The following paper was researched and written as part of LSE GROUPS 2025.

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The overall theme of LSE GROUPS 2025 was *Visions for the Future*

This paper was submitted on the final Thursday afternoon of the project. Students then presented their work at a conference, on the closing Friday.

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Mobile Finance and Food Security: Evaluating the Positive Externalities of M-PESA in Kenya

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ABSTRACT

Developing countries increasingly face food security challenges. Understanding the spillover effects of other industries, such as mobile finance, can help policymakers identify positive externalities and potential solutions to food security problems. However, limited empirical research exists on the nexus between mobile finance and food security in East Africa. This study explores whether a mobile finance system such as M-PESA in Kenya has an effect on food prices' stability and security. Regression, GIS mapping and the Logic Model were employed in the analyses of secondary data from the World Bank and the Financial Sector Deepening Kenya. Results suggest that M-PESA has a positive association with food security in Kenya. First, after the expansion of the M-PESA system in 2009, areas that adopted this mobile finance system came along with a more stable food price annually. Second, regional effects brought by the M-PESA system in Kenya were non-negligible; regions with higher population density using M-PESA tend to experience an improvement in food security indicators. The findings suggest that relevant organisations should be aware of the positive contributions brought by mobile finance systems in developing countries and attempt to promote the operating model in Kenya.

KEY WORDS: mobile finance; food security; digital financial exclusion; positive externalities

INTRODUCTION

Worrying trends highlight the need for alternative methods to enhance food security among vulnerable populations. The 3-year rolling average prevalence of undernourishment globally rose from 7.3% in 2017-19 to 9.1% in 2021-23; and of severe food insecurity, from 7.6% in 2014-16 to 10.9% in 2021-23 (FAO, 2025). In response, attention has turned to non-conventional tools for their potential spillover effects on food access.

M-PESA is a mobile money transfer service that enables users, especially those previously excluded from formal finance, to access credit and financial tools (Kagan, 2023). The name consists of "M" for mobile and "PESA", the Swahili word for money. Launched in 2007 by Safaricom, M-PESA has significantly expanded financial inclusion in Kenya, with over 90% of adults now using the platform and an estimated 59% of the country's GDP facilitated through the platform in 2023 (Stadler, 2024; Suri, 2017). This service is a form of digital microfinance, targeting low-income individuals without traditional banking access (Kagan, 2023). By increasing the financial resilience of low-income households, M-PESA allows smooth consumption and maintains access to food during shocks (Jack & Suri, 2014). Furthermore, at a community level, circulating digital cash stimulates local markets, indirectly improving food access even for non-users by increasing liquidity and demand (Ajefu et al., 2024).

LITERATURE REVIEW

Existing literature had principally focused on the potential for mobile finance to alleviate poverty (Djahini-Afawoubo, Couchoro and Atchi, 2023; Suri, 2017). The consensus among researchers is that mobile money reduces financial constraints, with rollouts across the developing world effectively serving as pilot tests since the advent of modern mobile phones roughly two decades ago. Additionally, research shows that mobile money services produce welfare-enhancing effects on smallholder households, who constitute the majority of the rural poor in Kenya (Kikulwe, Fischer & Matin Qaim, 2014). Some studies also explored the social dimension of M-PESA, for instance its customers' interpersonal and institutional trust relations with agents and Safaricom, respectively (Morawczynski & Miscione, 2008); its exclusion of marginalised groups (Hove & Dubus, 2019); and its role within broader digital financial innovations (Kingiri & Fu, 2019).

Beyond financial effects, emerging literature suggests that M-PESA might also have spillover effects on food security, defined as "when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life" (World Food Summit, 1996). From the supply side, more efficient and quicker remittance transfers sent via M-PESA allow rural families to purchase seeds (Munyegera and Matsumoto, 2016), hire labour, and buy agricultural inputs at critical times, which can boost farm productivity. Households receiving money through M-PESA reported greater access to a variety of foods, including fruits, vegetables, animal products, and oils, leading to improved dietary diversity and nutrition. Nevertheless, evidence linking M-PESA to stable food availability remains underexplored.

