in Sub-Saharan Africa* (Scham, Switzerland: Palgrave Macmillan, 2019), Chapter 15 "Regulating Money"; Mose George Moibi, *Evaluating the Adequacy of the Legal and Regulatory Framework of Mobile Money Transactions in Kenya* (Thesis, University of Nairobi).

82 Former CBK governor Njuguna Ndung'u defines four phases of the remedial "Test and Learn" regulation approach in Kenya. The first was a "payment and transfer phase". Prior to M-Pesa's formal introduction, a 2006 Communications Law recognised the capacity of mobile phone devices to carry

Prior to M-Pesa's formal introduction, a 2006 Communications Law recognised the capacity of mobile phone devices to carry funds and to store value through products, such as airtime.[83] This paved the way for M-Pesa to be regulated as a payment system rather than be subject to Kenya's banking laws.[84] By 2012, Safaricom had expanded its mobile banking products to include microcredit services.[85] Financial intermediaries were introduced to analyse transaction and savings data and establish individual credit scores. Credit options and pricing were based on these credit scores. M-Shwari was developed as a Safaricom product with the Central Bank of Kenya ("CBK"), and in just over three years it was being used by 40 million customers.[86] No new regulations were passed in response to this rollout.

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funds, and phones to store value through products such as airtime. This paved the way for M-Pesa to be regulated as a payment system rather than be subject to Kenya's banking laws.

Following M-Pesa's implementation, the CBK proposed the application of Trust Laws to keep customer's funds in a Commercial Bank of Africa (CBA) account that was inaccessible to Safaricom and managed by trustees. Establishment of the trust protected users against insolvency, illiquidity and operational risk.

The second stage was a "savings accounts phase". Kenya's commercial banks joined the mobile money scape by offering savings accounts which directly connected to mobile money accounts. New regulation was passed by the CBK which permitted the connection between commercial banks and M-Pesa and allowed savings accounts to be set up by phone. These were likely verified through a National Payment System Act of 2011 and the National Payment System Regulations of 2014. Other telecommunication companies could open their own mobile banking systems, but none would ever dent the social penetration of M-Pesa.

A third phase was described by Ndung'u as a "mobile microcredit phase", which accompanied an expanding of Safaricom products to include loan offerings. Financial intermediaries were introduced to analyse transaction and savings data and establish individual credit scores. Credit options and pricing were based on these credit scores. M-Shwari was developed as a Safaricom product with the CBA, and in just over three years was being used by 40 million customers. No new regulations were passed in response to this phase. Instead, the CBK issued "guidelines designed to mitigate financial risks". Most of these measures were aimed at addressing issues such as liquidity risk, mitigating operational risk and settlement risk when the flow of funds is obstructed. No standards were established towards fair practice or consumer rights when borrowing.

The final phase in the mid-2010s was a "remittances phase", which permitted cross-border remittance transactions to and from overseas via mobile money. Like the mobile microcredit phase, no new regulation was proposed. Instead, Kenya was categorised by the 2011 Financial Action Task Force as inadequately represented by Anti-Money Laundering/Combating the Financing of Terrorism (AML/CFT) regulations.

Njuguna Ndung'u, "Regulation and Innovation: The Experience of Regulating Kenya's M-Pesa" (Annual Conference of the Cambridge Centre for Alternative Finance, Cambridge, UK, June 2018).

83 See Postal and Telecommunications Policy Statement 2006.

84 See Ignacio Mas and Daniel Radcliffe, "Mobile Payments Go Viral: M-Pesa in Kenya" in Punam Chuhan-Pole and Manka Angwafo (eds), *Yes Africa Can: Success Stories from a Dynamic Continent* (Washington, DC: The World Bank, 2011).

85 Tamara Cook and Claudia McKay, *How M-Shwari Works: The Story So Far* (Washington, DC, Nairobi, Kenya: CGAP and Financial Sector Deepening (FSD), 2015); Ndunge Kiiti and Monique Hennink, *The Use and Impact of M-Shwari as a Financial Inclusion Banking Product in Urban and Rural Areas of Kenya* (Irvine, CA: IMTFI, 2014).

86 Ndung'u, "Regulation and Innovation" (n. 82). M-Shwari is a savings and loan service that enables M-PESA customers to save as little as Kshs. 1, and access credit from Kshs. 1,000. Deposits earn interest and accountholders may apply for unsecured consumer loans. See Safaricom, "M-Shwari",

Instead, the CBK issued "guidelines designed to mitigate financial risks".[87] The majority of these measures were aimed at addressing issues such as liquidity risk, mitigating operational risk and settlement risk when the flow of funds is obstructed.

Through the "Test and Learn" approach, Kenya's regulatory strategy fails to remedy predatory practice from finance providers. The CBK did not intervene to regulate digital lenders. In fact, digital credit providers are not even defined as financial institutions under the local Banking Act, Micro Finance Act or the Central Bank of Kenya Act. Furthermore, by labelling interest charges as "facilitation fees", mobile lenders such as Safaricom can avoid regulation and an interest rate cap.

Despite these labels, the CBK passed a recent amendment to their passive regulatory response in December 2020. The amendment was known as the Central Bank of Kenya Amendment Bill ("CBK Amendment Bill") and is currently under review. The bill would introduce measures to enable direct CBK regulation of digital financial services.[88] If passed into law, the CBK Amendment Bill would require multiple digital financial credit providers to obtain licences from the CBK to continue their operations or offer financial services.[89]

B. US regulation of credit markets

While legally prohibited today in the United States, well-documented discriminatory,[90] exclusionary and predatory credit market practices persist.[91] Similar to Kenya's regulatory responses, the regulatory response in the United States has yet to effectively address predatory and discriminatory practices in legacy or fintech consumer financial services companies.

