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Articles

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Letter From The Editor In Chief

Dear Reader,

On behalf of the Editorial Board, I am thrilled to present the inaugural edition of the Georgetown Undergraduate Public Policy Review (GUUPPR). This Summer 2024 issue marks the beginning of an exciting journey for undergraduate voices in addressing pressing public policy challenges. GUUPPR strives to provide a platform for fresh and interdisciplinary perspectives on public policy.

This year's Editorial Board is composed of a pioneering group of undergraduates whose passion and creativity have brought this milestone issue to life. Their dedication reflects an unwavering commitment to amplifying student voices in the public policy space.

In *Cash Transfers: A Direct Solution to Adolescent Substance Use*, Sherri Wu examines the potential of direct cash transfer programs to mitigate adolescent substance use, offering evidence-based recommendations for policymakers. Wu highlights the importance of economic stability in reducing risk behaviors among adolescents and discusses the broader implications of such programs for public health policy.

In *Interconnected: An Evaluation of Synergistic Benefits and Systemic Risks of the Bank-FinTech Nexus*, Andrew Kwok analyzes the relationship between traditional banks and FinTech companies, proposing a framework to balance innovation and stability. Kwok delves into case studies of successful partnerships and outlines regulatory gaps that must be addressed to mitigate systemic risks while fostering growth in the financial sector.

In *Leveling the Playing Field: A Revenue-Sharing Model for Equitable Pharmaceutical Innovation*, Michelle Hu advocates for a revenue-sharing model to enhance access to medications while incentivizing research and development. Hu evaluates existing market inefficiencies and explores how such a model could align corporate incentives with public health priorities, particularly in addressing neglected diseases.

In *Gender & Caribbean Food Systems: Surmounting Barriers to Gender Mainstreaming*, Jackson Hightower explores structural barriers in Caribbean food systems, advocating for policies that empower women and promote sustainability. Hightower examines gendered labor dynamics, the intersection of cultural norms and economic systems, and provides actionable strategies for achieving equity in agricultural policy.

This inaugural issue reflects GUUPPR's commitment to showcasing undergraduate contributions to critical policy debates. Thank you for supporting GUUPPR and joining us as we redefine undergraduate policy analysis.

Sincerely,
Michael Cai,
Editor-in-Chief,
Fall 2024

Mission Statement

The Georgetown University Undergraduate Public Policy Review (GUUPPR) was established to empower Georgetown undergraduates to engage with the increasingly critical field of public policy. As issues like climate change, economic inequality, healthcare reform, and international relations continue to reshape our world, the need for informed, innovative policy solutions has never been greater. GUUPPR provides a platform for students to publish research that directly addresses these complex challenges, offering insights and recommendations that contribute to the broader policy discourse.

Each semester, GUUPPR assembles teams of dedicated student editors and researchers who engage in a rigorous editorial process, working collaboratively to ensure each publication meets the highest standards of clarity, depth, and relevance. This thorough review process fosters a dynamic learning environment where students refine their analytical and writing skills, sharpen their arguments, and explore policy topics in depth.

Our publication, shared through an online platform, reaches not only the Georgetown community but also policymakers, academics, and thought leaders who are shaping the future of public policy. Our students produce a range of content, from policy briefs to in-depth analyses and data-driven reports, all designed to provide accessible yet impactful insights on key policy questions.

At GUUPPR, we believe that today's students are tomorrow's policy leaders. By offering students the chance to publish meaningful work on pressing issues, we aim to contribute thoughtful perspectives to today's challenges and help cultivate a generation equipped to drive positive change in public policy.

Cash Transfers: A Direct Solution to Adolescent Substance Use

Sherri Wu

I. Low Socioeconomic Status and Adolescent Substance Use

Substance use is and has been a global issue largely because of the negative health consequences it entails. To tackle this problem, it is important to recognize that some individuals are more likely than others to be susceptible to substance use due to both psychosocial and economic disadvantages. To be specific, it is observed that adolescents (12-18 years old) from low socioeconomic backgrounds in developed countries are more likely to use nicotine and cannabis, and/or consume alcohol than those of higher socioeconomic backgrounds—consequently, this puts them at greater risk of substance-related consequences.

Socioeconomic status is a multifaceted measure, including but not limited to factors such as parental education, family income, access to resources like healthcare, as well as the quality of education received.[1] A study conducted in Europe by the IJERPH found that 15-16 year olds of low socioeconomic status, conditioned on the factors mentioned above, demonstrated significantly greater proportions of those using marijuana.[2] Similarly, in America, a study using data from "Monitoring the Future"—a study of American youth—found strong correlations between low socioeconomic status (proxied by parental education) and adolescent substance use.[3] These findings are consistent with the pattern that adolescent substance use tends to be associated with lower socioeconomic standing in developed countries.

II. Consequences of Adolescent Substance Use

[1] Danielle S. Roubinov and W. Thomas Boyce, "Parenting and SES: Relative Values or Enduring Principles?" *Current Opinion in Psychology* 15 (2017): 162–67, https://doi.org/10.1016/j.copsyc.2017.03.001.
[2] Giuseppe Gerra et al., "Socioeconomic Status, Parental Education, School Connectedness and Individual Socio-Cultural Resources in Vulnerability for Drug Use Among Students," *International Journal of Environmental Research and Public Health* 17, no. 4 (2020): 1306, https://doi.org/10.3390/ijerph17041306.
[3] Jerald G. Bachman et al., "Racial/Ethnic Differences in the Relationship Between Parental Education and Substance Use Among U.S. 8th-, 10th-, and 12th-Grade Students: Findings From the Monitoring the Future Project," *Journal of Studies on Alcohol and Drugs* 72, no. 2 (2011): 279–85, https://doi.org/10.15288/jsad.2011.72.279.

From a legal standpoint, the consequences of adolescent substance use can be as severe as detainment. According to a study conducted by the Brookings Institution, children in America born into families in the bottom 10% of the income distribution are 20 times more likely to be incarcerated compared to those from the top 10% of the income distribution.[4] The U.S. Department of Justice reports that 16% of underage arrests were related to substance use in 2020[5]; if this statistic were to reflect the Brookings Institutions' findings, close to 95% of those arrests would have been of individuals from low socioeconomic backgrounds.

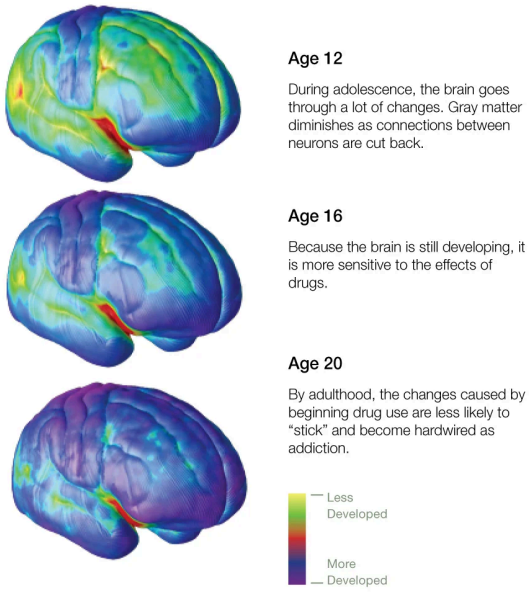


Figure 1, Source: Genetic Science Learning Center

Adolescent substance use also has extensive consequences on developmental health, as cannabis, nicotine, and alcohol can alter and affect brain chemistry. In Figure 1[6], the developmental stages of the brain at ages 12, 16, and 20 are shown. Less developed brain matter is correlated with higher susceptibility to substance use—at ages 12 and 16, individuals are much more sensitive to the effects of drug use than at age 20. According to *Translational Psychiatry,* critical aspects of brain development occur during adolescence, and the use of substances produces acute and lasting effects on brain functions and behavior.[7] As a result, alcohol and marijuana use, particularly during adolescence, is associated with poor cognitive performances,

[4] Adam Looney and Nicholas Turner, *Work and Opportunity Before and After Incarceration*, Economic Studies at Brookings, 2018, https://www.brookings.edu/wp-content/uploads/2018/03/es_20180314_looneyincarceration_final.pdf.
[5] U.S. Department of Justice, *Estimated Number of Juvenile Arrests*, 2020, https://ojjdp.ojp.gov/statistical-briefing-book/crime/faqs/qa05101.
[6] Genetic Science Learning Center, *The Adolescent Brain*, Learn Genetics, University of Utah, https://learn.genetics.utah.edu/content/addiction/adolescent.
[7] Michael R. Steinfeld and Maria M. Torregrossa, "Consequences of Adolescent Drug Use," *Translational Psychiatry* 13, no. 1 (2023): 1–22, https://doi.org/10.1038/s41398-023-02590-4.

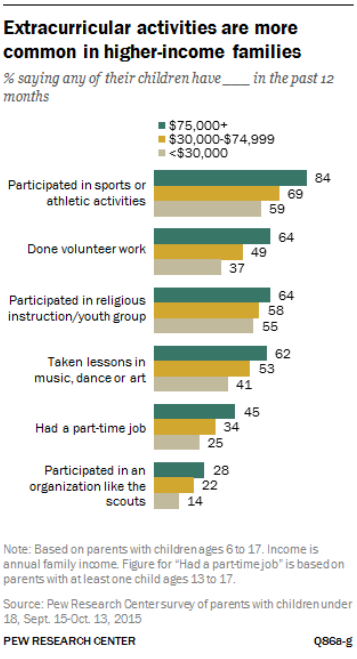
including but not limited to poor verbal memory, psychomotor speed, and visuospatial awareness.[8] Substance use subsequently increases adolescent susceptibility to mental health issues, violence, and overdose. Adolescent substance use entails a series of behavioral effects that often persist into adulthood due to permanent alterations in brain chemistry, yielding both short and long-term consequences.

III. Effects of Alternative Reinforcement on Adolescent Substance Use

Unfortunately, families from a low socioeconomic background lack the resources to finance substance-free activities for their children during adolescence, leaving them especially vulnerable to drug use as an alternative.[9] Parents of higher socioeconomic status tend to have more financial capital to invest in their children's development.[10] These investments may come in the form of material goods, enrichment activities, and extracurriculars, or simply just extra time to spend with their children. In contrast, parents from disadvantaged backgrounds tend to the basic needs of the family first (such as food and shelter), by necessity.[11]

Subsequently, parents from lower socioeconomic backgrounds lack resources and accessibility to invest in alternative reinforcers (a term used by Nageesa et al to refer to substance free activities) for their children.[12] Figure 2[13] contains

Figure 2, Source: Pew Research Center



[8] Kathleen M. Gray and L. Mark Squeglia, "Research Review: What Have We Learned About Adolescent Substance Use?" *Journal of Child Psychology and Psychiatry* 59, no. 6 (2018): 619–27, https://doi.org/10.1111/jcpp.12783.
[9] Naveed Andrabi, Reza Khoddam, and Andrew M. Leventhal, "Socioeconomic Disparities in Adolescent Substance Use: Role of Enjoyable Alternative Substance-Free Activities," *Social Science & Medicine* 176 (2017): 175–82, https://doi.org/10.1016/j.socscimed.2016.12.032.
[10] Roubinov and Boyce, *"Parenting and SES."*
[11] Roubinov and Boyce, *"Parenting and SES."*
[12] Andrabi et al., *"Socioeconomic Disparities in Adolescent Substance Use."*
[13] Pew Research Center, *"Parental Attitudes on Children's Extracurricular Activities,"* December 17, 2015, https://www.pewresearch.org/social-trends/2015/12/17/5-childrens-extracurricular-activities/.

results from the Pew Research Center, showing a consistently lower rate of participation in alternative reinforcers as the average household income rate decreases. The inherent human drive to experience pleasure or reinforcement is particularly prominent during adolescence[14]; if alternative reinforcement is less available, the motivation to turn to alternatives like substance use increases.

Adolescents are especially susceptible to resort to substance use without alternative reinforcement due to the developing nature of their brains.[15] The NIDA[16] and CDC[17] report that tobacco, nicotine, and marijuana are extremely addictive when used during adolescence since substance use satisfies the desire for pleasurable activities. As a result, adolescents who try or are exposed to marijuana or nicotine use are likely to develop frequent use and addiction compared to adults with fully developed brain matter. The IJERPH European study also reports findings consistent with this theory, with proportions of low socioeconomic status adolescents who frequently use cannabis being much higher than those who use it episodically or experimentally.[18]

What further enables the problem of adolescent substance use is that substances are also found to be often abundantly available in low SES communities.[19] The British Medical Journal finds that 13-15 year olds in the UK perceive illicit drugs (particularly cannabis) to be very easy to obtain, and mostly have access to substances through friends or even at school.[20] Moreover,

[14] Andrabi et al., *"Socioeconomic Disparities in Adolescent Substance Use."*
[15] Steinfeld and Torregrossa, *"Consequences of Adolescent Drug Use."*
[16] National Institute on Drug Abuse (NIDA), *"Is Nicotine Addictive?"* accessed January 31, 2024, https://nida.nih.gov/publications/research-reports/tobacco-nicotine-e-cigarettes/nicotine-addictive#:~:text=Introduction-,Tobacco%2C%20Nicotine%2C%20and%20E%2DCigarettes%20Research%20Report,they%20are%20addicted%20to%20nicotine.
[17] Centers for Disease Control and Prevention (CDC), *"Addiction, Health Effects, Marijuana,"* accessed September 9, 2021, https://www.cdc.gov/marijuana/health-effects/addiction.html.
[18] Gerra et al., *"Socioeconomic Status, Parental Education, School Connectedness and Individual Socio-Cultural Resources in Vulnerability for Drug Use."*
[19] Andrabi et al., *"Socioeconomic Disparities in Adolescent Substance Use."*
[20] David Ogilvie, Lesley Gruer, and Steve Haw, "Young People's Access to Tobacco, Alcohol, and Other Drugs," *BMJ* 331, no. 7513 (2005).

street prices of illicit drugs in the UK are falling in real terms—this further increases the likelihood of substance use by low socioeconomic adolescents, as it's both a cheap and stimulating alternative.[21] Inaccessibility to alternative reinforcement is compensated with the easy accessibility and affordability of substances, incentivizing adolescents to resort to these measures to derive satisfaction.

