UNDERSTANDING IMPACTS OF FINANCIAL SERVICES ON WOMEN'S LIVES

A MIXED METHODS APPROACH IN KENYA

JEREMY BURKE | LILA RABINOVICH | SIMONE SCHANER

USC Dornsife
Center for Economic and Social Research

Abstract

We study how existing financial services affect the wellbeing of Kenyan women, and whether these impacts are gender transformative. Our approach combines insights from qualitative research conducted with 160 women in three regions of Kenya, as well as quantitative analysis of multiple rounds of three nationally representative data sets spanning 14 years. Qualitatively, women report that financial services confer substantial economic and non-economic benefits, including reduced dependence on others (namely husbands) and a greater sense of self. Informal, group-based services are reported to have substantial social benefits. Quantitatively, we leverage the rapid expansion of mobile money starting in 2007 to show that mobile money growth increased women's economic resilience, while shifting norms related to gender based violence and reallocating self-reported household decision-making power towards women.

Acknowledgements

We thank the IDRC for financial support; we also benefited from valuable feedback from Jemimah Njuki and Martha Melesse throughout the project. Our fieldwork would not have been possible without the dedication of many researchers at the Busara Center for Behavioral Economics, including Jennifer Adhiambo, Jane Atieno, Mary Chebet, Grace Kamau, Ariana Keyman, Anisha Singh and Mary Wawira. We owe a great debt of gratitude to Callan Corcoran for her tireless, expert work on the qualitative and quantitative data analyses.

Contents

1 Introduction

In recent years, low and middle income countries have made impressive progress expanding access to financial services. Growth has been driven by private sector innovations that drive down the cost of financial intermediation, as well as by concerted support of policy makers and donors, operating under the assumption that financial inclusion will spur economic growth and reduce poverty. This assumption is supported by a body of evidence showing that increasing access to the formal financial sector can increase savings, investment, and income (see Cull et al. (2014) for a review). There is also evidence that fostering growth of informal financial services, like village savings and loan associations (VSLAs), can improve economic outcomes for poor, vulnerable households (Beaman et al., 2014; Ksoll et al., 2016; Karlan et al., 2017).

While this evidence is encouraging, recent research suggests that some approaches may be leaving women behind. Despite overall progress towards financial inclusion, gender gaps in access and use of services have remained essentially unchanged in recent years (Demirguc-Kunt et al., 2018). Moreover, evidence suggests men often reap bigger benefits than women upon gaining access to formal financial services (Steinert et al., 2018). At the same time, the research community is increasingly recognizing that many studies fail to identify and measure the impact of financial inclusion on non-economic aspects of wellbeing that are most relevant to women (Glennerster et al., 2018). If the financial services sector is to truly support gender transformative change, policymakers, practitioners, and researchers alike require a more robust understanding of what types of financial services best meet women's needs, how these services impact women's lives, and what gaps remain.

This report presents the results of a mixed methods research program, which contributes to filling these evidence gaps. We situate our work in Kenya, where we first assess the extent to which the financial services industry has explicitly taken gender goals and objectives on board. We then examine which aspects of wellbeing are most important to low-income Kenyan women, drawing on their own words. Guided by these insights, we study how financial services – especially mobile money – impact a broad range of welfare outcomes for women. Our approach is holistic, touching on both economic and non-economic markers of women's wellbeing.

In the next section, we detail this approach and lay out a framework for gender transformative change, which guides our analysis. Section 3 reports the result of a market mapping exercise to characterize the extent to which financial service providers (FSPs) place an explicit focus on women in product delivery. With this background in mind, Section 4 describes the results of in-depth qualitative interviews that we conducted in three regions of Kenya to understand wellbeing and financial service use from women's perspectives. Section 5 presents our quantitative analysis, which uses large nationally-representative secondary datasets to examine how financial services impact women's lives. We bring the results of these research streams together and conclude in Section 6.

2 Framework and Approach

Our project is designed to address three central research questions:

1. How do Kenyan women define wellbeing and what aspects of wellbeing are most important to them? How can these concepts be measured?
2. How do different types of financial services impact measurable aspects of women's welfare? Do these impacts have scope to be gender transformative?
3. How do impacts for men compare to impacts for women? Which services differentially benefit one gender over the other?

Answering these questions requires a robust definition of "gender transformative impact". We adopt Vossenberg et al. (2017)'s definition of gender transformation as both a process and a set of outcomes that lead to "enhanced capabilities of poor women to improve their livelihoods and strengthened individual, institutional, and collective capacities to tackle adverse norms and rules that undermine shared control of resources and decision-making." The authors' definition further identifies key outcomes of gender-transformative financial inclusion to include enhanced women's empowerment, strengthened relationships and negotiation dynamics, and enabling institutions (both formal and informal). Drawing from and expanding upon Vossenberg et al. (2017), Table 1 below summarizes key dimensions of change, sub-categories, and provides example outcomes in each of the domains.

We segment enhanced female empowerment, strengthened relationships, and negotiation dynamics into four spheres. First, outcomes that indicate **economic wellbeing and empowerment** relate to both material wellbeing (e.g. household wealth) and women's participation in economic systems (labor supply, personal income). Second, indicators of **household wellbeing** are relational, and capture how empowered a woman is within her own home to take decisions that advance her and her family's welfare. Third, outcomes that fall under **personal wellbeing and empowerment** reflect a woman's internal welfare, including her mental health, sense of self worth, goals, and aspirations. Finally, **socio-political wellbeing and empowerment** are relational and refer to a woman's agency outside her household (e.g. in politics and in her community).

How might financial services – and more broadly the process of gender transformative finance – move these outcomes? Figure 1 illustrates an abbreviated theory of change: we posit that a woman's pursuit of wellbeing informs the financial needs and goals that she identifies, and that available financial products may help women identify these goals. (For example: a woman's definition of wellbeing is to have enough to eat and school her children. She identifies a financial goal, which is to accumulate enough capital to invest in an income generating activity.) Financial inclusion occurs when a woman signs up for a product that appears to have scope to meet her needs (e.g. a mobile savings account). *If* the product is sufficiently fit-for-purpose *and* the background environment is supportive (e.g. unexpected shocks do not derail her plans), a woman will meet her financial goal.

Table 1: Defining Outcomes of Gender Transformative Finance

Key Dimensions of Change	Sub-Categories
Enhanced Women's Empowerment and Strengthened Relationships/Negotiation Dynamics	**Economic Wellbeing and Empowerment** (Labor supply, economic resilience, household wealth) **Household Wellbeing and Empowerment** (Household decision-making power, autonomy, voice) **Personal Wellbeing and Empowerment** (Personal goals, mental health, elevated aspirations) **Socio-Political Wellbeing and Empowerment** (Social group decision-making power, political/community leadership)
Enabling Rules and Practices	**Formal Institutions, Policies, and Regulations** (Reduced inequalities that constrain business success, gender-sensitive financial products and services, rules and regulations that govern access to finance) **Informal Institutions, Socio-Cultural Norms** (Informal enablers allowing women to thrive in life/business, access and use of informal financial services, norms and beliefs about women's role)

Our conceptualization draws from, and expands upon, the Vossenberg et al. (2017) definition of gender-transformative finance.

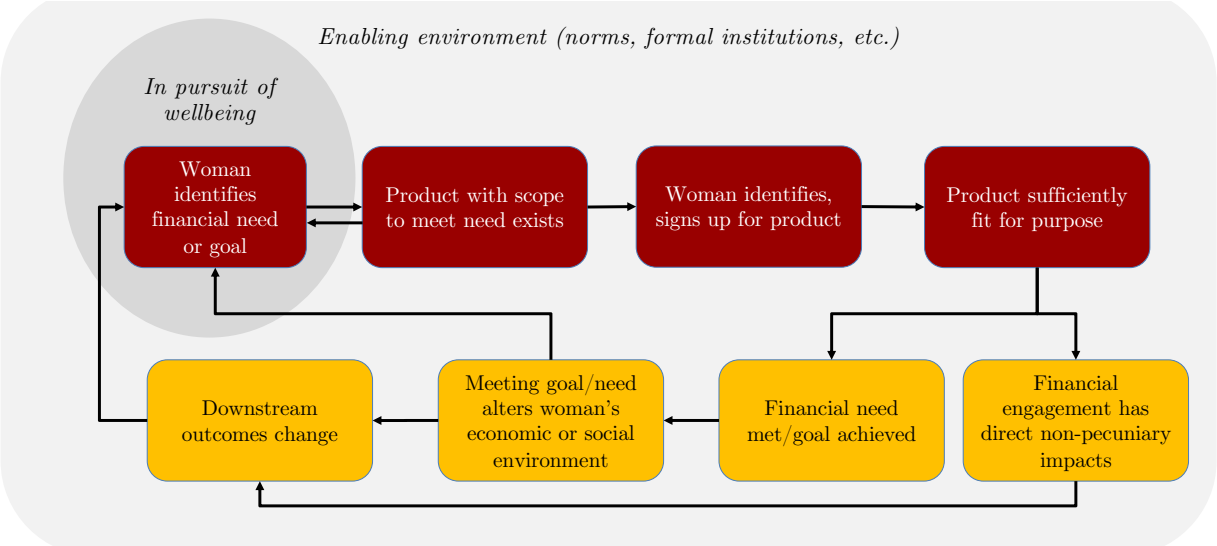
The financial change (in our example, business investment) is a primary outcome of the financial inclusion process and should directly reflect of the woman's welfare priorities. Upon meeting the goal, a woman's economic or social environment might change (e.g. she earns more income and is more financially resilient), which could spur her to identify new goals/needs – restarting the cycle. Changes in the economic or social environment could also catalyze change in downstream/secondary outcomes. E.g. earning more income means a woman has more say in how her household spends its money, or she may experience an increase in self worth. The figure also highlights that financial engagement may provide important non-pecuniary benefits (e.g. an improved social network or perceived self-efficacy), which could directly improve wellbeing even if financial goals are not achieved. This channel could be particularly important for products designed with an explicit gender or lens or set of gender goals in mind.

This theory of change suggests gender transformative impacts are more likely to be realized if (1) they are immediate goals embraced by women or (2) they are explicitly targeted by the financial service product. Gender transformative impact may also be realized indirectly, but this requires impacts on primary outcomes to be sufficiently powerful to catalyze further change

in the socioeconomic environment. Either way, thoughtful product design is key – if a woman does not see value in engaging with a product, she will not adopt. This also highlights the important of taking a woman-centered approach to understanding wellbeing: if a woman is not motivated explicitly by gender goals, she will not adopt a gender-focused product unless she sees another compelling use case.

With this theory of change in mind, we took a three-pronged approach to answering our research questions. First, to shed light on the extent to which gender-transformative *processes* are incorporated into the current Kenyan financial services landscape, we conducted a **market mapping** of over 4,000 formal and semi-formal Kenyan financial service providers (FSPs). Our aim was to identify the extent to which gender informs FSPs' approaches and products. Second, to understand how women define wellbeing and to develop nuanced narratives of why women adopt financial services and how these services contribute to wellbeing, we conducted original **qualitative research** with 160 women in three regions of Kenya. Finally, to assess the causal effect of financial services on women's and men's lives, we undertook a **quantitative analysis** that leverages data from three nationally representative surveys spanning 2003-2017.

Figure 1: Theory of Change: Financial Service Use and Pathways to Impact



Notes: Red boxes list inputs and outputs, gold boxes list outcomes and impacts.

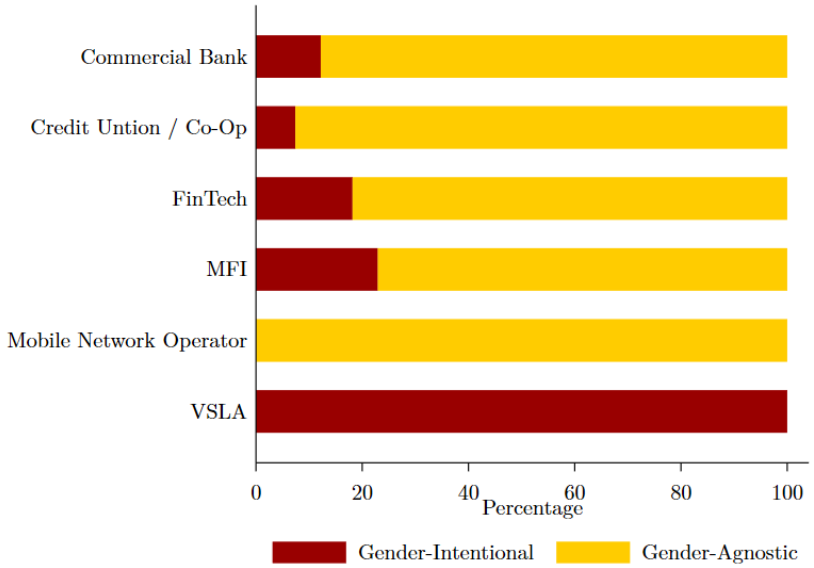
3 Market Mapping

We begin our analysis by briefly describing the results of our market mapping exercise. We provide additional detail for the interested reader in Appendix A.3.

We consulted formal and informal registries to compile a list of over 4,000 Kenyan financial services providers (including 4,110 saving and credit cooperatives (SACCOs), 86 microfinance institutions (MFIs), 55 commercial banks, 38 fintechs, and 6 mobile network operators). We were

able to gather detailed information on 363 of these intuitions online. Our ability to collect information varied substantially by provider type (see Appendix Table A8) – most commercial banks and mobile money providers have well-developed online presences, while many credit unions and cooperatives did not have any web presence at all.[1]

Figure 2: Gender Focus in Mapped Institutions



We classified institutions as "gender intentional" if they served majority female clients or had products specifically designed for or marketed to women. Figure 2 shows that the vast majority of mapped institutions, with the notable exception of VSLAs, do not display evidence of gender intentionality in their product offerings.

This is especially true when one accounts for market share: according to the 2017 Kenya Financial Inclusion Insights (FII) Survey, 81 percent of Kenyan women had a mobile money account, 27 percent of women had a formal bank account and just 4 percent of women belong to an MFI. Thus, most women who are financially included are being served by institutions with little-to-no gender focus. More than 40 percent of women belong to an informal saving/borrowing group or rotating savings and credit cooperative (ROSCA), both commonly referred to as *chamas* in Kenya. As we discuss in the next section, our qualitative analysis suggests that informal groups offer women benefits and amenities that are simply not available in the formal financial services market.

4 Qualitative Analysis

4.1 Introduction

Our qualitative research centered around three broad questions: (1) What does "wellbeing" mean to the women in our sample?, (2) How can financial services contribute to women's wellbeing?, and (3) Can financial services play a transformative role in women's lives? In order to answer these questions, we conducted focus groups and interviews with a sample of 160 women in three regions in Kenya.

[1] We considered fielding an online survey to institutions without a web presence, but most lacked contact information of any kind. Thus, our mapping largely reflects practices at larger, "mainstream" FSPs.

We took a bottom-up approach to answering our research questions, meaning we do not define wellbeing *a priori* as a set of outcomes to examine and measure. Rather, we asked our participants what wellbeing means to them, exploring in detail its constituent elements, and then strove to situate the contribution of financial inclusion to these broad goals and expectations. Similarly, a qualitative approach allows us to examine the ways in which financial engagement contributes to wellbeing from the ground up, in all its complexity and nuance, as perceived and experienced by women themselves.

We first outline our methodological approach to the qualitative data collection and subsequently describe our sample. Next, we present our results, organized around three broad themes: (1) defining wellbeing, (2) participation in financial services, and (3) impacts of engagement with financial services on women's lives. The final portion of this section ties the results together and discusses their broader implications.

4.2 Methodology and Data

Approach The qualitative data collection consisted of focus group discussions and in-depth, semi-structured interviews designed to provide nuanced answers to our research questions. We sampled women across the spectrum of financial services engagement, so that we could speak to a broad range of financial services – both formal and informal – that exist in women's portfolios.

Data collection proceeded in two complementary steps. Together with our field partner, the Busara Center for Behavioral Economics, we first conducted 10 focus group discussions (FGDs) – four in Nairobi, and three each in Kilifi and Siaya – with a purposively selected sample of adult women that used a range of financial products and services. The aim of the focus groups was to provide a baseline of themes for more detailed examination during the in-depth interviews. Specifically, with their focus on the shared emergence of meaning and narrative, the focus group discussions allowed us to develop a thorough taxonomy of wellbeing measures and types of financial service engagement. Insights from the FGDs informed a series of in-depth interviews (IDIs) with 90 women (30 per region of fieldwork), which captured nuanced narratives from women at the level of individual experience and perspective.

Setting To select participants, we focused on three regions in Kenya: Nairobi, Western Kenya, and Southeast Kenya. Within Western and Southeast Kenya, we selected a county to serve as the focus of our sampling. Average characteristics of the three counties of focus – Nairobi, Siaya, and Kilifi - are summarized in Table 2. We created a list of sublocations (a local administrative unit) within each county and used a script to randomly select three sublocations per county, which became our more granular study sites. The selected sites are shown on a map in Figure 3.

