Institution: City, University of London (City)		
Unit of Assessment: 16 Economics and Econometrics		
Title of case study: Transforming Healthcare Provision for the Informal Sector in Sierra Leone		
Period when the underpinning research was undertaken: 2006-2016		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Mireia Jofre-Bonet	**Role(s) (e.g. job title):** Professor of Economics	**Period(s) employed by submitting HEI:** 01/01/2006 - 31/12/2020
Period when the claimed impact occurred: 2016-2020		
Is this case study continued from a case study submitted in 2014? No		

1. Summary of the impact (indicative maximum 100 words)

In the wake of the Ebola epidemic, Professor Jofre-Bonet's research has significantly shaped changes to healthcare policy in Sierra Leone resulting in a health insurance scheme which positively impacts the lives of an estimated 2.7 million people working in the informal sector and provides free healthcare for children, pregnant women, the elderly, and people with disabilities. Prior to 2018, financial barriers prevented poor and vulnerable populations from accessing healthcare services. Research by Jofre-Bonet on healthcare provision, the interaction of public and private suppliers, willingness to pay for health products and health insurance, underpinned the premium that was set, as well as the design and enactment of the Sierra Leone Social Health Insurance (SLeSHI) scheme. She also advised the government on the specifics of the implementation of the scheme from 2016 to 2018, enabling its successful introduction.

2. Underpinning research (indicative maximum 500 words)

Professor Jofre-Bonet's body of research examines how health economics can contribute to improving healthcare systems, including cost-effectiveness of treatments and Willingness To Pay (WTP) for healthcare products and services. Her work in Low- and Middle-Income Countries (LMICs; defined by gross national income per capita and development assistance from The Organisation for Economic Co-operation and Development, OECD) included being part of a £1.5m project in the Gambia, funded by the Bill and Melinda Gates Foundation, that compared the infection rates and cost effectiveness of two antibiotic administration strategies for trachoma, the leading infectious cause of blindness worldwide. [3.1] In Brazil, Jofre-Bonet and co-authors investigated the Zika Virus epidemic in the first study exploring the economic and social impacts in depth. [3.2] Both of these projects applied health system economics and societal perspective methodologies to healthcare issues faced in LMICs, with the aim of developing efficient and effective health policy. This case study presents the further extension of this approach in Professor Jofre-Bonet's research on healthcare system reform in Sierra Leone.

(i) WTP for improvements in healthcare in the informal sector in Sierra Leone

Sierra Leone is a West African Low-Income country with a population of around 7.3 million people and a life expectancy at birth of 60 years, according to World Health Organisation (WHO) figures. In 'post-conflict' reconstruction since the end of the civil war in 2002, it is estimated to have the world's highest maternal mortality (WHO). Accessible and affordable healthcare services are a critical component of Sierra Leone's economic and social development priorities. The civil war left the country economically vulnerable, with a fragmented healthcare system dependant almost entirely on the support of financial donors, and one of the highest rates of out-of-pocket health expenditure in the world. This means ill-health can push people into poverty as they use savings, assets, or borrowing to pay for healthcare. After the loss of nearly 4,000 lives in the 2014-15 Ebola crisis, the Government's Health Sector Recovery Plan (2015-20) identified the need for a universal health insurance system. The Sierra Leone Demographic and Health Survey (2019, p. 38) found that 96% of people aged 15-49 do not have health insurance.

Professor Jofre-Bonet's research focused specifically on willingness to pay (WTP) for improvements in healthcare in the 'Informal Sector'. This sector encompasses small-scale enterprise and business activities focused on the production of goods or services; those involved are likely to work on a casual labour basis and/or with family members, i.e. there is no formal contractual relationship. The World Bank* finds that 'Informality is pervasive in Sierra Leone, and formal work is restricted to the few most highly educated workers' (2016, p. 65). In a working-age population of slightly more than 3 million people, 62% are employed informally, with fewer than 10 percent in wage employment (p. xiv). The informal sector is estimated at around 2.7 million people.