IV. Cash Transfers and Encouraging Alternative Reinforcement

The fundamental issue spurring the substance use of low socioeconomic adolescents is the parents' lack of financial capability to provide alternative reinforcement for their children.[22] As previously referenced, the Journal for *Social Science and Medicine* reports engagement in alternative reinforcers to be strongly correlated with reduced adolescent substance use.[23] Thus, to reduce the magnitude of adolescent substance use among communities of low socioeconomic status, the parents must first be financially supported to be able to provide alternative reinforcement.

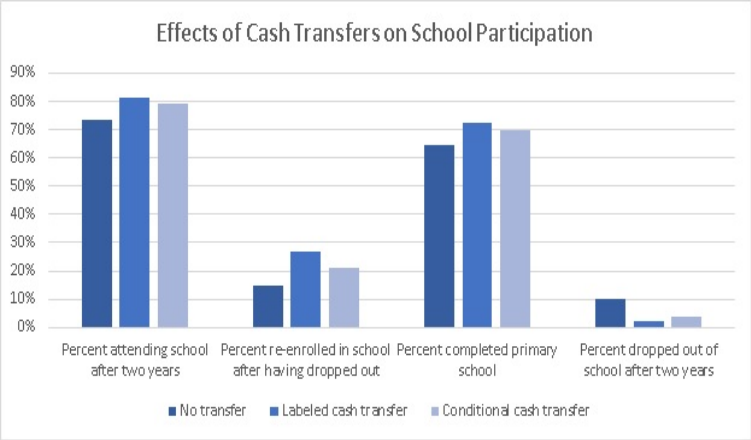
A cash transfer directly targets this issue; it provides immediate increases in financial flexibility, allowing disadvantaged parents the capability to invest in activities outside of necessities for living. The National Bureau of Economic Research conducted, in 2018, an experiment issuing a series of government funded unconditional cash transfers (UCT) to American Indian populations—which generally tend to be from lower socioeconomic backgrounds.[24] Results showed a 22% decrease in minor crimes for 16-17 year olds, with an indication that drug-related crimes are included in this data.[25] Furthermore, drug-dealing activities among American Indian youth also experienced decreased rates as a result of the

[21] Ogilvie, Gruer, and Haw, *"Young People's Access to Tobacco, Alcohol, and Other Drugs."*
[22] Roubinov and Boyce, *"Parenting and SES."*
[23] Roubinov and Boyce, *"Parenting and SES."*
[24] Ioana Marinescu, *"No Strings Attached: The Behavioral Effects of U.S. Unconditional Cash Transfer Programs," National Bureau of Economic Research* (NBER), February 19, 2018, https://www.nber.org/papers/w24337.
[25] Marinescu, *"No Strings Attached."*

UCT.[26] This cash transfer successfully reduced both the use and distribution of substances among adolescents from low socioeconomic backgrounds.

While UCTs have been proven to be effective in lowering adolescent substance use rates, they come with several potential drawbacks within the context of providing free lump sums of money to families. UCTs may disincentivize parents to work upon receiving unconditional compensation, or simply use the cash transfer for other purposes that do not positively affect their children's development.[27] To mitigate these risks, a conditional cash transfer (CCT) is more fitting to ensure that financial support is invested in alternative reinforcers that are associated with reduced adolescent substance use. Figure 3[28] reports an increase in school participation after the issuing of both labeled cash transfers and conditional cash transfers. Although the CCT subgroup has weaker results compared to the labeled cash transfer subgroup (3-5% less participation in every category), it still garnered higher levels of school participation than without cash transfers (7% more participation in every category). Results from the Behavioral Evidence Hub show that conditional cash transfers garner higher levels of adolescent involvement in alternative reinforcers, such as school.[29] In this way,

Figure 3, Source: Behavioral Evidence Hub



[26] Marinescu, *"No Strings Attached."*
[27] Chikako A. Yoshino et al., "Experiences of Conditional Unconditional Cash Transfers Intended for Improving Health Outcomes and Health Service Use: A Qualitative Evidence Synthesis," *Cochrane Database of Systematic Reviews* 2023, no. 3 (2023), https://doi.org/10.1002/14651858.cd013635.pub2.
[28] *"Labeled Cash Boosts School Attendance,"* B-HUB, https://www.bhub.org/project/labeled-cash-boosts-school-attendance/.
[29] "Labeled Cash Boosts School Attendance."

CCTs can mitigate the risks associated with unconditioned cash transfers and still yield positive results for adolescent engagement in alternative reinforcement.

In order to tailor the policy to populations that are at high risk or experience high levels of adolescent substance use, cash transfers should be issued to families of lower socioeconomic status—determined based on aggregate socioeconomic indexes like ESRI[30] that take into account household income, access to healthcare, and quality of education. Distribution should be conditioned upon the use of the cash transfer to only finance alternative reinforcers, regulated by periodic records (such as reporting receipts or enrollment records). This will allow families from low socioeconomic backgrounds to engage their children in substance free activities at no additional financial burden, increasing engagement in alternative reinforcement and simultaneously lowering adolescent substance use rates.[31]

[30] Andrew Henesy, *"Measuring Relative Social Position with Esri's Socioeconomic Status Index," ArcGIS Blog*, https://www.esri.com/arcgis-blog/products/esri-demographics/analytics/sei/#:~:text=Esri%27s%20Socioeconomic%20Status%20Index.
[31] Andrabi et al., *"Socioeconomic Disparities in Adolescent Substance Use."*

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Marinescu, I. (2018, February 19). *No strings Attached: The Behavioral Effects of U.S. Unconditional Cash Transfer Programs.* www.nber.org. https://www.nber.org/papers/w24337.

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Ogilvie, D., Gruer, L., & Haw, S. (2005). Young people's access to tobacco, alcohol, and other drugs. *BMJ, 331*(7513), 393-396. https://doi.org/10.1136/bmj.331.7513.393

Parental attitudes on children's extracurricular activities. (2015, December 17). Pew Research Center's Social & Demographic Trends Project. https://www.pewresearch.org/social-trends/2015/12/17/5-childrens-extracurricular-activities/.

Roubinov, D.S., & Boyce, W.T. (2017). Parenting and SES: relative values or enduring principles? *Current Opinion in Psychology, 15,* 162-167. https://doi.org/10.1016/j.copsyc.2017.03.001.

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Interconnected: An Evaluation of Synergistic Benefits and Systemic Risks of the Bank-FinTech Nexus

Andrew Kwok

I. Introduction

Recently, FinTech has seen considerable growth. According to data from Boston Consulting Group and QED Investors, compound annual growth rate of revenue for FinTech firms (excluding China-operated firms and cryptocurrencies) is at 21% in 2024,[1] and a study from McKinsey & Company finds that not only has the market capitalization of FinTech companies doubled since 2019 to $550 billion in 2023, but the combined valuation of unicorn firms, or private companies valued at over $1 billion, has increased by seven times over a five-year time period.[2] These firms, which use technology to provide financial services to its users, have fundamentally changed the banking industry—FinTech has brought increased efficiency and enhanced access to financial services through new technology. Despite the potential upsides of the FinTech revolution, concerns surrounding a new and rising financial behemoth have arisen, especially regarding the potential for large systemic risks. With the ghost of the 2008 financial crisis in recent memory, the spillover effects that FinTech institutions might have on the rest of the financial system are worrisome. The study of FinTech is therefore particularly salient in today's financial environment in light of not only its high innovative potential, but also rising concerns.

This paper explores the potential firm-specific risks associated with FinTech institutions, including their underlying financial risk and unique vulnerability to cyber-attacks. Also covered are the risks the bank-FinTech nexus poses to the overall financial system due to bank-FinTech interconnectedness and FinTech's increase of procyclicality. By analyzing these risks and the potential spillover effects, this research aims to offer a critical evaluation of the extent to which

[1] Dhruv Goyal et al., *Global Fintech 2024: Prudence, Profits, and Growth* (Boston Consulting Group, 2024), https://web-assets.bcg.com/a9/4e/eeb7ae814bfb98d918fac0fcc4ce/2024-fintech-report-june-2024-edit-03.pdf.
[2] McKinsey & Company, "Fintechs: A New Paradigm of Growth," McKinsey & Company, 2023, https://www.mckinsey.com/industries/financial-services/our-insights/fintechs-a-new-paradigm-of-growth.

the bank-FinTech nexus poses systemic risk and how that risk can be reconciled with the innovation and benefits that bank-FinTech interconnection brings, as well as potential policy solutions to mitigate risk without stifling innovation.

II. Background

The term FinTech broadly describes a subset of non-banking financial institutions (NBFIs) that use technology to facilitate financial services such as asset management, financial intermediation, digital ledger technology (DLT), and neobanks, which provide users bank-like services without physical branches.[3] FinTech's continued growth has begun to play an increasingly important role in the financial sector, revolutionizing the way that financial services can be accessed.

The COVID-19 pandemic expedited the adoption of technology in an already rapidly digitizing world—digital services are higher in demand than ever.[4] With people unable to access their physical banking branches, more people turned to alternative services in the form of FinTech. Daily download rates of finance apps increased by a rate of 21-26%, marking this mass movement toward mobile financial services.[5] While apps provided by traditional banks make up a large portion of the increase in downloads, the adoption of FinTech services outside of traditional banking outpaced traditional banking apps by 9%, reflecting the general trend toward FinTech services.[6]

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[3] William Magnuson, "Regulating Fintech," *Vanderbilt Law Review* 71, no. 4 (2018): 1167–1226, https://scholarship.law.vanderbilt.edu/vlr/vol71/iss4/2.
[4] Avalos Almanaza et al., "Firms' Digitalization during the COVID-19 Pandemic : A Tale of Two Stories," World Bank, January 25, 2023, https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099906201252336913/idu003954df4097d60473d0b65906fce19f25ce6.
[5] Jing Fu and Manisha Mishra, "Fintech in the Time of COVID-19: Technological Adoption during Crises," *Journal of Financial Intermediation* 50 (2022): Article 100945, https://doi.org/10.1016/j.jfi.2021.100945.
[6] Ibid.

In the light of this emerging competition, banks started to partner with and acquire these FinTech firms.[7] These acquisitions made strategic sense for banks in the context of widespread increases of technological adoption and increased technological literacy. By integrating FinTech into their business model, especially after seeing the increased growth of FinTech during the pandemic, banks moved to protect their market share and mitigate losses of depositors to the FinTech sector.[8]

These acquisitions highlight the increasing interconnectedness of the banking sector and other NBFIs such as FinTech firms. Historically, commercial banks and other NBFIs were separated through the Glass-Steagall Act of 1933, which enforced the separation of investment and commercial banks (Glass-Steagall Act, 1933). Glass-Steagall's separation of investment banking and commercial banking were later partially repealed by the Financial Services Modernization Act of 1999, also known as the Gramm-Leach-Bliley Act, allowing banks to operate as financial holding companies (FHCs), a type of bank holding company (BHC) that can hold both depository institutions and a NBFIs (Gramm-Leach-Bliley Act, 1999).

The rapid growth of FinTech institutions and their increasing interconnectedness to the financial system are directly related, as there are many potential synergistic effects for both banks and FinTechs. However, this same interconnectedness that drives synergy and growth also poses serious questions to overall financial stability. FinTech institutions are subject to less regulation than traditional banks and thus take on higher credit risk, and their technology-centric business models are uniquely vulnerable to shocks from cyber-attacks. Because of the interconnectedness between banks and FinTech, these vulnerabilities can propagate through the

[7] Yue Wang and Nicole Melican, "Steady M&A Continues to Deepen Bank-Fintech Convergence," *S&P Global*, 2022, https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/steady-m-a-continues-to-deepen-bank-fintech-convergence-69421059.

[8] Jing Fu and Manisha Mishra, "Fintech in the Time of COVID-19: Technological Adoption during Crises," *Journal of Financial Intermediation* 50 (2022): Article 100945, https://doi.org/10.1016/j.jfi.2021.100945.

financial system, creating the potential for large spillover effects that could lead to mass financial instability.