Creditors maintain a legacy of exploiting unbanked and underbanked communities. Even well-intentioned developers who aspire to create more inclusive

available at https://www.safaricom.co.ke/personal/m-pesa/credit-and-savings/m-shwari (visited 25 August 2021).

87 *Ibid*.

88 John Syekei, Dominic Indokhomi and Ariana Issaias, "Kenya: Trends and Developments" *Chambers and Partners* (18 March 2021), available at https://practiceguides.chambers.com/practice-guides/fintech-2021/kenya/trends-and-developments (visited 25 August 2021).

89 The Central Bank of Kenya (Amendment) Bill 2021.

90 Richard Rothstein, *A Comment on Bank of America/Countrywide's Discriminatory Mortgage Lending and Its Implications for Racial Segregation* (Washington, D.C.: Economic Policy Institute, 2012) p. 3 (describing the Department of Justice's settlement with Bank of America and concluding that "[t]he lending industry seems to have systematically targeted African Americans and Hispanics for these risky subprime loans"); Seamster and Charron-Chénier, "Predatory Inclusion and Education Debt" (n. 6) pp. 199–200 (describing the targeting of minority homebuyers and students who borrow to fund mortgage or education debt as predatory inclusion).

91 See generally Kathleen C Engel and Patricia A McCoy, "From Credit Denial to Predatory Lending: The Challenge of Sustaining Minority Homeownership" in James H Carr and Nandinee K Kutty (eds), *Segregation: The Rising Costs for America* 81 (New York: Routledge, 2008).

fintechs may discover that bias creeps in and compromises the objectivity of outcomes.[92] Offering evidence of bias resulting from the adoption of such technologies in the criminal justice system, Michelle Alexander has argued that the technologies constitute the "newest Jim Crow"[93] or, as Ruha Benjamin explains, "Jim Code".[94]

C. Intermediaries and credit reporting

In both the United States and Kenya, the consumer reporting industry comprises intermediaries—credit bureaus, investigative reporting companies, savings and credit cooperative organisations ("SACCOs"), and other organisations—that collect and distribute consumer reports. Consumer reporting agencies ("CRAs") collect, assemble, evaluate and distribute consumer reports to authorised third parties. By applying uniform criteria to credit evaluation processes, CRA's methodologies have the potential to increase fairness.

To further complicate the landscape, alongside the growing body of secured lending intermediaries, a second class of fintech firms has emerged. Digital asset markets have inspired creative business models that expand consumer credit evaluation processes and offer a greater number of pathways for consumers to access credit. Early evidence suggests that post-crisis credit products developed by fintech firms or on the blockchain protocol have fuelled the resurgence in consumer credit markets.[95] To access this wave of credit, consumers face a dizzying and increasingly diverse array of borrowing choices. While conventional intermediaries such as credit card companies, banks and mortgage lenders continue to dominate the

92 See generally Barocas and Selbst, "Big Data's Disparate Impact" (n. 55). An increasing number of commentators express concern that failing to address bias may weaponise ADM platforms. See, eg, Noreen Malone, "The Algorithm Knows Me. So Why Does It Keep Shaming Me?" *New York Magazine* (11 October 2018), available at http://nymag.com/intelligencer/2018/10/algorithm-shame-the-feeling-of-being-seen-by-the-algorithm.html (visited 25 August 2021).

Recently, for example, social media erupted with outrage after journalists discovered that Amazon's "Prime-lining"—a pattern of denying some of its services to disadvantaged neighbourhoods—was eerily reminiscent of historical redlining. Careful evaluation of Amazon Prime's free same-day delivery service recently revealed the exclusion of "predominantly black ZIP codes". David Ingold and Spencer Soper, "Amazon Doesn't Consider the Race of Its Customers. Should It?" *Bloomberg* (21 April 2016), available at https://www.bloomberg.com/graphics/2016-amazon-same-day/ (visited 25 August 2021); see also Rafi Letzter, "Amazon Just Showed Us That 'Unbiased' Algorithms Can Be Inadvertently Racist" *Business Insider* (21 April 2016), available at http://www.businessinsider.com/how-algorithms-can-be-racist-2016-4 (visited 25 August 2021).

93 See Michelle Alexander, "The Newest Jim Crow" *New York Times* (8 November 2018), available at https://www.nytimes.com/2018/11/08/opinion/sunday/criminal-justice-reforms-race-technology.html (visited 9 July 2021); see also Virginia Eubanks, *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor* (New York: St Martin's Press, 2018).

94 Ruha Benjamin, *Race After Technology: Abolitionist Tools for the New Jim Code* (Cambridge, UK: Polity 2019, 2019).

95 Yet the crisis has had a profound effect on consumer access to credit and the relationship they have with it. TransUnion, "Financial Crisis – 10 Years Later: Consumer Credit Market on an Upward Curve" *TransUnion* (22 August 2018), available at https://newsroom.transunion.com/financial-crisis--10-years-later-consumer-credit-market-on-an-upward-curve/ (visited 16 July 2021).

market, many innovative entrepreneurs eagerly compete to capture a larger share of the irresistibly attractive $93 billion[96] consumer debt market.[97]

A robust literature describes a variety of predatory tactics that creditors have employed to target vulnerable borrowers.[98] Credit intermediaries extend credit to borrowers with limited or impaired credit histories but often demand higher, arguably exorbitant, interest rates from these borrowers.[99] Notwithstanding their awareness of the exploitive and abusive credit terms, vulnerable borrowers may conclude that they have few, if any, other options. Advanced ML and AI will enhance the ability of creditors, payday lenders and other predatory market participants to target vulnerable consumers, exacerbating extant problems. Ultimately, when combined with other technologies, digital debt platform providers may violate federal and state anti-discrimination statutes and regulations, such as Title VII of the Civil Rights Act of 1964,[100] Regulation B of the Equal Credit Opportunity Act[101] and the Fair Housing Act,[102] all of which prohibit intentional and unintentional discrimination that has a disparate effect on legally protected classes.