Recruitment We recruited participants in collaboration with our partner organization in the field, The Busara Center for Behavioral Economics. As a first step, Busara obtained the necessary approvals in each fieldwork location.[2] With assistance from a local guide in each site, Busara staff recruited participants door-to-door. Consent was obtained at that stage, and then

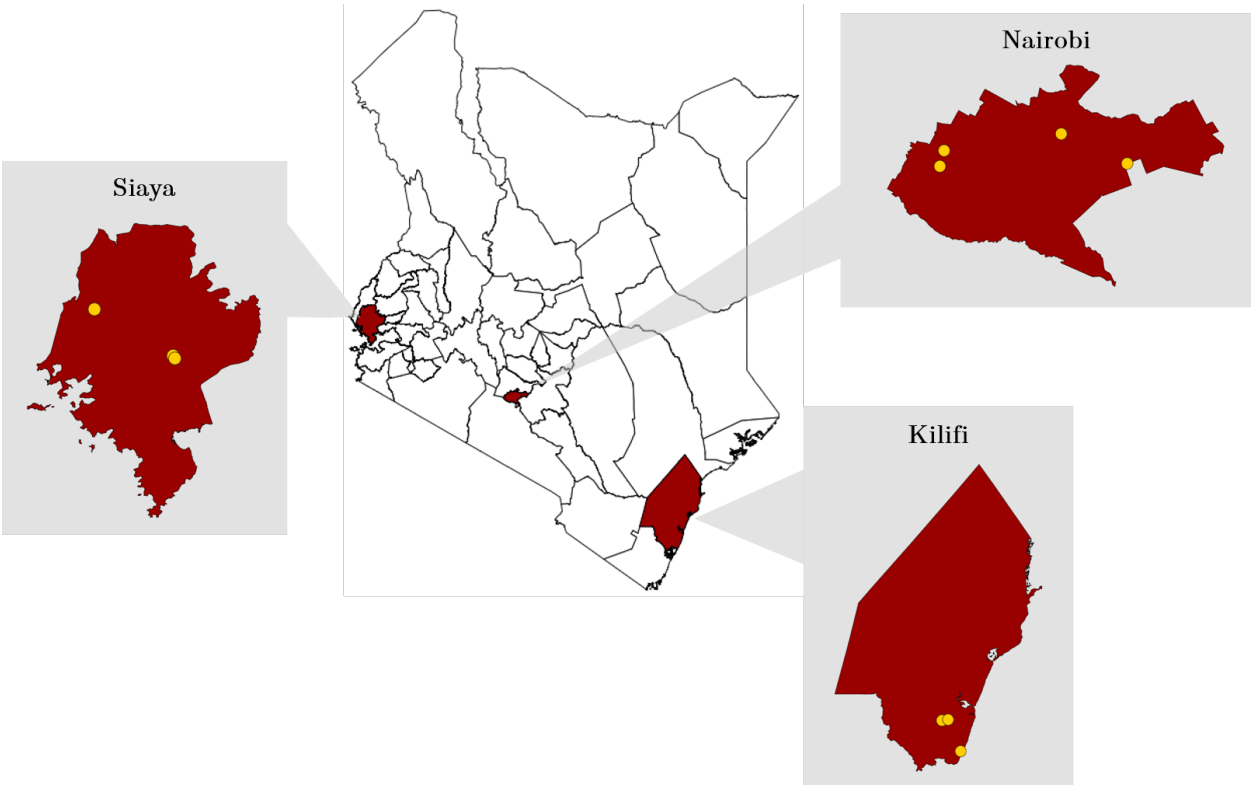
[2] Additionally, all study protocols and instruments were approved by IRBs at the Univeristy of Southern California and the Kenya Medical Research Institute.

Table 2: Descriptions of Counties Studied in Qualitative Analysis

	Kilifi	Nairobi	Siaya
Population	1,440,958	4,337,080	989,708
Average Household Size	4.8	2.9	3.9
Population Density (per sq km)	116	6,247	393
Completed Primary Education or Higher	86%	92%	89%
Employment Rate	87%	81%	95%
Female Employment Rate	90%	78%	96%
Farming Households	54%	2%	78%
Mobile Phone Ownership	39%	69%	44%

Notes: Statistics are pulled from the 2019 Kenyan Census, published by the Kenyan National Bureau of Statistics (KNBS). The mobile phone ownership share includes all individuals aged three and above.

Figure 3: Qualitative Study Sites



Qualitative analysis study sites, with selected counties highlighted in **red** and respondent townships marked with golden dots.

verbally again before each focus group and interview.[3] We also administered a pre-interview survey at the recruitment stage, which collected information on women's demographic characteristics and use of financial services.

Instruments For the focus groups, we designed a semi-structured discussion protocol to collect information on women's views of what constitutes wellbeing or "having a good life", and of experiences and perceived impacts of financial participation on their lives. The individual in-depth interviews were based on a similar semi-structured protocol.

The interviews explored the types of financial products and services women use and why, and delved deeply into women's own conceptualizations of the impacts of different financial channels. The interviews also mapped women's "user journeys" with products and services – i.e. how they came to adopt a product, and how their use and perceived impacts of the product evolved over time. We paid special attention to contextual factors that might support or inhibit transformative change, and to perceived differences in the financial engagement experiences of men and women.

Interviews proceeded in a systematic way where early questions were open-ended and later questions more specific; this was to avoid priming the respondent with the researchers' hypotheses. The open-ended portion of the interview is especially important as it provides an opportunity to learn entirely new or unexpected content for further scientific examination. All interviews were tape-recorded and transcribed for analysis.

Coding and Analysis We conducted a thematic analysis of the focus group transcripts first and then separately analyzed the interview transcripts following the same approach. For the analysis, we coded transcripts using a deductive approach, with codes generated from a review of the transcripts and the study's research questions and aims. This approach aimed to uncover the key themes and the most significant messages inherent in the raw data (Thomas, 2006). Where needed, the resulting codes were organized into broader, overarching categories. All transcripts were coded by two team members using the final version of the codebook. An initial sample of 10% of the transcripts was coded separately by two team members, and inter-coder reliability was assessed. Discrepancies were addressed until the reliability score exceeded 80% (Cohen's kappa score of 0.88 for the focus groups, and 0.98 for the interviews). We used qualitative data analysis software (Dedoose) to support the organization, review, and coding of the raw data.

Because the focus groups played an exploratory role aimed primarily to support the development of the in-depth interview instrument, our main analysis presented in this section primarily draws from the interview data.

4.3 Results

4.3.1 Sample Description

We intentionally sampled women across a range of financial service engagement, from a few women who engage with no services at all to others who manage their finances through a broad array of instruments. Appendix Table A1 reports demographic characteristics of FGD and

[3] Participants who failed or were unwilling to provide informed consent were excluded from the study. We also excluded participants who were not fluent in English or Swahili, or who were employed by financial institutions.

[4] The sample sizes in these tables are slightly smaller than the overall sample included in the IDIs because not all participants completed the pre-screening questionnaire.

IDI participants.[4] Women who completed the pre-interview survey are on average in their late 30s. Over 85% have completed primary education or higher, and around 90% own a mobile phone. Around two-thirds have their own business as a primary source of income.

4.3.2 Defining Wellbeing

In our focus groups and interviews, we explored women's own views about what wellbeing means to them, its critical components and necessary conditions. We used the terms "wellbeing" and "having a good life" interchangeably to ensure our participants understood what we meant by this relatively abstract concept. As part of these discussions, we provided participants with several avenues to explore the meaning of wellbeing. We asked them to define wellbeing and "having a good life" in their own words, to tell us about their goals and wishes for themselves and for their families, and to share with us what they hoped to accomplish in their lives in the next few years.[5]

Overwhelmingly, the women in our sample defined wellbeing by listing specific, tangible items or elements that they consider prerequisites to "a good life". The most commonly cited elements were:

- Having "enough" money
- Having a successful business
- Having enough to eat
- Schooling for children
- A good-quality home (built of durable material, with furnishings and appliances)
- Good health

For a majority of our participants, money was the primary requirement for wellbeing; most other elements (education, health, home, and even the ability to set up and maintain a good business) would flow from that:

> *If you have money, you are sure you will have a good life. I can build a house, buy house-stuffs and buy clothes and a plot with that money. Money is number one, even if I have a good house but I do not have money it will not be a good life* (Siaya).

Many women also reflected on more abstract elements of wellbeing, such as the idea of "peace" or "peace in the home" (which, from the discussion, we interpret to mean the opposite of stress, worry or discord). As one of our participants explained:

> *You might have money but you are faced with disease burden or many conflicts in the house [...] mostly if you are healthy and without conflict you have a good life* (Siaya).

In addition to the idea of "peace," women talked about achieving a degree of financial independence as a marker or condition for wellbeing:

> *[A good life means] ... getting things easily ... by not begging for things. Having your own cash without asking for anyone's money* (Siaya).

Our participants emphasised how financial independence from spouses contributes to their wellbeing. While many reported having a marriage

[5] A similar approach was recently utilized by CGAP in its own work on the impact of financial services. We echo their approach, which they described as follows: "Instead of starting with a financial service and asking, 'What does this service do for poor people?' we asked, 'What outcomes would poor people like to achieve?' Starting with this question led us to think more holistically about the goals low-income people set for themselves and whether or not financial services play a role in achieving them" (El-Zoghbi, 2019b).

in which consultation and joint decision-making were the norm, a significant proportion of the women we spoke to reported limited economic and social autonomy. Across the field sites, many of the women told us that they could not make important financial and other decisions (such as visiting parents) without asking permission from their husbands. Some also told us of significant tension in the household (including financial) due to husbands making decisions that do not benefit the household as a whole:

> *There is a project we had together. We bought a piece of plot. I thought we would invest together. I took a loan and told him I had mine. He was to get his so that we could invest. He told me he was not ready. In the process of waiting for him, he was just asking me for my money which I was giving him. I gave him up to 58,000. It reached a point [where] I stopped giving him money. I asked him to let me lay the foundation. He said the plot will be divided between the first wife's son and my son. I gave my consent for him to go and process the title deed. Only to realise he sold the plot without my consent* (Siaya).

It was clear from the data that some measure of economic security is central to our participants' view of what a good life entails. Ideas

that we may have expected to be mentioned *a priori* – such as happiness, spirituality/religion, gender equality, satisfying working lives, rewarding social lives, or community cohesion – were mentioned by a small minority of participants, if at all. Ideas around economic prosperity or growth, or political stability at the community or national level were practically non-existent in the discussions.

4.3.3 Experiences of Financial Service Engagement

The second broad theme of the interviews was participants' engagement and experiences with financial services. By financial services we mean the range of mechanisms and institutions with which women can interact in managing their money, from informal systems such as *chamas* (interpreted to encompass saving and loan groups, in all their forms) or money lenders, to semi-formal and formal services including SACCOs, MFIs, mobile money services, and formal commercial banks.

Discussion of service engagement took up the bulk of the time allocated for the interviews, because our participants had extensive experience with a range of services, and much to say about them. In what follows, we present findings from discussions about women's experiences of using a range of individual financial services, including chamas, commercial banks, mobile money, SACCOs, and MFIs.

Chamas Our participants used the term chama to encompass several informal group saving and lending approaches, including table banking (an arrangement whereby women "save" money in a collective pot that is lent out to members with interest) and ROSCAs, as well as "welfare" or "insurance" chamas (some of which purchase and distribute foodstuffs among its members, while others act as a sort of insurance for members' health and/or funerary expenses).[6]

Chamas accounted for a lot of our interview time, as they were, together with mobile money, the most widely used financial service among our participants. Women were overwhelmingly positive about chamas, and the role they play in their lives. The benefits of chamas relative to other saving and loan options were clear and consistent across interviewees and study sites. According to our participants, chamas are unique in that they offer access close to home, involve friends and community members, offer more favorable terms than SACCOs or MFIs and, critically, provide relatively accessible, immediate access to funds.

The latter point in particular was often the main advantage identified by our interviewees. Women expressed great appreciation for the ease of use of chamas – little or no paperwork or barriers to entry, frequent disbursements, manageable repayment terms, and amounts of cash they received at suitable intervals, and in amounts that enabled them to meet urgent and immediate needs of the household and family.

> *[I]n chama, you will get loans easily compared to SACCO or banks that will take you long before getting those loans and there are many and complicated procedures* (Kilifi).

Nevertheless, chamas were not without their disadvantages. A significant number of women

[6] In many of the interviews we were able to distinguish between the specifics of the chamas the women were reporting about. However, in some interviews this became difficult because women involved in more than one chama simultaneously (an extremely common finding) would discuss their experiences with all of them together, or mix comments about one or the other without specifying to which they were referring.

expressed worries about theft, typically by the treasurer (which was an issue when the chama did not have a formal bank account in which the cash was kept) or by an individual whose turn it was to receive the pot of cash. Indeed, some of the women had been in chamas where a treasurer or member "ran off" with the group's cash, which can be devastating to the group and its members.

> *Chama is good if you are given all your cash at once. [Chama is bad] when your cash is stolen. We live in the ghetto and nobody will care* (Nairobi).

Many also worried about the risk of unrepaid loans. The concern was about other members not paying the group back after receiving (and using) their loan, jeopardizing the cycle; participants also worried about their own ability to repay their portion. The latter issue was an especially significant source of concern with some women, in particular those who had actually been in the situation, as the obligation to not fail the group was felt strongly:

> *[Chama] has been stressful, because at times you have no money to repay your loans... if you don't plan yourself it is hard but if you have a plan you can pay* (Nairobi).

While these negative experiences came up frequently and were a real concern among our participants, it did not seem to deter them from using chamas, which remain, even with this disadvantage, one of the most convenient and fit-for-purpose financial services according to our sample. It did, however, lead many women to note that chamas might benefit from easier access to formal bank accounts in which money could be safely kept, and controlled by more than one chama member, for increased accountability. While some interviewees said at least one of their chamas had a bank account, a greater proportion told us that, in their chamas, the traditional system of treasurers taking the money home was still in place.

Mobile Services The vast majority of the women we spoke with reported using mobile money, the bulk of which was Safaricom's M-Pesa service. Our participants' views on M-Pesa were consistent across the sample: the system facilitates money transfers by making them faster and more secure, it is easy to use, and it has no barriers to entry.

> *[M-Pesa] is useful because I pay rent using M-Pesa, when I want to send someone money I can do it [...] few years ago, it was difficult to send money, transact and even to communicate, but now with phone and M-Pesa, you can easily transact with your account* (Nairobi).

A few participants also noted that mobile money services help them control their spending, since cash is not at hand – here perceived benefits included both self control and ability to keep money away from others:

> *[M-Pesa] helps with managing expenditure since I will have to move to withdraw the cash unlike having the money at hand where I can just use it* (Kilifi).

> *M-Pesa is good since no one can access your money apart from you.* (Siaya)

In addition to M-Pesa, a significant number of our interviewees used other mobile services for

both loans and savings (women often referred to these services as "M-Pesa" as well, since leading products are offered through the M-Pesa platform). Mobile loans were more common among our participants than mobile savings. Women who used these services typically argued that mobile loans helped them address short-term needs efficiently, as access to these loans is practically immediate.

> *I just had to take [a mobile] loan to meet my needs because I had nowhere to get money from... (Nairobi).*

In their narratives of their use of different financial services, it seemed as if many of the mobile loan users turned to these services to fill the gaps left by chama disbursement schedules. In our sample, most if not all of the women who reported using mobile money-based savings and loans did so in addition to, and not instead of, their involvement with chamas. According to our participants, many of the advantages of mobile loans and savings are similar to those of chamas: small amounts available with relatively manageable repayment terms, easy access, and low barriers to entry. Women's comments on the manageable repayment rates are striking given that these products often have very high implicit interest rates – what appears to be key is keeping payment amounts small.

We speculate from the data that there are at least two reasons mobile loan and savings services were used less frequently than chamas in our sample. First, unlike chamas, mobile services are a "solo" venture that does away with the support and social pressure to meet repayment obligations that chamas offer. Second, mobile saving and lending has less flexibility built in than chamas do, in particular around repayments.

> *[The chama] has been a nice experience. It makes one happy since you get surprised with cash when it is your turn to get the cash. But with M-Pesa, it hasn't been good. You are given a loan of 5,000 and you are expected to pay in a month* (Nairobi).

> *With M-Pesa I can take airtime on loan. I can get a cash loan but the problem is I can fail to pay. There is no much pressure with chama... I prefer chama compared to M-Pesa* (Nairobi).

Apart from repayment pressure, some current or past mobile loan users complained about high interest rates, deductions without warning, and difficulties trying to access their accounts (the latter of which may be related to technological literacy limitations amongst our sample).

Commercial Banks Across our sample, there appeared to be widespread interest in commercial banks, but they were often seen as out of reach. The expressed aims of increased engagement varied by county: women in Siaya and Kilifi often did not have bank accounts, and aspired to save with the bank. Respondents from Nairobi more frequently had bank accounts, but felt unable to procure large loans. Banks were perceived as a "safe" financial service across the board.

> *The bank is the best. Because it ensures money security* (Nairobi).

> *I really want to have a bank account to save for my kids' school fees* (Kilifi).