III. Synergistic Benefits of Bank-FinTech Interconnection

The bank-FinTech nexus provides a multitude of synergistic benefits for banks and FinTechs, which leverage each other to drive mutual growth. These synergy effects transcend the benefits of pure financing, enhancing the services both banks and FinTechs are able to offer and allowing both to stay competitive in an evolving industry.

A. Increased Funding to Fuel FinTech Growth

The relationship between banks and FinTech companies has created a significant benefit for FinTech companies through the funding and liquidity provisions that banks provide. A large source of bank-FinTech synergy is through FinTechs' access to the capital needed to develop and scale their services. A study from the Federal Reserve Bank of New York finds that NBFIs receive large amounts of funding through loans from banks, and that the surge in NBFI growth coincides with this increase in lending over time.[9]

This funding mechanism is synergistic for both parties involved. For the FinTechs, access to funding not only allows them to provide their services, but also fuels innovation of new products and offerings. For the banks, the need to innovate to keep up with the changing technological needs of the financial services is offloaded to the FinTechs, allowing them to maintain focus on the strategic goals of their company rather than focus their efforts on FinTech. Banks also indirectly gain access to new markets that FinTech provides, such as the

[9] Viral V. Acharya, Nicola Cetorelli, and Bruce Tuckman, "Nonbanks Are Growing but Their Growth Is Heavily Supported by Banks," Federal Reserve Bank of New York, June 20, 2024, https://libertystreeteconomics.newyorkfed.org/2024/06/nonbanks-are-growing-but-their-growth-is-heavily-supported-by-banks/.

underbanked, as well as Millennials, Gen Zers, and future generations who might be more technologically savvy.[10]

B. FinTech Access to Bank-Specific Benefits

FinTech gains access to benefits traditionally only conferred upon banks through acquisition and partnership. Though access to bank-specific benefits exists for all types of FinTech firms that are acquired by or partner with banks, perhaps the most overt case can be found in the operations of neobanks, a certain type of FinTech firm that provides banking services without physical branches, much of the time without a bank charter.[11] The Federal Reserve Bank of Kansas City describes the bank-FinTech relationship for neobanks, finding that neobanks use a bank's underlying infrastructure by connecting their digital services directly to the bank's existing system.[12] By partnering with banks, neobanks do not only gain access to a bank's infrastructure—they gain the ability to provide Federal Deposit Insurance Corporation (FDIC) insurance,[13] which insures deposits of up to $250,000. FDIC insurance is a vital guarantee to maintaining confidence in deposits while mitigating the risk of bank runs.

This phenomenon broadly follows a wider trend of NBFIs using banks to guarantee them the right to access traditionally bank-only services. Following the 2008 financial crisis, many of the most significant NBFIs, such as Morgan Stanley and Goldman Sachs, rushed to become bank holding companies and opened depository branches.[14] Becoming BHCs provided these

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[10] Terri Bradford, "Neobanks: Banks by Any Other Name?" [Payments System Research Briefings] *Federal Reserve Bank of Kansas City*, August 2020, https://www.kansascityfed.org/Payments%20Systems%20Research%20Briefings/documents/7600/psrb20bradford0812.pdf.
[11] Ibid.
[12] Ibid.
[13] Ibid.
[14] James Mantone and Craig Vanderpool, "Crisis Put Goldman, Morgan Stanley on Journey to Bankland," *S&P Global*, 2018, spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/crisis-put-goldman-morgan-stanley-on-journey-into-bankland-46425800.

companies important benefits such as the aforementioned access to FDIC insurance, but also access to the Federal Reserve Bank's discount window for liquidity provisions.[15] FinTech gains access to discount window borrowing through their banking counterparts as other NBFIs have already done.

Through the acquisition of FinTech companies by banks, both FinTech companies and banks can reap symbiotic benefits that trickle up to their parent BHC. FinTechs are able to access government guarantees that banks have cultivated over the years, and banks are able to utilize their benefits to stabilize the upside that FinTech brings in terms of technological innovations and reducing frictions to financial services.

C. Reducing Frictions to Financial Services

FinTechs reduce frictions of financial services such as asset management and financial intermediation.[16] Not only can bank holding companies leverage the aforementioned funding and bank-specific benefits to grow their FinTech subsidiaries, but BHCs also take advantage of FinTech's low cost structure and engage in regulatory arbitrage strategies to decrease frictions to financial services even further.

For BHCs that hold FinTech firms, regulatory arbitrage involves taking advantage of the gap between the stringent regulations on traditional banks and the less stringent regulatory environment surrounding FinTech. This phenomenon can most clearly be seen in FinTech's financial intermediation services through its facilitation of peer-to-peer lending (P2P). A few barriers are associated with traditional financial intermediation services, such as high interest rates and low credit scores. Though FinTech's P2P lending is still overseen by the Securities and

[15] Ibid.
[16] William Magnuson, "Regulating Fintech," *Vanderbilt Law Review* 71, no. 4 (2018): 1167–1226, https://scholarship.law.vanderbilt.edu/vlr/vol71/iss4/2.

Exchange Commission, regulations on FinTech's P2P lending are much less stringent than regulations on banks, allowing FinTech to provide lower borrowing rates than credit cards.[17]

FinTechs also provide an alternative to traditional asset management methods, which are notorious for their high fees and questionable ability to beat the market, with 99% of actively managed funds underperforming the S&P 500.[18] FinTech companies have increased their utilization of robo-advisors which have incredibly low fees, ranging from 0.25%-0.50% of assets managed per year, versus traditional advisors which may have fees of around 1% of assets.[19] They are able to offer these low fees due to the low-overhead cost model of FinTech firms due to the lack of their physical branches—they bear less costs and can thus transfer savings to their users.[20] On top of reduced fees, robo-advisors have a comparative advantage over traditional asset managers in tax-loss harvesting, or the offsetting of capital gains tax through the sale of losing investments (Chason, 2016, pp. 543-545). Robo-advisors are fundamentally better at tax-loss harvesting due to the sheer bandwidth required to monitor fluctuations in asset prices, a process which is practically infeasible for humans, but made much easier with the processing power of computers (Magnuson & Magnuson, 2018, p. 1177).

IV. Risks Specific to FinTech Firms

Though the bank-FinTech nexus provides many benefits, the very same benefits that interconnectedness between banks and FinTechs provide can create risks on the firm level. This section will explore two key risks specific to FinTech firms: financial risk and the risk of cyberattacks.

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[17] Anjan V. Thakor, "Fintech and Banking: What Do We Know?" *Journal of Financial Intermediation* 41 (2020): Article 100833, https://doi.org/10.1016/j.jfi.2019.100833.
[18] Chris Newlands and Madhumita Marriage, "99% of Actively Managed US Equity Funds Underperform," *Financial Times*, 2016, https://www.ft.com/content/e139d940-977d-11e6-a1dc-bdf38d484582.
[19] Jason Suknanan, "How to Choose Between Using a Robo-Advisor and Using a Traditional Financial Advisor to Manage Your Investments," *CNBC Select*, 2022, https://www.cnbc.com/select/robo-advisor-vs-financial-advisor/.
[20] George Allayannis and Joseph M. Becker, "A Global Fintech Overview," SSRN Electronic Journal, November 6, 2019, https://doi.org/10.2139/ssrn.3386449.

A. Financial Risk

As mentioned previously, one of the benefits of bank-FinTech partnerships is banks gaining new access to those who are underbanked. Providing services to the underbanked, however, poses increased risk for FinTech firms. The International Monetary Fund (IMF) finds that FinTech firms, specifically neobanks, provide financing to those who are younger, have less income, and have lower credit scores than the typical borrowers of banks.[21] The same study finds that these loans are not only unsecured, but are also involved in riskier sectors.

Neobanks fail to adequately protect themselves against their increased credit risk because they are not subject to the same liquidity requirements as banks. Ceteris paribus, it makes more sense for companies that hold riskier assets to be better capitalized—they should have more available capital per risk-weighted assets than companies that hold less risky assets. A higher chance of counterparty loan default means that there is greater likelihood losses must be absorbed by the firm, so in order to cover losses and ensure they remain solvent they logically should keep higher capital to protect them against the effects of loan defaults. To ensure stability, neobanks should theoretically be more well-capitalized than traditional banks. However, the IMF also finds that though neobanks take on higher credit risk, they also tend to be less well-capitalized than traditional banks—they have less available capital per risk-weighted assets than banks tend to hold.[22] The reason FinTechs are able to have lower capital ratios than traditional banks is because financial regulation has historically been passed in response to the historic systemic risks of banks on the financial system. The Basel Accords are perhaps the most representative of this regulatory discrepancy, which only provide risk-based capital requirements to banks—Basel III in particular sets a 4.5% requirement for common equity tier 1 (CET1) to be

[21] International Monetary Fund, *Global Financial Stability Report* (International Monetary Fund, 2022), https://www.imf.org/en/Publications/GFSR/Issues/2022/04/19/global-financial-stability-report-april-2022.
[22] Ibid.

at least 4.5% of risk-weighted assets, and Tier 1 capital to be at least 6% of risk-weighted assets for banks only.[23] The disparity between the regulation on FinTechs and banks, while something that can be leveraged to create higher returns for BHCs, creates increased credit risk and liquidity risk for the firm.

B. Cyberattacks

Because FinTech heavily relies on technological innovation in their business model, they are uniquely prone to cyberattacks in ways that banks and other types of NBFIs are not. Cyberattacks have historically been used to take advantage of the vulnerabilities of financial institutions. Take, for example, the Bangladesh Bank heist in 2016, where hackers wired almost $1 billion from the central bank of Bangladesh. Bangladesh's central bank used technology provided by the Society for Worldwide Interbank Financial Telecommunication (SWIFT), which promises a secure network through which banks can send and receive information. It is generally believed that vulnerabilities in SWIFT's telecommunication system were at fault in this bank heist, with former New York congresswoman Carolyn Mahoney stating "I couldn't believe that much money could be lost in the SWIFT system".[24]

The Bangladesh Bank heist illustrates the old adage that a chain is as strong as its weakest link—it is clear that even a single technological vulnerability can be used to access and exploit the entire underlying network, leaving individual entities in the network vulnerable to losses. The fast growth of FinTech corresponds with an increasing amount of data and the resultant increase in network connectivity to transfer and use that data. As the networks underlying FinTech become larger, it becomes increasingly difficult to manage all nodes in a

[23] Basel Committee on Banking Supervision, "Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems," Bank for International Settlements, last modified June 2010, https://www.bis.org/publ/bcbs189.pdf.

[24] Krishna N. Das and Jonathan Spicer, "How the New York Fed Fumbled over the Bangladesh Bank Cyber-Heist," *Reuters*, 2016, https://www.reuters.com/investigates/special-report/cyber-heist-federal/.

network and ensure that these nodes are adequately protected against cyberattacks. There are existing standards in place that force compliance, such as the Payment Card Industry Data Security Standard (PCI DSS) introduced in 2004, with FinTech operations falling under their standards. The Bangladesh Bank heist, however, postdates these standards, proving that cybersecurity breaches can still occur in the financial sector with security standards such as these, even with the standards updating as technology evolves.

V. Potential for Systemic Risk and Spillover Effects

The firm-specific risks between banks and their sister FinTech firms can extend beyond their parent BHC. FinTech, through both its operations and through its potential failure, poses risks to the entire financial system, possibly creating spillover effects to the rest of the economy.

A. Procyclicality

FinTech has the potential to amplify fluctuations in the business cycle, increasing procyclicality both by intensifying booms and exacerbating crashes. This increased procyclicality could have ripple effects throughout the financial sector, both with asset prices in the securities market and with rates in debt financing.

One of the many FinTech services previously outlined was its ability to provide asset management services at a lower cost through mechanisms such as robo-advising. Robo-advising, deriving their algorithmic trading practices based on artificial intelligence (AI) models, are trained like all AI models—the model learns from large amounts of collected data, identifying patterns that it then uses to make decisions. With respect to robo-advising, the data used is widely available financial data, which naturally includes the sentiment of retail investors and any potential behavioral mispricings. The asset management decisions of robo-advisors, therefore, have the potential to exhibit “herd behavior,” where they might try to enter or exit a position

based on en masse market fluctuations.[25] Through this mechanism, robo-advisors serve as an amplifier to systemic risk, one that will increase as robo-advisors continue to grow in size and numbers.

Another way FinTechs increase procyclicality is through their reduction of borrowing costs. One of FinTech's benefits is its ability to provide lower rates through their low-overhead cost structure and less stringent regulation, allowing people that are typically underbanked to access financial services.[26] However, with this new market segment comes increased credit risk due to the nature of loans to younger, less income, lower credit score individuals.[27] The IMF finds that credit risk tends to be underpriced by institutions such as neobanks. In response to lower rates offered by FinTechs, banks might be compelled to lower their rates to remain competitive, even if credit risk is not adequately priced by FinTechs.[28] Low FinTech rates will thus spread through the pressure its low prices exert on the rest of the industry.

