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From Mobile Wallets to Stable Wages: Assessing the Employment Impact of Mobile Money

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We analyse the **impact of mobile on employment** in Kenya, Tanzania, and Nigeria, highlighting how adopters are **more likely to be self-employed** and **receive stable incomes**, particularly where usage is widespread. Notably, **women and rural dwellers receive greater benefits**, underscoring digital financial inclusion as a **tool for economic empowerment.**

Conceptual Background

- Financial inclusion boosts job creation and stability by allowing individuals to handle income changes and invest in education and health (Klapper, 2014).
- In low- and middle-income countries (LMICs), only 41% of the disadvantaged access formal finance, dropping to 20% for the very poor, underscoring the need for better financial access to combat unemployment (Klapper and Singer, 2014).
- Mobile money, a digital financial service that faciltiates transactions via mobile devices, can enhance financial inclusion (Aron 2018), promote financial decision-making and encourage savings and investment (Suri and Jack, 2016)
- Mobile money can have downstream impacts, with empirical evidence on enhancing food expenditures (Murendo and Wollni, 2016), inmproving school attendance (Rotondi and Billari 2021) and expanding entrepreneurial activities (Apeti et al 2023).

Our research examines the **relationship between mobile money and individual employment outcomes** from a **cross-national perspective**. Three **key hypotheses** guide our analysis:

1. Access to mobile money fosters entrepreneurial endeavors, thus increasing the likelihood that an individual is self-employed.
2. Access to mobile money services leads to more stable income structures since it drives a shift from irregular to regular-pay occupations.
3. The positive impacts of mobile money are realized in national contexts with stable and accessible mobile money infrastructures, with larger payoffs for disadvatanged population sub-groups such as women and rural dwellers.

Data and Methods

- We use repeated cross-sectional, nationally-representative data from the **InterMedia Financial Inclusion Insights (FII) surveys** from 2013 to 2017.
- Our analysis begins with a **cross-national** analysis of mobile money's impact on three employment outcomes (probability of being employed, self-employed and of receiving regular wages) in **Kenya, Nigeria, and Tanzania** – three contexts with differing levels of mobile money penetration and infrastructure (mobile money adoption ranging from 68% in Kenya, 35% in Tanzania, and 1% in Nigeria).
- We further focus on **Tanzania** as a case study, where geospatial augmentation of the FII with lightning flash rates observed via satellite, together with a 2015 policy change provide us two instrumental variables (IVs) to address the potential endogeneity of mobile money adoption.
- To account for differential migration to areas of better connectivity, we estimate IV models on a sub-sample of non-movers.

Mobile Money and Employment

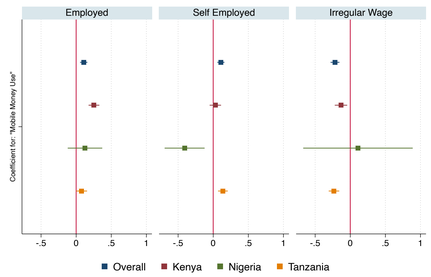

Figure 1: Probit marginal effects from a model estimating employment outcomes as a function of mobile money adoption across Kenya, Tanzania and Nigeria. Covariates include: poverty status, household bank account ownership, receipt of government transfers, recent relocation, mobile phone access (owning or borrowing), rural household status, respondent's gender, age (plus age squared for non-linear effects), and education level. Robust standard errors, adjusted for heteroskedasticity. The model also accounts for country, year, and country-year specific trends.

Heterogeneous Effects by Gender and Rural Status

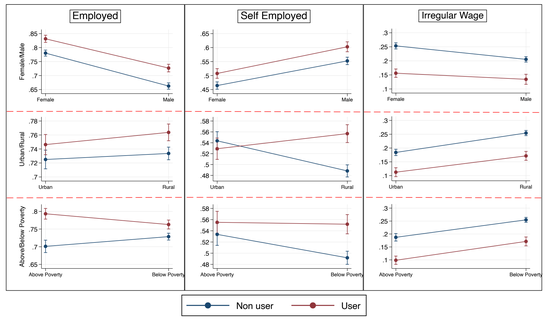

Figure 2: Predicted probabilities from country-pooled model of mobile money use and employment outcomes, by gender, urban-rural and poverty status.

Tanzanian Case Study: Tackling Endogeneity in Mobile Money Adoption

Table 1: First Stage Equation

	(1)	(2)	(3)	(4)
	Mobile Money User			
	b/se	b/se	b/se	b/se
	Whole sample		**Employed**	
		Non movers		**Non movers**
Flash rates (log)	-0.016*	-0.016*	-0.021**	-0.020**
	(0.009)	(0.009)	(0.009)	(0.010)
Post	0.113***	0.120***	0.117***	0.124***
	(0.013)	(0.013)	(0.014)	(0.014)
F-Stats	41.47***	43.13***	41.45***	42.22***
Hansen-J test Chi-sq p-val	0.09	0.139	0.05	0.164
N.	10342	8824	8430	7301

Note: OLS. Covariates: poverty status, household bank account ownership, receipt of government transfers, recent relocation, mobile phone access (owning or borrowing), rural household status, respondent's gender, age (plus age squared for non-linear effects), and education level. Standard errors robust to heteroskedasticity reported in brackets. * p<0.10, ** p<0.05, *** p<0.01

Table 2: Instrumental Variable Estimations

	IV			IV: Non-movers		
	Employment	**Self-employment**	**Irregular Wage**	**Employment**	**Self-employment**	**Irregular Wage**
	0.017	0.060*	-0.089**	-0.002	0.073**	-0.102***
	0.033	0.029	0.031	0.026	0.026	0.029
N.	10317	8430	8430	8807	7301	7301

Note: IV. Covariates: poverty status, household bank account ownership, receipt of government transfers, recent relocation, mobile phone access (owning or borrowing), rural household status, respondent's gender, age (plus age squared for non-linear effects), and education level. Standard errors robust to heteroskedasticity reported in brackets. * p<0.10, ** p<0.05, *** p<0.01

- Mobile money use is **positively associated with being employed or self-employed**, and **negatively associated with receiving irregular wages**. This highlights mobile money's role in enhancing employment stability and quality.
- Our findings reveal **cross-national variations** in mobile money's employment impacts, however, with impacts concentrated in Kenya and Tanzania – countries with higher adoption rates.
- Analysis of gender and rural status differences indicates that mobile money **enhances employment chances for women and individuals in rural settings**, positioning mobile money as a crucial instrument for economic empowerment and reducing poverty.
- IV results from Tanzania indicate mobile money causally increases the likelihood of self-employment by 6% and reduces irregular wage employment by 8.9%, emphasizing its role in fostering stable employment opportunities.

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