Among those currently unbanked, several reasons were reported for not engaging with com-

mercial banks. A fairly common notion among our unbanked participants in Siaya and Kilifi was that they do not have enough money to open an account. This is somewhat surprising, given that low-cost bank accounts have been available on the market for a number of years. In addition, women in Nairobi often held bank accounts to save, but expressed frustration at their (perceived) inability to procure bank loans, which require a steady business to demonstrate an ability to repay. It is unclear what amount of income these women believe is necessary to open an account in a commercial bank, but many felt their income was too low for them to qualify or to potentially benefit from it:

> *I have wished to open a bank account but with my situation I find it hard to open the account because whatever income I am making won't be enough to save in the bank. In case I open [an account] it will be dormant* (Kilifi).

Other barriers cited were physical distance to a bank branch, particularly in Siaya (although some in Kilifi and Siaya were aware of the presence of bank agents in the more remote areas), and a confusing process they did not understand well.

Among those who do report having bank accounts, many have opened them in response to incentives, such as employers paying via bank account. Several of our participants reported having bank accounts that they or their relatives had opened for them in the past but were currently dormant or empty:

> *[I stopped using a bank because] I did not have money to save [... at] the bank there are so many deductions and I stopped using it, I decided to just save in the phone* (Siaya).

Savings and Credit Cooperatives (SACCOs) We had few participants with any direct experience of SACCOs. Most women had not joined or considered joining one, though there was a small group of participants, particularly in the Nairobi area, who had joined a SACCO and had good experiences:

> *There was a person who came to my house and she told me to join a SACCO that will help me. [...] After some time, I decided to join it. I paid a fee and started to deposit some amount [... Money is kept] in the bank, but if you want a loan you communicate earlier then the officials will get it for you. [...] I get money to expand my business or even pay school fees* (Nairobi).

Another small group of participants had been interested in joining a SACCO but had not done it yet. In this group, a commonly cited obstacle was a lack of adequate funds, but other (typically logistical) barriers were mentioned:

> *I would like to join [name] SACCO because they can give you a lot of money in terms of loans. [I haven't joined because] I do not have adequate funds...* (Nairobi).

Microfinance Institutions (MFIs) While not many of our participants had ever had a SACCO membership, an even smaller number of women in our sample had any direct experience with MFIs. Those with any knowledge of or interaction with MFIs tended to view them negatively. In particular, interviewees were under the impression that the MFIs' handling of defaults was too strict given women's constraints:

> *[I know about an MFI] but I am afraid after how I saw them reclaiming their money from people in Muhoroni. Our neighbour once took off because of the loan from [name] MFI* (Siaya).

Even so, some women did find ways to put MFI loans to productive use:

> *I got a loan [from an MFI] and bought stuffs for my salon. I took it in January this year. For that loan, I took about 60,000 I paid some for school fees and the rest directed to my salon [... I have also been saving] in my account in [the MFI]* (Siaya).

4.3.4 A Patchwork of Financial Services

Much of the existing research has focused on people's experiences with individual financial products or services, such as MFIs or commercial banks (El-Zoghbi et al., 2019). There is a risk that, while important, these single product narratives miss important nuance.

Indeed, in interviews women described multi-layered engagement with a range of financial services, often using different services to meet different needs. Here, some of our findings are in line with the detailed work in Collins et al. (2009), which uses financial diaries to paint a rich picture of the economic lives of low-income households in Bangladesh, India, and South Africa.

In the narrative that emerged out of our qualitative data, women's engagement with multiple financial products and services is related to a number of things. First, women often have many somewhat discrete financial goals and priorities, such as paying school fees, starting or growing a business, making house repairs, and covering day to day expenses. Low and insecure

incomes, coupled with the availability of several formal and informal financial options, leads them to develop financial strategies involving different financial services and products to serve specific aims and meet particular needs. For example, one of our interviewees might report participating in one chama with the aim of using the money to pay school fees, in another chama with the aim of using the money to make improvements to her home, and then use a mobile loan to pay outstanding debt or smooth consumption of basic needs such as food:

> *The one I save in M-Pesa is for emergencies and boost my business. Maybe to buy household items or pay school fees. For the chama savings is for planning my goals. I got my contributions and I bought land at home with it* (Nairobi).

The use of multiple products for different uses relates to existing literature on goals and mental accounting (Shefrin and Thaler, 1988; Davies et al., 2009; Dupas and Robinson, 2013). The theory of mental accounting posits that individuals separately allocate money in different "mental accounts" to different purposes, and do not treat money as fungible across accounts; in practice, individuals often assign money in different financial services to different mental accounts. While we find evidence of this in our interviews, we were not able to discern common patterns relating specific services to specific purposes.[7]

While our participants often reported using different services for different purposes, they appeared to mainly engage with most of these services in order to borrow cash for consumption rather than to save or invest. The one exception is mobile money, which is typically used for making and receiving payments. According to their own narratives, when women save, as with a chama for instance, it is often a vehicle for borrowing. And when they borrow, it is more often than not with the aim of paying school fees, buying food, paying for medical care or improving the home. Investing in income-generating activities, such as agriculture or a shop, was less common, even though most of our participants reported aspiring to owning or expanding a business.

4.3.5 Impacts of Financial Service Engagement on Wellbeing

By nature, our qualitative research cannot assess the causal impacts of financial services on women's lives. However, we can extract suggestive evidence on the areas of likely impact.

In our interviews, the clearest evidence of impact relates to how financial services facilitate and smooth consumption. The emerging narrative among our participants was that when women can access certain financial services (in particular those that most closely fit their needs, i.e. are flexible, forgiving in terms of interest rates and repayment, are close to home, have members who are neighbors and friends), things are easier. It enables them to pay school fees, to buy food, cover emergency expenses, improve their homes, or support business activities.

> *[M-Pesa and the chama have improved my life], because if I get a problem, I have somewhere I can get money [...] if the money is in M-Pesa, it's safe and also it's your se-*

[7] A more troubling aspect of the patchwork of services we encountered relates to debt cycles: a number of our interviewees reported borrowing money from one source, typically mobile lending, to pay off debts incurred elsewhere, such as chamas. We return to debt cycles later on in the report.

cret and no one will know you have money. You can use it to pay school fees for your child. You can also send money to your child or even receive money from someone (Siaya).

[With the chama,] life is better, I sleep well and eat well. I have no stress [...] I can buy good clothes [...] I can now afford food (Siaya).

Closely entwined with the consumption element is increased financial independence and changed gender dynamics within the household. Many of our participants reported a lack of financial independence and autonomy in their households, which limited access to finance exacerbates. According to the women, prior to participating in chamas and other sources of finance they were dependent on their husbands (or other male authority figures) for most if not all household expenditures, and unable to start or sustain their own businesses. Access to money through these services provides a degree of independence that they did not have before, which makes it easier for them to support and make decisions for their families:

Before I joined a chama, I used to rely on my husband a lot but nowadays I can buy food if he doesn't. I don't have to rely on him all the time. I can also take loans when he does not have money (Siaya).

Several of our participants talked about how their own engagement with financial services changed their husbands' perceptions of them:

Initially, he [my husband] did not accept them [financial services] he was negative about it, but there was a time he was down financially and I gave him about 102,000, from that time he even started reminding me whether I have participated in Chama (Nairobi).

[My husband] sees me as an independent person now. I can afford my own items now (Nairobi).

[My husband] sees that I do not borrow him money, I normally do things on my own. And he is happy about the progress I make (Nairobi).

Nevertheless, independent access to finance could also create conflict with partners and other family members, and in many cases the women hide their financial activities from others:

[My husband] doesn't want me in any chama and he does not know I am in a chama (Nairobi).

Sometimes you may go and take a loan from the chama but later when I come with the money at home, my husband took money and misused that money, I kind of regretted why I was even taking that loan (Kilifi).

Another area that emerged as positively influenced by financial inclusion is women's social networks. In our qualitative research, participants discussed how financial inclusion, especially through group savings and loans, contributed to increased social interaction and engagement. We draw our definition of social engagement from the women's narratives themselves, to mean contact with neighbors and a decrease in social isolation, having access to support and advice from peers, and becoming a more active member in the community.

Women's Views of Men's Attitudes to Household Finances

A clear narrative emerged around women's perceptions of men's attitudes and behaviors towards the household's money. A number of the women in our study, especially in Nairobi and Kilifi, talked about the various ways in which their husbands – or "men" more generally – do not act responsibly and in the household's interest when it comes to money. A typical refrain was that men misuse money that is available to them, for instance, by spending it on "*their own entertainment*", including alcohol, women, and social activities. In sum, women felt that "*you cannot trust [men] with finances*" (Nairobi), even though, compared to women, men "*have many things that bring them money*" (Kilifi). Women, in contrast, will put money towards the needs of their children and the household as a whole. Many of our participants felt that being primarily responsible for meeting the household needs, with their often unreliable and insufficient financial resources, made their situation more stressful and challenging than it is for men, who do not face the same pressure to spend primarily to meet household needs.

Our interviewees suggested that informal groups in particular – likely because of their non-institutional structure – facilitate maintaining a robust social network that may have been elusive for women prior to their involvement with these groups:

> *It has improved my social life... because I can share different things with different people. I learn new things from the members. For instance, my husband beats me, I go to the chama and we talk about it. When we share such things, you realize you are not the only one going through the hardship.* (Nairobi).

> *If I have stress, there are members in the chama who talk you out of it. They talk to you on how to live with your husband and protect your marriage. We do help each other...* (Kilifi).

A striking finding was that women themselves associate their participation in group financial activities (particularly chamas) with increased social integration and contact and, in turn, with empowerment, learning, and personal growth:

> *I feel happy because the chamas have helped me. I learnt I can take loans and uplift my life. The women there did advise me on how to better my life* (Kilifi).

> *We have become good friends [... In the Chama] we talk about business because most of them are business women, they normally advise it and our elders advise us how we can live in our families without conflicts* (Siaya).

Self-efficacy and self-perception also emerged in our interviews as areas impacted by financial inclusion. First, as mentioned earlier, women in savings and loan groups frequently expressed

a sense of empowerment buoyed by group support. Women spoke in particular of how participation in the groups provide them with new ideas and lessons to deploy in the face of life challenges. Second, their self-perception and self-efficacy were improved through participation in financial services as it offered them independent access to money they could use at their discretion towards addressing family goals and meeting emerging needs:

> *When I joined a chama, my life changed... I am not useless. I have class now. You can't tell me I am down right now* (Nairobi).

> *[Joining a chama] has helped me in paying school fees, it has helped me and I no longer beg [...] it has changed the way I think and makes things easy for me; I can start a business and pay other things that I need [... it has removed shame from me] because now I look active and achieving things in life, I look hard-working now* (Kilifi).

> *[With the chama t]here are a lot of differences because now I can get a loan and solve my problems unlike before...* (Kilifi).

While the majority of our participants noted that using financial services, especially chamas, contributed significantly to their wellbeing, some of our participants noted that borrowing could have negative consequences. Women, especially in Nairobi, frequently reported stress regarding repayment, anxiety regarding the potential for asset repossession, and unannounced account deductions from mobile money lenders. A common narrative among our sample was about taking out loans to pay off existing debts, creating a situation they portrayed as a cycle of stress:

> *I can say that it is somehow making us miserable because of stress and depression... Sometimes you take a loan from the chama to pay for another loan somewhere else so the cycle does not end* (Nairobi).

> *[The mobile lender has] an office in Ruai whereby they come and assess your business and they give you money but the interest is very high and it's really draining me. I applied for 12,000 but they gave me 10,000, the interest is 2,000. I am hopeful that I will pay by next week, it's really draining me a lot* (Nairobi).

> *I would like [the bank] to have some patience with their clients. They will come and look at my business and if I requested the 20,000, they need to evaluate if my business can repay the loan. If it can't, they need to call me and tell me the amount they see my business can repay. Even the chama is giving me stress because if I fail to contribute the 3,000, I am fined 1,000. At least with the chama, I can talk with the members but with the bank, they will take it up with the law.* (Nairobi).

4.4 Discussion

The central questions motivating our qualitative research were (1) what does wellbeing mean

to the women in our sample, (2) how can financial services contribute to women's wellbeing, and (3) can financial services play a truly transformative role in women's lives. We conducted focus groups and individual interviews with a sample of 160 women in three regions in Kenya to explore these issues and draw conclusions based on the women's own experiences, perceptions and preferences.

We find that the women's understanding of what wellbeing means is inextricably linked with ideas of financial security and meeting the financial needs of their families. Notably, women highlighted having money, being able to feed their family and send their children to school, having a comfortable home, and having a successful business. Less commonly cited components of wellbeing were health, no stress, and a good marriage.

Our in-depth interviews clearly show that participation in financial services, both formal and informal, plays a critical role in the lives of the Kenyan women in our sample. Financial services, in the women's own telling, have a central role in supporting women to conduct the business of everyday life successfully. Particularly, financial services support them when they are flexible and easy to use, and when they provide immediate and secure access to cash and to savings. According to the women, chamas, mobile money and mobile lending and savings do this most effectively.

To the women, the main channel through which participation in financial services played a role in their wellbeing was by facilitating and smoothing consumption. This finding is in line

with other research on the impact of financial inclusion on consumption smoothing and dealing with shocks (Stewart et al., 2010; Gopalaswamy et al., 2016; Jack and Suri, 2014; Peters et al., 2016) and, more broadly, about the positive impact of mobile money on poverty rates especially for women (Jack and Suri, 2016; Lee, Morduch, Ravindran, Shonchoy, and Zaman, Lee et al.). In our research, the main finding is not so much that participation in financial services improves resilience – i.e. "stabilizing consumption despite shocks" (El-Zoghbi, 2019b) – but that it makes every day financial transactions easier and more predictable in the face of poverty and almost constant cash insecurity.

As described in previous sections, each product or service the women use has advantages and disadvantages – and when one service cannot meet all of their needs, they use others to fill the gaps. In the women's own narratives, there appears to be no perfect service or system, although chamas seem to be the closest to an ideal financial service according our sample (mobile money, ubiquitous and usable as it is, was also highly regarded, but it does not in itself meet women's need for cash in the same flexible way as chamas).

Previous discussions of financial services in women's lives have argued that "so far, there is little evidence that for some groups, especially women, formal financial services add sufficient value to shift people's use patterns" (El-Zoghbi, 2019a). Yet in our research, there are clear messages about the added value of formal services even as informal ones, especially chamas, meet so many of the women's needs. Unambiguously, women in our study highlighted the way in which digital payment services (most notably mobile money), are critical to facilitate timely, easy and secure every day transactions. While chamas were almost universally regarded as having several structural benefits, digital loan and saving services were also praised for their accessibility and simplicity, even as drawbacks to these services were also noted. We also note interest among our participants in commercial bank accounts either for individuals or for chamas, because of the greater security and accountability commercial banks can provide.

Yet the role of financial services in women's lives is not merely an economic one. Women told us of how different financial services enable them not just to meet their and their families needs, but that they also affect their household and familial relationship dynamics, cause and reduce stress, and provide valuable social connections.

Similar to the findings of other qualitative research (Brody et al., 2015; Peters et al., 2016), we find a common narrative about chamas, in particular, giving women access to a network of peers who, in addition to playing a financial role, enable sharing of experiences and advice about issues ranging from marriage to business development to money management. These networks were highly valued among our participants, many of whom highlighted that if not for the chama meetings, they would have more limited opportunity to socialize and learn from peers.

Moreover, immediate and direct access to cash that is under their control, especially through mobile services and chamas, was central to women's perception of the impact of financial services to their wellbeing. In addition, this independent access to financial resources often enabled them to bypass male authority in decisions about consumption and spending. Women valued the opportunity to pay school fees, buy

food, or start a business without having to ask husbands (or other family members) for money and permission. Our findings about independent access to and control over financial resources, as well as their social impact on women, echo those of a meta-analysis of "self help group" programs in South Asia, which finds increased independence in financial decision-making, group solidarity-building and social networks, and respect gained within the household and the community among women who participate in such programs (Brody et al., 2015).

Finally, financial service use also changed the way the women viewed themselves: they felt participation in financial services made them more effective providers for their family, that it gave them new ideas about how to manage their money, and that it empowered them to make their own decisions. This is akin to the concept of self-efficacy in behavioral psychology: an individual's belief that they can accomplish a given task and cope with emerging challenges (Bandura, 2006). While qualitative research cannot in itself ascertain whether financial participation improves self-efficacy, our research suggests that it may not just be a pre-condition or a mediating factor for financial inclusion; self-efficacy can be an outcome of financial inclusion.

5 Quantitative Analysis

5.1 Descriptive Analysis

5.1.1 Datasets and Key Outcomes

The aim of our quantitative analysis is to draw on large secondary datasets to paint a picture of how different financial services impact women's lives. To do this, we begin with a descriptive analysis, which explores correlations between financial service use and a broad range of socioeconomic outcomes. We use two well-known nationally representative datasets that track financial services use in Kenya: the Financial Sector Deepening (FSD) FinAccess Household Survey (fielded in 2006, 2009, 2013, and 2015) and the Financial Inclusion Insights (FII) Household Survey (fielded annually between 2013-2017). Both datasets measure a wide range of service use, including products from banks, mobile money operators, SACCOs, MFIs, insurance providers, and informal services.