The first stage of the research took place between 2011 and 2016, with Dr Alice Mesnard (City, University of London) and former PhD student, Joseph Kamara. [3.3] They developed a survey to elicit the WTP for improvements in healthcare from individuals in the informal sector, using a Discrete Choice Model approach. Eight informal sector activities were selected: petty trading, subsistence farming, commercial bike riding, cattle rearing, fishing, tailoring, mining, and quarrying. A random effect logit model was used to estimate households' WTP for an improvement in coverage, choice of health care provider, and a reduction in waiting time. The study revealed that households were WTP more to have better attributes (better coverage, less waiting time) and to go to a faith-based provider. The findings also suggest that location mattered in determining the WTP, with urban households WTP more for health insurance than their rural counterparts at Sierra Leone Leones (SLL) 54,348 (USD7.34) and SLL 37,250.5 (USD5.03), respectively. [3.3]

(ii) WTP for Health Insurance in the Informal Sector in Sierra Leone

Subsequently, in 2016, Jofre-Bonet was commissioned by the government in Sierra Leone and used a very large (10,000obs) tailored survey to elicit the WTP for health insurance (HI) of individuals in the informal sector in Sierra Leone. [3.4] The survey used a Double-Bounded Dichotomous Choice with Follow Up contingent valuation method, an approach chosen because it has been shown to yield more accurate WTP estimates than the alternative single-bounded method. 89% of respondents said they would pay for health insurance to avoid expensive pay-as-you-go healthcare. The article examines the individual factors associated with the likelihood of joining the HI scheme at a variety of premium levels. The analysis showed that a premium could be set at approximately SLL 20,000 SLL (USD3.54) per month but noted that setting a single premium too high would jeopardise the participation of certain groups, impacting the financial risk-pooling mechanism. Jofre-Bonet's work challenged pre-conceptions on feasible premium fees for healthcare coverage compared to what the informal sector was already paying out-of-pocket for medical care. Discussions with Professor Jofre-Bonet around the optimal premium underpinned the government's policy decision to set the joining price of the Sierra Leone Social Health Insurance (SLeSHI) scheme at SLL 15,000 when it rolled out in 2018.

* Margolis, D., Rosas, N., Turay, A. and Turay, S. (2016) 'Findings from the 2014 Labor Force Survey in Sierra Leone'. World Bank Studies. doi: 10.1596/978-1-4648-0742-8

3. References to the research (indicative maximum of six references)

3.1 Harding-Esch, E., **Jofre-Bonet**, M., Dhanjal, J.K, Burr, S., Edwards, T., Holland, M. *et al* (2015). Costs of Testing for Ocular *Chlamydia trachomatis* Infection Compared to Mass Drug Administration for Trachoma in The Gambia: Application of Results from the PRET Study. *PLOS Neglected Tropical Diseases*, 9(4). https://doi.org/10.1371/journal.pntd.0003670

3.2 Kuper, H., Lyra, T.M., Moreira, M.E.L., de Albuquerque, M.S.V., de Araújo, T.V.B., Fernandes, S., **Jofre-Bonet**, M. *et al* (2019). Social and Economic Impacts of Congenital Zika Syndrome in Brazil: Study Protocol and Rationale for a Mixed-methods Study [version 2; peer review: 2 approved]. *Wellcome Open Research*, 3(127). https://doi.org/10.12688/wellcomeopenres.14838.2

3.3 Kamara, J., **Jofre-Bonet**, M. & Mesnard, A. (2018). A Discrete Choice Experiment to Elicit the Willingness to Pay for Health Insurance by the Informal Sector Workers in Sierra

Leone, *International Journal of Health Economics and Policy*. 3(1). pp.1-12. https://doi.org/10.11648/j.hep.20180301.11

3.4 **Jofre-Bonet**, M. & Kamara, J. (2018). Willingness to Pay for Health Insurance in the Informal Sector of Sierra Leone. *PLOS ONE,* 13(5). https://doi.org/10.1371/journal.pone.0189915

Related grants and funding

Mabey, D. and Bailey, R. (PIs). Partnership for the Rapid Elimination of Trachoma, Bill & Melinda Gates Foundation. 10/10/2004 - 31/3/2013, £1,544,734. [3.1]

Jofre-Bonet, M. Data collection and analysis of WTP for health insurance. The National Social Security and Insurance Trust (NASSIT) of Sierra Leone. 2013-2014. USD25,000. [3.3]

4. Details of the impact (indicative maximum 750 words)

Professor Jofre-Bonet's research and her extensive engagement with the Government of Sierra Leone resulted in a transformation of healthcare policy and practice with the introduction of the Sierra Leone Social Health Insurance (SLeSHI) scheme. Through establishing willingness to pay (WTP) for Health Insurance (HI) in the Informal Sector, her work has had a significant impact on the provision of support for poor and vulnerable populations, improving the lives of an estimated 2.7 million workers who did not previously have access to affordable healthcare in this post-conflict Low Income country**.**