One of the few studies, Nagarajan and Haas (2011), concluded that M-PESA had a strong impact on rural security by enabling timely access to funds for hiring labour. The authors highlighted that urban areas benefited from more access and production through finance sectors such as money circulation, transaction ease, and security of money. Another study by Plyler et al. (2010) discovered that with more money circulating locally and faster, many vendors ordered food in advance and paid for it on time, facilitating higher agricultural productivity, food availability and variety. A more recent study by Ajefu et al. (2024) on Tanzania found a positive correlation between mobile money adoption and food security, particularly in rural or female-headed households. The study saw mobile money uptake climb to roughly

39% by 2017 (versus 21% for formal banking), with 38% coverage in rural areas, suggesting that digital finance helps stabilise consumption patterns during income and weather shocks by improving access to informal transfers and increasing liquidity.

However, in many previous studies, analysis on food security has focused primarily on improved access to diverse or nutritious foods, yet limited attention has been paid to other critical dimensions such as food-price volatility, long-term stability, or potential measurable improvements in household nutritional outcomes. Consequently, the question of whether and to what extent microfinance systems like M-PESA enhance food security in developing countries such as Kenya remains underexplored. By integrating a mixed method of spatial GIS mapping, difference-in-differences regression analysis and logic model, our study aims to bridge this research gap by investigating whether proximity to mobile money indirectly improves food security, even for non-users, by supporting time-sensitive activities (Nagarajan & Haas, 2011).

DATA

Two main data sets were used in the analysis. The first was the population census "2016 FinAccess Household Survey" (FSD Kenya, 2016) with more than 130 different categories, asking the participants a wide array of questions on household characteristics and accessibility to financial services. We obtained the second dataset from World Bank microdata (Andrée, 2024), which contains monthly food price estimates by product and market spanning 2007 to 2024, indexed to a 2018 baseline. Using this data, we tracked the monthly price evolution of a food basket across Kenya and computed absolute measures of food price volatility at the county level.

METHODOLOGY

1. GIS MAPPING

We first used Geographic Information System (GIS) mapping to visualise spatial patterns in the relationship between M-PESA usage and food security. The analysis incorporated county-level data from FDS Kenya on M-PESA user adoption and the proportion of individuals reporting no experience of food deprivation, which we used as a proxy indicator for food security status. The number of M-PESA users and the number of respondents who have never experienced food insecurity were each divided by the total number of responses for the survey to get the input for our GIS mapping. For instance, if 7 out of 10 respondents have an M-PESA account, we will use 0.7 as the input value. A complementary correlation analysis was further conducted for robustness.

2. REGRESSION ANALYSES

In addition, two separate regressions were conducted. To discern the relationship between food security and M-PESA roll out, two proxies of food security – hunger and price volatility of the food price index (Vhurumuku, 2014; World Bank Group, 2025) – were used. The specifications of the first regression are as follows:

$$Pr(hunger\_i = 1) = \Phi(\beta_0 + \beta_1 mpesa\_use\_i + \beta_2 gender\_i + \beta_3 income\_i + \beta_4 agegroup\_i + \beta_5 education\_i + \beta_6 phone\_i + \delta\_c + \varepsilon\_i)$$

The dependent variable, hunger, was coded as a dummy, where it takes on a value of 1 for respondents who have experienced some form of hunger and 0 for those who have not. The variable of interest, M-PESA usage frequency, is used as a proxy for user engagement with mobile money services, taking values from 1 (daily usage) to 7 (less than once yearly). This measure captures the intensity of mobile money integration, although we acknowledge it may not reflect all aspects of user engagement. Additional control variables such as gender, income, age, education, county and cell phone ownership were included for robustness. The second regression specification is as follows:

$$Price\_volatility\_it = \beta_0 + \beta_1 Treatment\_i + \beta_2 Post\_t + \beta_3 (Treatment\_i \times Post\_t) + \alpha\_i + \gamma\_t + \varepsilon\_it$$