We use the mapping in Table 1 to assess the extent to which the surveys can measure key outcomes related to gender-transformative change. In terms of **economic wellbeing and empowerment**, we begin by classifying respondents according to their primary source of income in the FSD: wage work (both casual and regular), agriculture, non-agricultural self-employment, and other sources (mostly reliance on transfers from family and friends – a sign of economic vulnerability).[8] Women in our qualitative research emphasized the ways in which financial services made managing tight budgets "easier". To get at this concept, the FII survey tracks perceived changes in the respondent's financial situation, financial security, and financial satisfaction, which we aggregate into a *financial wellbeing index*. The FSD survey administers a battery of objective questions that measure economic security; we code a woman as being "economically resilient" if she reports never going without food, shelter, or needed medicine/medical treatment

[8] This category also includes a very small share of individuals who depend on income from e.g. pensions or rentals.

in the past year. Appendix Table A3 provides detail on how these and other indices we use are constructed and interpreted.

In terms of **household empowerment/wellbeing**, the FII tracks women's reported involvement in household decision-making including spending household income, purchases for basic needs, and bigger purchases. The survey also records a woman's reported influence on household decisions and her willingness to voice her disagreement during decision-making. We classify a woman has having overall decision agency if she reports agency in each of these domains. The FSD tracks a simpler measure, which is whether the woman reports being involved in household decisions (we consider a woman involved if she reports deciding alone or jointly with others).[9]

In terms of **personal empowerment/wellbeing**, the FII tracks subjective measures, including happiness, life satisfaction, and freedom from worry, which we aggregate into a single general wellbeing index. Finally the FSD asks respondents about perceived safety from crime in their home – this indicator is difficult to classify, as it likely reflects a mix of economic, household, and broader social factors. For analysis purposes, we create an indicator for whether a woman reports never feeling unsafe from crime in her home.

These indicators reflect available survey data: we acknowledge that our measures do not capture many important aspects of wellbeing and empowerment that are part of gender-transformative change. For example, apart from membership in group-based financial services, neither survey tracks outcomes related to **socio-political empowerment**, such as political/community leadership or strength of social networks. The datasets are also ill-suited to measure changes in social norms and more formal enabling rules and practices, which typically evolve at the community and institutional level. Finally, we lack data on some key concepts that emerged in our qualitative interviews, such as self efficacy and dependency. Even so, the indicators do touch on many important aspects of women's lives that extend well beyond basic financial outcomes like service use and employment.

5.1.2 Relationships Between Financial Service Use and Key Outcomes

We focus on the latest waves of the FSD (2015) and FII (2017) data for the descriptive analysis. Before beginning, it is important to highlight the challenge of *selection bias*. Specifically, women who use financial services differ from women who do not in many ways that are unrelated to the direct effect of the service. To make this concrete, Table 3 uses 2015 FSD data to document differences in characteristics of users and non-users of banks, mobile money, and informal services (which include chamas and other informal arrangements). Women who use formal financial services (banks and mobile money) are much more likely to reside in urban areas and are better educated: 80 percent of women who use banks have completed primary education or higher while only 45 percent of non-bank account owners report the same. Users of informal services are also substantially different from non-users; they live in smaller households, are better educated, and more likely to be currently partnered.

[9]The qualitative interviews frequently referenced "peace" in the home, which the FII and FSD surveys do not track. In the next section, we use the Demographic and Health Survey to examine impacts on gender-based violence.

Table 3: Differences in Characteristics of Users and Non-Users of Financial Services

	Bank			Mobile Money			Informal		
	Non-Users	Users	Diff-erence	Non-Users	Users	Diff-erence	Non-Users	Users	Diff-erence
Age	36.75	36.20	-0.55	38.08	35.75	-2.32	35.98	37.19	1.21
	[17.08]	[13.00]	(0.51)	[19.91]	[13.48]	(0.57)	[18.06]	[14.36]	(0.50)
Household Size	4.76	3.97	-0.79	5.04	4.30	-0.74	4.76	4.42	-0.34
	[2.37]	[2.15]	(0.09)	[2.54]	[2.17]	(0.09)	[2.48]	[2.20]	(0.08)
Urban	0.37	0.65	0.28	0.30	0.52	0.22	0.42	0.46	0.04
	[0.48]	[0.48]	(0.02)	[0.46]	[0.50]	(0.02)	[0.49]	[0.50]	(0.02)
Never Partnered	0.17	0.22	0.04	0.18	0.18	0.00	0.23	0.14	-0.09
	[0.38]	[0.41]	(0.02)	[0.38]	[0.39]	(0.01)	[0.42]	[0.35]	(0.01)
Currently Partnered	0.62	0.60	-0.02	0.58	0.64	0.06	0.56	0.67	0.12
	[0.49]	[0.49]	(0.02)	[0.49]	[0.48]	(0.02)	[0.50]	[0.47]	(0.02)
Previously Partnered	0.21	0.18	-0.03	0.24	0.18	-0.06	0.22	0.19	-0.03
	[0.41]	[0.38]	(0.01)	[0.43]	[0.38]	(0.01)	[0.41]	[0.39]	(0.01)
Completed Primary Education or Higher	0.45	0.80	0.35	0.28	0.69	0.41	0.42	0.64	0.22
	[0.50]	[0.40]	(0.02)	[0.45]	[0.46]	(0.02)	[0.49]	[0.48]	(0.02)
Completed Secondary Education or Higher	0.12	0.52	0.39	0.05	0.31	0.27	0.16	0.26	0.10
	[0.33]	[0.50]	(0.02)	[0.21]	[0.46]	(0.01)	[0.37]	[0.44]	(0.01)
Observations	3709	1142	4851	1751	3100	4851	2208	2643	4851

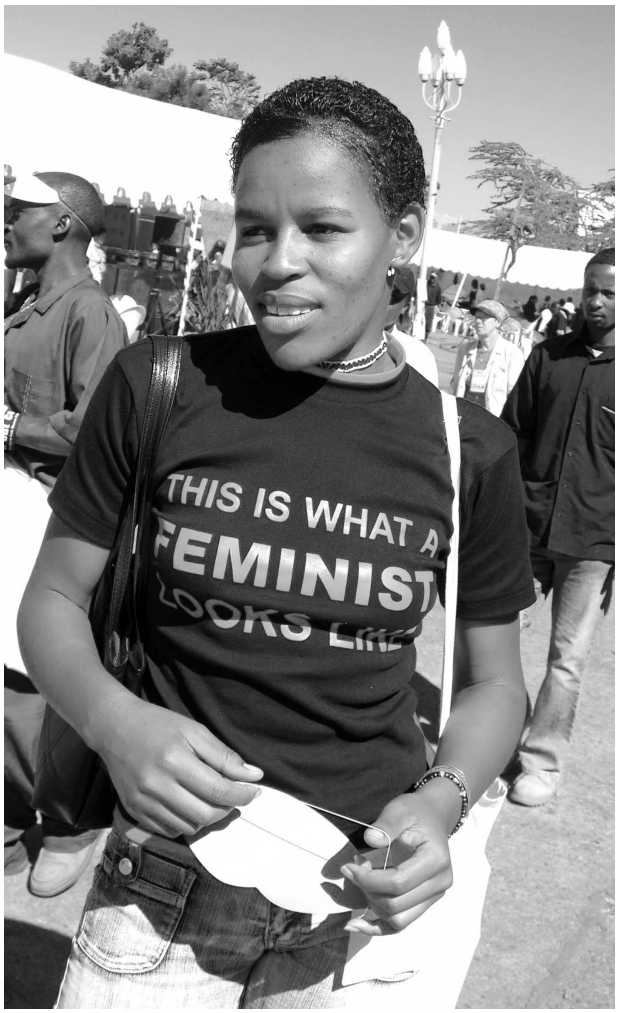
Notes: Estimates weighted to be nationally representative. Standard errors in parentheses, standard deviations in brackets.

This means we cannot simply attribute differences in empowerment between (e.g.) mobile money users and non-users to the effect of the service: using mobile money may well be empowering, but it might also be that more empowered women adopt in the first place. We take two approaches to addressing this challenge. In this subsection, we use regression analysis to account for observable differences in demographic characteristics of users and non-users. In the next subsection, we exploit the rapid, geographically uneven expansion in mobile money in a quasi-experimental approach.

Using individuals observed in the latest waves of the FSD and FII, we use ordinary least squares regression to explore relationships between financial service use and the well-being/empowerment measures discussed above. We first regress each outcome on financial service use in isolation. This tells us the raw difference between users and non-users of the service. Then we introduce controls for demographic characteristics and geography.[10] Results from these specifications tell us the difference in outcomes between services users and non-users, *holding additional control variables constant.* If point estimates change a great deal when we add these controls, this suggests selection bias may be an important issue. We graph estimates for both men and women, to explore how correlations between account use and wellbeing vary by gender.

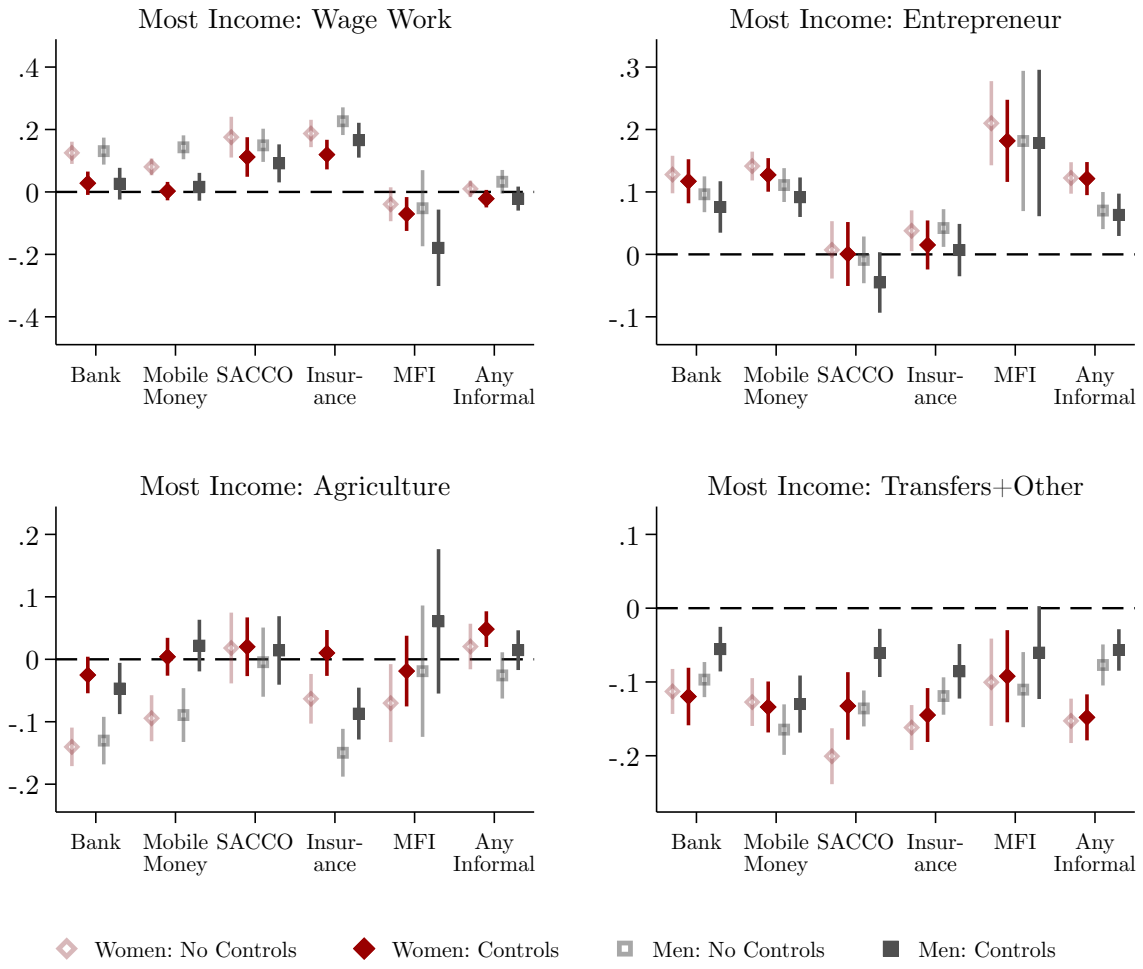
Figure 4 graphs correlations between account use and primary income source in the FSD data. Hollow diamonds and squares plot the raw differences between account users and non-users for women and men respectively; solid diamonds and squares show regression-adjusted differences. Whiskers indicate 95 percent confidence intervals.

The unadjusted estimates in the wage work panel show that, for example, both men and women who use banks are around 13 percentage points more likely to report earning most of their income from wage work. Overall, both women and men who use banks and mobile money are more likely to earn income from wage work and entrepreneurship; SACCO users are more likely



[10] To control for geography we include division fixed effects. The division is an old administrative below the district, which was used before Kenya migrated to the county system. Demographic controls include urbanicity, age, an indicator for whether the head of household is female, household size, education, and marital status.

Figure 4: Raw and Regression-Adjusted Differences in Employment Outcomes Between Service Users and Non-Users (FSD Data)

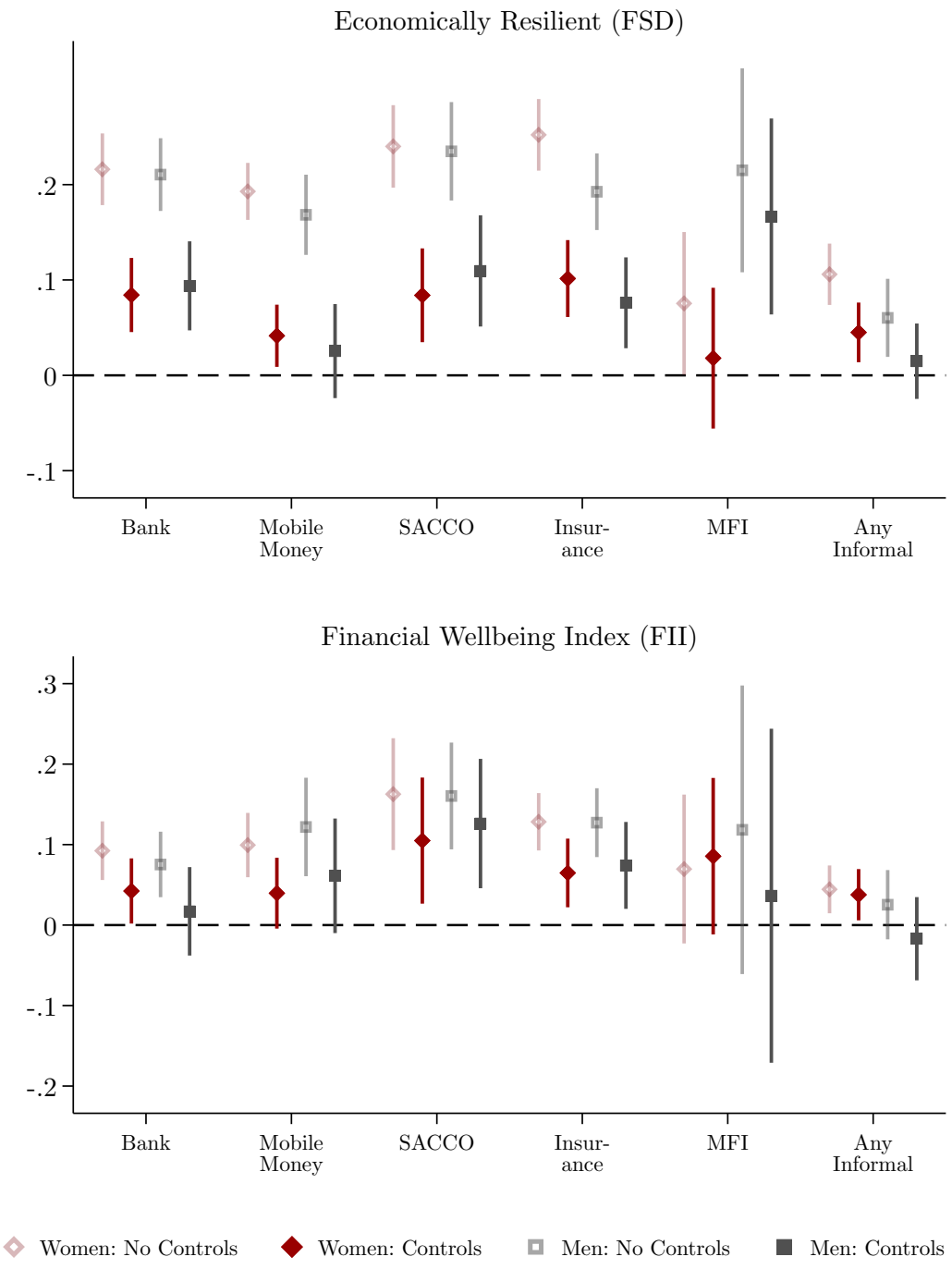


Notes: All estimates use FSD 2015 data; whiskers graph 95 percent confidence intervals based on robust standard errors clustered at the division level. Regression controls include urbanicity, age, female head-of-household, household size, education level (none, partial / complete primary, partial / complete secondary, and higher education), partnership status (never, currently, or previously partnered), and division fixed effects.

to earn wage income; and MFI and informal service users are more likely to be entrepreneurs.