While diverse swaths of information reasonably linked to a consumer[103] may qualify as a "consumer report",[104] there are, nevertheless, limits on the reach of the

96 Parmy Olson, "How Klarna Plans to Replace Your Credit Card" *Forbes* (7 November 2016), available at https://www.forbes.com/sites/parmyolson/2016/11/07/buy-now-pay-later/ (visited 9 July 2021).

97 Shelly Hagan, "Rush Into Hot CLO Market Leaves Latecomers Fighting for Scraps" *Bloomberg* (18 June 2018), available at https://www.bloomberg.com/news/articles/2018-06-18/rush-into-hot-clo-market-leaves-latecomers-fighting-for-scraps (visited 19 May 2021) ("New CLO deals may be on pace to reach an all-time high of $150 billion this year, according to Wells Fargo & Co. New issuance increased 65 percent in 2017 from a year earlier, while refinancing and resets, which renew the coupon and the terms on an issue, reached $166 billion last year, data compiled by Bloomberg show").

98 Andrea Freeman, "Payback: A Structural Analysis of the Credit Card Problem" (2013) 55 *Arizona Law Review* 151, 154; see also Andrew P MacArthur, "Pay to Play: The Poor's Problems in the BAPCPA" (2008) 25 *Emory Bankr. Dev J.* 407, 478 ("[C]redit card companies have targeted the poor 'as a source of major profits . . .'" (quoting Kristin Brandser Kalsem, "Bankruptcy Reform and the Financial Well Being of Women: How Intersectionality Matters in Money Matters" (2006) 71 *Brook L. Rev* 1181, 1216)). For discussions on payday lending, see Baradaran, *How the Other Half Banks* (n. 4). See also Deyanira Del Rio and Andy Morrison, "Here's What Happens When Payday Loans are Banned" *The Washington Post* (5 July 2016), available at https://www.washingtonpost.com/news/in-theory/wp/2016/07/05/heres-what-happens-when-payday-loans-are-banned/ (visited 25 August 2021); Center for Responsible Lending, "S. 1642 & H.R. 3299: Madden Bill Could Open the Floodgates to Predatory Lenders" *Center for Responsible Lending* (Fall 2017), available at http://www.responsiblelending.org/sites/default/files/nodes/files/research-publication/crl-cleveland-fed-report-madden-nov2017.pdf (visited 25 August 2021).

99 Kathleen C Engel and Patricia A McCoy, "A Tale of Three Markets: The Law and Economics of Predatory Lending" (2002) 80 *Tex. L. Rev* 1255, 126; Freeman, "Payback" (n. 98).

100 42 USC § 2000e (2012).

101 15 USC § 1691(b) (2012).

102 42 USC § 45 (2012).

103 FEDERAL TRADE COMMISSION, 40 Years of Experience with the Fair Credit Reporting Act: An FTC Staff Report with Summary of Interpretations, reprinted in National Consumer Law Center, Fair Credit Reporting, at Appx. D, Part V (8th ed. 2013), www.nclc.org/library [https://perma.cc/8RKG-JHGW].

104 National Consumer Law Center, Fair Credit Reporting § 2.3.4.1 (8th ed. 2013), www.nclc.org/library [https://perma.cc/8RKG-JHGW]; see also *Trans Union Corp. v Fed. Trade Comm'n*, 245 F.3d 809 (D.C. Cir. 2001).

Fair Credit Reporting Act (FCRA), originally passed in 1970.[105] Eligible information must pertain to an "individual", defined by the statute as an "an identifiable person".[106] The statute focuses on the motivating purpose for gathering and sharing the information.[107] To that end, the statute applies only to information that is "used or expected to be used or collected" for the purpose of evaluating a consumer's credit, insurance and employment eligibility for consumers' right to obtain access to the information that appears in their credit reports.[108]

The FCRA introduces mandatory disclosure obligations for CRAs. Consistent with the principles of transparency and consumer protection, the FCRA guards consumers' identity and establishes remedies for consumers who are harmed by identity theft in the context of credit reporting.[109] To ensure the accuracy of information in credit reports, CRAs perform a continuous monitoring function and investigate the accuracy, veracity, relevancy and proper utilisation of such information.[110]

The mobile credit market in Kenya proposes novel regulatory issues which do not fit neatly into pre-existing regulatory categories.[111] In Kenya, the CBK Amendment Bill provides an opportunity to recalibrate consumer interests and the direction of unregulated financial institutions.[112] The draft of the Bill in the Kenya Gazette Supplement mentions that the CBK retains the authority to "make regulations as are necessary" to enable certain provisions of the Bill including CIS and reporting requirements for digital credit providers.[113] Details of the enacted legislation have not yet been clarified.

The CBK Credit Reference Bureau Regulations 2019 outline documents covering certain provisions of the Banking Act and the Microfinance Act, while the SACCO Societies Act considers the practice of credit recording, credit scoring and access to information.[114] Pursuant to these statutes and regulations, credit reporting information may be collected by licensed credit reference bureaus. These bureaus

105 15 USC §1681 (1970).

106 See 15 USC § 1681(a)(4). See also *McCready v EBay, Inc*., 453 F.3d 882 (7th Cir. 2006).

107 15 USC § 1681a(d)(1) (2012).