B. Interconnectedness

The same interconnectedness that provides many synergies between banks and FinTechs can create systemic risk. As mentioned previously, banks and FinTechs primarily utilize acquisitions for the purpose of mutual benefits, such as the FinTech accessing funding and bank-specific benefits, with the bank benefiting from FinTech's technology and not having to dedicate its own resources to develop the technology internally. However, the firm-specific risks

[25] Sushil Bikhchandani and Sunil Sharma, "Herd Behavior in Financial Markets," *IMF Staff Papers* 47, no. 3 (2001): 279–310, https://www.imf.org/external/pubs/ft/staffp/2001/01/pdf/bikhchan.pdf.
[26] Terri Bradford, "Neobanks: Banks by Any Other Name?" [Payments System Research Briefings] *Federal Reserve Bank of Kansas City*, August 2020, https://www.kansascityfed.org/Payments%20Systems%20Research%20Briefings/documents/7600/psrb20bradford0812.pdf.
[27] International Monetary Fund, *Global Financial Stability Report* (International Monetary Fund, 2022), https://www.imf.org/en/Publications/GFSR/Issues/2022/04/19/global-financial-stability-report-april-2022.
[28] Financial Stability Board, "Financial Stability Implications from FinTech: Supervisory and Regulatory Issues that Merit Authorities' Attention," *Financial Stability Board*, June 2017, https://www.fsb.org/uploads/R270617.pdf.

associated with FinTechs have the potential to affect banks as well. This paper has previously discussed financial risks and cybersecurity threats as two examples of firm-specific risk.

FinTech has a higher risk of failure due to the credit risk and liquidity risk they take on. Firstly, FinTech's lending practices lead to higher credit risk due to the riskier market they serve.[29] FinTechs also carry higher liquidity risk—they are not subject to the same capital requirements as banks, and thus hold less provisions that might protect them in the case of mass defaults.[30] FinTechs would therefore have to lean on banks to provide them with liquidity provisions. However, the impending failure of a bank holding company's FinTech subsidiary would create a costly incentive problem. While the BHC might want the bank to bail out the FinTech firm, it might not be a sound decision for the bank to offer liquidity to a FinTech firm that is poised to fail. Banks might therefore take on excessive risk in providing liquidity to the FinTech firm, which might lead to substantial losses on the bank that could then propagate throughout the financial system.

FinTech's unique vulnerability toward cyberattacks do not only affect the FinTech firm, but the entire BHC. At worst, if the bank uses the FinTech subsidiary's software in its operations, banks might suffer mass losses due to the breach. At best, the banks might not suffer significant direct losses from the breach, but loss of trust in the bank's sister FinTech firm may cause the erosion of trust in the bank, triggering potentially disastrous long-term losses for the bank.

Interconnectedness has historically caused major issues to the overall financial system, such as during the 2008 financial crisis. One of the main reasons for the rippling effects throughout the economy was the interconnectedness of the financial system—mortgage-backed securities (MBSs) were being created with various subprime mortgages, which companies like

[29] International Monetary Fund, *Global Financial Stability Report* (International Monetary Fund, 2022), https://www.imf.org/en/Publications/GFSR/Issues/2022/04/19/global-financial-stability-report-april-2022.
[30] Ibid.

Lehman Brothers (Lehman) had invested heavily in due to the booming real estate market. American Investment Group (AIG) had been selling large quantities of credit default swaps (CDSs), which provided insurance against default for securities such as MBSs. AIG sold these CDSs to companies like Lehman on the pretense that they would have a low chance of needing to fulfill them. When the housing bubble burst, however, the effects failures had on Lehman spilled over to AIG, creating a feedback loop of financial stress that propagated throughout the financial system.

FinTechs could threaten financial stability through their interconnectedness with banks. Similar to the 2008 financial crisis, interconnectedness can create feedback loops that can amplify shocks and cause disruption to the rest of the financial system.

VI. Evaluation of Systemic Risk

Because FinTech is a quickly developing field, there is ongoing debate on the extent to which FinTech poses systemic risk. Particularly, the results of two measures of systemic risk, ΔCoVaR and SRISK, garner different results on the extent to which FinTech institutions pose significant systemic risk.

A study by Franco et al. (2020) adapted a systemic risk model from Adrian and Brunnermeier (2016) called ΔCoVaR (conditional value at risk) to measure the systemic risk posed by FinTech firms.[31] Specifically, ΔCoVaR is defined as the "change in the value at risk of the financial system conditional on the institution being under distress relative to its median state".[32] Franco et al (2020), through their usage of ΔCoVaR methodology, finds that while 20 out of the 36 FinTech firms sampled contribute to systemic risk, the maximum magnitude of risk

[31] Luca Franco et al., "Does Fintech Contribute to Systemic Risk? Evidence from the U.S. and Europe," *ABDI Working Paper No. 1132*, S&P Global, 2020, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3468809.
[32] Tobias Adrian and Markus K. Brunnermeier, "CoVaR," *American Economic Review* 106, no. 7 (July 1, 2016): 1705–1741, https://doi.org/10.1257/aer.20120555.

each might contribute is only 0.03%.[33] The same study therefore concludes that FinTech firms do not pose substantial risk to the financial system.[34]

However, Li et al. (2020) proposes a different method of calculating the systemic risk posed by FinTech firms[35] using a methodology created by Brownlees and Engle (2016) called SRISK, which they define as "the expected capital shortfall of a financial entity conditional on a prolonged market decline".[36] The data set is the same sample of stocks from KFTX that Franco et al. (2020) used. Li et al. (2020) concludes that there do exist significant spillover effects from FinTech to banks, especially in the bearish case.[37]

The methodology underlying the SRISK methodology that Li et al. (2020) employs in their paper is more applicable for FinTech firms than ΔCoVaR in this case. Perhaps most relevant is the effects of capital shortfall, or the undercapitalization of firms leading to mass spillover effects.[38] As discussed before, FinTech firms are undercapitalized compared to banks due to regulatory discrepancies between banks and FinTech firms, on top of having increased credit risk that directly causes the effects of a firm's undercapitalization to manifest. ΔCoVaR, however, is more concerned with "leverage, size, maturity mismatch, and asset price booms".[39]

Though there are studies using various metrics of risk, the ability of the SRISK model to consider the sources of risks to which FinTech is more prone strengthens the argument that

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[33] Luca Franco et al., "Does Fintech Contribute to Systemic Risk? Evidence from the U.S. and Europe," *ABDI Working Paper No. 1132*, S&P Global, 2020, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3468809.
[34] Ibid.
[35] Jianping Li et al., "Risk Spillovers between FinTech and Traditional Financial Institutions: Evidence from the U.S.," *International Review of Financial Analysis* 71 (2020): Article 101544, https://doi.org/10.1016/j.irfa.2020.101544.
[36] Christian T. Brownlees and Robert F. Engle, "SRISK: A Conditional Capital Shortfall Measure of Systemic Risk," *ESRB: Working Paper Series No. 2017/37*, 2016, http://dx.doi.org/10.2139/ssrn.3723383.
[37] Christian T. Brownlees and Robert F. Engle, "SRISK: A Conditional Capital Shortfall Measure of Systemic Risk," *ESRB: Working Paper Series No. 2017/37*, 2016, http://dx.doi.org/10.2139/ssrn.3723383.
[38] Christian T. Brownlees and Robert F. Engle, "SRISK: A Conditional Capital Shortfall Measure of Systemic Risk," ESRB: Working Paper Series No. 2017/37, 2016, http://dx.doi.org/10.2139/ssrn.3723383.
[39] Tobias Adrian and Markus K. Brunnermeier, "CoVaR," *American Economic Review* 106, no. 7 (July 1, 2016): 1705–1741, https://doi.org/10.1257/aer.20120555.

FinTech might pose significant systemic risk. However, even if Franco et al. (2020) did not find significant systemic risk in their study, they agree with the sentiment that there should be a development of a regulatory framework because FinTech does have the potential to create a significant threat to financial stability.[40]

VII. Conclusion

The interconnectivity between banks and FinTech firms presents significant opportunities along with potentially worrisome risks. The bank-FinTech nexus shifts the paradigm of the financial service industry toward increased accessibility and lower costs. Though there are substantial upsides to the increase of interconnectivity between banks and FinTech firms, these benefits must be weighed against not only firm-specific risks such as financial risks and vulnerability to cyberattacks, but also the potential systemic risk that procyclicality and bank-FinTech interconnectivity could pose to the broader financial system.

To maximize the net benefits of FinTech, policy must strike a delicate balance between maintaining the possibility for growth and innovation while still mitigating the systemic risks associated with FinTech firm practices. Much of the specific riskiness of FinTech lies in the regulatory discrepancies between FinTech and banking in terms of capital requirements—though FinTech takes on riskier assets, they are less well-capitalized than banks.[41] Policy efforts might try not to necessarily strive toward regulatory parity between the capital requirements of banks and FinTechs, but making progress toward making sure FinTech companies have adequate levels of capital as provisions for loan defaults could be an avenue to explore. This policy recommendation could have the effect of mitigating risk for specific FinTech firms, which would

[40] Luca Franco et al., "Does Fintech Contribute to Systemic Risk? Evidence from the U.S. and Europe," *ABDI Working Paper No. 1132*, S&P Global, 2020, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3468809.
[41] International Monetary Fund, *Global Financial Stability Report* (International Monetary Fund, 2022), https://www.imf.org/en/Publications/GFSR/Issues/2022/04/19/global-financial-stability-report-april-2022.

mitigate the chance of FinTech firm failure that might spill over into their sister banks and the financial system as a whole.

The complex nature of FinTech emphasizes the importance of nuanced policy to address systemic risk without stifling innovation. Because FinTech is growing at such fast rates, effective policy could be the difference between more accessible, more technologically advanced financial services and the next financial crisis.

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Leveling the Playing Field:
A Revenue-Sharing Model for Equitable Pharmaceutical Innovation

Michelle Hu

The federal government's first ever negotiation with prescription drug manufacturers took place in 2024. That year, the Centers for Medicare and Medicaid Services (CMS) engaged a select group of drug manufacturers to determine how much taxpayers would contribute toward their costly products. Although CMS asserts it pursued aggressive discounts—projecting $6 billion in savings once new prices take effect in 2026—many of the terms remain contested in courtrooms nationwide.[1] Pharmaceutical companies and related organizations are challenging the law in court, suggesting that government interference would stifle innovation.[2]

In theory, these costs are largely justified: from high R&D expenses to substantial regulatory hurdles, firms face significant upfront costs to developing new drugs. Without patent protections, some contend that firms would never be able to justify the high-upfront investments, and as a result, society would never experience the benefits of new innovation. Yet, this system has flaws: high prices exclude many from access to life-saving medication.

Up until now, policymakers have largely taken these costs as an unavoidable part of patent law. Yet, a rapidly growing body of evidence indicates that private sector funding isn't nearly as influential in bringing medication to market as was previously thought. Based on historical successes of government-funded innovation and research on the dominance of the taxpayer funds for pharmaceutical development, it seems there need not be such a disconnect between global health goals and the innovation that makes it possible.

This article proceeds in four parts, arguing that current systems of patent law are incentivizing market behavior that is fundamentally unjust. The surprising relationship between the professional sports model of revenue sharing, and Rawlsian theory of justice as fairness will

[1] King, R., Lim, D., & Gardner, L. (2024, August 15). *In a first, Medicare has set prices for 10 drugs, saving billions*. POLITICO; Politico. https://www.politico.com/news/2024/08/15/cms-releases-prices-for-10-negotiated-drugs-00174021

[2] Goldstein, A., & Gilbert, D. (2023, August 29). Biden administration names 10 prescription drugs for price negotiations. *Washington Post*. https://www.washingtonpost.com/health/2023/08/29/medicare-drug-price-negotiations/

be presented as an alternative system that allows for redistribution needed to address global health issues. Part I outlines the economic and philosophical justifications for patent law, as well as the global health consequences for the market inefficiencies it creates. Part II provides a theoretical and practical justification for the importance of societal structures that foster equality of opportunity, through an overview of Rawls' theory of justice as fairness. Part III discusses the revenue sharing model of professional sports, and its unexpectedly Rawlsian justification. Finally, Part IV outlines an example for a privately funded but publicly held method of pharmaceutical funding that is more closely aligned with the societal importance of health.

I. Patents, Innovation, and Global Health

In contrast to other types of patentable innovations, the process for creating new drugs involves enormous R&D investments and dense government regulation, making it both time-consuming and risky.[3] Furthermore, while most pharmaceuticals may cost millions of dollars to develop and sell, the costs of production can be insignificant.[4] It seems plausible to assume that in a world without patent law, firms could simply wait to see what medications are created, and then produce them at a much cheaper price. As a result, no firms would risk the burden of innovation, and society would give up the benefit of new drugs.

Through this problem of public goods, we arrive at the most straight-forward justification for patent law. The creation of "legal quasi-monopolies"—that is, instances where only the patent owner may sell a specific product—theoretically incentivizes production, as patent owners can set their own (monopolistic) prices. As the argument goes, it is this promise of greater profits that spurts innovation.[5] Thus, the most compelling justification for the patent system is a

[3] Buccafusco, C., & Masur, J. S. (2020). Drugs, Patents, and Well-Being. *SSRN Electronic Journal* (1408).
[4] *Hill, Andrew M., Melissa J. Barber, and Dzintars Gotham. "Estimated costs of production and potential prices for the WHO Essential Medicines List." BMJ global health 3.1 (2018): e000571, 1.*
[5] Buccafusco, C., & Masur, J. S. (2020). Drugs, Patents, and Well-Being. *SSRN Electronic Journal*, 1408.

utilitarian one: the societal benefit of innovation is significantly greater than the societal costs associated with the inefficiency of monopolies.