A Difference-in-Difference (DiD) regression with M-PESA rollout in Sep 2009 as the selected treatment date was used. While M-PESA was officially launched in Mar 2007, it was not until Sep 2009 – due to teething issues and infrastructure limitations –that the platform experienced an exponential increase in users, likely due to the inaugural establishment of M-PESA with Family Bank that integrated financial institutions and mobile micro finance accessibility (World Bank, 2010). DiD was chosen to provide a higher level of confidence in the association between M-PESA adoption and price volatility (Columbia University, 2022). In principle, DiD can isolate the effect of M-PESA on price volatility (White & Sabarwal, 2014), as it compares two parallel evolving regions, yet one is given the treatment while not the other. For this study, Nairobi serves as the treatment group following M-PESA rollout in September 2009, while Turkana serves as the control group, having remained without M-PESA access throughout the entire analysis period.

3. LOGIC MODEL

Finally, we used a variation of the Wisconsin Logic Model (University of Wisconsin-Madison) to convey how M-PESA might have increased food security in Kenya. This method synthesises analysis from secondary sources regarding the effects of mobile money services (MMS), and by extension M-PESA, on four components of Kenya's food value chain (FVC): input suppliers, smallholder farmers, consumers, and financing. FVCs broadly refer to the farm-to-table chain connecting supply, distribution, and selling processes. This analysis focuses on enhancements to the FVC to identify a relationship between M-PESA and food security. We identified a logic model as an effective means to visualise the intermediary steps connecting these two seemingly unrelated phenomena. To complement the quantitative aspects of our study, this logic model provides a holistic overview of the qualitative results of M-PESA's rollout and exponential penetration across Kenya following its launch. It equally serves to anticipate theoretical gaps in our analysis by identifying the underlying mechanisms linking mobile finance and positive food security outcomes, especially with regard to the long-term sustainability, efficiency, and growth of Kenya's FVC, a proximate of food security.

RESULTS AND DISCUSSION

1. GIS MAPPING

As illustrated below, regions with high levels of food security and mobile banking usage are concentrated around the capital Nairobi. This is represented by the darker shades in the south-western region of the country. In contrast, the northern and south-east counties exhibit relatively low levels of both indicators. These spatial patterns suggest a positive correlation between M-PESA usage and food security. To quantify this relationship, we conducted a correlation analysis, which revealed a correlation of 0.7313 between the two variables. This result is significant at all levels, further supporting a strong association between mobile banking usage and food security in Kenya.