108 15 USC § 1681(a)(4).

109 *Ibid*.

110 15 USC § 1681(b) (2012); 15 USC § 1681i. See also S. Rep. No. 91–139 (1970). While they are beyond the scope of this article, it is important to note the complexities of the consumer privacy and transparency concerns. The FCRA obligates CRAs that engage in distributing consumer reports to comply with transparency obligations and privacy protections. *TRW Inc. v Andrews*, 534 US 19, 24, 122 S. Ct. 441, 151 L. Ed. 2d 339 (2001) (citing 15 USC § 1681(a)). For example, the statute requires CRAs to adopt reasonable procedures to ensure that the information that they disseminate in credit reports is current, accurate, distributed solely to authorised users and utilised only for permissible purposes. 15 USC §§ 1681a(d)(a)(A), 1681e, 1681k, 1681.

111 See Jason G Blechman, "Mobile Credit in Kenya and Tanzania: Emerging Regulatory Challenges in Consumer Protection, Credit Reporting and Use of Customer Transactional Data" (2016) 17 *The African Journal of Information and Communication* (AJIC) 64–88.

112 Central Bank of Kenya (Amendment) Bill, 2020, Central Bank of Kenya (Amendment) Bill, 2021.

113 *Ibid*. [Central Bank of Kenya (Amendment) Bill, 2021], s.6, Amendment of section 57 of Cap.490.

114 The Banking Act (Cap.488), the Microfinance Act (No. 19 of 2006), and the SACCO Societies Act (No. 14 of 2008).

may establish their own infrastructures to collect information which can subsequently be shared with regulators, supervisory authorities or other bureaus and their intermediaries.[115] While credit providers cannot deny customers solely on their credit score, enforcement and monitoring is insufficient to ensure that inaccurate and discriminatory scoring does not negatively impact consumers.

The CBK Amendment Bill passed its second parliamentary reading in August 2021, and will likely be introduced into law following a third reading. Critics anticipate friction with Kenya's Capital Markets Authority, which has otherwise managed public issuers of securities and their adherence to regulatory standards.[116] This shift would indicate a strong move towards state-controlled approvals of conduct from fintech institutions. For most of 2020, and the onset of the COVID-19 pandemic, the CBK locked out all digital lenders from the credit reporting ecosystem. The response was organised in order to prevent digital lenders from forwarding defaulters' names to credit reporting agencies, simultaneously preventing the blacklisting of defaulters for amounts less than US$10.[117]

Ultimately, CRAs usually serve as gatekeepers, determining creditworthiness, thereby granting or denying consumers access to credit. CRAs role in scoring consumers goes beyond a simple up–down vote, signalling the risk associated with extending credit; a CRA's consumer report directly influences the material economic terms of credit arrangements. Increasingly, emerging technologies define the processes that will evaluate consumers' eligibility for credit and the terms of these credit arrangements. Today, nascent CRAs are emerging in the digital world and scoring our society.[118] Notably, since the FCRA only covers CRAs, third-party data brokers that provide information to alternative credit scorers fall beyond its purview.[119]

D. Regulatory considerations and experimentation

Regulatory guidelines are often introduced to provide some form of balance in business–consumer representation of the market. The aim of the above discussion was to clarify some regulatory responses to digital financial services and consider which consumer protections may ensure that exploitive or predatory practices from businesses do not succeed. There are, however, several instances in which the regulatory response has been too slow in relation to rapidly developing technologies.

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115 *Ibid*.

116 "Fintech 2021 - Kenya | Global Practice Guides" *Chambers and Partners* (18 March 2021), available at https://practiceguides.chambers.com/practice-guides/fintech-2021/kenya/trends-and-developments (visited 9 July 2021).

117 "Kenya vs Digital Lenders: A Not-So-Brief Look at the Gift That Keeps on Taking" *Weetracker.com* (27 April 2021), available at https://weetracker.com/2021/04/27/digital-lending-kenya/ (visited 9 July 2021).

118 Confer with Danielle Keats Citron and Frank Pasquale, "The Scored Society: Due Process for Automated Predictions" (2014) 89:1 *Washington Law Review* 2–3.

119 Anna Maria Andriotis, "FICO Score's Hold on the Credit Market Is Slipping" *Wall Street Journal* (2 August 2021), available at https://www.wsj.com/articles/fico-scores-hold-on-the-credit-market-is-slipping-11627119003 (visited 31 August 2021).

Often the practice of sandboxing ensures forms of protection against restrictions introduced in regulation.

(i) Sandboxes

Regulatory sandboxes often accompany cultures of financial inclusion and innovation.[120] Creating a sandbox can encourage innovation through limited competition and can create services that benefit groups who are excluded and underserved by pre-existing financial infrastructures. Proponents argue that sandboxes facilitate innovation and creativity.[121]

In Kenya, M-Pesa emerged without regulatory intervention from the CBK. Mobile payments were a new and unused product, with no comparable regulatory framings. Many people view the lack of positive regulation as deeply concerning.[122]

In 2018, Arizona became the first US state to create a regulatory sandbox that allows "a person to temporarily test innovative financial products or services on a limited basis without otherwise being licensed or authorised to act under the laws of this state".[123] Lawmakers took this step in part to promote the state as a new fintech innovation hub, with Attorney General Mark Brnovich noting explicitly his dissatisfaction with the "glacial pace" of federal regulation from the US Congress.[124]

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120 See Ivo Jenik and Kate Lauer, *Regulatory Sandboxes and Financial Inclusion* (Washington, DC: CGAP, 2017).