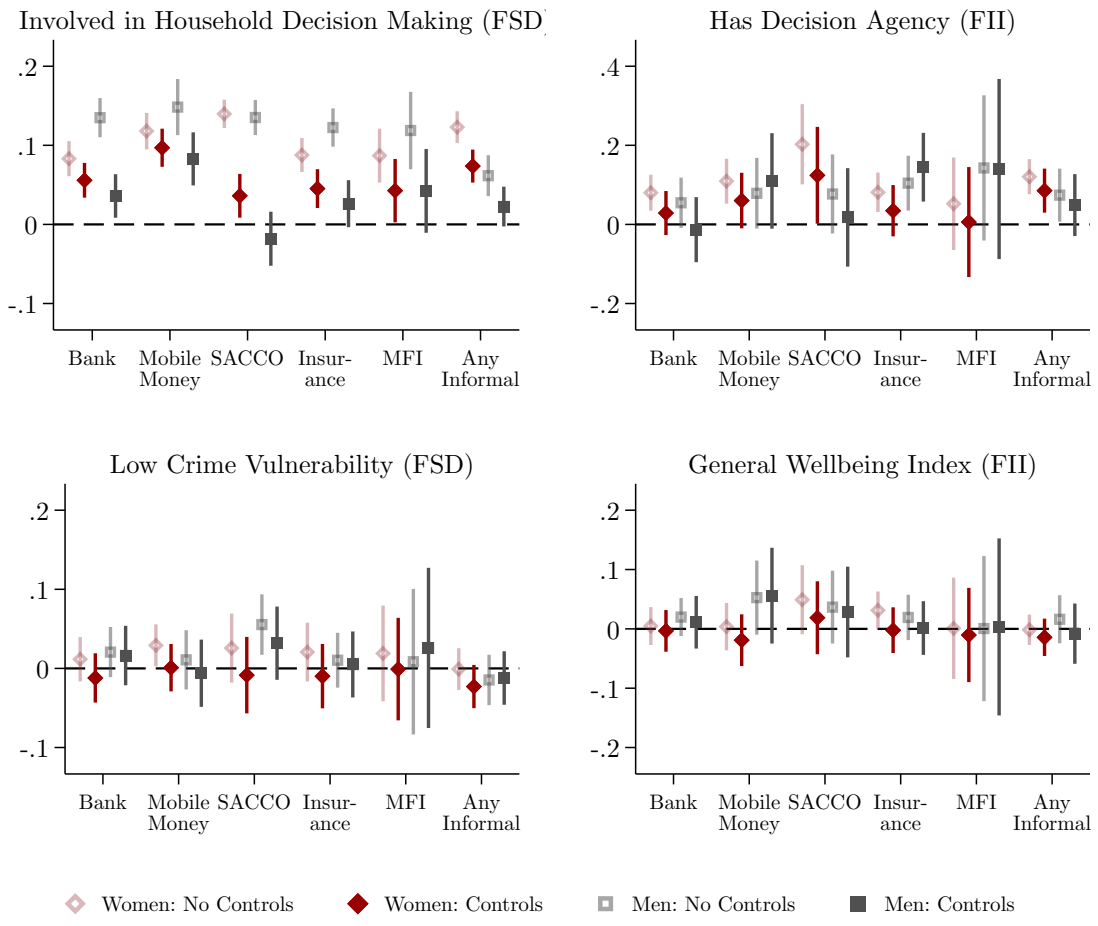
Strikingly, users of *all* types of services are significantly less likely to depend on transfers/other income sources – thus, users of financial services of all forms are more economically independent. We also see that differences in wage work and agriculture between users and non-users tend to attenuate (become less stark) after including controls, while differences in entrepreneurship and transfer receipt are relatively robust. Finally, we see that patterns for men and women are quite similar, though the associations between informal service use and entrepreneurship and transfer receipt are larger for women. Figure 5 examines whether these differences in income source translate into differences in broader measures of economic wellbeing.

Figure 5: Raw and Regression-Adjusted Differences in Economic Wellbeing Between Service Users and Non-Users



Notes: Whiskers graph 95 percent confidence intervals based on standard errors clustered at the division level. Regression controls include urbanicity, age, female head-of-household, household size, education level (none, partial / complete primary, partial / complete secondary, and higher education), partnership status (never, currently, or previously partnered), and division fixed effects.

Figure 6: Raw and Regression-Adjusted Differences in Household and Social Wellbeing Between Service Users and Non-Users



Notes: Whiskers graph 95 percent confidence intervals based on standard errors clustered at the division level. Regression controls include urbanicity, age, female head-of-household, household size, education level (none, partial / complete primary, partial / complete secondary, and higher education), partnership status (never, currently, or previously partnered), and division fixed effects.

The top panel of the figure shows that nearly all types of service use are associated with greater economic resilience per the FSD.[11] Raw differences are often quite large, with both male and female bank and SACCO users over 20 percentage points more likely to be resilient. Estimates attenuate substantially once we add controls, with differences for MFI use no longer significant for women, and mobile money and informal service use no longer significant for men. The bottom panel considers the subjective financial wellbeing index we construct using the FII; here, we see fewer significant differences, especially after including controls – though both male and

[11] We classify an individual as economically resilient if s/he reports never going without food, shelter, and medical care in the past year.

[12] The fact that we see differences in objective, but not subjective measures of wellbeing could reflect a phenomenon

female SACCO users attain notably higher levels of wellbeing even after regression adjustment.[12]

Finally, Figure 6 turns to measures of household and social wellbeing. The upper left panel studies correlations with self-reported involvement in decision-making in the FSD. Most types of service use are associated with significantly more involvement, both for men and women. While some estimates (e.g. for SACCOs) attenuate after accounting for controls, we still see significant differences especially with respect to mobile money use and women's informal service use. There are fewer differences in the FII-based indicator for having decision agency, though again

Table 4: Correlation of Account Use with Downstream Outcomes: Results for Women

	Bank	Mobile Money	SACCO	Insurance	MFI	Informal
FSD						
Most Income: Wage Work	0.028	0.003	0.112***	0.120***	-0.071**	-0.022
	(0.019)	(0.015)	(0.032)	(0.024)	(0.028)	(0.014)
Most Income: Entrepreneur	0.117***	0.127***	0.001	0.015	0.182***	0.121***
	(0.018)	(0.014)	(0.026)	(0.020)	(0.033)	(0.013)
Most Income: Agriculture	-0.025*	0.004	0.020	0.010	-0.019	0.048***
	(0.015)	(0.015)	(0.024)	(0.019)	(0.029)	(0.015)
Most Income: Transfers+Other	-0.120***	-0.134***	-0.133***	-0.145***	-0.092***	-0.148***
	(0.020)	(0.018)	(0.023)	(0.019)	(0.032)	(0.016)
Economically Resilient	0.084***	0.042**	0.084***	0.101***	0.018	0.045***
	(0.020)	(0.017)	(0.025)	(0.020)	(0.038)	(0.016)
Involved in household decision making	0.056***	0.097***	0.036**	0.045***	0.043**	0.074***
	(0.011)	(0.012)	(0.014)	(0.012)	(0.020)	(0.011)
Low Crime Vulnerability	-0.012	0.001	-0.009	-0.010	-0.001	-0.023
	(0.016)	(0.015)	(0.025)	(0.021)	(0.033)	(0.014)
Observations	4774	4774	4774	4774	4774	4774
FII						
Financial Wellbeing Index	0.042**	0.040*	0.105***	0.065***	0.086*	0.038**
	(0.021)	(0.022)	(0.040)	(0.022)	(0.049)	(0.016)
Has Decision Agency	0.029	0.060*	0.124**	0.035	0.006	0.085***
	(0.028)	(0.036)	(0.062)	(0.033)	(0.071)	(0.028)
General Wellbeing Index	-0.003	-0.019	0.019	-0.002	-0.010	-0.014
	(0.018)	(0.022)	(0.031)	(0.020)	(0.040)	(0.016)
Observations	1909	1909	1909	1909	1909	1909

Notes: Robust standard errors clustered at the division level in parentheses. This table shows results of regressions of key outcomes of interest on indicators for financial service use. Additional controls include urbanicity, age, female head-of-household, household size, education level (none, partial / complete primary, partial / complete secondary, and higher education), partnership status (never, currently, or previously partnered), and division fixed effects. *, **, and *** denote statistical significance at the 10, 5, and 1 percent levels respectively.

called reference dependent preferences (Kőszegi and Rabin, 2006): the idea is that individuals' subjective wellbeing is reflects a comparison to a "reference point", which could shift as people e.g. become wealthier.

female users of mobile money, SACCOs, and informal services have significantly more agency even after accounting for controls. In contrast, the bottom row of Figure 6 shows that there are limited associations with social wellbeing as measured by perceived vulnerability to crime in the FSD and the general wellbeing index in the FII.

Table 4 recaps point estimates (with controls) for women; Appendix Table A5 reports results for men. Taken together, the correlational analysis suggests that financial service use is robustly related to economic activity (especially entrepreneurship and a lack of reliance on transfers), which translates into significant differences in overall economic wellbeing, as captured by measures in both the FII and FSD. Moreover, both male and especially female users of financial services report significantly more household empowerment – particularly for mobile money, SACCO, and informal services. What is less clear is whether this translates into broader changes in wellbeing, as measured through vulnerability to crime (FSD) and general life satisfaction (FII). We see no significant correlation between account use and these outcomes among women or men.

It is important to note, however, that *these relationships do not necessarily reflect the causal effect of different financial services.* The fact that most estimates attenuate towards zero (sometimes quite substantially) when we control for background characteristics suggests that selection bias is a real concern. To make progress on this front, we need to isolate "quasi-experimental" variation in access to financial services. While this is not possible for all types of services, recent rapid expansion in access to mobile money offers the type of variation we require. We describe this approach, which builds on earlier work by Jack and Suri (2016), in detail in the next subsection.

5.2 Quasi-Experimental Analysis

5.2.1 Conceptual Approach

Figure 7 shows how mobile money agents rapidly proliferated across Kenya between 2006 and 2015.[13] This opens up the possibility of using a "differences-in-differences" style approach to estimate the effect of expanded access to financial services. Our analysis rests on the assumption that *absent expansion in access to finance, trends in women's socioeconomic outcomes would have been the same in high- and low-mobile money growth areas.*[14]

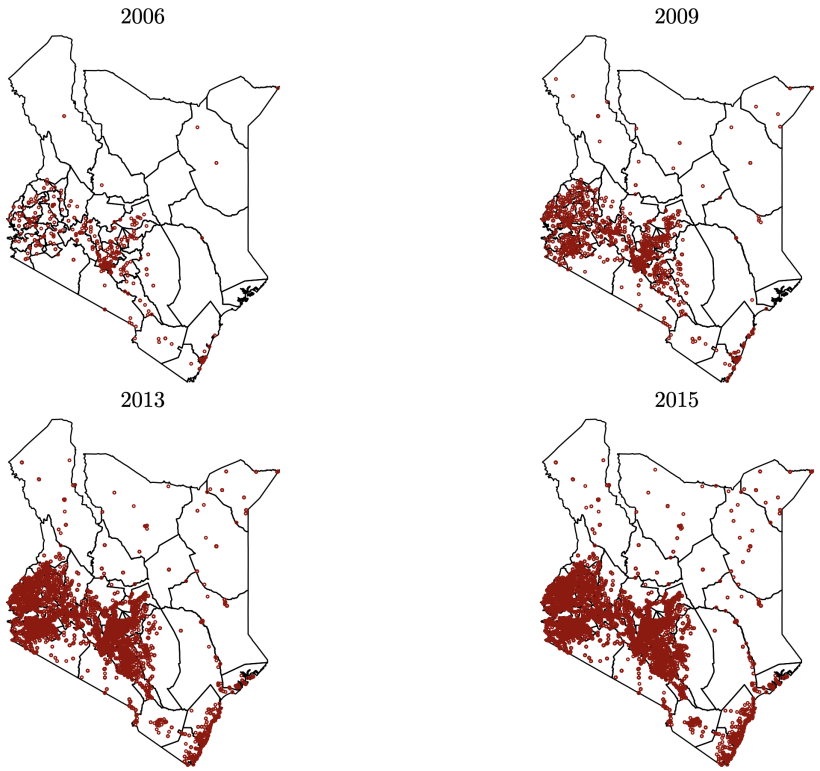
Before proceeding, it is important to discuss what a differences-in-differences analysis can and cannot tell us: first, since we compare changes in outcomes based on geography, we estimate the impact of *expanded access to mobile money*, but not the impact of *actual use of the service.* While this has clear limitations, it also has advantages, especially if one is interested in estimating broad-based effects: for example expanding access to mobile money could impact the lives of both users and non-users through spillover and local economy-wide effects.

Second, the assumption that high- and low-growth areas were on parallel trajectories prior to Kenya's expansion in financial services need not be satisfied. This assumption would be violated, for example, if mobile money operators invested first in areas that were on higher

[13] Kenya's first mobile money service, M-PESA, was not launched until Spring 2007. The mobile money outlets plotted on the 2006 map are likely outlets that were providing other services in 2006, or outlets that mis-reported opening dates.

[14] This is often referred to as the "parallel trends" assumption in the econometrics literature.

Figure 7: Growth in Mobile Money Agents



Growth in mobile money agents during FSD years using FSD-Kenya's 2015 FinAccess geospatial mapping. Outlets are represented by maroon circles. Changes over time were calculated using outlet open dates. A comparison of this retrospective measure of growth with observed outlets in 2013 resulted in a correlation greater than 0.75 for almost all locations.

economic growth trajectories. To address this concern, we focus on a period where growth was arguably closer to "random". Jack and Suri (2014) and Jack and Suri (2016) provide evidence that the expansion in mobile money agents up to 2010 was not systematically correlated with initial household conditions. We follow their approach and focus on expansion of mobile money outlets between 2007 and 2010.

5.2.2 Data and Tests of Key Assumptions

Measuring Expanded Financial Access To measure access to financial services, we leverage geocoded financial outlet data from FSD Kenya's FinAccess geospatial mapping. This dataset has the GPS coordinates of nearly 100,000 financial access points (including mobile money agents, banks, bank agents, SACCOs, and MFI

[15] A limitation of these data (and our approach) is that they omit information on financial access points that were in existence in previous years, yet ceased operations prior to the mapping. To assess the magnitude of this bias, we compare a retrospective 2013 financial service provider landscape based on the 2015 mapping with an earlier geospatial mapping conducted by FSD Kenya in 2013. Our retrospective measure of outlet availability is highly correlated with the 2013 geospatial mapping – the correlation is greater than 0.75 in almost all locations. Though highly correlated, our retrospective construction still contains error. Measurement error often attenuates results, though one worry is that constructing a growth measure based on outlets that survived until 2015 may undo some of the "randomness" in expansion exploited by others. This is one reason we focus on a differences-in-differences

branches) across the country as of 2015.[15] Critically, the dataset also records when an outlet opened. We assigned these coordinates to Kenyan sub-locations. The sub-location is the smallest administrative unit we have access to in the FSD data and lets us construct a localized access measure: our 2015 base map has over 6,600 sub-locations, with a median area of 16 km^2 and an average area of 88 km^2. We then merged sub-location-level population estimates from 2006 to the map to create measures of outlets per 1,000 people in each sub-location and year from 2000 to 2015. To fully exploit the variation in outlet expansion, our primary measure of 2007-2010 growth is the change in the number of outlets per 1,000 between these years.[16]

Testing for Pre-Trends Ideally, we would have multiple years of survey data prior to 2007, which we could use to assess whether high- and low-growth sub-locations were indeed on similar trajectories in terms of key outcomes. While we lack this data, we can create sub-location-level estimates of access to other financial services from 2000 to 2015 using the FSD geospatial mapping. Figure A1 in the Appendix documents that there is little evidence of differential trends prior to 2007, though access to banking outlets expands in higher mobile money growth areas in the post-mobile-money era, especially following 2010.[17] This post-growth expansion is not a threat to the validity of our estimates: rather, this points to an effect of mobile money on local financial services markets (e.g. a deeper mobile money agent network could have facilitated the growth of banking agents). It is, however, important to keep in mind that these sort of spillover effects are embedded in our differences-in-differences estimates.

Assembling Outcome Data Our analysis draws on two datasets that span the pre- and post-mobile money periods. The first is the FSD household survey that we used in the observational analysis. We use information on district, division, location, and sub-location name to create a crosswalk that assigns all respondents to a sub-location on our 2015 base map. As discussed earlier, this dataset has rich information on financial service use and income sources, but limited data on other measures of wellbeing.