(i) Influencing the development of a national Health Insurance scheme

In 2016, introducing a national Health Insurance scheme became a priority not only for the government in power – the All People's Congress (APC) – but also for major donors such as the World Bank and the then UK Department for International Development. Professor Jofre-Bonet's initial research with Dr Joseph Kamara [3.3] led to her being commissioned by the National Social Security and Insurance Trust (NASSIT) of Sierra Leone to carry out an extensive study to elicit the WTP of the informal sector. The significance of this work was confirmed by the Director General of NASSIT, a senior civil servant:

> "Two key academic documents helped to shape the idea of a National Health Insurance Scheme in Sierra Leone. First, the paper "A Discrete Choice Experiment to Elicit the Willingness to Pay for Health Insurance by the Informal Sector Workers in Sierra Leone" [3.3]… justified the practical need from the largest workforce in the country – the Informal Sector – to have a national health insurance scheme… The second and main paper [was the] 'Willingness to Pay for Health Insurance among Informal Sector Workers in Sierra Leone' [3.4]." [5.1]

As lead consultant of the study, Professor Jofre-Bonet met with representatives of the World Health Organization (WHO) in Sierra Leone in October 2016 to discuss the results of the research and the obstacles to the implementation of the HI scheme. [5.1] Later that month, she presented the initial report to the Minister of Labour and Social Security and his team; health development partners working in Sierra Leone (WHO, World Bank); the private sector; and other government representatives, who were developing Sierra Leone's HI scheme.

Afterwards, Professor Jofre-Bonet held private talks on to the implications of the research and the feasibility of the implementation of the HI scheme with the Minister of Labour and Social Security; the Director General of the National Social Security and Insurance Trust; and the WHO country representative. [5.1, 5.2] Discussions with these stakeholders facilitated a better understanding of the barriers to the implementation of the HI scheme, including the characteristics of the healthcare provision up to that point; the persistent lack of funding for medical staff, and the recent reduction in their numbers due to the Ebola crisis. The commissioned study [3.4] helped to determine how much informal sector individuals were willing and able to pay and the frequency of payment. It also helped to increase the level of acceptance of the HI scheme among beneficiaries and increased the desire and willingness from Government and other partners to implement the scheme. [5.3, 00.01.49]

(ii) Shaping the Sierra Leone Health Insurance Act of 2017

A combination of the WTP survey results and insights from discussions with Professor Jofre-Bonet helped the technical team and, subsequently, the Government of Sierra Leone to make an evidence-based decision to go ahead with their plans for the Sierra Leone Social Health Insurance (SLeSHI) scheme. This is confirmed by the Director General of NASSIT, who writes that Professor Jofre-Bonet's work:

> "… was also subsequently used as the base for the preparation of the Social Health Insurance Policy for Sierra Leone and thereafter the Sierra Leone Social Health Insurance Act of 2017." [5.1]

The SLeSHI budget of around SLL 18.19 billion, on top of SLL 4.16 billion already invested, was approved in May 2017 [5.4, p. 1] and the policy gained Cabinet Approval in November 2017. [5.5] This laid the foundation for the SLeSHI Bill that was debated, approved, and ratified in Parliament in December 2017 leading to the Sierra Leone Social Health Insurance Act of 2017. [5.6] Integrated implementation plans for the scheme are documented in key reports produced by the Ministry of Health and Sanitation, including the National Health Sector Strategic Plan 2017-21 [5.7a, e.g. p. 55] and the National Nursing and Midwifery Strategic Plan 2019-2023. [5.7b, e.g. p. 36]

(iii) Implementation and Evaluation of the SLeSHI Scheme

Returning to Sierra Leone after his studies, Dr Kamara played a key role in setting up these far-reaching changes as the National Co-ordinator of the SLeSHI Scheme, which was launched by President Ernest Bai Koroma on 16 February 2018 at a well-attended ceremony in Freetown. [5.3, 00.02.47] Following the change of government in April 2018, President Julius Maada Bio of the Sierra Leone People's Party (SLPP) committed to the implementation and extension of the SLeSHI Scheme. [5.8, p.41]

The government's 2019 Midterm Review Report for the United Nations Human Rights Council (UNHRC) confirmed the extension of the scheme to the Informal Sector:

> "112. In December 2017, the Parliament of Sierra Leone approved the introduction of the Sierra Leone Social Health Insurance Scheme (SLeSHI). This scheme is administered by NASSIT. NASSIT intends to extend the social security protection to the Informal Sector." [5.9, p.27]