121 This conversation is common while discussing regulatory sandboxes in popular media, scholarly journals and policy discussions. For some examples of scholarly discussions, see, for example: Lev Bromberg, Andrew Godwin and Ian Ramsay, "Fintech Sandboxes: Achieving a Balance between Regulation and Innovation" (2017) 28 *Journal of Banking and Finance Law and Practice* 314; Jayoung James Goo and Joo-Yeun Heo, "The Impact of the Regulatory Sandbox on the Fintech Industry, with a Discussion on the Relation between Regulatory Sandboxes and Open Innovation" (2020) 6 *Journal of Open Innovation: Technology, Market, and Complexity* 43; Jenik and Lauer, "Regulatory Sandboxes" (n. 119); Péter Fáykiss, Dániel Papp, Péter Sajtos and Ágnes Tőrös, "Regulatory Tools to Encourage FinTech Innovations: The Innovation Hub and Regulatory Sandbox in International Practice" (2018) *Financial and Economic Review* 4; Luke G Thomas, "The Case for a Federal Regulatory Sandbox for Fintech Companies" (2018) 22 *NC Banking Inst*. 257.

122 See, for example, Douglas W Arner, Jànos Barberis and Ross P Buckley, *FinTech and RegTech in a Nutshell, and the Future in a Sandbox* (CFA Institute Research Foundation 2017); Leigh Soutter, Kenzie Ferguson and Michael Neubert, "Digital Payments: Impact Factors and Mass Adoption in Sub-Saharan Africa" (2019) 9 *Technology Innovation Management Review* (online publication); Yermack, *FinTech in Sub-Saharan Africa* (n. 19).

123 AZ Rev Stat § 41–5601 (2018).

124 "Arizona Becomes First State in U.S. to Offer Fintech Regulatory Sandbox" *Arizona Attorney General azag.com* (22 March 2018), available at https://azag.gov/press-release/arizona-becomes-first-state-us-offer-fintech-regulatory-sandbox (visited 30 June 2021). Though beyond the scope of this article, Arizona's regulatory approach appears similar to steps taken by other US states to leverage their authority to craft state financial services laws and take advantage of gaps in federal regulation. For example, South Dakota revised its usury laws in 1980 in the wake of the US Supreme Court's decision in *Marquette National Bank v First of Omaha* in order to encourage credit card companies to incorporate in the state. More recently, Wyoming passed 24 state laws designed to attract cryptocurrency companies to relocate, and in July 2021 became the first US state to legalise organisation of a digital autonomous organisation (DAO). See Elena Botella, "Wyoming Wants to Be the Crypto Capital of the U.S." *Slate*

Sandbox participants are still subject to Arizona's consumer protection laws and must submit testing plans and risk mitigation strategies as part of their application.[125] In the three years since the law was passed, however, only 10 companies have applied to participate in the sandbox. Moreover, neither the companies nor the Arizona Attorney General's office have made analyses of tests public.[126]

Sandboxing can create additional problems for consumers. Encouraging digital financial development through regulatory sandboxes may divert resources from underdeveloped alternate national infrastructures. In addition, innovation has a risk of bringing greater conveniences to those who are already included and are within easy reach of innovators. In this situation, the solutions proposed through innovation may exacerbate exclusions already present, especially when defining conditions of use and inclusion.

Consumer watchdog organisations in the United States are also wary of regulatory sandboxes' potential to open the door for predatory consumer financial service companies to get around regulations passed in the wake of the 2008 global financial crisis and the creation of the Consumer Financial Protection Bureau (CFPB). The National Consumer Law Center has raised concerns about sandboxing, including how it may waive requirements that participants submit to review of their safety and soundness, may exempt companies from the State regulatory oversight and may fail to mandate transparency for participants and their activities.[127]

(ii) Algorithmic learning impacts

The introduction of Safaricom's M-Shwari loan programme to consumers who lacked sufficient credit history records led to a novel credit scoring practice. To create credit scores for no-file customers, a credit scoring algorithm based on telecommunications was created, which considered each customer's airtime usage, airtime credit, M-Pesa usage and length of time as a Safaricom customer.[128] While these credit scores appeared to be arbitrary measures dependent on Safaricom-specific

(28 June 2021), available at https://slate.com/technology/2021/06/wyoming-cryptocurrency-laws.html (visited 6 July 2021), and Camomile Shumba, "Wyoming is the First US State to Approve a DAO, Consolidating its Crypto-friendly Reputation" *Insider* (5 July 5 2021), available at https://markets.businessinsider.com/news/stocks/wyoming-approves-a-dao-consolidating-its-crypto-friendly-reputation-2021–7 (visited 6 July 2021).

125 Paul Watkins, Evan Daniels and Stuart Slayton, "First in the Nation: Arizona's Regulatory Sandbox" (2018) 29 *Stan. L. & Poly Rev*Online 1, 1–17.

126 Sophie Quinton, "Fintech 'Sandboxes' in Arizona, other States, Aim to Attract Companies" *Arizona Mirror* (16 June 2021), available at https://www.azmirror.com/2021/06/16/fintech-sandboxes-in-arizona-other-states-aim-to-attract-companies/ (visited 6 July 2021).

127 Lauren Saunders, "Fintech and Consumer Protection: A Snapshot" (March 2019) *National Consumer Law Center* (online publication).