To shed light on other aspects of women's lives, we turn to the Kenya Demographic and Health Survey (DHS), which was fielded in 2003, 2008, and 2014. We assign respondents to sub-locations based on GPS coordinates provided by DHS.[18] In terms of economic empowerment, the DHS reports a wealth index and measures of employment, including whether a woman was compensated for her labor.[19] In terms of household empowerment, we have data on gender based violence (GBV) norms, actual experience of gen-

approach, instead of simply regressing post-2010 outcomes on mobile money growth.

[16] We topcode outlet growth at the 99th percentile among sub-locations with any growth. This is to limit the influence of a very small number of urban sub-locations that have extremely large changes in density.

[17] The figure reports the results of sub-location-level regressions, where the outcome of interest is outlet density per 1,000 people. We control for year fixed effects, division fixed effects, mobile density in 2006 (to account for the possibility that areas with outlets that reported being open prior to mobile money's rollout may be different), interactions between 2006 density and years, and finally mobile outlet growth and its interactions with year. The interaction with the year 2000 is the omitted year, which means that the plotted coefficients illustrate how the association between mobile outlet growth and bank/SACCO/MFI density changes relative to 2000. If areas are on parallel trends, these differential changes should be zero.

[18] These GPS coordinates are scrambled to protect respondent anonymity. This means some respondents will be assigned to the wrong sub-location, which should work to attenuate our results.

[19] For additional detail on how the DHS constructs its wealth index, see Rutstein and Johnson (2004).

der based violence, and self-reported decision agency. Our measure of GBV norms is an indicator for whether a woman does not agree that wife beating is acceptable in any of 5 scenarios. We also construct indicators for whether a woman reported being free of physical, emotional, and sexual violence in the past year. Finally, we classify a woman has having "decision agency" if she reports deciding (either on her own or with others) about her own health care, large household purchases, visiting family, and what food to cook. Appendix Table A3 summarizes variable components and construction.

Appendix Table A4 describes summary statistics for our analysis samples. Note that only a subset of the DHS women were selected for the GBV module – thus analyses of GBV-related outcomes will have a smaller sample size. Overall, FSD women are older and less likely to be never partnered (which makes sense since the DHS focuses on women aged 15-49), while rates of education are similar. We also see that a greater share of women in later surveys report living in urban areas.

5.2.3 Results

We use the following differences-in-differences specification for our core analysis, which parallels the specification we used when assessing pre-trends:

$$\begin{aligned} y_{ist} = & \beta_0 + \beta_1 grow_s \times post_t + \beta_2 grow_s + \\ & \beta_3 dens06_s + \beta_4 urban_{ist} + \\ & \beta_5 dens06_s \times post_t + \\ & \beta_6 urban_{ist} \times post_t + \lambda_d + \delta_t + \varepsilon_{ist} \end{aligned} \tag{1}$$

where y_{ist} references the outcome of interest for woman i in sub-location s at year t, $grow_s$ identifies growth in mobile density between 2007 and 2010, $post_t$ identifies years after 2006, $dens06_s$ is mobile outlet density in location s in 2006 (again, these are agents who were operating a business before mobile money was rolled out in Kenya), $urban_{ist}$ identifies whether or not a surveyed woman lives in an urban area, λ_d accounts for division fixed effects, and δ_t accounts for year-specific fixed effects.

The key parameter of interest is β_1, which tells us the effect of receiving one additional agent per 1,000 residents in a woman's sub-location, provided the differences-in-differences assumptions hold. β_2 tells us whether the change in agent density was correlated with the outcome of interest *before* the mobile money rollout. Insofar as the FSD geospatial mapping lets us identify as-good-as-random variation in outlet growth, this coefficient should be close to zero and not statistically significant.

Table 5 uses FSD data to study the effect of expanded outlets on women's financial service use. Row 1, column 1 shows that getting an additional mobile money agent per 1,000 people in the sub-location is associated with a 9 percentage point increase in the probability a woman uses mobile money. To put this in perspective, the average woman in a sub-location that saw agent growth between 2007 and 2010 saw an increase of 0.48 agents per 1,000; the 95th percentile woman saw an increase of 1.3 agents. In the post period, 43 percent of women in sub-locations with no growth reported using mobile money. Thus, experiencing "average growth" would increase mobile money use by 4.4 percentage points, or roughly 10 percent relative to the no-growth post period mean. While such impacts are not massive, they are substantial and represent important gains in mobile money use. In contrast, we find no evidence that the mobile money rollout affected use of other financial services, such as banks, MFIs, and informal ar-

Table 5: First Stage: Impact of Mobile Money Agent Expansion on Financial Service Use (FSD Data)

	(1) Mobile Money	(2) Bank	(3) Insurance	(4) SACCO	(5) MFI	(6) Informal Services
β_1: Outlet Growth × Post	0.091**	-0.010	-0.038	-0.0039	0.016	0.017
	(0.040)	(0.030)	(0.026)	(0.021)	(0.013)	(0.063)
β_2: Outlet Growth	-0.025	0.089***	0.056**	0.016	-0.0035	-0.023
	(0.037)	(0.027)	(0.023)	(0.019)	(0.0098)	(0.054)
Pre-Period Mean, No Growth	0	0.088	0.025	0.081	0.018	0.52
Post-Period Mean, No Growth	0.43	0.16	0.098	0.073	0.036	0.50
N	14600	14600	14600	14600	14600	14600

Notes: Standard errors clustered at the division level. All regressions include division fixed effects, year fixed effects, and controls for 2006 mobile outlet density, urban area, and their interactions with the post-period dummy. *, **, and *** indicate statistical significance at the 10, 5 and 1 percent levels respectively.

rangements. Thus we find no evidence that mobile money crowded other financial services out of users' patchworks of financial services. Table 6 turns to the impact of access to mobile money on measures of economic empowerment in the FSD household survey. We find that an additional agent per 1,000 is associated with a 7.4 percentage point increase in the likelihood that a woman reports her primary source of income as self-employment and 4 percentage point increase (only marginally significant) in agricultural income. This is offset by a reduction in the share of women relying on wage work to earn a living. While reliance on other income (i.e. transfers) does not change, we find a 9 percentage point increase in the likelihood that a woman is economically resilient (defined as never experiencing a shortage of food, shelter, or medicine in the past year). We also find that women report feeling safer from crime – an additional agent is associated with a 10 percentage point increase in the likelihood that a woman says she has never felt unsafe from crime in her own home.

Table 7 turns to measures of economic empowerment in the DHS. Mobile growth is associated with a 3.8 percentage point increase in the likelihood that a woman is not "asset poor", in that her household falls above the bottom quintile per the DHS assets index. In contrast, we see no significant impacts on overall employment rates (consistent with our FSD estimates), or the likelihood that a woman performs paid or unpaid work.

Table 8 studies how access to mobile money impacted measures of household empowerment, including GBV norms, experience of GBV, and decision agency. An additional agent is associated with a 5.3 percentage point increase in the likelihood that a woman says GBV is never justified and a 7.9 percentage point increase in the likelihood that a woman has a say in the four household decisions we observe across DHS rounds.

We also report impacts on agency over large

[20] Say over large household purchases is the only decision-making question posed to men in the 2003-2014 rounds of the Kenya DHS.

household purchases (a 7.8 percentage point increase, significant at the 1 percent level) to facilitate comparison with changes for men.[20] We report impacts on this and other key outcomes for men in Appendix Tables A6 and A7. We see similar economic effects across genders: men in higher growth areas are significantly more likely to use mobile money and significantly more likely to be above the bottom wealth quintile (while we do not see significant impacts on male self-employment, point estimates are not very different from those for women). Unlike women, mobile money growth makes men less reliant on transfers from others/other sources of income, while their reported vulnerability to crime is unchanged.

Table 6: Impact of Mobile Money Agent Expansion on Economic and Personal Wellbeing (FSD Data)

	(1)	(2)	(3)	(4)	(5)	(6)
	Main Source of Income					
	Wage Work	Self- Employment	Agriculture	Transfers + Other	Economically Resilient	Low Crime Vulnerability
β_1: Outlet Growth × Post	-0.12***	0.074***	0.040*	0.010	0.094***	0.10***
	(0.034)	(0.026)	(0.022)	(0.029)	(0.030)	(0.037)
β_2: Outlet Growth	0.14***	-0.037	-0.058**	-0.045*	-0.011	-0.071**
	(0.030)	(0.023)	(0.024)	(0.027)	(0.030)	(0.030)
Pre-Period Mean, No Growth	0.16	0.19	0.42	0.23	0.13	0.38
Post-Period Mean, No Growth	0.17	0.17	0.39	0.27	0.27	0.56
N	14600	14600	14600	14600	14475	14504

Notes: Standard errors clustered at the division level. All regressions include division fixed effects, year fixed effects, and controls for 2006 mobile outlet density, urban area, and their interactions with the post-period dummy. *, **, and *** indicate statistical significance at the 10, 5 and 1 percent levels respectively.

Table 7: Impact of Mobile Money Agent Expansion on Economic Wellbeing (DHS Data)

	(1) Above Bottom Quintile Wealth	(2) Employed in past year	(3) Paid Work	(4) Unpaid Work
β_1: Outlet Growth × Post	0.038**	-0.0042	-0.0033	-0.00089
	(0.018)	(0.016)	(0.014)	(0.012)
β_2: Outlet Growth	0.015	0.011	0.018	-0.0076
	(0.012)	(0.012)	(0.012)	(0.010)
Pre-Period Mean, No Growth	0.71	0.60	0.48	0.13
Post-Period Mean, No Growth	0.64	0.57	0.44	0.13
N	30712	30696	30676	30676

Notes: Standard errors clustered at the division level. All regressions include division fixed effects, year fixed effects, and controls for 2006 mobile outlet density, urban area, and their interactions with the post-period dummy. *, **, and *** indicate statistical significance at the 10, 5 and 1 percent levels respectively.

Table 8: Impact of Mobile Money Agent Expansion on Empowerment (DHS Data)

	(1)	(2)	(3)	(4)	(5)	(6)
		Married and Partnered Women				
	GBV Never Justified	No Physical GBV	No Emotional GBV	No Sexual GBV	Has Decision Agency	Agency: Large HH Purchases
β_1: Outlet Growth × Post	0.053**	-0.0065	0.024	0.015	0.079***	0.078***
	(0.021)	(0.036)	(0.017)	(0.014)	(0.027)	(0.023)
β_2: Outlet Growth	-0.0000022	0.020	-0.013	-0.013	-0.024	-0.027
	(0.018)	(0.013)	(0.011)	(0.0091)	(0.021)	(0.018)
Pre-Period Mean, No Growth	0.25	0.71	0.88	0.88	0.24	0.35
Post-Period Mean, No Growth	0.45	0.68	0.87	0.90	0.50	0.66
N	30698	11749	11781	13376	18479	18484

Notes: Standard errors clustered at the division level. All regressions include division fixed effects, year fixed effects, and controls for 2006 mobile outlet density, urban area, and their interactions with the post-period dummy. *, **, and *** indicate statistical significance at the 10, 5 and 1 percent levels respectively.

A key question is whether the changes in household empowerment reported by women affect men as well. Point estimates on GBV norms are not statistically significant for men, but are similar in magnitude – so although we find no significant evidence that men's attitudes towards GBV changed, we cannot definitively rule out an attitudinal shift similar to women's either. We do, however, see that men in higher growth areas are significantly *less* likely to report having a say over large household purchases. This is striking, and suggests that changes precipitated by mobile money may have transferred some amount of decision agency from men to women.

5.2.4 Discussion

Overall, our findings related to economic empowerment are in line with Jack and Suri (2016), who find that Kenya's mobile money expansion reduced poverty. We provide new evidence that the expansion also boosted women's household empowerment: they are less tolerant of gender-based violence and report having more say in household decisions, potentially at the expense of their male partners. Women also report feeling safer in their homes, which could reflect a mix of economic progress, intra-household dynamics, and broader changes in social agency. The fact that we find no significant impact on perceived safety for men suggests the latter two channels could be important. The shifts we observe are especially notable given that core mobile money products do not have explicit gender aims. Additionally, since Kenyan women are less likely to own a mobile phone than men (76% versus 83% in the 2017 FII), there are *ex-ante* reasons to worry that services like mobile money could differentially favor men and amplify, rather than close, gender gaps. Our decision-making results suggest that the opposite may be true.

The effects we estimate are meaningful, but modest in magnitude when one considers that the average woman in a sub-location with agent growth saw an uptick of roughly half an agent per 1,000 residents. In these "average" areas our estimates amount to a 6-8 percent shift in GBV norms and decision agency relative to post-period means in no growth areas. It is important to keep in mind that these estimates reflect *sub-*

location wide shifts in household empowerment. In other words, our differences-in-differences estimates capture changes in empowerment for the average woman in the sub-location; we cannot estimate separate effects for mobile money adopters and non-adopters. Separately estimating direct and spillover effects is an open area for future research, and – at least in our setting – would require time series data that measures both mobile money use and household empowerment among the same set of women.

6 Conclusion

In this report we have taken two distinct, complementary approaches to understanding how financial services impact different aspects of Kenyan women's lives. In Section 4, we synthesize results of detailed qualitative interviews with women in three regions of the country. These interviews provide rich, nuanced insights into what aspects of wellbeing women prioritize; how women manage their finances; and the perceived economic, household, and social benefits of different financial services. Our quantitative analysis is narrower in scope and confined to outcomes available in existing secondary datasets, but lets us size the correlations between financial service use and wellbeing and – most importantly – estimate the causal effect of mobile money expansion on measures of women's economic and household empowerment.

While different in scope and approach, some key themes emerge from both lines of inquiry. In qualitative interviews, women articulated key ways in which financial services had positive impacts on economic empowerment. These benefits included better cash management, increased ability to smooth consumption and make necessary household purchases, and (to a lesser extent) increased capacity to support business activities. Quantitatively, we find clear evidence that mobile money built household wealth, boosted economic resilience, and facilitated a shift from wage work to self employment. In our qualitative interviews, women reported that financial services gave them much-valued ability to cater for household needs on their own; this built a sense of self efficacy and in some cases raised their standing in the eyes of their husbands. Quantitatively, we find that women report significantly more household decision agency, including in the domain of household purchases. Women also became less accepting of gender based violence, which could be a byproduct of an increased sense of self worth (though we lack data to test this hypothesis directly).

Our qualitative work does, however, suggest that using financial services can be a double edged sword: we encountered stories of women having to hide their financial activities (such as chama participation or mobile loans) from their husbands; and husbands taking and misusing cash newly accessed by their wives. This is consistent with quantitative work that suggests women – especially when they have limited agency in the household – may explicitly use financial services to hide or control income from other household members (Anderson and Baland, 2002; Schaner, 2017). Other times, participation in financial services was a source of stress for women, especially when loans became hard to repay. Yet, overall, participants told us access to both formal and informal finance had broadly positive effects on their social lives, self-perception and self-efficacy, and household dynamics.

The qualitative interviews also highlight important gaps in the quantitative data – many of the most important non-economic benefits identified by women are not measured in the FSD and DHS. These outcomes include self efficacy and self worth, as well as women's social networks and solidarity: while this may be less relevant for mobile money, women were very clear about the ways in which informal groups built connections and created a platform to share both ideas and support. Our measurement toolkit in

Appendix A.4 delves into these issues in more detail and highlights potential survey questions that could fill some of these gaps. A key challenge here is that not all these measurements will be relevant in other settings; thus it is important for organizations developing large quantitative surveys to understand what items are locally relevant and balance this against a need to draw on consistent measures for purposes of cross-country comparisons.

Finally, our findings point to ways in which further innovation in financial services delivery might amplify impact and accelerate gender transformative change. There is clear potential for formal services to strengthen informal groups like chamas, as evidenced by interviewees' hopes to store chama resources in a formal account. A number of Kenyan banks and mobile money operators offer services tailored for chamas; the challenge is to ensure they are sufficiently convenient and easy to use that women are not dissuaded by administrative rules and hurdles. It is also important to ensure these products do not degrade the very features of chamas that make them so valuable – evidence from the microfinance sector suggests digital solutions that make it easy for women to participate remotely could, for example, weaken social ties and make groups less stable (Harigaya, 2017).

Overall, our results suggest women derive many important benefits from financial services – but are they gender transformative? Vossenberg et al. (2017)'s broad characterization of gender transformation is useful here: "enhanced capabilities of poor women to improve their livelihoods and strengthened individual, institutional, and collective capacities to tackle adverse norms and rules that undermine shared control of resources and decision-making." In our qualitative interviews, women offered many examples of how access to and participation in finance achieved this kind of transformation in their capabilities to improve their livelihoods. Our quantitative results relating to economic resilience, gender norms, and decision-making power echo the women's own examples.

On the other hand, women still struggled to make ends meet while grappling with patriarchal norms that simultaneously limit women's economic agency while putting the burden of household and care work squarely on their shoulders. Moreover, women rarely connected financial service use to broader social or political change. In our quantitative analysis, data limitations prevent us from studying these outcomes, but the non-economic effects we observe are modest in magnitude. Taken together, we see financial services – at least as they operate in Kenya today – as helping women take a series of steps in the "right direction" on the path towards gender equality. Or put another way, while the services may not be gender transformative in and of themselves, they have a clear and valuable role to play in the process of transforming women's lives. Looking ahead, finding ways to grow the value proposition of new and existing services while leveraging the power of women's social networks may be an especially promising way of amplifying these important impacts.

