

## Extended Abstract

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<b>Paper/Poster Title</b>	<b>The Smallholder Financial Inclusion Index (SFI): A Multidimensional Indicator for Access to and usage of Finance</b>
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Abstract prepared for presentation at the 97<sup>th</sup> Annual Conference of the Agricultural Economics Society, The University of Warwick, United Kingdom

27<sup>th</sup> – 29<sup>th</sup> March 2023

<b>Abstract</b>	<i>200 words max</i>
<p>Many rural households in developing countries have little or no access to financial services and 500 million smallholder households account for those most financially excluded. To identify financially excluded groups, policymakers need appropriate indicators for measuring financial inclusion. We conceptualize the Smallholder Financial Inclusion Index (SFI) as a multidimensional indicator to measure access to and usage of formal financial services for smallholder households. We use a two-step Multiple Correspondence Analysis (MCA) to identify 18 relevant indicators for access and usage of financial services and their weights to estimate the index. Further, we test the SFI using data smallholder household data from Uganda, Tanzania, Bangladesh, Ivory Coast, and Nigeria.</p> <p>Our results show that smallholder households across all countries are excluded from financial services with an SFI mean value of 12.89 (out of 100) and 57.68% of them belong to the lowest decile. However, the results also suggest that the country indicator performances within the SFI are key to understanding financial inclusion within smallholder households. The study provides a valuable tool for applying a data-driven multidimensional index for identifying smallholder households that are the most financially excluded.</p>	
<b>Keywords</b>	Financial Inclusion, Composite Indicator, Multiple Correspondence Analysis, Smallholders, Global South
<b>JEL Code</b>	Q140 Agricultural Finance
<b>Introduction</b>	<i>100 – 250 words</i>
<p>Financial inclusion is a multidimensional phenomenon that encompasses the generation of access to useful and affordable financial products and services that meet individuals' needs. Many rural households in developing countries have little or no access to financial services and an estimated 500 million smallholder households account for those most financially excluded. To understand and identify financially excluded groups, policymakers need appropriate indicators for understanding and measuring access to and usage of financial services. Access to formal financial services aims at fostering account ownership and is key to increasing banking penetration. However, the mere possession of a bank account and access to banking services is not enough to generate financial inclusion. Estimating the usage of financial services is also crucial to assess the actual consumption of financial services, which includes regularity, frequency, and duration of use over time.</p> <p>While previous studies have measured financial inclusion at the global and national levels, there have been no frameworks proposed to assess whether a household is financially</p>	

included. Moreover, an index for measuring financial inclusion among smallholder farmer households is crucial as access to and usage of finance enhances savings, agricultural productivity, and equipment and technology adoption. We conceptualize the Smallholder Financial Inclusion Index (SFI) as a multidimensional indicator to measure access to and usage of formal financial services among smallholder farmers. This study proposes a framework for a household-level measure of financial inclusion and tests the index using data from five countries from the global south.

**Methodology**

*100 – 250 words*

To assess financial inclusion at the household level, rather than at the national or regional level, the study introduces a novel approach. We conducted a Multiple Correspondence Analysis (MCA), which considers financial inclusion as a multidimensional latent variable. To identify relevant indicators that capture the access to and usage of financial services, MCA was applied in two stages. The first stage served to identify the indicators' significance and impact on the latent variable. The second stage was used to derive the indicator weights. In addition, in-depth interviews with experts were conducted to reveal key knowledge about the indicators applied by financial institutions to assess financial inclusion and confirm the choice of indicators used in the index.

To test the Smallholder Financial Inclusion Index, we used 2015 and 2016 data from World Bank's CGAP Smallholder Household Surveys from 5 different countries. The dataset includes 13,895 observations from agricultural households from Uganda, Tanzania, Bangladesh, Ivory Coast, and Nigeria.

**Results**

*100 – 250 words*

The results of the MCA allowed identifying 18 indicators to measure the access to and usage of financial services. For the access dimension, nine relevant indicators grouped into four subdimensions were identified: account access, savings availability, credit availability, and financial advice. For the usage dimension, nine relevant indicators grouped into five subdimensions were identified: account usage, credit usage, investment usage, savings usage, and insurance.

The SFI allows for identifying the most financially deprived households and allows comparison of them at the household, regional, and national levels. In our study, the aggregated result at the country level shows that smallholder households across all countries are excluded from financial services with an SFI mean value of 12.89 (out of 100) and 57.68% of them belonging to the lowest decile. Further, only 2.81% of all households are located in the first five deciles. The country comparison shows that Uganda, with 18.59, and Bangladesh with 16.46, are the only countries with a mean above the average index mean. The country with the lowest SFI value was Ivory Coast with a value of 6.34.

However, the results also suggest that evaluating the country indicator performances within the SFI is key to understanding financial inclusion within smallholder households. This was further confirmed by the expert interviews, which suggest that including indicators specific to the context of agriculture is necessary for developing a comprehensive understanding of access and usage of financial services by rural households.



**Discussion and Conclusion****100 – 250 words**

For smallholders, it is essential to have access to financial services to be able to make investments, enhance productivity and implement climate change adaptation measures. The lack of financial inclusion among smallholders in the global south makes it particularly important to target respective households with specific policy programs designed for this end. For those programs to be efficient, it is crucial to identify financially deprived smallholder households since regional and national interventions are not economically feasible and efficient. To this end, this study provides a valuable tool for identifying smallholder households that are the most financially excluded. The proposed index shows that financial inclusion among smallholders in developing countries can be measured by applying a data-driven multidimensional index consisting of several indicators. While the index values can be taken to compare single households with regard to their financial inclusion, and e.g., identify the most deprived households, the index values can further be used to make comparisons at the country level.