128 Cook and McKay, *How M-Shwari Works* (n. 85).

financial interactions, they were aggressively utilised, allowing credit providers to accept or deny loan requests based on this credit score.[129]

Instability of income meant that conventional lending conditions might prove difficult for new mobile borrowers to comprehend and understand, with negative consequences on a person's capacity to continue to borrow if they were unable to repay within short-term set time parameters.[130] Many consumers did not understand the concept or application of credit scoring, nor why they were sometimes being denied credit.[131]

Legal definitions of discrimination in the United States impact ML/AI by placing constraints on the use of algorithms in certain contexts. With these constraints in place, automated decision-making (ADM) cannot, in theory, make use of an intentionally discriminatory tool that inflicts harm on some individuals and groups and unfairly benefits others. However, as danah boyd, Karen Levy and Alice Marwick have argued, anchoring concepts of fairness to a narrow consideration of individuals ignores how they are connected to broader social networks, and so in the context of AI systems, "algorithms that identify our networks, or predict our behaviour based on them, pose new possibilities for discrimination and inequitable treatment".[132]

Relatedly, group fairness constraints on credit scoring can, in some scenarios, produce greater discrimination than other methods. In an experimental study, computer scientists at University of California, Berkeley, compared how two models optimised for different fairness criteria—statistical parity and equality of opportunity—and a third that was unconstrained performed with respect to approving loans for groups with different credit scores. They found that both equality of opportunity and unconstrained models produced positive changes to black consumers' credit scores over time, while the statistical parity model caused active harm by over-lending and causing credit scores to drop through defaults, leading to their conclusion that "while incentives for the bank and positive results for individuals are somewhat aligned for the majority group, under fairness constraints they are more heavily misaligned in the minority group".[133]

IV. Future Directions for Research

So far, we have discussed both the histories and application of financial inclusion, considering how certain credit-lending programmes may lead to discriminatory practice and perpetual debt cycles, while also providing reporting systems which

129 *Ibid*.

130 Kiiti and Hennink, "The Use and Impact of M-Shwari" (n. 85)

131 *Ibid*.

132 danah boyd, Karen Levy and Alice Marwick, "The Networked Nature of Algorithmic Discrimination" in Seeta Pena Gangadharan, Virginia Eubanks and Solon Barocas (eds), *Data and Discrimination: Collected Essays* (Open Technology Institute and New America, 2014) p. 56.

133 Lydia T Liu, Sarah Dean, Esther Rolf, Max Simchowitz and Moritz Hardt, "Delayed Impact of Fair Machine Learning" (2018) 80 *Proceedings of Machine Learning Research* 3157.

may further disempower consumers through complicated scoring mechanisms. The regulatory discussions have considered the provisions of practices in both the United States and Kenya to protect the well-being and interests of consumers but have shown that, at times, the enforcement and practice of such regulations do not provide sufficient consumer support against aggressive emerging and quickly developing financial technological platforms. In the following section, we consider the social impact of these technologies and regulations, indicating themes for further social research. Through assessing the local impact of fintech in both Kenya and the United States, alongside clear problems in ML and AI systems, further research and scholarship can clarify how discriminatory practices may be traced and analysed.

A. Everyday life and fintech

(i) Kenya

Numerous reports touted the positive impact of fintech, including mobile payments in Kenya, particularly after the publication of the World Bank's 2017 Findex Report.[134] In this case, the banking industry in Kenya has been described by some scholars as being "competitive" due to the impact of mobile money.[135] Many journalists noted that after 10 years, mobile finance seemed to be completely embedded within daily financial life.[136] The logic is a foundational concept in development and improvement discussions: after being successfully included in formal financial services, M-Pesa users were now suddenly mobile.

The logic of this view can be challenged when considering local and social applications of mobile money. Rather than "disrupting" Kenyans' financial lives, mobile money was instead incorporated around pre-existing cultural practices

134 Demirgüç-Kunt *et al*., *Global Findex Database 2017* (n. 1).

135 Consider, for example, the accounts written in Peter Ondiege, "Regulatory Impact on Mobile Money and Financial Inclusion in African Countries-Kenya, Nigeria, Tanzania and Uganda" (2015) 50 *Center for Global Development (CGD)* (online publication); William Vlcek, "Global Anti-Money Laundering Standards and Developing Economies: The Regulation of Mobile Money" (2011) 29 *Development Policy Review* 415.

136 See, eg, Andrea Barry, "How Kenya Created the World's Most Successful Mobile-Payments Service" *Technology and Operations Management* (9 December 2015), available at https://digital.hbs.edu/platform-rctom/submission/how-kenya-created-the-worlds-most-successful-mobile-payments-service/ (visited 17 July 2021); Judith Owigar, "How M-Pesa Is Changing Everyday Life in Kenya" *Urbanet* (31 July 2017), available at https://www.urbanet.info/how-m-pesa-is-changing-everyday-life-in-kenya/ (visited 17 July 2021); Kieron Monks, "How M-Pesa Changed Banking in Africa" *CNN* (24 February 2017), available at https://www.cnn.com/2017/02/21/africa/mpesa-10th-anniversary/index.html (visited 17 July 2021); "M-Pesa Marks 10 Year Anniversary in Africa" *Vodafone.com* (21 February 2017), available at https://www.vodafone.com/news/press-release/m-pesa-10 (visited 17 July 2021); "M-PESA, When Innovation in Fintech Comes from Africa" *Eggon* (28 November 2017), available at https://eggon.co/m-pesa-innovation-fintech-comes-africa/ (visited 17 July 2021); Kelsey Piper, "What Kenya Can Teach Its Neighbors—and the US—about Improving the Lives of the 'Unbanked'" *Vox* (11 September 2020), available at https://www.vox.com/future-perfect/21420357/kenya-mobile-banking-unbanked-cellphone-money (visited 17 July 2021).