Yet, the utilitarian justification is shaky; the costs born by society to enable these "legal quasi-monopolies" is simply too significant to not demand an alternative. First, the "higher prices for patented goods are borne by consumers"--whether individual payers or insurance companies and the government.[6] Furthermore, "many people are priced out of the market for patented goods, even if they would have been able and willing to purchase that product if it were priced at marginal cost",[7] causing many to miss out on the benefits of such innovation. One final inefficiency of the patent process is that it indirectly incentivizes the production of the most profitable goods—not those with the greatest societal benefit.[8] Often, drugs that could save lives are scarce, while the market remains oversaturated with "me too" drugs, treatments that are nearly identical to existing medications and developed for profitability. Furthermore, evidence shows that treatments for diseases primarily affecting poorer populations, including those in developing nations, are significantly underproduced compared to drugs for diseases affecting wealthier populations.[9] This disparity reflects a profound problem in global health. Although, for instance, improved treatments for malaria and tuberculosis would massively improve global human welfare, pharmaceutical firms often underinvest in these areas due to lower profit margins.[10] This example highlights a troubling disparity: as life-saving medications are brought to market for those who can afford the outrageous prices, global health efforts in low-income countries continue to stall, ultimately underscoring the urgent need to address global health inequities within the current pharmaceutical model.

[6] *Id. 1410.*
[7] *Id.*
[8] Olson, David S., Taking the Utilitarian Basis for Patent Law Seriously: The Case for Restricting Patentable Subject Matter (January 12, 2009). *Temple Law Review, Vol. 82, No. 1*, 196.
[9] Buccafusco, C., & Masur, J. S. (2020). Drugs, Patents, and Well-Being. *SSRN Electronic Journal* (1405-1406).
[10] Buccafusco, C., & Masur, J. S. (2020). Drugs, Patents, and Well-Being. *SSRN Electronic Journal* 1409.

II. Connecting Patents to Philosophical Theories

Despite the scientific milestones that have happened in recent decades, global health improvements have not been equal.[11] Amid rapid global change and persistent health disparities, we should critically revisit and evaluate the prominent moral and philosophical foundations upon which our institutions are built, providing a stronger, more grounded basis for their legitimacy.

A. Utilitarianism

As previously discussed, the theoretical foundation of patent law is primarily utilitarian: despite short-term monopoly costs, patents are permitted to incentivize innovations that ultimately improve human welfare. The core utilitarian principle of "the greatest happiness for the greatest number"[12] suggests that society benefits more from encouraging drug development than it loses from the inefficiencies created by temporary monopolies. However, while monetary incentives may drive innovation, the significant limitations of this model persist when considering core issues of healthcare like fairness and accessibility.

While utilitarianism advocates for maximizing well-being, the practical application of doing so amid healthcare disparity is complex. For example, how can different aspects of well-being be compared or measured on a single scale? If we must construct a single index for it, who decides? Furthermore, how could we apply utilitarianism when weighing the value of others' lives?[13] John Rawls, one of utilitarianism's key critics, argued that utilitarian calculations inherently reflect biases and subjective values, especially when deciding whose well-being to prioritize. As he states, "the nature of the decision made by the ideal legislator is not, therefore, materially different from that of an entrepreneur deciding how to maximize his profit… or that of

[11] Ruger, Jennifer Prah. "Health and social justice." *Lancet (London, England)* vol. 364,9439 (2004): 1075-80. doi:10.1016/S0140-6736(04)17064-5, 3.
[12] Rawls, John. "A theory of justice." *Cambridge (Mass.)* (1971), 24.
[13] Roberts, Marc J., and Michael R. Reich. "Ethical analysis in public health." *The Lancet* 359.9311 (2002): 1055-1059, 1056.

a consumer deciding how to maximize his satisfaction."[14] Whether on an individual or societal level, Rawls argues, the utilitarian approach allows "a single person's system of desires to determine the best allocation of limited means."[15]

B. Rawlsian Justice as Fairness

In response to such shortcomings, Rawls developed his theory of "justice as fairness," which provides a framework for equity centered on equality of opportunity. Rather than viewing justice through a utilitarian lens, Rawls proposed a model in which justice is determined from a hypothetical "original position," where individuals make decisions behind a "veil of ignorance."[16] Without knowledge of their own social status, race, abilities, or personal circumstances, rational individuals are assumed to choose fair principles that "free and rational persons" would accept universally, forming a social contract that prioritizes fairness over self-interest.[17]

Even so, society conceived with fair principles is not the end goal. Within this framework, a fair society is one that redistributes opportunity by providing "more attention to those with fewer native assets and in… less favorable social positions"[18] to counterbalance the inherent inequities of life.[19] The power of the major political, social, and economic institutions that shape individuals' lives is immense–"so profound and present from the start… that men born into different positions have different expectations of life."[20] Thus, as Rawls argues, we must continuously be critical of institutions that inherently favor certain people over others and redress them to achieve true equality of opportunity.

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[14] Rawls, John. "A theory of justice." *Cambridge (Mass.)* (1971), 24.
[15] *Id.*
[16] *Id. 11.*
[17] *Id. 10.*
[18] *Id. 86.*
[19] *Id. 17.*
[20] *Id. 7.*

As alluded to earlier, one of the most significant social institutions in this regard is healthcare, where disparities in access can have monumental consequences. Applying justice as fairness to this sector suggests that healthcare should be pursued as a matter of morally right and wrong outcomes, not merely as an economic commodity to be measured by utility. Many in the public health community argue that a "minimum level of health is necessary for people to have a reasonable range of opportunity when they make life choices."[21] From this perspective, ensuring access to healthcare is part of society's obligation to establish baseline equality—a foundational aspect of justice—without which people cannot exercise their two moral powers: their "capacity for a sense of injustice and for a conception of the good."[22] Health, like basic liberties and political participation, is a prerequisite necessity.

Some may argue that health outcomes are primarily shaped by individual choices rather than societal responsibility; perhaps, it is allowable for a just society to have differences in health outcomes as they are an inevitable product of individual choices. Yet, this perspective overlooks the well-documented social determinants of health, which indicate that factors like socioeconomic status, education, and environment significantly impact health outcomes.[23] These systemic influences on health reinforce Rawls' argument that true fairness requires addressing unjust institutions, as these inequalities stem from inequalities at birth.

III. Theoretical and Practical Explanation of Revenue Sharing in Professional Sports

Just as Rawls' concept of justice as fairness advocates for equal opportunity in healthcare, professional sports leagues employ revenue sharing to create a more balanced playing field. This model, while not guaranteeing equality of outcome, emphasizes competition over

[21] Roberts, Marc J., and Michael R. Reich. "Ethical analysis in public health." *The Lancet* 359.9311 (2002): 1055-1059, 1057.
[22] Rawls, John. "A theory of justice." *Cambridge (Mass.)* (1971) xii.
[23] Fishman, Jayna, and Douglas MacKay. "Rawlsian justice and the social determinants of health." *Journal of Applied Philosophy* 36.4 (2019): 608-625, 608.

absolute parity. By supporting competitive balance, revenue sharing exemplifies how the concept of justice as fairness may foster environments that allow all to compete on the basis of skill and ability alone.

A. Economics of Professional Sports

From shaping the culture of American cities, drawing in $50 billion of revenue yearly, and developing friendly rivalry between teams, sports is an important business.[24] And, although "sports leagues are in the business of selling competition on the playing field," cooperation is also key for a team's future success.[25]

To ensure games are unpredictable, exciting, and profitable, leagues strive to maintain competitive balance—a state where no single team consistently dominates--so games remain engaging for fans. One key tenet to fostering competitive balance in many professional sports leagues, including the NFL, MLB, and NBA, is the practice of revenue sharing.[26] Under this economic model, "clubs whose local revenue falls below the league average receive a net positive revenue transfer while those clubs who fall above the league average are net payers."[27] In turn, the high-revenue teams benefit as well. While a few individual, standout teams in a league may make considerable amounts of revenue, actual league revenues are greatest when "all teams were able to compete at an equally high level."[28] Thus, the guiding principles of revenue sharing works towards an ideal goal: a system where both the revenue-contributing teams and the

[24] Conte, N. (2024, July 23). *Visualized: How U.S. Sports Leagues Make Money*. Visual Capitalist. https://www.visualcapitalist.com/u-s-sports-leagues-by-revenue/
[25] Zimbalist, Andrew S. "Competitive balance in sports leagues: An introduction." Journal of Sports Economics 3.2 (2002): 111-121. 111.
[26] Fort, Rodney, and James Quirk. "Cross-subsidization, incentives, and outcomes in professional team sports leagues." *Journal of Economic literature* 33.3 (1995): 1265-1299, 1290.
[27] Addison, F. Gibbons. "A proposed wealth redistribution system based on the underlying premise of revenue sharing in American pro sports." *Tex. L. Rev.* 89 (2010): 1179, 1174.
[28] *Id. 1180.*

revenue-receiving teams benefit, creating a more balanced and stronger league for those involved.

Some critics of revenue sharing may raise the issue that simply funneling money towards a team offers no guarantee for its future success. For one, while teams receive these payments with the assumption that it will be used to improve the team as a whole, there is no way to ensure that this intention is being followed. In some cases, owners may pocket the funds or use them for non-competitive purposes, such as reducing debt, rather than improving player talent.[29] Additionally, even if these funds were to be fully reinvested in the team, a more talented roster or improved strategy still cannot guarantee success. Such a limitation highlights an important point–revenue sharing is not a mechanism to ensure equality of outcome, where all teams perform at an equal level. Equal funding does not translate into equal efficiency or impact across teams, as disparities in management and decision-making can affect how effectively these funds are used.[30]

However, it is important to note that equality of outcome is not the objective of revenue sharing. Rather, revenue sharing is intended to promote competitive balance by providing equality of opportunity. In this sense, each team receives the resources necessary to compete on a reasonably level playing field, but the outcome depends on factors such as skill, strategy, and management decisions. Ultimately, the profit-maximizing goals of sports leagues has created a model that is quite equitable and a practical application of Rawls' theory of justice as fairness. This system focused on opportunity, allows for natural differences in result based on merit, while creating an environment of equitable competition.

[29] *Id. 1181.*
[30] *Id. 1182.*

IV. A Proposed Health Interest Fund Based on the Premises of Revenue Sharing in Professional Sports

Building on the theoretical foundation of equality of opportunity and the practical application of revenue sharing, this paper will explore a potential model to begin to address some institutional flaws of the patent system. Given the incongruity between the utilitarian basis of patent law, and the justice-oriented justifications for health equity, this paper will advocate for the possibility of an application revenue sharing reform in the pharmaceutical industry.

A. Overview

This paper envisions a public innovation fund for health. Pharmaceutical firms that financially benefit from the inefficiencies of the patent system pay a certain percentage of their revenue from those drugs into a social impact fund. Set up with a similar approach to the distribution mechanism of pooling national revenue sharing employed by the NFL,[31] this program would be funded by a proportion of revenue from pharmaceutical firms that hold patents for either "me too" drugs–patents for medication that are nearly identical in formulation to other treatments on the market. These medications offer minimal (if any) improvements to human welfare, yet are produced regardless as they are highly profitable.[32] Thus, this creates a system of cross-subsidization: profitable, but low-impact drug lines subsidize essential development with smaller profit margins. One other aspect of the revenue sharing model that is useful to consider is the NFL's system for differing team contributions based on market size and income potential.[33] A similar strategy can be employed to determine contribution based on drug type and calculated social benefit. Drugs with minimal therapeutic advancement could have a

[31] Fort, Rodney, and James Quirk. "Cross-subsidization, incentives, and outcomes in professional team sports leagues." *Journal of Economic literature* 33.3 (1995): 1265-1299, 1286.
[32] Buccafusco, C., & Masur, J. S. (2020). Drugs, Patents, and Well-Being. *SSRN Electronic Journal*, 1432.
[33] Fort, Rodney, and James Quirk. "Cross-subsidization, incentives, and outcomes in professional team sports leagues." *Journal of Economic literature* 33.3 (1995): 1265-1299, 1289.

higher contribution rate, measured by similarity to existing drugs on the market and percentage mark-up from the original cost of production.

Furthermore, similar to the NFL's control over shared assets such as licensing or broadcasting rights,[34] there needs to be one entity to both have ownership of all intellectual property rights associated with new developments to ensure mission alignment. In this mock-up example, the National Institutes of Health (NIH) is selected as the public funder of the pharmaceutical industry, as the role of research and drug development is largely similar to the organization's current role.[35] Then, the NIH, in coordination with other national and international organizations, allocates these funds to address diseases in low-income or underserved populations. As the forward-facing funder of these drugs, the NIH maintains ownership of any intellectual property associated with the development in order to ensure that it is offered for low prices on the market.

B. Further Explanation

This section works to further explain the reasoning behind some of the processes that lead to this model of a public impact health fund. First, the NIH was selected as the governmental agent that facilitates and allocates the monetary fund due to a clear connection based on the nature of its work. In its current role as a key collaborator with the pharmaceutical industry, the NIH has the infrastructure and resources to transition from basic biomedical research, to the clinical research and scientific discoveries necessary in the R&D pipeline for developing drugs.

