

# BINTA ZAHRA DIOP

PhD Candidate, Economics  
University of Oxford

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## Education

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Doctor of Philosophy, Economics, University of Oxford	2023 (expected)
PhD Scholar, Institute for Fiscal Studies (IFS) – Enrichment Scheme	
Fields: Development Economics, Labor Economics, Public Economics	
Master’s in Research, Economics (PPD), Paris School of Economics	2014
Master 1 – Graduate – Applied Economics, University Paris X - Nanterre	2012
Licence – Undergraduate – Economics, University Paris X - Nanterre	2011

## Work in Progress

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**Job Market Paper:** “Antipoverty Policies with Resale Markets: Sorting, Allocative Efficiency, and Internal Migration”

“Productivity and Allocation of Labor across Ghana’s Health Facilities”  
(with Awoonor-Williams K, Ismaila H, Ofosu A, Williams MJ)

“Eliciting Heterogeneous Preferences for Fairness”  
(with Panin A, Cisse M)

## Publication

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“*The relatively young and rural population may limit the spread and severity of Covid-19 in Africa: a modelling study*” (2020), Diop BZ\*, Ngom M, Pougúé Biyong C, Pougúé Biyong J N. *BMJ Global Health* 2020;5:e002699.

## Teaching Experience

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University of Oxford	Oxford, UK
Quantitative Methods, MSc. in Economics for Development	Fall 2020, Winter 2021, Fall 2021
Statistical Coding, MSc. in Economics for Development	Winter 2020, Spring 2020, Spring 2022
Development Economics, Exeter Summer School (undergraduate)	Summer 2019

## Professional Activities

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### Invited Talks:

University of Johannesburg’s EDWG, Johannesburg (Virtual)	2021, 2022
World Health Organization’s COVID19 Modelling Group, Geneva (Virtual)	2020
ODI’s Public Finance Initiative Conference - Panelist, London	2020

### Conference presentations:

European Economic Association - Econometric Society European Meeting*, Milan	2022
International Conference for Development Economics, Clermont-Ferrand	2022
Royal Economic Society Easter Training School, Bristol	2022
PhD Student Workshop of the UEA, London - (Virtual)	2021
Econometric Society Africa Meeting, Abidjan (Hybrid)	2021
10 <sup>th</sup> European Meeting of the Urban Economics Association, Copenhagen (Virtual)	2021
Midwest International Economic Development Conference (MWIEDC), Chicago (Virtual)	2021
PhD Student Workshop of the UEA - Elevator Pitch, London (Virtual)	2020
Working Group for African Political Economy (WGAPE), Berlin	2019

**Press citations:** CNN Business, The Independent, The Conversation, Quartz, Boston Globe, FastCompany, The American Bar Association Journal (ABA Journal), The Behavioral Scientist, NY Daily News, Metro, Courthouse News Service, CityLab, allAfrica, Le Point

## Professional Service

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### Events organized

Oxford, Research Jamboree, Machine Learning and Economics Day (with Prof. Kasy)	2022
Oxford, Initiator and Convener, PhD Peer Presentation Seminar (with L. Milsom)	2020 – 2022
Oxford, Co-organizer of the Oxford African Public Policy Discussion Group	2020 – 2021
Oxford, Machine Learning and Economic Inequality Conference (with Prof. Kasy)	2020 – 2021

### Community

Referee Service: BMJ Global Health, Migration Studies	
Paris School of Economics, Board member, Student association (SynaPSE)	2013 – 2014

## Scholarships and Awards

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Institute for Fiscal Studies (IFS) PhD Enrichment Scheme	2022 – 2023
Alfred P. Sloan Foundation, Studentship via Prof. Maximilian Kasy	2022 – 2023
University of Oxford, Department of Economics Final Year Bursary	2021 – 2022
African Economic Research Consortium (AERC) PhD Doctoral Award	2021 – 2023
Global Challenges Research Fund (GCRF) Studentship (full tuition)	2019 – 2021
Oxford Center for the Study of African Economies (CSAE) filled small gaps	2018 – 2020
French National Research Agency's scholarship: "Investissement d'avenir" (PIA)	2013 – 2014
Senegal National Olympic Committee Fellowship	2008
French Ministry of Sports Fellowship / Pôle France Swimming (full ride+)	2006 – 2007

## Professional Experience

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University of Oxford – Graduate Research Assistant	2018 – 2020
University of Chicago – Senior Research Analyst (Previously Research Manager)	2014 – 2018
Georgetown University – Graduate Research Assistant	2013
Senegal's Strategy for Accelerated Growth (SCA), Prime Minister Office – Summer Intern	2011
Feed the Future Senegal (Projet de Croissance Economique/USAID) – Summer Intern	2010
Stade Francais O.C. (Ranked 2 <sup>nd</sup> in France in 2009) – Stipendiary Swimmer	2008 – 2010

## Other Writings

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"Using Administrative Data to Measure the Productivity and Allocation of Health Workers and Funds: Lessons from Ghana", IGC (2019), Diop BZ, Awoonor-Williams K, Ofosu A, Williams MJ

"Using Behavioral Science to Improve Criminal Justice Outcome" , UChicago Crime Lab & Ideas42 (2018), Cooke B, Diop BZ\*, Fishbane A, Hayes J, Ouss A, Shah AK —Peer reviewed version [here](#)