Figure 1: Proportion of respondents who use M-PESA

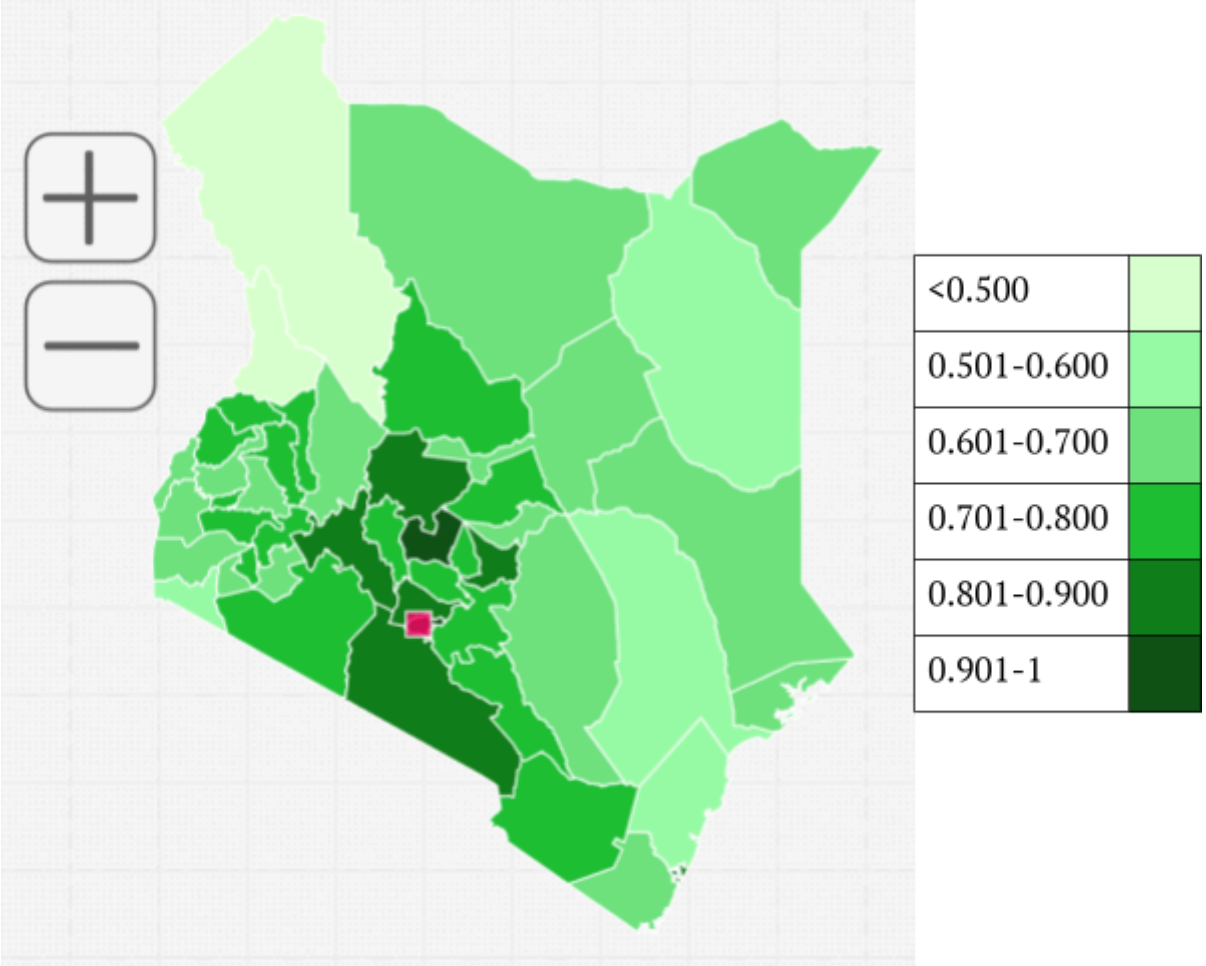
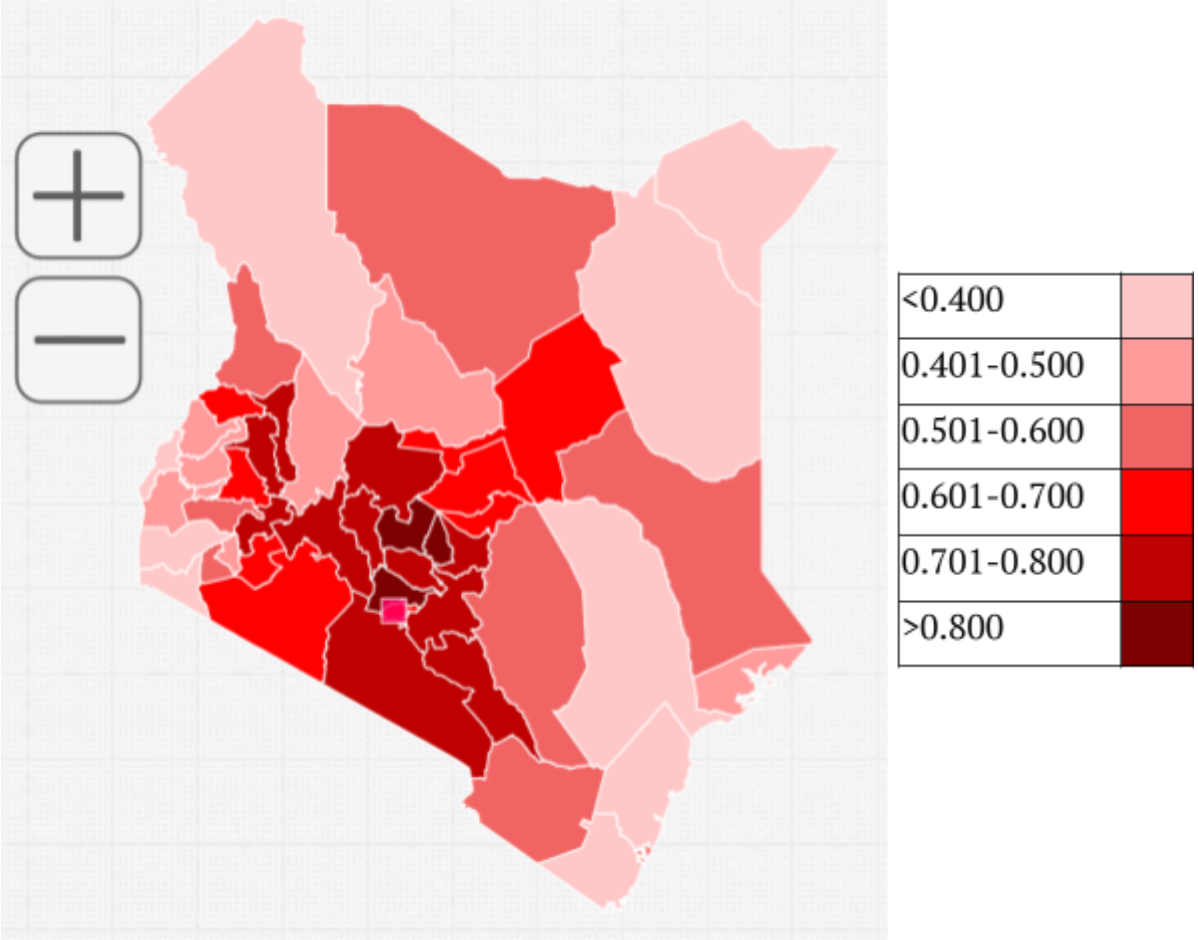


