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*The Impact of Social Health Insurance on the Incentives of Health Care Providers in East Africa: A Mixed-methods Approach*

**1. Summary**

Many health systems in low- and middle-income countries (LMICs) suffer from incentive problems of health care providers. The typical example is the high absence rate (35%) among public providers in rural area (Chaudhury et al., 2006), which results from weak financial incentives among other factors. These incentive problems restrict the access to quality health care for the disadvantaged population in LMICs, especially in times of the COVID-19 pandemic. Development Economists have experimented incentive intervention programs at different subnational levels to address the problems, but the effects of long-term neglect and lack of accountability on health care supply require systemic reforms. Recent progress towards universal health coverage in LMICs makes social health insurance one of the most feasible systemic tool at hands, however only a small proportion of all the health insurance schemes in LMICs have ever been subjected to impact evaluation (Spaan et al., 2012). This project aims to understand how social health insurance affects the incentives of health care providers and assess whether it effectively addresses the provider incentive problems. It focuses on the social health insurance schemes in three East African countries which have similar economic and demographic characteristics, but distinct health systems. A mixed-methods approach with an exploratory sequential design (Creswell & Creswell, 2018) is proposed to answer the cross-cutting research questions. In doing so, my project helps fill the literature gap on the impact of social health insurance in LMICs, and contributes to a better understanding of social health insurance beyond a means of financial protection from catastrophic health expenditure.

**2. Research plan**

**2.1 State of research**

The proposed research project is inspired by the contribution made by Development Economists to understanding health care delivery in low- and middle-income countries (LMICs). **In a nutshell, the literature finds that health care systems in LMICs tend to generate weak incentives for public health care providers to exert efforts and deliver high-quality service and distorted incentives for private providers to prescribe unnecessary or even harmful treatments** (Kremer & Glennerster, 2012).

Health care by definition is a credence good with information asymmetries between patients and providers, which can lead to inefficiencies as either undertreatment or overtreatment (Dulleck and Kerschbamer, 2006). Therefore, health care delivery requires market regulation. Partly as a result, the default policy setup of health care supply in LMICs is through a free provision in public health facilities by qualified providers paid a fixed salary (Das et al., 2016). The free public provision is designed to increase access to quality health care for the disadvantaged population in LMICs, but in practice, there are several problems.

**The public health care sectors in LMICs first suffer from high absenteeism, especially in rural areas** (see, e.g. Chaudhury & Hammer, 2003; Banerjee, Deaton & Duflo, 2004; Fujii, 2019). The most influential evidence is from a nearly nationally representative survey conducted in Bangladesh, India, Indonesia, Peru, and Uganda (Chaudhury et al., 2006). The survey found an average absence rate of 35 percent among public health workers and the rates were generally higher in poorer countries. The scholars also found providers in smaller health facilities were

absent more often than larger ones and higher-ranking providers, such as doctors, were absent more often than lower-ranking ones. The absenteeism results from many factors, among which is the weak financial incentives as evidenced by the high rate of “dual practice” among public providers (McPake, Russo & Tseng, 2014). For example, more than 60 percent of public doctors in rural India were found to have a private practice, even if it was illegal (Das et al., 2016).

**Even when providers are present, the quality of care provided is often poor.** Early research led by Das and Hammer evaluates the quality of health services in 4 low-income countries by direct observations of doctor-patient interaction and the “vignette” approach (providers are presented with hypothetical cases and their responses are compared to a checklist of essential procedures, see, e.g. Das & Hammer, 2005, 2007; Das, Hammer & Leonard, 2008). The studies indicate a gap in both competence and practice of health care providers in low-income countries. For example, providers in India lack the knowledge of even rudimentary examinations for patients with symptoms of common but severe diseases such as diarrhea (Das, Hammer & Leonard, 2008). Meanwhile, the actual examination and treatment provided in practice often fall short of what doctors claim to provide for a hypothetical patient (Das & Hammer, 2007). The conclusion is also supported by the research in different LMICs by other scholars. (e.g. see a systematic review by Berendes et al., 2011)

**On top of the two identified gaps, dual practitioners among public providers are also found to exert more efforts and provide a higher quality of care in their private practices.** New research on the quality of health services in LMICs has begun to use the standardized (fake) patient (SP) approach, where SPs are people recruited from the local community and coached to present the same case to multiple health care providers (see, e.g. Das et al., 2012; Das et al., 2016; Kwan et al., 2019). During the unannounced SP visits, the same public providers spent more time with SPs and were more likely to offer a correct treatment in their private practices than their public ones (Das et al., 2016). These differences in dual practice cannot simply be explained by high caseload and long waiting times in the public sector (Mæstad, Torsvik & Aakvik, 2010). Kremer and Glennerster (2012) hence attribute the poor quality of public provision to weak financial incentives of providers under a fixed wage system.