## Miscellaneous

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Languages: English, French, Wolof

Selected Arts (photography)

UNESCO World Heritage Contest (Top-10)	2018
Artwork for Jazz album <i>Wërsëg</i> by Jamm	2018

Selected Sports (swimming)

Swimming at the Beijing Olympic Games (for Senegal)	2008
2x Bronze at African Games and 3x Bronze at African Championships	2007, 2008, 2011
Ranked 2 <sup>nd</sup> and 3 <sup>rd</sup> , Top Division French "Interclubs", Stade Français-OC	2008 – 2010

## References

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Douglas GOLLIN (supervisor)  
Oxford, douglas.gollin[at]qeh.ox.ac.uk

Hamish LOW  
Oxford, hamish.low[at]economics.ox.ac.uk

Martin J. WILLIAMS (supervisor)  
Oxford, martin.williams[at]bsg.ox.ac.uk

Christopher WOODRUFF (Teaching)  
Oxford, christopher.woodruff[at]qeh.ox.ac.uk

## Abstracts and Summaries

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### Job Market Paper:

ANTIPOVERTY POLICIES WITH RESALE MARKETS: SORTING, ALLOCATIVE EFFICIENCY, AND INTERNAL MIGRATION

Abstract: Rural antipoverty programs often focus on increasing agricultural productivity by transferring resources to farmers. Yet, many farmers' most productive investment may be in another technology: migration. I explore the impacts of such programs on productivity and on migration. First, I use a difference-in-difference exploiting variations in the roll-out of a Zambian fertilizer input subsidy program (ISP). As expected, the ISP increases rates of fertilizer adoption, yields, and rural labor supply via immigration. There is an additional two-fold increase in individual outmigration. I show that short-term outmigration (consistent with a relaxed credit constraint) and medium-term outmigration (consistent with structural transformation driven by agricultural productivity gains) account for respectively 30% and 45% of the variance. Household specializing in their comparative advantage can explain these dual results. Second, I generalize these findings with a structural general equilibrium framework accounting for an externality in adoption. When compared with cash and in-kind transfer scenarios, the ISP with resale markets fosters the highest levels of specialization: addressing both the externality and the credit constraints. When farmers' types are costly to elicit, resale markets can improve the allocative efficiency of programs, turning voucher programs into cash-transfers to re-sellers and an in-kind transfers to net-buyers.

### Other Work in Progress:

ALLOCATION OF LABOR ACROSS GHANA'S HEALTH FACILITIES

(with Awoonor-Williams K, Ismaila H, Ofori A, Williams MJ)

Summary: We use never-used-before administrative data covering all Ghana's healthcare staff and facilities. We measure potential gains from reallocating labor across facilities while accounting for administrative constraints. We provide the first comprehensive estimate of a healthcare system production functions. We further explore the allocation of medical labor across vacancies and geographic areas.

ELICITING HETEROGENEOUS PREFERENCES FOR FAIRNESS

(with Panin A, Cisse M)

Summary: We will explore how individuals rank fairness definitions used in the development of artificial intelligence (AI) systems. We design a behavioral experiment to reveal preferences for fair processes (rather than outcomes) embedded in AI systems. We use experimental methods to add to the machine fairness literature, being the first (to our knowledge) to measure preferences for machine fairness definitions by observing choices over definitions when individuals interact with different machine fairness rules. Prior work measured preferences solely with survey instruments.

### Published Work:

THE RELATIVELY YOUNG AND RURAL POPULATION MAY LIMIT THE SPREAD AND SEVERITY OF COVID-19 IN AFRICA: A MODELLING STUDY, *BMJ Global Health* 2020;5:e002699.

(with Ngom M, Poug   Biyong C, Poug   Biyong J N.) [[paper](#)]

Introduction: A novel coronavirus disease 2019 (COVID-19) has spread to all regions of the world. There is great uncertainty regarding how countries' characteristics will affect the spread of the epidemic; to date, there are few studies that attempt to predict the spread of the epidemic in African countries. In this paper, we investigate the role of demographic patterns, urbanisation and comorbidities on the possible trajectories of COVID-19 in Ghana, Kenya and Senegal.

Methods: We use an augmented deterministic Susceptible-Infected-Recovered model to predict the true spread of the disease, under the containment measures taken so far. We disaggregate the infected compartment into asymptomatic, mildly symptomatic and severely symptomatic to match observed clinical development of COVID-19. We also account for age structures, urbanisation and comorbidities (HIV, tuberculosis, anaemia).

Results: In our baseline model, we project that the peak of active cases will occur in July, subject to the effectiveness of policy measures. When accounting for the urbanisation, and factoring in comorbidities, the peak may occur between 2 June and 17 June (Ghana), 22 July and 29 August (Kenya) and, finally, 28 May and 15 June (Senegal). Successful containment policies could lead to lower rates of severe infections. While most cases will be mild, we project in the absence of policies further containing the spread, that between 0.78% and 1.03%, 0.61% and 1.22%, and 0.60% and 0.84% of individuals in Ghana, Kenya and Senegal, respectively, may develop severe symptoms at the time of the peak of the epidemic.

Conclusion: Compared with Europe, Africa's younger and rural population may modify the severity of the epidemic. The large youth population may lead to more infections but most of these infections will be asymptomatic or mild, and will probably go undetected. The higher prevalence of underlying conditions must be considered.