References

Anderson, S. and J. M. Baland (2002). The Economics of ROSCAs and Intrahousehold Resource Allocation. *The Quarterly Journal of Economics 117*(3), 963–995.

Bandura, A. (2006). Toward a Psychology of Human Agency. *Perspectives on Psychological Science 1*(2), 164–180.

Beaman, L., D. Karlan, and B. Thuysbaert (2014). Saving for a (not so) Rainy Day: A Randomized Evaluation of Savings Groups in Mali. *National Bureau of Economic Research Working Paper*(20600).

Brody, C., T. de Hoop, M. Vojtkova, R. Warnock, M. Dunbar, P. Murthy, and S. L. Dworkin (2015). Economic Self-Help Group Programs for Improving Women's Empowerment: A Systematic Review. *Campbell Systematic Reviews 11*(1), 1–182.

Collins, D., J. Morduch, S. Rutherford, and O. Ruthven (2009). *Portfolios of the Poor: How the World's Poor Live on $2 a Day.* Princeton University Press.

Cull, R., T. Ehrbeck, and N. Holle (2014). Financial Inclusion and Development: Recent Impact Evidence.

Davies, S., J. Easaw, and A. Ghoshray (2009). Mental Accounting and Remittances: A Study of Rural Malawian Households. *Journal of Economic Psychology 30*(3), 321–334.

Demirguc-Kunt, A., L. Klapper, D. Singer, S. Ansar, and J. Hess (2018). The Global Findex Database 2017 : Measuring Financial Inclusion and the Fintech Revolution. *World Bank.*

Dupas, P. and J. Robinson (2013). Why Don't the Poor Save More? Evidence from Health Savings Experiments. *American Economic Review 103*(4), 1138–71.

El-Zoghbi, M. (2019a). Does Financial Inclusion Impact the Lives of the Poor? *Consultative Group to Assist the Poor.*

El-Zoghbi, M. (2019b). Toward a New Impact Narrative for Financial Inclusion. *Consultative Group to Assist the Poor.*

El-Zoghbi, M., N. Holle, and M. Soursourian (2019). Emerging Evidence on Financial Inclusion. *Consultative Group to Assist the Poor.*

Glennerster, R., C. Walsh, and L. Diaz-Martin (2018). A Practical Guide to Measuring Women's and Girls' Empowerment in Impact Evaluations. Technical report. Gender Sector, Abdul Latif Jameel Poverty Action Lab.

Gopalaswamy, A. K., M. S. Babu, and U. Dash (2016). Systematic Review of Quantitative Evidence on the Impact of Microfinance on the Poor in South Asia. Technical report.

Harigaya, T. (2017). Effects of Digitization on Financial Behaviors: Experimental Evidence from the Philippines. Technical report, Mimeo.

Jack, W. and T. Suri (2014, January). Risk Sharing and Transactions Costs: Evidence from Kenya's Mobile Money Revolution. *American Economic Review 104*(1), 183–223.

Jack, W. and T. Suri (2016). The Long-Run Poverty and Gender Impacts of Mobile Money. *Science 354*(6317), 1288–1292.

Karlan, D., B. Savonitto, B. Thuysbaert, and C. Udry (2017). Impact of Savings Groups on the Lives of the Poor. *Proceedings of the National Academy of Sciences 114*(12), 3079–3084.

Kőszegi, B. and M. Rabin (2006). A Model of Reference-Dependent Preferences. *The Quarterly Journal of Economics 121*(4), 1133–1165.

Ksoll, C., H. B. Lilleør, J. H. Lønborg, and O. D. Rasmussen (2016). Impact of Village Savings and Loan Associations: Evidence from a cluster randomized trial. *Journal of Development Economics 120*, 70–85.

Lee, J. N., J. Morduch, S. Ravindran, A. Shonchoy, and H. Zaman. Poverty and Migration in the Digital Age: Experimental Evidence on Mobile Banking in Bangladesh. *American Economic Journal: Applied Economics (Forthcoming)*.

Peters, M., C. Lockwood, Z. Munn, S. Moola, and R. Mishra (2016). People's Views and Experiences of Participating in Microfinance Interventions: A systematic review of qualitative evidence.

Rutstein, S. O. and K. Johnson (2004). The DHS Wealth Index. Technical report.

Schaner, S. (2017). The Cost of Convenience? Transaction Costs, Bargaining Power, and Savings Account Use in Kenya. *Journal of Human Resources 52*(4), 919–945.

Shefrin, H. M. and R. H. Thaler (1988). The Behavioral Life-Cycle Hypothesis. *Economic inquiry 26*(4), 609–643.

Steinert, J. I., J. Zenker, U. Filipiak, A. Movsisyan, L. D. Cluver, and Y. Shenderovich (2018). Do Saving Promotion Interventions Increase Household Savings, Consumption, and Investments in Sub-Saharan Africa? A Systematic Review and Meta-Analysis. *World Development 104*, 238–256.

Stewart, R., C. van Rooyen, K. Dickson, M. Majoro, and T. de Wet (2010). What is the Impact of Microfinance on Poor People? A Systematic Review of Evidence from Sub-Saharan Africa. Technical report.

Thomas, D. (2006, June). A General Inductive Approach for Analyzing Qualitative Evaluation Data. *American Journal of Evaluation 27*(2), 237–46.

Vossenberg, S., A. Rappoldt, and J. d'Anjou (2017). Beyond Access: Exploring Gender-Transformative Approaches to Financial Inclusion.

A Appendix

A.1 Qualitative Analysis Supplementary Tables and Figures

Table A1: Demographic characteristics from pre-FGD and pre-IDI surveys for participants in qualitative study

	FGD	IDI
Age	40	37.32
	[10.99]	[10.27]
Urban	0.361	0.365
	[0.484]	[0.485]
Never Partnered	0.0278	0.0811
	[0.165]	[0.275]
Currently Partnered	0.806	0.730
	[0.399]	[0.447]
Previously Partnered	0.167	0.176
	[0.375]	[0.383]
Completed Primary Education or Higher	0.861	0.919
	[0.348]	[0.275]
Completed Secondary Education or Higher	0.375	0.392
	[0.488]	[0.492]
Has own mobile phone	0.889	0.932
	[0.316]	[0.253]
Agriculture is primary source of income	0.239	0.137
	[0.430]	[0.346]
Business is primary source of income	0.627	0.658
	[0.487]	[0.478]
Paid employment is primary source of income	0.119	0.178
	[0.327]	[0.385]
Observations	72	74

Summary statistics are displayed for focus group discussion (FGD) and in-depth interview (IDI) participants, pooled across all study sites. Standard deviations for each variable are displayed in brackets.

For survey questions on employment, response rates were lower – 67 of 72 participants responded to employment questions for the FGDs and 73 of 74 for the IDIs.

There were 93 IDI participants, but only 74 completed the pre-survey.

A.2 Quantitative Analysis Supplementary Tables and Figures

Table A2: Description of data sources used in quantitative analysis

	DHS			**FII**	**FSD-H**				**FSD-G**
	2003	2008	2013	2017	2006	2009	2012	2015	2015
Survey Months	Apr - Sep	Nov - Feb	May - Oct	Jun - Jul	Aug - Sep	Jan - Mar	Oct - Feb	Apr - Jun	Apr - Jun
Representation	National	National	National	National	National	National	National	National	–
Sampling Unit	Household	Household	Household	Household	Household	Household	Household	Household	FSP
Sampled Households	11,773	11,947	43,898	3,129	4,418	6,598	6,449	8,665	–
Sampled Women	8,195	8,473	31,079	1,955	2,476	3,873	3,814	5,281	–
Sampled Men	3,578	3,474	12,819	1,174	1,942	2,725	2,635	3,384	–
Sampled FSPs	–	–	–	–	–	–	–	–	91,158

DHS refers to the *Kenyan Demographic and Health Survey*.

FII refers to the *Financial Inclusion Insights* survey.

FSD refers to *FinAccess Survey Data*, where H indicates the *Household* dataset and G denotes the *Geospatial* dataset.

Table A3: Details on Construction of Wellbeing and Empowerment Indicators

Survey	Variable	Interpretation	Components
FSD	Economically Resilient	Respondent has never gone without food, shelter, and needed medicine/medical care in past year	Never gone without enough food
			Never gone without shelter
			Never gone without medical treatment
FII	Has Decision Agency	Respondent responds affirmatively to the following decision-making scenarios	Somewhat/very involved in spending household income
			Somewhat/very involved in basic purchases
			Somewhat/very involved in non-basic purchases
			Influences most/all household decisions
			Somewhat/very likely to voice disagreement
	Financial Wellbeing Index	Share of scenarios where respondent reports her sense of financial wellbeing is positive (rather than neutral or negative)	Financial changes (improved over past year)
			Financially secure
			Financial satisfaction
	General Wellbeing Index	Share of scenarios where respondent reports her sense of general wellbeing is positive (rather than neutral or negative)	General happiness
			General satisfaction
			General worry
DHS	No Emotional GBV	Respondent has not experienced emotional GBV in the past year	Partner limits contact with family
			Partner needs to know where respondent is
			Partner does not allow meeting with friends
			Partner is jealous when talking with other men
			Partner humiliated respondent
			Partner accuses of infidelity
			Continued on subsequent page

Survey	Variable	Interpretation	Components
DHS	No Sexual GBV	Respondent has not experienced sexual GBV in the past year	Past year forced
			Past year forced to complete sex act
	No Physical GBV	Respondent has not experienced physical GBV in the past year	Ever threatened with weapon
			Past year kicked
			Past year punched
			Past year pushed
			Past year slapped
			Past year strangled
			Past year threatened
			Past year threatened with weapon
	GBV Never Justified	Respondent believes GBV is not justified in all listed scenarios	GBV not justified if refuses sex
			GBV not justified if argues with husband
			GBV not justified if burns food
			GBV not justified if partner goes out without telling
			GBV not justified if neglects children
	Has Decision Agency	Respondent included in all of the following household decisions (decides alone or with others)	Involvement in respondent healthcare decisions
			Involvement in large household purchases
			Involvement in visiting family or relatives
			Involvement in food to cook each day

Table A4: Demographic characteristics for women survey respondents across all surveys

Survey	**DHS**			**FSD**			
Year	2003	2008	2013	2006	2009	2013	2015
Age	28.08	28.47	28.95	35.64	37.69	35.41	36.68
	[9.309]	[9.515]	[9.380]	[15.40]	[16.13]	[15.06]	[16.29]
Household Size	5.647	5.487	5.402	4.562	5.070	4.559	4.555
	[2.675]	[2.595]	[2.511]	[2.221]	[2.476]	[2.383]	[2.327]
Urban	0.330	0.298	0.371	0.304	0.281	0.363	0.441
	[0.470]	[0.457]	[0.483]	[0.460]	[0.450]	[0.481]	[0.497]
Never Partnered	0.302	0.302	0.276	0.217	0.196	0.194	0.183
	[0.459]	[0.459]	[0.447]	[0.413]	[0.397]	[0.395]	[0.387]
Currently Partnered	0.594	0.596	0.611	0.589	0.576	0.629	0.614
	[0.491]	[0.491]	[0.487]	[0.492]	[0.494]	[0.483]	[0.487]
Previously Partnered	0.104	0.102	0.113	0.194	0.228	0.177	0.203
	[0.305]	[0.303]	[0.317]	[0.395]	[0.419]	[0.382]	[0.402]
Completed Primary Education or Higher	0.551	0.571	0.595	0.505	0.593	0.582	0.546
	[0.497]	[0.495]	[0.491]	[0.500]	[0.491]	[0.493]	[0.498]
Completed Secondary Education or Higher	0.204	0.219	0.214	0.209	0.229	0.217	0.217
	[0.403]	[0.413]	[0.410]	[0.407]	[0.420]	[0.413]	[0.413]
Observations	8020	8136	14556	2405	3780	3564	4851

Summary statistics are displayed for each survey with all years combined. Standard deviations for each variable are displayed in brackets.

Table A5: Correlation of Account Use with Downstream Outcomes: Results for Men

	Bank	Mobile Money	SACCO	Insurance	MFI	Informal
FSD						
Most Income: Wage Work	0.026	0.016	0.091***	0.166***	-0.179***	-0.021
	(0.026)	(0.023)	(0.031)	(0.028)	(0.062)	(0.020)
Most Income: Entrepreneur	0.076***	0.092***	-0.045*	0.007	0.178***	0.063***
	(0.021)	(0.016)	(0.025)	(0.021)	(0.060)	(0.017)
Most Income: Agriculture	-0.047**	0.022	0.014	-0.087***	0.061	0.015
	(0.021)	(0.021)	(0.028)	(0.021)	(0.059)	(0.016)
Most Income: Transfers+Other	-0.055***	-0.130***	-0.061***	-0.086***	-0.060*	-0.057***
	(0.015)	(0.020)	(0.017)	(0.019)	(0.032)	(0.014)
Economically Resilient	0.094***	0.025	0.109***	0.076***	0.167***	0.015
	(0.024)	(0.025)	(0.030)	(0.024)	(0.052)	(0.020)
Involved in household decision making	0.036**	0.083***	-0.018	0.026*	0.042	0.023*
	(0.014)	(0.017)	(0.017)	(0.015)	(0.027)	(0.013)
Low Crime Vulnerability	0.016	-0.006	0.032	0.005	0.026	-0.012
	(0.019)	(0.022)	(0.024)	(0.021)	(0.052)	(0.017)
Observations	3021	3021	3021	3021	3021	3021
FII						
Financial Wellbeing Index	0.017	0.061*	0.126***	0.074***	0.036	-0.017
	(0.028)	(0.036)	(0.041)	(0.027)	(0.105)	(0.026)
Has Decision Agency	-0.013	0.110*	0.018	0.145***	0.140	0.049
	(0.042)	(0.061)	(0.063)	(0.044)	(0.115)	(0.040)
General Wellbeing Index	0.011	0.056	0.028	0.001	0.003	-0.008
	(0.023)	(0.041)	(0.039)	(0.023)	(0.076)	(0.026)
Observations	1145	1145	1145	1145	1145	1145

Notes: Robust standard errors clustered at the division level in parentheses. This table shows results of regressions of key outcomes of interest on indicators for financial service use. Additional controls include urbanicity, age, female head-of-household, household size, education level (none, partial / complete primary, partial / complete secondary, and higher education), partnership status (never, currently, or previously partnered), and division fixed effects. *, **, and *** denote statistical significance at the 10, 5, and 1 percent levels respectively.

Table A6: Impact of Mobile Money Agent Expansion on Key Outcomes for Men: FSD Data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Main Source of Income					
	Mobile Money	Wage Work	Self-Employment	Agriculture	Transfers + Other	Economically Resilient	Low Crime Vulnerability
β_1: Outlet Growth × Post	0.080**	0.041	0.037	-0.018	-0.057**	0.032	-0.00070
	(0.033)	(0.043)	(0.033)	(0.040)	(0.026)	(0.038)	(0.052)
β_2: Outlet Growth	-0.031	0.014	-0.024	-0.017	0.027	0.036	-0.028
	(0.026)	(0.032)	(0.027)	(0.037)	(0.021)	(0.044)	(0.044)
Pre-Period Mean, No Growth	0	0.25	0.17	0.46	0.12	0.14	0.39
Post-Period Mean, No Growth	0.50	0.26	0.14	0.43	0.17	0.30	0.55
N	10071	10071	10071	10071	10071	9992	10012

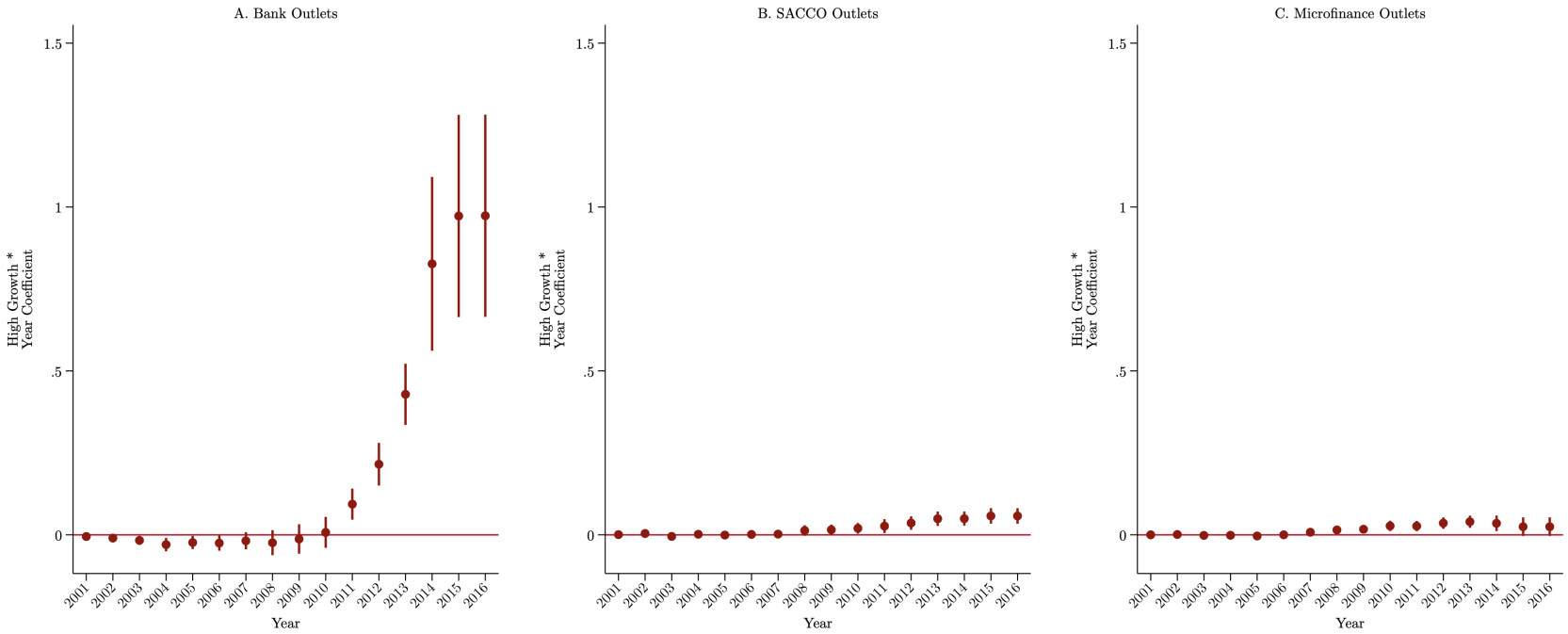
Notes: Standard errors clustered at the division level. All regressions include division fixed effects, year fixed effects, and controls for 2006 mobile outlet density, urban area, and their interactions with the post-period dummy. *, **, and *** indicate statistical significance at the 10, 5 and 1 percent levels respectively.