**Private providers working on a fee-for-service basis do have stronger incentives, but incentives do not necessarily translate into effort and care.** Although public health services are free in some LMICs, the share of services provided by private providers is still high (see a systematic review by Grépin, 2014). However, scholars found most of the private services in LMICs are furnished by providers without a medical degree or even formal medical training (Banerjee, Deaton & Duflo, 2004; Das et al., 2016). Lack of medical qualification and regulation in the private sector raises concerns for the quality of their services. But surprisingly, Das and others (2016) compared the quality of services provided by both public and private sectors in rural India and found private providers exerted significantly more efforts than public providers and performed no worse on diagnosis and treatment. This finding is also supported by studies in other LMICs (e.g. see a systematic review by Berendes et al., 2011). However, it is worth noting that the quality of public service that the scholars compared to is poor at the first place.

**One key problem of private health care in LMICs is the distortion of the providers’ incentives.** Due to asymmetric information between patients and providers, patients may have difficulty differentiating good treatment from bad, especially in LMICs with weak regulatory systems and a relatively lower level of education. This creates the opportunity for overtreatment in the private sector (Das et al., 2012). What is worse, an early review of injection

practice in 19 LMICs found that 25 to 96 percent of outpatient visits resulted in injection and over 70 percent of injections in four countries were unnecessary (Simonsen, et al., 1999). The excess injections are not only wasteful, but also increase the risk of bloodborne infections. Inappropriate practices are common in both public and private sectors, but private providers have stronger incentives to prescribe treatments that make patients feel that something is being done but provide only short-term benefits as injections (Kremer & Glennerster, 2012). Private providers also have no incentives to take into account the treatment externality, either positive, as with immunizations, or negative, as with antibiotics. This misplaced incentive results in the under-provision of the most cost-effective health interventions such as preventive measures against infectious diseases (see, e.g. Miguel & Kremer, 2003).

**As a result, incentive programs have been experimented at different subnational levels (e.g. provider, facility, and community) to strengthen the weak incentives for public providers while avoiding the distortions associated with the private provision in LMICs.** Evidence from the randomized evaluation literature indicates that incentive programs can improve health worker attendance, the use and the quality of public health services (see Lewin et al. (2008) and El-Jardali et al. (2019) for a systematic review of the literature), but the effects of long-term neglect and lack of accountability on health care supply in LMICs require systemic reforms to offset. For example, the incentive program implemented in rural India nearly doubled nurse attendance in the first 6 months after introduction, but afterward, the incentive system was deliberately undermined by the local health administrations (Banerjee, Glennerster & Duflo, 2008). Subsequently, the absence among nurses returned to the initial high level after 16 months. Olken, Onishi, and Wong (2014) also found no evidence that ultimate health outcomes differentially improved with incentives after 18 months in Indonesia. Surprisingly, they even found reductions in neonatal mortality were less persistent in the incentivized group than the non-incentivized group. This finding leads to the concerns of incentive programs being a “multitasking problem”, where efforts allocated to the incentivized targets come at the cost of other non-incentivized targets (Holmström & Milgrom, 1991). **The failure of the incentive programs reveals the urgency to create the right incentives at the systemic level to hold providers accountable.**

**One of the most feasible systemic schemes to address the incentive problems in LMICs is social health insurance<sup>1</sup>.** Since the World Health Organization (WHO) enshrined social health insurance as “the most efficient and equitable path towards universal coverage” (p.87) in the 2010 World Health Report, national health insurance reforms have been implemented in many LMICs (Lagomarsino et al., 2012). The reforms radically changed the health systems depicted by Kremer and Glennerster (2012), “the health sector in developing countries is often polarized between the extremes of pure public sector delivery and fee-for-service provision from the private sector, **unmediated by insurance companies.**” (p.273) For example, social health insurance coverage of the national population exceeds 90 percent in Rwanda, covering both formal and informal sectors (Chemouni, 2018). Therefore,

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<sup>1</sup> Social health insurance here refers to *mandatory* health insurance including both national health insurance and government-supported community-based health insurance (e.g. Rwanda). It is usually financed by general government revenues, donor support, formal-sector payroll contributions, and/or household premiums from the informal sector.

it is important to evaluate the impact of social health insurance on the incentives of health care providers in LMICs and assess whether it effectively addresses the provider incentive problems introduced above. However, despite its importance, Spaan and others (2012) conducted a systematic review of the impact of health insurance literature and found that only a small proportion of all the health insurance schemes in LMICs have ever been subjected to impact analysis. Within the few impact evaluations, only one partially studies the impact on provider incentives (see Basinga et al., 2011). Following the same search strategy in Spaan et al. (2012) to review the recent health insurance impact literature, I find the gap still remains.