(which helps make sense of its rapid adoption).[137] Mobile money streamlined the collection of funds for celebratory expenses and gifts, and the virtual medium permitted further-reaching conversations from friends and family who moved away. Despite these conveniences, however, the new transactional technologies distanced and sometimes strained interpersonal relationships, leading many to depend on mobile infrastructures for their daily needs. At the onset of the 2020 COVID crisis, reciprocal virtual monetary exchanges quickly collapsed as incomes ran dry.[138] The easiest solution to overcome and remedy these relationships is fast loan options readily accessible from the same telecom provider. With a society dependent on virtual relations, the pressure to quickly respond and reciprocate leads many to mobile lending.

The forced manipulation and formalisation of economies can lead to greater disparities and divisions. In Kenya, social savings groups (chamas) are frequently targets of digitisation. But with digitisation, users often find that the flexibility and social mobility are removed.[139] The commodification of informal social finance networks to accountable and streamlined markets can exaggerate pre-existing social divisions within economic systems.

Myriad credit scoring practices based on behavioural cues are emerging, utilising scales of AI and ML.[140] Unconventional data points are called in to "score" underbanked peoples suddenly "included" or banked in new technological financial systems. For these measures, the data points considered are proposed in line with assumed cultural behaviours but pose clear problems when trying to assess the creditworthiness of individuals who are unfamiliar with credit scoring practices. While many individuals do not comprehend how or when they are being scored, the practice of connecting assumed economic behaviours with conclusions from behavioural and cultural practice is reductive and dismissive from the position of the scorer.

(ii) United States

In the United States, the proliferation of P2P payments and lending products has had similar social and cultural impacts, often under the banner of innovation and convenience rather than financial inclusion. For example, Venmo was designed to appeal specifically to Millennial and Gen Z consumers by incorporating a social

137 Sibel Kusimba, *Reimagining Money: Kenya in the Digital Finance Revolution* (Stanford, CA: Stanford University Press, 2021).

138 *Ibid*.

139 Michael Kimani, "Why African Fintech Wants to Digitize Chamas, But Can't Seem To Get It Right" *Kioneki.com* (27 August 2018), available at https://kioneki.com/2018/08/27/why-fintech-wants-to-digitize-chamas-but-cant-seem-to-get-it-right/ (visited 20 December 2020).

140 See Emily Bary, "How Artificial Intelligence Could Replace Credit Scores and Reshape How We Get Loans" *The Market Watch* (28 October 2018), available at https://www.marketwatch.com/story/ai-based-credit-scores-will-soon-give-one-billion-people-access-to-banking-services-2018–10–09/ (visited 7 July 2021).

media element into the mobile application that allows users to share payment information with their social networks. Venmo's popularity also reflects two trends among these market segments: declining use of cash as a preferred payment mechanism[141] and a tendency to store value in products outside of traditional financial institutions. As recently as 2017, Venmo and its parent company PayPal provided custody for over $18 billion in customer accounts. These holdings generated sizeable amounts of income.[142] Since Venmo accounts are not insured by the Federal Deposit Insurance Corporation (FDIC) or the National Credit Union Administration (NCUA), users do face potential risks of losing the value stored in those accounts due to scams and fraudulent transactions.

Zelle has also emerged as a key player in the P2P payment space, boasting 1.2 billion transactions totalling $307 billion in 2020.[143] Zelle's network operator, Early Warning Services, is owned by a consortium of the largest US banks that—unlike Venmo—allow financial institution partners to provide its services to their customers for direct transfers between bank accounts. Furthermore, Zelle is one of the two[144] real-time payments providers in the United States, currently. However, since real-time payments are not batch-processed, they are more difficult to reverse than, for example, Automated Clearing House Network (ACH) or credit card payments. Banks are under no obligation to manage fraudulent Zelle transactions, which means that risks ultimately fall on consumers themselves.[145]

During the recent COVID-19 pandemic, P2P payment's growth accelerated as branch closures and quarantine measures made it more difficult to access cash or to transact face to face.[146] Mobile wallets like Cash App also became popular channels for distributing charitable and mutual aid payments.[147] Some financial service

141 See Geoffrey Gerdes, Claire Greene, Xuemei Liu and Emily Massaro, "The 2019 Federal Reserve Payments Study" *US Federal Reserve System* (2020), available at https://www.federalreserve.gov/paymentsystems/2019-December-The-Federal-Reserve-Payments-Study.htm (visited 10 July 2021).

142 Jana Kasperkevic, "What Are Apps Like Venmo Doing with Your Money?" *Marketplace* (20 February 2018), available at https://www.marketplace.org/2018/02/20/your-money/ive-always-wondered/what-are-apps-venmo-doing-your-money/ (visited 7 July 2021).

143 "Zelle Closes 2020 with Record $307 Billion Sent on 1.2 Billion Transactions" *Zellepay.com* (19 March 2021), available at https://www.zellepay.com/press-releases/zeller-closes-2020-record-307-billion-sent-12-billion-transactions (visited 7 July 2021).

144 The other is the RTP network operated by The Clearing House, which is owned by the same banks behind Early Warning Services, among others. The Federal Reserve plans to launch its real-time payments service, FedNow, in 2023. See Amy L Schwartz and Judy Mok, "Fed Moves Up FedNow Launch Date" *Ballard Spahr LLP Consumer Finance Monitor* (18 February 2021), available at https://www.consumerfinancemonitor.com/2021/02/18/fed-moves-up-fednow-launch-date/ (visited 30 August 2021).

145 See Vicky Nguyen, Didi Martinez, Joe Enoch and Michelle Tak, "Instant Fraud: Consumers See Funds Disappear in Zelle Account Scam" *NBC News* (11 June 2019), available at https://www.nbcnews.com/business/consumer/instant-fraud-consumers-see-funds-disappear-zelle-account-scam-n1015736 (visited 7 July 2021).