Furthermore, critics often claim that government involvement in pharmaceuticals might hinder innovation through inefficiency or imposing regulations. However, the governmental response to the COVID-19 pandemic, Operation Warp Speed, provided billions in funding and

[34] *Id. 1290.*
[35] Proudman, David, et al. "Public sector replacement of privately funded pharmaceutical R&D: cost and efficiency considerations." Journal of Medical Economics 27.1 (2024): 1253-1266, 1253.

timely logistical support, accelerating novel development of the mRNA vaccine at speeds unattainable with private-sector influence alone.[36] Finally, this government program's prioritization of public health and social welfare allowed it to prioritize rapid access and widespread availability, showing how government-backed research can effectively address both innovation and public health needs. By reducing financial risks and fast-tracking research, this approach ultimately ensured that life-saving treatments reached vulnerable populations equitably and swiftly.

Moreover, a growing body of research underscores the extensive role of public funding in advancing drug development. Findings from the Bentley Center for Integration of Science and Industry reveal that the NIH invested over $187 billion in research related to 354 of the 356 drugs approved by the FDA in recent years, covering at least half of the total R&D costs needed to bring these treatments to market.[37] This level of taxpayer-funded support suggests a critical need to reconsider the balance between public investment and private profit in the pharmaceutical industry. With taxpayers shouldering such a substantial share of development costs, there is an ever-pressing need to reconsider the justifications for monopolistic patents and the alignment of public and corporate interests, to ensure affordable access to the medicines they help create.

V. Conclusion

Decades of data on health access and the U.S. pharmaceutical industry highlight the flaws in the system focused on incentivizing innovation through profits rather than for the intrinsic

[36] Lalani, H. S., Nagar, S., Sarpatwari, A., Barenie, R. E., Avorn, J., Rome, B. N., & Kesselheim, A. S. (2023). US public investment in development of mRNA covid-19 vaccines: retrospective cohort study. *BMJ*, *380*(e073747), e073747. https://doi.org/10.1136/bmj-2022-073747

[37] *New study shows NIH investment in new drug approvals is comparable to investment by pharmaceutical industry*. (2023, April 28). Www.bentley.edu. https://www.bentley.edu/news/new-study-shows-nih-investment-new-drug-approvals-comparable-investment-pharmaceutical

importance of health. Given the enormous stakes of underinvestment and wasted resources on the well-being of others, immediate reform is necessary. While transitioning the private system of patent law to one publicly operated and privately funded is a massive upheaval, the fundamental misalignment between utilitarian, profit-driven motives of patent law and the redistributive purpose of healthcare ultimately requires drastic change. By showing the inherent connection between health equity and Rawlsian conceptions of justice, this paper introduces a potential solution found in an unlikely place: the revenue sharing model found in professional sports. This proposal will certainly be resisted by some stakeholders. Yet hopefully, contributing to the body of research that sees the benefits of a publicly funded system of pharmaceutical invention may open the discussion for lowering drug prices while maintaining innovation.

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Lalani, H. S., S. Nagar, A. Sarpatwari, R. E. Barenie, J. Avorn, B. N. Rome, and A. S. Kesselheim. "US Public Investment in Development of mRNA COVID-19 Vaccines: Retrospective Cohort Study." *BMJ* 380(e073747) (2023): e073747. https://doi.org/10.1136/bmj-2022-073747.

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Proudman, David, et al. "Public Sector Replacement of Privately Funded Pharmaceutical R&D: Cost and Efficiency Considerations." *Journal of Medical Economics* 27, no. 1 (2024): 1253–1266.

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Roberts, Marc J., and Michael R. Reich. "Ethical Analysis in Public Health." *The Lancet* 359, no. 9311 (2002): 1055–1059.

Ruger, Jennifer Prah. "Health and Social Justice." *The Lancet* 364, no. 9439 (2004): 1075–1080. https://doi.org/10.1016/S0140-6736(04)17064-5.

Zimbalist, Andrew S. "Competitive Balance in Sports Leagues: An Introduction." *Journal of Sports Economics* 3, no. 2 (2002): 111–121.

"New Study Shows NIH Investment in New Drug Approvals Is Comparable to Investment by Pharmaceutical Industry." *Bentley University*. April 28, 2023. https://www.bentley.edu/news/new-study-shows-nih-investment-new-drug-approvals-comparable-investment-pharmaceutical.

Gender & Caribbean Food Systems: Surmounting Barriers to Gender Mainstreaming

Jackson Hightower

I. **Introduction**

In the eyes of many experts and scholars, the Caribbean region has made notable progress in gender mainstreaming, surpassing many global counterparts. For example, the region has a female labor force participation rate of 55 percent (higher than the world average of 49 percent), the majority of girls attend primary school, more women than men graduate tertiary school, 40 percent of managers are women in 8 of the countries, and the Caribbean has a high overall Gender Parity Index score.[1][2] However, this picture drastically shifts when narrowed to the agricultural sector, in which men are significantly more likely to be employed, have higher positions, and are paid substantially better.[3] For example, "in Grenada only 22 percent of registered farmers are women, while the share in Jamaica is 30 percent [, and] The gender gap widens in agricultural jobs with the female share ranging from only 6 percent in Belize, to 24.5 percent in Trinidad and Tobago".[4] The question, then, is what specific barriers have led the agricultural sector to fail to properly integrate and mainstream women, especially when much of the rest of the region has seen improvement? In order to determine the answer to this question, this paper will analyze the specific hurdles that have prevented participation and integration, concluding that there are five primary ones: data, socio-cultural norms, resources, education and training, and administrative/legal hurdles. Upon examining these barriers, this essay will then

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[1] *Women in Business and Management: Gaining Momentum in the Caribbean. International Labour Organization,* 2018. https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---act_emp/documents/publication/wcms_645810.pdf.

[2] L. Burunciuc and X. de Carpio, "Empowering Women and Girls in the Caribbean for Long-Lasting Change," *World Bank*, March 8, 2022, https://www.worldbank.org/en/news/opinion/2022/03/08/empowering-women-and-girls-in-the-caribbean-for-long-lasting-change.

[3] "Women and Men's Separate On-the-Ground Realities in the Agricultural and Fisheries Sectors Must Be the Cornerstone on Which Policies Are Developed," *UN Women*, June 2, 2022, https://caribbean.unwomen.org/en/stories/news/2022/06/separate-on-the-ground-realities-in-the-agricultural-and-fisheries-sectors-must-be-the-cornerstone-on-which-policies-are-developed#:~:text=According%20to%20the%20UN%20Women's,men%20to%20953%20women%20in.

[4] "FAO Spearheads Gender Mainstreaming to Boost the Region's Response to Climate Change in Agri-Food Systems," *Food and Agriculture Organization*, August 11, 2021, https://www.fao.org/americas/noticias/ver/en/c/1419347/.

recommend several tactics, approaches, and policies for actors at various levels — local, national, regional, international — to implement in order to expand the participation of women in Caribbean food systems.

II. Agriculture in the Caribbean

Broadly, the Caribbean region hosts a highly complex food system, producing, importing, and exporting a vast amount of produce and products. In fact, the Latin America and Caribbean region (LAC) "is the world's largest net food- and agriculture-exporting region," having millions of farmers and making it pivotal for regional and global food security.[5] More specifically, Caribbean countries, which specialize in produce like onions, potatoes, coffee, cotton, bananas, citrus fruits, root crops, and sugarcane, consume approximately 40 percent of their food from indigenous farms, which means that fluctuations in domestic production can have important consequences for the health and safety of the populations of Caribbean countries.[6] Additionally, the significance transcends mere nutritional considerations, as Caribbean nations rely substantially on the agriculture sector for both domestic employment and national income. This reliance, in turn, plays a pivotal role in fostering overall economic growth, poverty mitigation, and sustainable development on a holistic scale. Notably, this sector contributes between 5-18 percent of the GDP for at least 20 countries within the LAC region.[7][8][9][10]

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[5] A. Quisumbing, R. Meinzen-Dick, T. Raney, A. Croppenstedt, J. Behrman, and A. Peterman, *Gender in Agriculture* (Springer Netherlands, 2014).
[6] S. Henry, M. Wuddivira, V. de Gannes, G. Meerdink, and N. Dalrymple, "Challenges of Food and Nutrition Security in the Caribbean," *The View of the Academies of Sciences* (2017).
[7] T. Barry, L. Gahman, A. Greenidge, and A. Mohamed, "Wrestling with Race and Colonialism in Caribbean Agriculture: Toward a (Food) Sovereign and (Gender) Just Future," *Geoforum* 109 (2020): 106–110, https://doi.org/10.1016/j.geoforum.2019.12.018.
[8] P. Abidin, S. Bhatasara, N. Mudege, and N. Mdege, "The Role of Gender Norms in Access to Agricultural Training in Chikwawa and Phalombe, Malawi," *Gender, Place, & Culture* 24, no. 12 (2017): 1689–1710, https://doi.org/10.1080/0966369x.2017.1383363.
[9] T. Barry, L. Gahman, A. Greenidge, and A. Mohamed, "Wrestling with Race and Colonialism in Caribbean Agriculture: Toward a (Food) Sovereign and (Gender) Just Future," *Geoforum* 109 (2020): 106–110, https://doi.org/10.1016/j.geoforum.2019.12.018.
[10] World Bank Group, "Agriculture and Food Systems in Latin America and the Caribbean Poised for Transformational Changes," *World Bank*, November 12, 2020,

However, within recent years, food systems in the Caribbean — as well as many other areas of the world — have been struggling due to a series of compounding and overlapping crises, including the COVID-19 pandemic and the Russo-Ukraine war. In particular, as a consequence of a pronounced dependence on food imports for sustaining both the tourism sector and domestic consumption, the Caribbean has seen a sharp escalation in food prices triggered by the Russo-Ukraine war. For instance, "at least four Caribbean countries – Dominican Republic, Guyana, Haiti, and Suriname – have experienced food price increases higher than 5 percent every month between March 2021-2022," and "Suriname witnessed food price increases of over 30 percent".[11] Furthermore, the Caribbean faces a litany of structural challenges that are commonly associated with small island developing states (SIDS), including high energy costs, natural disasters, low access to healthy foods and consequently high obesity, trade barriers, invasive species, biodiversity loss, climate change, sea level rise, and resource exploitation, many of which are only growing increasingly worse.[12]

III. Gender Gaps and Mainstreaming

Notably, the significance of the food systems and resulting harms that occur when they are failing are magnified for women in the Caribbean, who are heavily dependent on the agriculture industry for employment and nourishment.[13] In fact, several aggregate studies have found that "women food producers in countries being most affected by climate change are rendered especially vulnerable (e.g. Small Island Developing States)" to disruptions in food

https://www.worldbank.org/en/news/press-release/2020/11/12/agriculture-food-systems-latin-america-caribbean-changes.

[11] L. Burunciuc, "Food Insecurity in the Caribbean," *World Bank*, June 28, 2022, https://www.worldbank.org/en/news/feature/2022/06/28/food-insecurity-caribbean.

[12] S. Henry, M. Wuddivira, V. de Gannes, G. Meerdink, and N. Dalrymple, "Challenges of Food and Nutrition Security in the Caribbean," *The View of the Academies of Sciences* (2017).

[13] *Primer on Gender-Responsive Parliamentary Work on Food Security.* ParlAmericas, November 2023. https://parlamericas.org/uploads/documents/Primer-GenderResponsiveParliamentaryWorkonFoodSecurity-en.pdf.

supply or quality.[14] As the primary providers of family nutrition, they become the most vulnerable group to undernutrition and malnourishment during times of scarcity, exacerbating the impact of limited food access.[15] In the Caribbean and various other regions, the imposition of a "triple role" on women — encompassing economically productive labor, social reproduction, and care work/community-building — amplifies the complexity of their lives and professional endeavors. Unfortunately, this multifaceted contribution often remains unacknowledged and overlooked. For example, food grown by women for domestic purposes often is not recorded within national economic statistics and data.[16][17] This invisibility further marginalizes women and reinforces unsustainable food systems, highlighting the urgent need for policies and practices that recognize and support their vital role in ensuring healthy and resilient communities.