## **2.2 My contribution to the chosen topic**

My proposed research project plans to advance the literature on health system strengthening in LMICs by studying the impact of social health insurance on the incentives of health care providers in three East African countries. The project is inspired by the findings from my Master's thesis on national health insurance reforms in China. When I was working on the Chinese health financing system, I learned from both interviews and the literature that behaviors of health care providers, especially those working in health facilities contracted with national health insurances, are affected by the payment mechanisms of insurance schemes. Meanwhile, my working experience at the Global Fund to Fight AIDS, Tuberculosis and Malaria and WHO broadened my knowledge of the progress towards universal health coverage (UHC) in LMICs and led me to the research on the social health insurance reforms implemented to achieve universal coverage. Therefore, my current interest in how social health insurance as a systemic tool could address the incentive problems of health care delivery in LMICs is a natural progression of my previous research.

The proposed study will examine the following research questions:

- 1. What is the impact of social health insurance on the incentives of health care providers? Through which channel does social health insurance affect the incentives and then behaviors of health care providers?**
- 2. Can social health insurance strengthen the incentives for public providers and address the problems associated with fee-for-service private provision? If so, how?**
- 3. How does the impact mechanism of social health insurance change when countries are at different stages and on different paths towards universal health coverage?**

Three Eastern African countries, Rwanda, Kenya, and Uganda, are selected in my study for their similar economic and geographic background, yet distinct health systems. Specifically, the three countries are at different stages in terms of their progress towards universal coverage. Here the progress is evaluated using both population coverage and service coverage. Population coverage is defined as the share of the population covered for a defined set of health care goods and services under social health insurance programs. Service coverage uses the data from the 2017 WHO UHC index of essential service coverage, defined as the average coverage calculated based on 14 tracer indicators among the general and the most disadvantaged population. Hence, the service coverage here is more of a general measure of access to essential service in one country than a direct measure of the service covered by each social health insurance.

The government-supported community-based health insurance (CBHI) in Rwanda is a success story with its population coverage above 90 percent. However, Rwandan essential service coverage is not commensurate with its population coverage, at only 57 percent. Next, the National Hospital Insurance Fund (NHIF) in Kenya founded in

1966 is one of the oldest social health insurances in Africa, but its population coverage is limited by the voluntary enrolment of the informal sector, roughly 53 percent including all the dependents of the principal members (NHIF performance report, 2018). Despite the lower population coverage, Kenyan essential service coverage reaches 55 percent. Last, the National Health Insurance Scheme (NHIS) in Uganda is still at the design stage, where Cabinet just approved the NHIS Bill 2019 and plans to implement it in the coming years. The population coverage of NHIS is hence still zero percent. The service coverage in Uganda is the lowest among the three countries, 45 percent. By studying the three countries, the proposed research will advance our understandings of the impact of social health insurance on incentives of health care providers at different stages towards UHC.

Country	Rwanda	Kenya	Uganda
<b>Income group</b>	Low-income	Lower-middle income	Low-income
<b>Social health insurance</b>	Centralized CBHI, mandatory for all residents	NHIF, mandatory for formal sector, but voluntary for informal sector	NHIS, designed to be mandatory for all residents aged above 18
<b>Population coverage</b>	>90% (Chemouni, 2018)	16% principal members only, 53% including dependents (NHIF, 2018)	0%
<b>Service coverage</b>	Inpatient and outpatient, 57% (2017)	Inpatient (since 1966) and outpatient (since 2015), 55% (2017)	Inpatient and outpatient, 45% (2017)
<b>User fee</b>	Co-payment required for insurance members	Yes for both public and private health facilities	Free in all public health facilities
<b>Contracted facilities</b>	All public facilities and contracted private facilities	All public and private facilities where cost incurs	All public facilities and accredited private facilities
<b>Payment mechanism</b>	Cost reimbursement to providers/payment for performance	Cost reimbursement to providers	Cost reimbursement to providers with possible advance payment

Data source: income group from the World Bank country classification, 2019; service coverage from 2017 UHC index of essential service coverage, WHO; author’s compilation from Law N° 03/2015 of 02/03/2015 Governing the Organization of the Community-Based Health Insurance Scheme, National Hospital Insurance Fund Act, 2012, NHIF annual report, 2018, the National Health Insurance Scheme Bill, 2019.