146 See Taylor C Nelms and Stephen C Rea, *Credit Unions and the Coronavirus: Notes on the Impacts and Implications of the COVID-19 Crisis (Part 2)* (Madison, WI: Filene Research Institute, 2020).

147 *Ibid*.

industry observers expect these trends to persist after the pandemic.[148] If fintech tools such as these become more prevalent in everyday life in the United States, prudential regulation may be needed to protect consumers from fraud. Additionally, greater reliance on digital and mobile channels by merchants and other payments receivers has the potential to exacerbate financial exclusion; a William Mills/Harris Poll conducted at the beginning of the pandemic in March 2020 found that, while 73 per cent of respondents reported being more likely to use digital banking and payments tools, that number fell to 64 per cent for households earning less than $50,000 per year.[149]

B. Limitations of fintech in providing financial inclusion

Scholars have criticised a neocolonial-style iconography accompanying the implementation of ML/AI and fintech systems in the Global South. In particular, rhetoric around financial inclusion encourages a business model that is advanced by big technology monopolies. Abeba Birhane suggests that this business model imposes harmful values and interests while simultaneously stifling approaches that do not conform to its values. Access to transactional data may provide some opportunity for social good in impoverished and excluded communitites, but the "evangelical advocacy" and blind trust commonly surrounding their discussion while business owners seek to capitalise on every aspect of human life undermine the financial inclusion agenda. While we don't have longitudinal data to assess how this will impact Kenyans, if the US experience is any guide, there are potential risks for new forms of discrimination and exclusion.

Financial inclusion or penetration of banking is always seen as low in "emerging" markets. Prior to the introduction of M-Pesa, only 18.5 per cent of Kenyans used formal financial institutions.[150] While fees for payments under $10 were waived in 2020 for the COVID-19 pandemic, this change was short-lived. More recently, Safaricom proposed reducing the fees in the long run. Following these COVID anti-cash measures, the M-Pesa transaction value grew by 32.9 per cent in 2020 to Ksh 9.04 trillion (about $84 billion). Much of this growth came from mobilising, or "including," many who were not otherwise using mobile payments in Kenya.

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148 Justin Ho, "P2P Payment Apps are Booming, Thanks to the Pandemic" *Marketplace* (15 March 2021), available at https://www.marketplace.org/2021/03/15/p2p-payment-apps-are-booming-thanks-to-the-pandemic/ (visited 7 July 2021).

149 Scott Mills, "Study Suggests Americans in Lower Income Households Less Likely to Leverage Digital Banking and Payments During Social Distancing than Higher Income Households" *Business Wire* (2 April 2020), available at https://www.businesswire.com/news/home/20200402005497/en/Study-Suggests-Americans-Income-Households- (visited 7 July 2021). It is unclear whether this gap is due to lack of access, awareness or general distrust of digital banking. Nevertheless, it is a potentially concerning data point.

150 Despite the advances of M-Pesa, just over 55 per cent of Kenyans had an account at a formal financial institution in 2017, compared to 93 per cent of US consumers the same year: Demirgüç-Kunt *et al*., *Global Findex Database 2017* (n. 1).

In this case, sandboxing and a responsive regulatory environment through "test and learn" create situations where corporate interests are difficult to mitigate. Some propose separating parent telecom company Safaricom and the M-Pesa platform and services in the interest of maintaining consumer protection in Kenya.[151]

These discussions resurface every few years, and never gain traction.[152] This leaves ground for speculation on reasoning, interests and parties who may benefit from this collusion of telecom and mobile payment branches. The regulation proposals could potentially address consumer abuses not only from Safaricom but also fintech firms in Kenya at large. The CBK Amendment Bill proposes surveillance and licensing but will need to work around the established agents. Perhaps an equivalent of a local commission such as the CFPB may adequately assess local consumer welfare.

V. Conclusion

This article has examined the myths and misperceptions of financial inclusion and the limitations of the fractured regulatory environment in many countries integrating fintech applications in unbanked and underbanked communities. Insofar as financial inclusion advocates pin their hopes on fintech, the efficacy of these technological integrations for achieving greater accessibility—whether through mobile money and micro-lending or alternative credit scoring—cannot be assumed.

This article has explored ways that financial inclusion may create channels for prosperity and improvement; yet these platforms may engineer debilitating and sometimes precarious financial circumstances for users or borrowers. While financial inclusion and the "fintech revolution" may enable consumers to enjoy greater and more efficient access to financial services, it is important to ensure that inclusion practices do not further financial hardships. Regulators in both the United States and Kenya have taken steps towards addressing regulatory concerns, but consumer protection requires greater focus to create lasting and significant welfare reforms. In fact, arguably, the solution may not be a specific regulatory action, but rather reforms aimed to address the underlying causes of financial inclusion.

151 Elizabeth Ajao, "A Safaricom Split Is a Telco's Dream and A Fintech Startup's Nightmare" *Weetracker.com* (23 November 2020), available at https://weetracker.com/2020/11/23/kenya-push-safaricom-split/ (visited 20 December 2020).

152 One instance of proposed regulation in mobile money came in 2015, through a set of 11 regulations published by the Communications Authority of Kenya, among them Fair Competition and Equality of Treatment regulations. These regulations were all dismissed by the then Attorney General Githu Muigai, Mugambi Mutegi, "HakiPensheni: AG Blocks Matiang'i Bid to Cut Safaricom Big Market Muscle" *HakiPensheni* (5 August 2015), available at https://hakipensheni.blogspot.com/2015/08/ag-blocks-matiangi-bid-to-cut-safaricom.html (visited 26 August 2021).