In addition to mitigating harm to women in food systems, several studies have concluded that "addressing gender issues is one of the most effective, efficient, and empowering ways to boost development and address poverty".[18][19] This outcome stems from the potential for heightened involvement of women in the agri-food sector to bolster productivity and enhance the fair distribution of income. These improvements, in turn, stand to elevate the quality of life for women and their families. Moreover, the increased income could stimulate greater demand for

[14] T. Barry and L. Gahman, "Food System and Social Reproduction Realities for Women in Agriculture Across the Caribbean: Evidence from Grenada, St. Lucia, and St. Vincent and the Grenadines," *Journal of Agrarian Change* 21, no. 4 (2021): 815–833, https://doi.org/10.1111/joac.12426.
[15] *Primer on Gender-Responsive Parliamentary Work on Food Security.* ParlAmericas, November 2023. https://parlamericas.org/uploads/documents/Primer-GenderResponsiveParliamentaryWorkonFoodSecurity-en.pdf.
[16] Barry, T., L. Gahman, A. Greenidge, and A. Mohamed. "Wrestling with Race and Colonialism in Caribbean Agriculture: Toward a (Food) Sovereign and (Gender) Just Future." *Geoforum* 109 (2020): 106–110. https://doi.org/10.1016/j.geoforum.2019.12.018.
[17] Barry, T., and L. Gahman. "Food System and Social Reproduction Realities for Women in Agriculture Across the Caribbean: Evidence from Grenada, St. Lucia, and St. Vincent and the Grenadines." Journal of Agrarian Change 21, no. 4 (2021): 815–833. https://doi.org/10.1111/joac.12426.
[18] A. Quisumbing, R. Meinzen-Dick, T. Raney, A. Croppenstedt, J. Behrman, and A. Peterman, *Gender in Agriculture* (Springer Netherlands, 2014).
[19] "FAO Spearheads Gender Mainstreaming to Boost the Region's Response to Climate Change in Agri-Food Systems," *Food and Agriculture Organization*, August 11, 2021, https://www.fao.org/americas/noticias/ver/en/c/1419347/.

products and services, fostering a positive economic ripple effect and bolstering sustainable development.[2021] Notably, this hypothesis is directly supported by empirical data, as a recent World Bank study concluded that "increasing female labor market income contributed to a 30 percent reduction in extreme poverty in Latin America and the Caribbean".[2223] Relatedly, the IMF has determined that achieving gender parity in labor force participation could drive GDP growth upwards "16 percent in Suriname, 13 percent in Trinidad and Tobago, 12 percent in Saint Vincent and the Grenadines, 8 percent in Jamaica, 7 percent in Saint Lucia and 6 percent in Barbados".[24] Thus, as can be seen, beyond reducing harm, empowering women in food systems offers a powerful lever for unlocking development and prosperity, paving the way for a more equitable and sustainable future for all.

However, despite these positive outcomes, "national statistics across several Caribbean countries reveal that women represent less than 30% of registered farmers" and "the agricultural labour force is [still] highly segregated".[2526] According to a gender analysis of 6 CARICOM states, "men are more likely than women to be formally employed in agriculture, with over 2,903 men compared to 1,128 women recorded for Barbados; 3,588 men to 953 women in Grenada and

[20] C. Beckford and D. Campbell, "Women, Agriculture, and Food Security in the Caribbean," in *Domestic Food Production and Food Security in the Caribbean* (2013).
[21] M. Berger, V. DeLancey, and A. Mellencamp, *Bridging the Gender Gap in Agricultural Extension* (Washington, DC: International Center for Research on Women, 1984).
[22] L. Burunciuc and X. de Carpio, "Empowering Women and Girls in the Caribbean for Long-Lasting Change," *World Bank*, March 8, 2022, https://www.worldbank.org/en/news/opinion/2022/03/08/empowering-women-and-girls-in-the-caribbean-for-long-lasting-change.
[23] *Women in Business and Management: Gaining Momentum in the Caribbean*, *International Labour Organization* (2018), https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---act_emp/documents/publication/wcms_645810.pdf.
[24] Ibid.
[25] "FAO Addresses Gender Inequalities in Caribbean Farming," *Land Portal*, January 2, 2019, https://landportal.org/node/77899.
[26] "Women and Men's Separate On-the-Ground Realities in the Agricultural and Fisheries Sectors Must Be the Cornerstone on Which Policies Are Developed," *UN Women*, June 2, 2022, https://caribbean.unwomen.org/en/stories/news/2022/06/separate-on-the-ground-realities-in-the-agricultural-and-fisheries-sectors-must-be-the-cornerstone-on-which-policies-are-developed#:~:text=According%20to%20the%20UN%20Women's,men%20to%20953%20women%20in.

144,528 men compared to 49,644 women in Jamaica in 2017". Additionally, women are more likely to be employed informally, which means that policies like safety nets, protection schemes, and other resources more frequently neglect their positions. Furthermore, to the extent that they are included, many women earn approximately 85 cents for every dollar earned by men, and their businesses are likely to be smaller and less profitable than those of their male counterparts. Yet, despite this deficiency, very few countries in the region have national policies designed to support and assist women in the development of farms or inclusion in the agricultural sector.

Thus, as is evident, the agricultural industry is a necessary focal point in order to better achieve gender mainstreaming in the Caribbean. According to UN Women and the UN Economic and Social Council, gender mainstreaming "is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated".[27] To successfully achieve gender mainstreaming, it is important to recognize that gender equality is the ultimate goal and to envision a pathway to achieving it. Thus, the pertinent question then becomes, what are the critical barriers to gender equality in participation, leadership, and outcomes within Caribbean agri-food systems, and how can they best be surmounted?

IV. Barriers to Participation & Literature Review

Based on an analysis of data, a wide berth of literature, and anecdotal accounts, there are five primary barriers to greater gender mainstreaming in the Caribbean agri-food industry: data, socio-cultural norms, resources, education and training, and administrative/legal hurdles.

A. Data

[27] L. Gény, T. Basdeo-Gobin, and G. Hosein, "Gender Mainstreaming in National Sustainable Development Planning in the Caribbean," *Studies and Perspectives* (2020).

A significant hurdle to both integrating women into the agricultural workforce and understanding the myriad challenges they encounter stems from inadequate data collection and assessment. Specifically, there is a substantial deficiency in comprehensive information regarding the resources, roles, and adversities experienced by Caribbean women in the agricultural sector, hindering effective identification and mitigation of other obstacles. This occurrence is partially induced by the proclivity of women in food systems to participate in informal work, which is not tracked or considered as comprehensively as formal work, which is more male-dominated; moreover, this trend is especially prominent in Caribbean countries since many of their "national statistics only consider "principle farmers" who are mostly men".[28] One consequence of insufficient data collection is governmental policies that inadvertently worsen the gender participation gap by perpetuating problems like unequal resource and information access.[29] Another issue lies in inadequate national planning for the agricultural sector. For example, in impoverished, hazard-prone agricultural communities in Dominica and Grenada, the exclusion of women's specific needs in disaster risk resilience strategies resulted in suboptimal policy choices and adaptation measures that have been directly correlated with adverse consequences on food security following natural disasters.[30] This multifaceted challenge underscores the need for comprehensive data collection and gender-inclusive policies to address the intricate dynamics of women's participation in the agricultural sector, fostering resilience and sustainable development.

B. Socio-Cultural Norms

[28] "FAO Addresses Gender Inequalities in Caribbean Farming," Land Portal, January 2, 2019, https://landportal.org/node/77899.
[29] "FAO Spearheads Gender Mainstreaming to Boost the Region's Response to Climate Change in Agri-Food Systems," *Food and Agriculture Organization*, August 11, 2021, https://www.fao.org/americas/noticias/ver/en/c/1419347/.
[30] "FAO Addresses Gender Inequalities in Caribbean Farming," Land Portal, January 2, 2019, https://landportal.org/node/77899.

Secondarily, rooted in legacies of patriarchy and the plantation system, Caribbean women's roles in farming have primarily been relegated to domestic tasks and subsistence production, disregarding their agency and diverse contributions. Consequently, even when they are working formally in the agri-food profession, the work of women is "dismissed or considered menial in both informal and formal economic settings".[31] One manifestation of these norms is the aforementioned "triple role" that Caribbean women play, which creates labor constraints, affecting the time and resources available that women have for agriculture.[32] Another consequence is the perpetuation of gender violence. At their culmination, these harmful norms also shape the types of jobs that are offered to Caribbean women as well as the protection, payment, resources, and leadership positions that they can receive in those jobs.

In addition to being directly harmful to women in the agricultural sector (as well as other sectors), these misperceptions also deliberately and inadvertently compromise policymaking. For example, there are a series of myths in the Caribbean — ranging from "contemporary alarm that women could become too powerful, from fear that gender equality would lead to challenges to heteronormativity . . . , and from masculine reassertions of primacy" — that induce decision-makers to heavily prioritize men's needs in gender mainstreaming policies.[33] This concept is supported by a survey of women in Caribbean agri-food systems, which found that 37.6% of women thought that their government institutions had a highly flawed understanding of the role they play.[34] A specific example of this trend is the flawed notion that providing resources

[31] T. Barry and L. Gahman, "Food System and Social Reproduction Realities for Women in Agriculture Across the Caribbean: Evidence from Grenada, St. Lucia, and St. Vincent and the Grenadines," *Journal of Agrarian Change* 21, no. 4 (2021): 815–833, https://doi.org/10.1111/joac.12426.
[32] A. Quisumbing, R. Meinzen-Dick, T. Raney, A. Croppenstedt, J. Behrman, and A. Peterman, *Gender in Agriculture* (Springer Netherlands, 2014).
[33] L. Gény, T. Basdeo-Gobin, and G. Hosein, "Gender Mainstreaming in National Sustainable Development Planning in the Caribbean," *Studies and Perspectives* (2020).
[34] T. Barry and L. Gahman, "Food System and Social Reproduction Realities for Women in Agriculture Across the Caribbean: Evidence from Grenada, St. Lucia, and St. Vincent and the Grenadines," *Journal of Agrarian Change* 21, no. 4 (2021): 815–833, https://doi.org/10.1111/joac.12426.

and support to husbands will cause them to spread to their wives. Consequently, challenging and dismantling these harmful and persistent misperceptions is not just a matter of social justice but also a crucial step towards creating effective and equitable policies that truly empower all actors in the agricultural sector.

C. Resources

In addition to data aggregation and socio-cultural norms, one of the most quantifiable barriers is unequal resource allocation and access. Broadly, within the LAC region, women are responsible for 60 to 80 percent of food production, but they have significantly less land tenure, comprising just 8-30 percent of agricultural landholders.[35] Moreover, among land-possessing women, less than 5 percent have access to technical assistance for the maintenance, preservation, and ownership of the land.[36] Additionally, women in agricultural professions are less likely to have the ability to obtain modern technology and information.[37] This area is one that has been highly affected by the Ukraine war, as key agricultural inputs like fertilizers have become increasingly expensive and scarce in the region.[38]

This trend has many structural and historical causes: “the preference towards men in inheritance; men’s privileges in marriage; a tendency to favour men in the land distribution programs at both community and State levels; and gender biases in the land market”.[39] However, there are also more proximate factors that perpetuate the gender gap, particularly lack of support

[35] Primer on Gender-Responsive Parliamentary Work on Food Security, ParlAmericas, November 2023, https://parlamericas.org/uploads/documents/Primer-GenderResponsiveParliamentaryWorkonFoodSecurity-en.pdf.
[36] "How Rural Women Are Adapting to Climate Change in Latin America and the Caribbean," *Oxfam International*, May 25, 2022, https://www.oxfam.org/en/how-rural-women-are-adapting-climate-change-latin-america-and-caribbean.
[37] "FAO Spearheads Gender Mainstreaming to Boost the Region’s Response to Climate Change in Agri-Food Systems," *Food and Agriculture Organization*, August 11, 2021, https://www.fao.org/americas/noticias/ver/en/c/1419347/.
[38] A. Quisumbing, R. Meinzen-Dick, T. Raney, A. Croppenstedt, J. Behrman, and A. Peterman, *Gender in Agriculture* (Springer Netherlands, 2014).
[39] Primer on Gender-Responsive Parliamentary Work on Food Security, ParlAmericas, November 2023, https://parlamericas.org/uploads/documents/Primer-GenderResponsiveParliamentaryWorkonFoodSecurity-en.pdf.

from financial institutions. According to a survey of Organization of Eastern Caribbean States (OECS) farmers, 70.6 percent women cited that inability to receive loans and credit is a major barrier to expanding their farms, and 62.4 percent indicated that this result was largely a result of challenges in fulfilling collateral or security criteria.[40] This tendency often occurs as a consequence of financial institutions requiring land deeds or titles to receive financial support, which Caribbean women are significantly less likely to possess; additionally, these agencies and organizations provide assistance to small farms less frequently than larger ones, which are more commonly composed of women.[41] For example, in Guyana, 90 percent of female heads of farm households do not possess the deed or title of their land, rendering them ineligible to receive funding.[42] Thus, despite a better loan repayment history, "records, in fact, show that Caribbean women receive fewer loans compared to men, and at a lower cash value".[43] Moreover, insecure land ownership also undermines the ability of women to receive training, technology, and agricultural inputs like fertilizer as they are often directed towards officially registered farmers.[44] In turn, this creates obstacles to women-owned and run farms expanding, adapting to changes, and competing effectively in the market.

D. Education and Training

As was noted, one of the areas that the Caribbean has seen much progress in is gender equality in lower education. However, this picture substantially changes when considering agricultural education and training. In fact, according to a poll of Caribbean agri-food workers,

[40] T. Barry and L. Gahman, "Food System and Social Reproduction Realities for Women in Agriculture Across the Caribbean: Evidence from Grenada, St. Lucia, and St. Vincent and the Grenadines," Journal of Agrarian Change 21, no. 4 (2021): 815–833, https://doi.org/10.1111/joac.12426.
[41] E. Rubiana-Matulevich and L. Iacovone, "Building Back Better from COVID-19: Boosting Women's Entrepreneurship," World Bank (2021).
[42] "FAO Addresses Gender Inequalities in Caribbean Farming," Land Portal, January 2, 2019, https://landportal.org/node/77899.
[43] Ibid.
[44] Ibid.