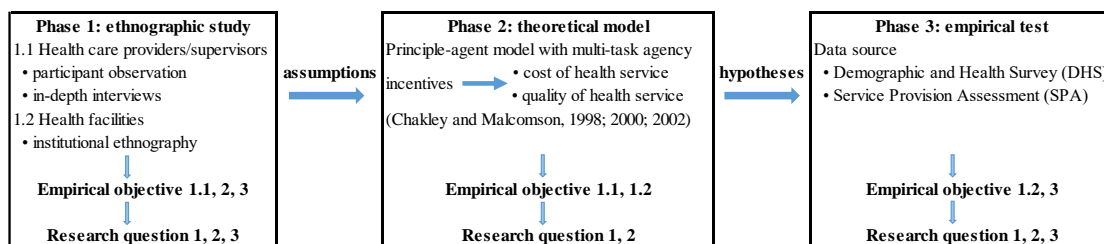
The three countries also represent three distinct paths towards universal health coverage in LMICs. Specifically, Rwanda applied the bottom-up approach, starting with pilot CBHI in three districts and gradually scaling it up to the national level, then mandating its enrolment and standardizing its service coverage, and eventually centralizing its management (Chemouni, 2018). In contrast, Kenya took the top-down approach, starting with mandatory national health insurance for the formal sector covering only inpatient services, then gradually expanding coverage to the informal sector on a voluntary basis and incorporating outpatient services in the package (Abuya, Maina & Chuma, 2015). Last, the health system in Uganda was the typical one described by Kremer and Glennerster: free public services and fee-for-service private provision. Now it pursues an ambitious one-for-all scheme. By studying the representative social health insurance models in the three countries, this research project also contributes to the discourse on the optimal path to UHC in LMICs.

### 2.3 Objectives, data and methods

Theoretical Objectives	Empirical Objectives
1. Understand the way(s) in which social health insurance affects the incentives of health care providers in both public and private sectors in LMICs. (Research question 1)  2. Assess how social health insurance can be utilized as a systemic tool to address the incentive problems of health care delivery in LMICs. (Research question 2)  3. Explore how the impact of social health insurance changes at different stages towards UHC and on different paths towards UHC in LMICs. (Research question 3)	1.1 Describe how social health insurance functions and how health care providers respond to the economic incentives of social health insurance in Rwanda, Kenya, and Uganda 1.2 Pose hypotheses based on 1.1 and test them empirically using nationally representative data  2. Follow different institutional actors (ministry of health, health facilities, NGOs, and community organizations) and describe how they perceive the function of social health insurance in Rwanda, Kenya, and Uganda.  3. Compare the impact mechanism of social health insurance in Rwanda, Kenya, and Uganda and document how the impact evolves at different stages and on different paths towards UHC

To achieve the objectives of this research project, I propose a mixed-methods approach drawn from health economics and medical anthropology. The reasons for choosing mixed methods are from both the interdisciplinary training of my doctoral program and the cross-cutting nature of my research questions. In addition to economists, the research on the impact of health insurance in LMICs has also drawn attention from medical anthropologists (see, e.g. Ahlin, Nichter & Pillai, 2016; Dao & Nichter, 2016; Dao & Mulligan, 2016). The ethnographic studies bring the perspectives of the social life of health insurance, which can broaden our understanding of the impact of health insurance in LMICs beyond the scope of the traditional quantitative framework. Specific to this research plan, Dao and Nichter (2016) found no ethnographic studies in LMICs that have investigated the impact of health insurance on the incentives of providers. Therefore, I aim to bridge the two disciplines working on the same research questions and fill the literature gap. The proposed approach follows an exploratory sequential design (three-phase design), starting with a qualitative phase followed by two quantitative phases (Creswell & Creswell, 2018, p. 306). I explain the three phases in the details below.