The SLeSHI Scheme is also a fundamental element of Sierra Leone's Universal Health Coverage (UHC) plan which means all Sierra Leoneans will receive the health services they need without suffering financial hardship. [5.10] The UHC Partnership – which includes organisations such as the WHO and UK Foreign, Commonwealth & Development Office – has more recently "shifted its support towards the development, implementation and monitoring of the National Health Sector Strategic Plan 2017-2021 as well as the establishment of Sierra Leone's Social Health Insurance scheme". [5.10]

The SLeSHI financial risk-pooling mechanism which is now in place sets out to "ensure the cross-subsidization between the rich and the poor and also ensure the healthy cross-subsidize the sick" [5.5, p.20]. The changes mean all workers in the informal sector are required by law to join the scheme and to pay an equivalent flat rate of $2 USD a month to access a health insurance scheme for primary care. [5.5, p.24] Those in the formal sector will pay 6% of their salaries into the scheme 'at source'. The government will also pay a contribution:

> "Government of Sierra Leone shall provide subsidy to the SLeSHI Fund to match up the fiscal gap that will be created mainly due to the inclusion of the exempted groups (all children below 12 years, all pregnant women, all lactating mothers, the disabled, senior citizens above 65 years and indigents) and the meagre amount that is been paid by the Informal Sector." [5.5, p.25]

The full roll out of the scheme has been delayed due to the Covic-19 pandemic but realising the benefits of improved health outcomes in the working population to Sierra Leone's economic and social development remains a political priority. President Bio said in January 2021: "We are

following through on our promise in the New Direction Manifesto [5.8] and The Medium-Term National Development Plan to increase affordable access to quality healthcare service delivery. That goal also aligns with a central plank of our human capital development priorities - access to quality healthcare - and the Sustainable Development Goal 3 on delivering good health and well-being to our citizens". [5.11, p. 2] The SLeSHI health insurance scheme will enhance the health and quality of life of the estimated 2.7 million people in the informal sector in Sierra Leone by improving access to affordable healthcare.

5. Sources to corroborate the impact (indicative maximum of 10 references)

5.1 Testimonial from the Director General, National Social Security and Insurance Trust, Sierra Leone, 21 May 2018 describing the relevance of research for the HI Scheme and confirming meetings with the Ministry of Health of Sierra Leone and WHO.

5.2 Invitation from the Director General, National Social Security and Insurance Trust, Sierra Leone to present research results to the Technical and Coordinating Committees of SLeSHI on 24 October 2016.

5.3 Francess Bernard, Sierra Leone Broadcasting Corporation. (2018) "SLeSHI Inception". Video and broadcast clips of the SLeSHI launch, 16 February 2018. Available at: https://youtu.be/Km1HZ9G2e04

5.4 Sierra Leone Social Health Insurance (SLeSHI) Budget Approval – May 2017.

5.5 Sierra Leone Social Health Insurance (SLeSHI) Policy – November 2017. (see footnote on p.24 for direct reference to Professor Jofre-Bonet's work).

5.6 Evidence of the ratified Health Insurance Reform Bill (The Sierra Leone Social Health Insurance Authority Act, 2017) – Supplement to the Sierra Leone Gazette Vol. CXLVIII, No. 85 dated 1 December 2017.

5.7 Sierra Leone, Ministry of Health and Sanitation:
(a) National Health Sector Strategic Plan 2017-2021
https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/sierra_leone/sierra_leone_nhssp_2017-21_final_sept2017.pdf
(b) National Nursing and Midwifery Strategic Plan 2019-2023.
https://sierraleone.unfpa.org/en/publications/national-nursing-and-midwifery-strategic-plan-2019-2023

5.8 Sierra Leone People's Party (SLPP) Manifesto – see p.41.
https://www.thesierraleonetelegraph.com/maada-bio-launches-his-slpp-2018-election-manifesto/

5.9 Sierra Leone Government – Midterm Review Report on the 2nd Cycle Universal Periodic Review Recommendations 2019, United Nations Human Rights Council.

5.10 The Universal Health Coverage Roadmap – Ministry of Health and Sanitation, Sierra Leone. https://mohs.gov.sl/2020/12/11/universal-health-coverage/ Accessed 17.02.21.

5.11 President Julius Maada Bio, 22 January 2021. Remarks at the Turning of the Sod for the 150 Bed Hospital Health Village at Kerry Town, Sierra Leone. https://statehouse.gov.sl/wp-content/uploads/2021/01/Remarks-by-His-Excellency-Dr.-Julius-Maada-Bio-President-of-the-Republic-of-Sierra-Leone-at-the-Turning-of-the-Sod-for-the-150-Bed-Hospital-Health-Village-at-Kerry-Town-22-January-2021.pdf