57.6 percent believe that business and agriculture training opportunities that account for gender differences are severely lacking and represent a substantial barrier to participation.[45] Notably, in the same survey, a majority of men noted that this was either not an impediment or a relatively low one for them.[46]

Women face significant disadvantages in accessing agricultural training and education for various reasons. Primarily, existing programs often prioritize men in both access and content, marginalizing or overlooking the valuable contributions of women in agricultural work. Additionally, their triple roles, limited time, and constrained availability contribute to the challenges they encounter. The dominance of men in public spaces, coupled with their greater mobility, further exacerbates the disparity. Furthermore, the requirement for proof of land ownership poses an additional barrier for women seeking agricultural training.[47] Moreover, even in general education, which has seen much progress, there are still unique challenges for women, including gender violence and lack of childcare support, that undermines their ability to learn.[48] Thus, addressing these systemic issues is crucial for achieving true gender equality across all facets of education and empowering women in the Caribbean region.

E. Administrative/Legal Hurdles

Lastly, there exists considerable evidence that Caribbean governments and their policies heavily favor male farmers and erect barriers to female ones. While many Caribbean

[45] T. Barry and L. Gahman, "Food System and Social Reproduction Realities for Women in Agriculture Across the Caribbean: Evidence from Grenada, St. Lucia, and St. Vincent and the Grenadines," *Journal of Agrarian Change* 21, no. 4 (2021): 815–833, https://doi.org/10.1111/joac.12426.
[46] Ibid.
[47] P. Abidin, S. Bhatasara, N. Mudege, and N. Mdege, "The Role of Gender Norms in Access to Agricultural Training in Chikwawa and Phalombe, Malawi," Gender, Place, & Culture 24, no. 12 (2017): 1689–1710, https://doi.org/10.1080/0966369x.2017.1383363.
[48] L. Burunciuc and X. de Carpio, "Empowering Women and Girls in the Caribbean for Long-Lasting Change," World Bank, March 8, 2022, https://www.worldbank.org/en/news/opinion/2022/03/08/empowering-women-and-girls-in-the-caribbean-for-long-lasting-change.

governments have attempted gender mainstreaming in agriculture, there exists "a disjuncture between government policies and implementation. Instead of implementing government policies as government employees, extension workers often collude with male heads of households to reinforce traditional gender roles".[49] One of the reasons this occurs is due to the fact that party affiliation, cronyism, and gender all have been proven to have a significant consequence on a person's ability to gain approval for permits, loans, advisory services, information, and land from the government in several Caribbean countries.[50] Additionally, as a result of intentional and incidental events, women in Caribbean food systems face systematically higher barriers to accessing information about navigating government bureaucracies.[51]

Secondarily, attempts to rectify this disparity have been woefully inadequate. Over the last several decades, numerous Caribbean governments have implemented national development plans and other policies that have specifically attempted to provide resources and support to female food system workers.[52] However, a study of 12 Caribbean states, including the Bahamas, Jamaica, and Turks and Caicos, found that these programs were substantially underfunded and woefully understaffed, particularly "in gender responsive budgeting, programming and monitoring".[53] The result of these deficiencies has been that "many women-owned businesses are hindered because they encounter more difficulties navigating industry procedures and protocols, registering with state ministries, and accessing entrepreneurial training oriented towards the

[49] P. Abidin, S. Bhatasara, N. Mudege, and N. Mdege, "The Role of Gender Norms in Access to Agricultural Training in Chikwawa and Phalombe, Malawi," Gender, Place, & Culture 24, no. 12 (2017): 1689–1710, https://doi.org/10.1080/0966369x.2017.1383363.
[50] T. Barry and L. Gahman, "Food System and Social Reproduction Realities for Women in Agriculture Across the Caribbean: Evidence from Grenada, St. Lucia, and St. Vincent and the Grenadines," Journal of Agrarian Change 21, no. 4 (2021): 815–833, https://doi.org/10.1111/joac.12426.
[51] Ibid.
[52] L. Gény, T. Basdeo-Gobin, and G. Hosein, "Gender Mainstreaming in National Sustainable Development Planning in the Caribbean," Studies and Perspectives (2020).
[53] Ibid.

unique challenges they face as women".[54] This persistent disparity demands a fundamental shift, moving beyond mere resource allocation and towards a comprehensive approach that tackles systemic inequalities, challenges harmful gender norms, and invests in building the capacity of women-led initiatives to thrive within the food system.

V. Discussion

As can be seen, there are numerous, significant challenges, hurdles, and barriers that have to be surmounted in order to improve gender mainstreaming in Caribbean food systems. While these factors are seemingly distinct and do have consequences independent from one another, it is important to note that they are also highly interconnected phenomena, and each one has considerable effects on the others. For example, primary ownership and management of land, farms, and businesses, as well as ability to receive loans from financial institutions — conceptualized here as a resource barrier — is highly correlated with and largely induced by culturally-specific gender norms and their legacies. Another example is how a primary barrier to agricultural education comes from socio-cultural norms since many Caribbean women regard themselves as helpers as opposed to farmers, undermining the significance of their contributions and thus the imperative of training them in their eyes and those of their male counterparts.[55] Furthermore, the intricate interplay between these barriers is exemplified by the role of government policies. In the Caribbean, existing policies often inadequately address the gender-specific challenges within the agriculture sector. The lack of targeted policies not only hinders the formulation of supportive frameworks but also perpetuates existing disparities. For instance, without policies that actively promote equal access to education and resources, efforts

[54] T. Barry, L. Gahman, A. Greenidge, and A. Mohamed, "Wrestling with Race and Colonialism in Caribbean Agriculture: Toward a (Food) Sovereign and (Gender) Just Future," Geoforum 109 (2020): 106–110, https://doi.org/10.1016/j.geoforum.2019.12.018.
[55] P. Abidin, S. Bhatasara, N. Mudege, and N. Mdege, "The Role of Gender Norms in Access to Agricultural Training in Chikwawa and Phalombe, Malawi," Gender, Place, & Culture 24, no. 12 (2017): 1689–1710, https://doi.org/10.1080/0966369x.2017.1383363.

to break the socio-cultural norms that limit women's involvement in agriculture may remain futile. Moreover, inadequate data collection practices undermine the ability of policymakers to formulate evidence-based strategies, exacerbating the challenges faced by women in the agriculture industry. Thus, it is evident that to foster meaningful change, a holistic approach addressing these barriers in tandem is essential.

VI. Recommendations

The question, then, is what sorts of policies and shifts are required to surmount these obstacles and correct these harms. Notably, numerous impediments have been recognized, and it is crucial to underscore that these obstacles predominantly stem from enduring, cross-temporal influences such as racism, sexism, and capitalism. These pervasive forces, both overt and covert, actively sustain gender discrimination, manifesting most obviously in socio-cultural norms that deprecate and diminish the significant contributions made by female agricultural workers and farmers.

Consequently, any attempt at a solution will inevitably have to attempt to tackle these ideological obstructions at their root, and the first step to doing so is by increasing awareness not only of the issues that women in Caribbean agri-food systems face but also the benefits that their greater participation and inclusion could bring, including poverty reduction, food security, and sustainability.[56] Importantly, this ideological-shaping can and should be attempted by actors at all scales (e.g., individuals, communities, national governments, and international NGOs), as it provides the greatest likelihood of altering the mindsets of the most people. Another structural shift that is needed is conducting proper gender analyses to determine other gender gaps and barriers to participation and leadership. At the minimum, this must include a shift in research and

[56] A. Quisumbing, R. Meinzen-Dick, T. Raney, A. Croppenstedt, J. Behrman, and A. Peterman, *Gender in Agriculture* (Springer Netherlands, 2014).

data collection by organizations at all levels, including towards an inclusion of informal work and the triple role that women often play, in order to better inform decision and policy making.

Moreover, despite structural barriers, there are also more immediate changes that can and should be made. One such example of relevance to the Caribbean is "strengthening women's property rights or rights under family and civil law," which "can give women greater incentive and ability to invest in the land, have bank accounts, or obtain credit".[57] While the responsibility for this tactic will necessarily and inevitably fall upon governments, other groups like NGOs, collective action institutions, and individuals can play a useful role by acting as watchdogs and sustaining pressure to ensure proper and durable implementation. Relatedly, accomplishing this goal, and others spearheaded by Caribbean governments, will undoubtedly require considerable expansion of investment, personnel, and other resources dedicated to these causes as well as greater gender diversity in decision making. Fortunately, some of the institutional knowledge building and planning for this conversion has already occurred; for example, Trinidad and Tobago has created a Toolkit for Gender Responsive Budgeting for Institutionalizing Gender Equality and Gender Mainstreaming Practices in Government Ministries, which could serve as a useful guide.[58]

Furthermore, expanding resources for Caribbean women will only be successful if accompanied by access to educational and training opportunities for the purpose of implementation. One example of a replicable policy that has had success is a series of World Bank workshops designed around spreading information about owning and operating a business, which have already been proven to increase the number of women-enterprise owners in the

[57] Ibid.
[58] L. Gény, T. Basdeo-Gobin, and G. Hosein, "Gender Mainstreaming in National Sustainable Development Planning in the Caribbean," Studies and Perspectives (2020).

agricultural sector.[59] Another instance is seminars led by the government in Suriname for religious organizations and NGOs surrounding capacity building for women's rights.[60] In order to surmount barriers to inclusion and participation in these trainings like availability and caretaking, activities should be offered in local areas, as opposed to requiring travel, and a stipend could be considered to offset for displaced labor. A factor worth noting is that these training courses also need to be accessible for less literate people; otherwise, some of the most vulnerable members of Caribbean society will continue to be marginalized and left behind. Another specific step that could be taken to assist female farmers would be governments and NGOs distributing technology and financial support that aids with farm work and housework in a more egalitarian manner, which "will not only improve the productivity of the household and agricultural work of women who are unpaid family workers, but will free up their time for training and other activities".[61] An example of this idea can be seen in the Belize Climate Resilient and Sustainable Agriculture Project, which successfully provided grants to over 3,700 small farmers to enable them to purchase technologies and implement innovative practices to improve the productivity and resiliency of their farms.[62]

Although the aforementioned set of solutions are solely a representative sample of a broader set of policies that might be beneficial, they are descriptive of the necessary shifts that would need to occur. Specifically, as can be seen, any progress will require, at minimum, accountability, political will, and technical capacity. Additionally, coordination among states —

[59] T. Barry, L. Gahman, A. Greenidge, and A. Mohamed, "Wrestling with Race and Colonialism in Caribbean Agriculture: Toward a (Food) Sovereign and (Gender) Just Future," Geoforum 109 (2020): 106–110, https://doi.org/10.1016/j.geoforum.2019.12.018.
[60] L. Gény, T. Basdeo-Gobin, and G. Hosein, "Gender Mainstreaming in National Sustainable Development Planning in the Caribbean," Studies and Perspectives (2020).
[61] M. Berger, V. DeLancey, and A. Mellencamp, *Bridging the Gender Gap in Agricultural Extension* (Washington, DC: International Center for Research on Women, 1984).
[62] L. Burunciuc, "Food Insecurity in the Caribbean," World Bank, June 28, 2022, https://www.worldbank.org/en/news/feature/2022/06/28/food-insecurity-caribbean.

something that could perhaps be facilitated and enabled by international institutions like the United Nations and the Technical Centre for Agricultural and Rural Cooperation — is necessary to ensure that certain countries do not fall behind. Lastly, it is important that any solutions be guided by and responsive to the actual needs and demands of the women themselves, which is why broad inclusion and integration is vital at all stages, including leadership, planning, and implementation.

VII. Conclusion

As has been demonstrated, the intricate web of challenges hindering gender mainstreaming in Caribbean food systems necessitates a comprehensive and coordinated approach. Addressing each barrier independently will not yield lasting results; instead, focused efforts must simultaneously dismantle socio-cultural norms, strengthen resource access, enhance education opportunities, remove harmful government policies, and implement targeted solutions informed by robust data collection. As is evident from the literature review, survey of Caribbean farmers, and other forms of analysis, these challenges are deeply interwoven and mutually reinforcing, meaning that only through such a holistic approach is it possible to pave the way for a more equitable and prosperous future for women in Caribbean agriculture. Otherwise, there will inevitably be barriers that interfere with progress, undermining attempts at gender equality and sustainable development.

Additionally, this path forward demands the collaboration of governments, institutions, communities, and individuals, each playing their part in dismantling the barriers that have kept women from fully participating in this critical sector. Governments must develop and implement supportive policies that promote gender equality and invest in programs that address the specific needs of women farmers and agricultural workers. Institutions must provide training and

capacity-building opportunities for women, while communities must challenge traditional gender roles and create more supportive environments for women's participation in agriculture. Individuals, too, have a crucial role to play by advocating for change, challenging norms, and supporting women-led initiatives. By working together, actors can ensure that Caribbean food systems not only serve as a vital source of nutrition and development but also as a platform for empowering women and fostering a more just and sustainable future.

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