Mixed-methods Approach with Exploratory Sequential Design



**First, I plan to conduct participant observation and in-depth interviews with health care providers and their supervisors and in parallel institutional ethnography at the health facilities where the investigated providers work.** As introduced in the state of research section, the incentive problems are more severe in small health facilities in rural area. Therefore, I choose to conduct my fieldwork at primary care facilities (contracted with social health insurance) in rural areas of each country. The facility selection will be based on the criteria of accessibility, safety, and inputs from my key informant interviews with stakeholders. One public and one private

facility will be selected in each country. All providers and supervisors in the selected facilities will be eligible to participate in my study. The fieldwork will be divided into two periods: 1) March – May 2021, I will spend one month in each country to initiate contact with the ministry of health, local NGOs and community organizations. During the period, I will assess study feasibility at possible field sites, and aim to establish agreements to conduct fieldwork at two health facilities in each country; 2) July – December 2021, I will conduct ethnographic research for one month at each selected facility. The date is subject to change dependent on the evolution of the COVID-19 pandemic.

**Second, I plan to use the qualitative data from phase one to inform assumptions of the theoretical model that explains how social health insurance affects the incentives of health care providers.** The intended model was developed by Chalkley and Malcomson to explain the impact of payment mechanisms of the British National Health Service and U.S. Medicare on the incentives of providers (see, e.g. Chalkley and Malcomson, 1998; 2000; 2002). They incorporate the multi-task agency problem of healthcare procurement termed by Holmström & Milgrom (1991) into a principal-agent model. The model focuses on the trade-off between the quality of health service and cost-reducing efforts furnished by health care providers (together as a proxy for the incentives of health care providers) under different incentive schemes, such as cost reimbursement and prospective payment system. Recall that cost reimbursement is also the mechanism used in Rwanda, Kenya, and Uganda. In phase two, I will revise the theoretical model to contextualize the findings from my ethnographic study and pose hypotheses based on the theoretical framework for further empirical test in phase three.

**Third, I plan to carry out an empirical test on the hypotheses posed in phase two using data collected by the Demographic and Health Survey (DHS) Program in the three countries.** DHSs are nationally representative surveys on different health indicators and my access to the datasets has already been approved. Specifically, I plan to use the standard DHS of households for health insurance registration and health expenditure data and Service Provision Assessment (SPA, an independent survey of the DHS program) surveys of health facilities for the quality of health service data. The geo-coded data allows me to estimate the two key variables in the theoretical model, quality and cost of health service, and test the hypotheses posed in phase two.

#### **2.4 Relevance and impact of the project**

In times of the COVID-19 pandemic, properly functioning health care delivery is more important than ever before. This research project contributes to the understanding of the impact of social health insurance on the incentives of health care providers in the fields of both health economics and medical anthropology. The proposed mixed-methods approach has the potential to inspire more interdisciplinary studies that incorporate the benefits of both quantitative and qualitative methods. Meanwhile, the case selection of the three East African countries with representative social health insurance designs is also particularly interesting for academics working on the health financing systems in LMICs. It deepens our understanding of the response of the impact mechanism to different health system designs. I plan to publish my research results as articles in scientific journals (e.g. Journal of Health Economics) and conference papers of both disciplines to encourage a further discourse on the interaction between two fields.

This research project also has the potential to contribute to expanding the common perception of health insurance as a means of financial protection from catastrophic health expenditure. If properly designed, social health insurance can also be used as a systemic tool to regulate health care delivery and promote health system reforms in

LMICs. The new perception has the potential to help prioritize social health insurance reforms on the political agenda and accelerate the progress towards universal health coverage in LMICs.

## 2.5 Schedule

The Ph.D. in Development Economics Program at the Graduate Institute requires three papers for graduation.

Activity/Milestone	2020-2021				2021-2022				2022-2023			
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Desk research and prepare a list of health facilities for fieldwork with supervisors												
Clean DHS and SPA data and prepare for initial data analysis												
Establish contact with MOH and NGOs in three countries through network in Geneva												
First stage fieldwork for 3 months (1 month in each country) and select field sites												
Draft the Preliminary Thesis Dissertation (equivalent to paper 1 draft)												
Return to IHEID and meet with supervisor and co-supervisors												
Revise and defend the Preliminary Thesis Dissertation												
Second stage fieldwork for 6 months (2 months in each country)												
Draft fieldwork report during fieldwork												
Return to IHEID and meet with supervisor and co-supervisors												
Revise theoretical model based on data collected from fieldwork												
Conduct empirical test on hypotheses generated from theoretical model												
Draft paper 2 and prepare paper 1 for journal submission												
Meet with supervisors and revise paper 2												
Draft paper 3 and prepare paper 2 for journal submission												
Meet with supervisors, revise paper 3, and prepare for thesis defense												
Final thesis defence June 2023												
Prepare paper 3 for journal submission												



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