Table A7: Impact of Mobile Money Agent Expansion on Men: Key DHS Outcomes

	(1) Above Bottom Quintile Wealth	(2) Employed in past year	(3) Paid Work	(4) Unpaid Work	(5) GBV Never Justified	(6) Agency: Large HH Purchases
β_1: Outlet Growth × Post	0.060***	-0.0022	0.010	-0.012	0.031	-0.062***
	(0.019)	(0.014)	(0.015)	(0.012)	(0.026)	(0.020)
β_2: Outlet Growth	0.012	0.0095	0.012	-0.0019	-0.017	0.050***
	(0.013)	(0.010)	(0.011)	(0.0071)	(0.022)	(0.014)
Pre-Period Mean, No Growth	0.62	0.73	0.64	0.090	0.27	0.90
Post-Period Mean, No Growth	0.63	0.81	0.64	0.18	0.56	0.90
N	19484	19470	19446	19446	19473	10108

Notes: Standard errors clustered at the division level. All regressions include division fixed effects, year fixed effects, and controls for 2006 mobile outlet density, urban area, and their interactions with the post-period dummy. *, **, and *** indicate statistical significance at the 10, 5 and 1 percent levels respectively. Impacts on decision-making agency are reported for married and cohabiting men only.

Figure A1: Correlation Between Mobile Outlet Growth and Other Financial Service Outlets by Year



Notes: The full regression specification includes division fixed effects, year dummies, mobile outlet density in 2006 and its interaction with year dummies, and mobile outlet density growth 2007-2010 and its interaction with year dummies. The figure graphs coefficients on the interactions between outlet growth and year (2000 is the omitted year). Whiskers give 95 percent confidence intervals based on standard errors clustered at the division level.

A.3 Market Mapping: Additional Detail

A.3.1 Methodology and Data

The first step in the narket mapping exercise was to identify FSPs. We used multiple datasets and registries, including MIX Market's institutional data, the Kenya Central Bank's list of licensed commercial banks, institutional websites, and Financial Sector Deepening Kenya's (FSD-K's) 2016 FinAccess geospatial mapping[21] – as well as knowledge gained through networking and referrals. These sources cover formal and semi-formal financial service providers, listed by type in Table A8. In total, we identified 4,325 institutions.

After identifying institutions, we designed a data collection template to record type of institution, types of products offered, size of clientele, regions served, gender distribution of clientele, and whether any products are specifically targeted towards women. We populated the template with publicly-available information gleaned through existing registries and online search. A financial service provider was included in our final analysis if we were able to identify product offerings, such as group savings, collateralized loans, or insurance. Table A8 summarizes inclusion rates by provider type.

Of those institutions mapped, Figure A2 describes the distribution by financial service provider type. Though the mapping rate was comparatively low for credit unions and cooperatives, they represent a majority of mapped institutions, as thousands were initially identified. In contrast, VSLAs were unlikely to have a web presence detailing their product offerings, and are thus comparatively under-represented in our final sample.

During the process, we classified a service provider as gender-intentional if they marketed products targeted specifically at women, offered services only to women, or reported more than 50% women clientele. We acknowledge that this is a lax definition, in that organizations that do not have well-developed gender strategies could qualify.

A.3.2 Summary Statistics

The market mapping exercise offers a view into provider-side efforts at women's financial inclusion. As illustrated in Figure 2, all village savings and loan groups (VSLAs) were gender-intentional; while our sample here is very small, this is consistent with other research on VSLAs (Karlan et al., 2017). Apart from this, only a small share of mapped institutions appear to be gender-intentional. Given our relatively loose inclusion criteria, this result is striking, though it is possible that gender-intentional financial service providers are systematically less likely to have a formal web presence than gender-agnostic institutions and consequently are underrepresented in our search results. Just 23 percent of microfinance institutions (MFIs). Notably, all mobile network operators were all classified as gender-agnostic.

[21] This dataset, available at `https://fsdkenya.org/dataset/finaccess-geospatial-2015/` contains mapping of nearly 100,000 financial service access points and agricultural institutions operating in Kenya in mid 2015.

Table A8: Tabulation of market mapping institutions that were identified and included

	Dropped	Included	Total
Commercial Bank	14	41	55
	(25.45)	(74.55)	(100.00)
Credit Untion / Co-Op	3865	245	4110
	(94.04)	(5.96)	(100.00)
FinTech	27	11	38
	(71.05)	(28.95)	(100.00)
MFI	25	61	86
	(29.07)	(70.93)	(100.00)
Mobile Network Operator	2	4	6
	(33.33)	(66.67)	(100.00)
Other	26	0	26
	(100.00)	(0.00)	(100.00)
VSLA	1	2	3
	(33.33)	(66.67)	(100.00)
Total	3960	364	4324
	(91.58)	(8.42)	(100.00)

Count of institutions identified by institution type. Percentages displayed under each count describe the share of that institution type that was dropped or included.

Though we did not build this into our classification criteria, product offerings vary depending on whether an FSP has a gender focus: as is illustrated in Figure A3, gender-intentional providers are more likely to offer group lending, low-cost savings, and financial literacy training. Gender-agnostic FSPs are more likely to offer general and commitment savings accounts, and investment products.

Figure A2: Mapped institutions by type

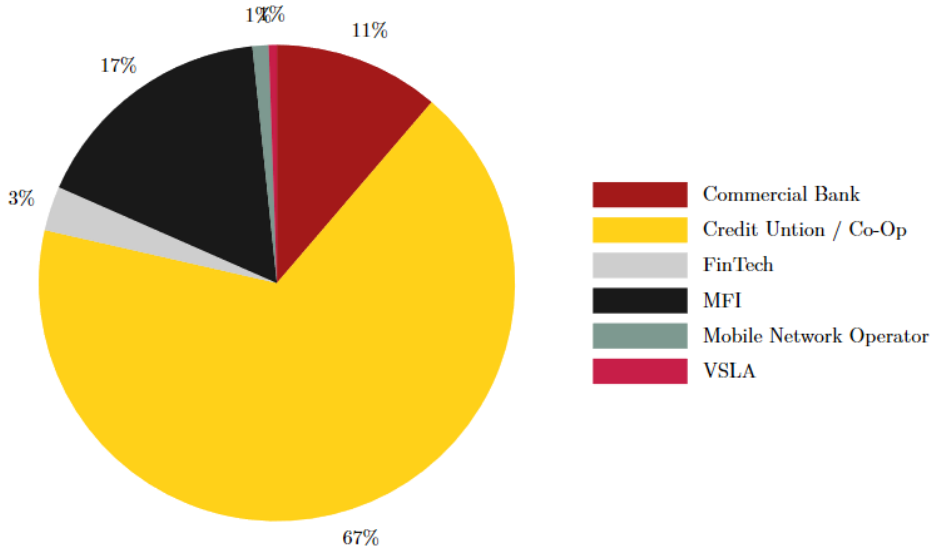
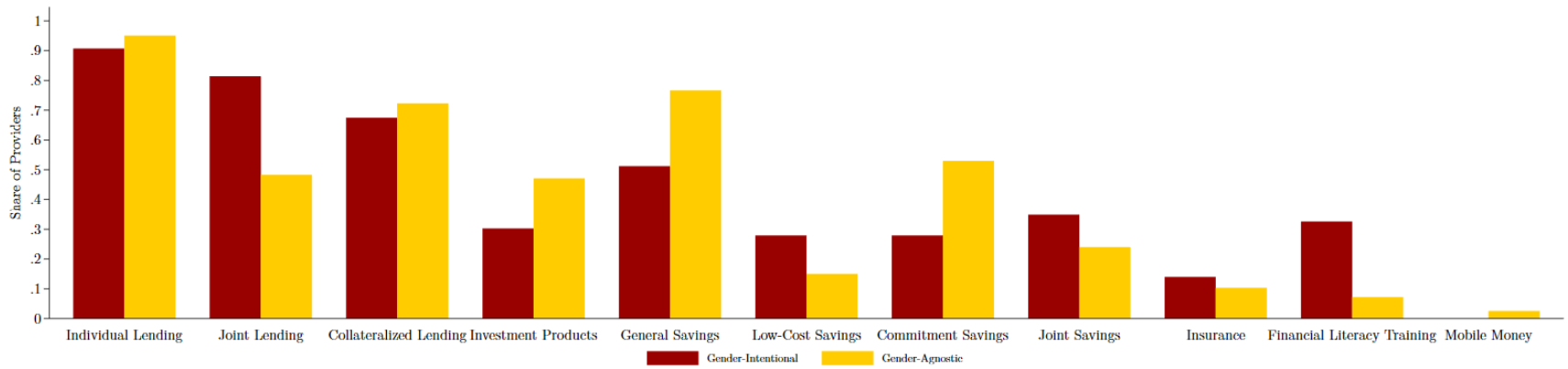


Figure A3: Product offerings in gender-intentional institutions



A.4 Measurement Toolkit

Mainstream quantitative surveys – even those with an explicit gender focus like the DHS – tend to concentrate on a narrow set of proxies of female empowerment. Key measures include women's self-reported decision making power, experiences of gender-based violence, labor force participation, and ownership of tools like bank accounts and mobile phones, which indicate economic engagement and social autonomy.

These measures are no doubt important, but several other less well-covered concepts were clearly top of mind for women in our qualitative interviews. In this section, we summarize some of the most important concepts raised by women, and suggest potential questions to capture these concepts in quantitative surveys. Whenever possible, we have drawn questions from the EMERGE project (Evidence Based Measures of Empowerment for Research on Gender Equality) or other well-established surveys fielded in low and middle income countries.[22] These measures have the advantage of being validated or pre-tested. In some cases, we suggest additional or new measures – these measures are listed without specifying a source. We caveat that we were not able to field test these questions in the context of a quantitative survey, so these questions are in "draft" form. In both cases, we recognize that the most salient aspects of empowerment will vary across cultural contexts. Thus, our list should be taken as a starting point, rather than an endpoint. In keeping with our framework, we group indicators according to whether they measure economic, household, personal, or socio-political empowerment.

[22]The EMERGE project is an initiative housed at the University of California-San Diego, which aggregates and quality-scores quantitative measures of female empowerment. For more information, see `https://emerge.ucsd.edu`.

Table A9: Potential Measures of Female Wellbeing and Empowerment

Aspect	Measure	Source	Notes
Economic			
Financial Agency	When you want or need to buy things like food or clothing for yourself or your family, which of the following answers best describes your situation?	EMERGE: Control Over Assets	Add: whether or not woman has recently made these purchases on her own
Financial Agency	5 items from the Global Findex Questionnaire measuring personal savings behavior in formal/informal institutions	The World Bank: 2017 Global Findex Questionnaire	
Financial Agency	Do you yourself have any cash in hand to spend on household's expenditures?	India Human Development Survey-2. (2011-12). Education and Health Questionnaire	
Expenditure Control	Do you yourself control the money needed to buy the following things? - Vegetables or fruits? - Clothes for yourself? - Any kind of medicine for yourself? - Toiletries for you like (give local examples)?	EMERGE: Woman's Role in Household Decision-Making	Add: to pay school fees, loans, items for the household.
Household			
Intra-Household Communication	Have you ever hidden your financial activities from your husband (such as being in a chama or saving money with a mobile savings account)?		

Aspect	Measure	Source	Notes
Spousal Support	Think about how your husband views your financial activities, like getting income and making purchases. Which statement best reflects his views? - He does not approve of me engaging in financial activities - He approves of me engaging in financial activities - He is not aware of my financial activities		
Household Communication	Do you and your husband/partner talk about the following with each other often, sometimes, or never? - Things that happen at this work/on the farm? - Things that happen at home? - What to spend money on? - Things that happen in the community? Response Options: Often; Seldom; Never	EMERGE: Woman's Role in Household Decision-Making	
Financial and Household Agency	I feel I am able to meet my family's most urgent needs on my own [with assistance of spouse]. Response Options: Agree; Neutral; Disagree		
Financial Agency	I am able to manage my own/my household's money on my own [with assistance of spouse] Response Options: Agree; Neutral; Disagree		
Financial Agency	I depend on my husband or others to give me money to meet my family's needs.		

Aspect	Measure	Source	Notes
	Response Options: Agree; Neutral; Disagree		
Mobility	Are you usually permitted to go to the following places on your own, only if someone accompanies you, or not at all? - To the local market to buy things? - To a local health center or doctor? - To the community center or other nearby meeting place? - To homes of friends in the neighborhood? - To a nearby shrine/mosque/temple/ church? - Just outside your house or compound? Response Options: Alone; Not alone; Never	EMERGE: Woman's Role in Household Decision-Making	Researchers interested in financial engagement in countries with women's groups could add options like "local savings group"
Personal			
Self Efficacy	- I can always manage to solve difficult problems if I try hard enough. - If someone opposes me, I can find the means and ways to get what I want. - It is easy for me to stick to my aims and accomplish my goals. - I am confident that I could deal efficiently with unexpected events. - Thanks to my resourcefulness, I know how to handle unforeseen situations. - I can solve most problems if I invest the necessary effort.	Generalized Self-Efficacy Scale	Optional addition (not scored): I have important goals for my and my family's future.

Aspect	Measure	Source	Notes
	- I can remain calm when facing difficulties because I can rely on my coping abilities. - If I am in trouble, I can usually think of a solution. - I can usually handle whatever comes my way. Response Options: Not At All True; Hardly True; Moderately True; Exactly True		
Self Esteem	- On the whole, I am satisfied with myself. - At times I think I am no good at all. - I feel that I have a number of good qualities. - I am able to do things as well as most other people. - I feel I do not have much to be proud of. - I certainly feel useless at times. - I feel that I'm a person of worth, at least on an equal plane with others. - I wish I could have more respect for myself. - All in all, I am inclined to feel that I am a failure. - I take a positive attitude toward myself. Response Options: Strongly Agree; Agree; Disagree; Strongly Disagree	Rosenberg Self Esteem Scale	
Socio-Political			
Group Membership	Are you a member of any type of association, group or club which holds regular meetings?	EMERGE: Woman's Role in Household Decision-Making	

Aspect	Measure	Source	Notes
Social Engagement	How often do you leave the house for activities other than earning income and shopping for the household?		
Social Networks	In this community, I have friends with whom I can share my problems. Response Options: Agree; Neutral; Disagree		
Social Networks	Apart from people you live with, how many friends do you have in this community that you speak with on a regular (at least monthly) basis?		
Community Engagement	- I have the knowledge and skills to influence the community - I have the ability to impact my community in important ways - I have confidence in my capabilities to make needed changes in my community - I am able to affect the area in which I live - I can influence community members to take actions on important issues - I have the knowledge and skills to gather information relevant to my community - I know I can make a difference in my community - I want to get involved in my community - I am willing to get involved in my community	EMERGE: Individual Community-Related Empowerment Scale	

Aspect	Measure	Source	Notes
	- I am going to get involved in my community - I intend to take action in my community - I participate in community activities - I am involved in my community - I volunteer for community projects - I think it is important for me to get involved in my community - I feel that efforts to address community issues are worthwhile - I am motivated to get involved in my community - I think that the problems in my community are serious Response options: Five point rating scale ranging from 1 = “strongly agree” (the most favorable perception) to 5= “strongly disagree” (the most unfavorable perception)		