Figure 2: Proportion of respondents who have never gone without food to eat



2. REGRESSION ANALYSIS

2.1. FOOD INSECURITY (HUNGER)

To complement the GIS mapping results above, a probit regression was conducted, with the average marginal effects presented below.

Figure 3: Probit Regression

Average marginal effects — Number of obs = 6,109
Model VCE: Robust

Expression: Pr(hunger), predict()
dy/dx wrt: mpesa_use male income agegroup education internet_dummy 201.region_new 202.region_new 203.region_new 204.region_new 205.region_new 301.region_new 302.region_new 303.region_new 304.region_new 305.region_new 306.region_new 401.region_new 402.region_new 403.region_new 404.region_new 405.region_new 406.region_new 407.region_new 408.region_new 501.region_new 502.region_new 503.region_new 601.region_new 602.region_new 603.region_new 604.region_new 605.region_new 606.region_new 701.region_new 702.region_new 703.region_new 704.region_new 705.region_new 706.region_new 707.region_new 708.region_new 709.region_new 710.region_new 711.region_new 712.region_new 713.region_new 714.region_new 801.region_new 802.region_new 803.region_new 804.region_new

	dy/dx	Delta-method std. err.	z	P>|z|	[95% conf.	interval]
mpesa_use	.0371011	.0059633	6.22	0.000	.0254133	.0487889
male	-.0106766	.0120882	-0.88	0.377	-.034369	.0130158
income	-1.88e-06	7.86e-07	-2.39	0.017	-3.42e-06	-3.34e-07
agegroup	.0211621	.0046269	4.57	0.000	.0120936	.0302307
education	-.0890118	.0087633	-10.16	0.000	-.1061876	-.0718359
internet_dummy	-.0630444	.0256765	-2.46	0.014	-.1133695	-.0127194
region_new						
NYANDARUA	-.1228751	.0482657	-2.55	0.011	-.2174741	-.0282761
NYERI	-.2095971	.0379797	-5.52	0.000	-.2840359	-.1351583
KIRINYAGA	-.1857914	.0447671	-4.15	0.000	-.2735333	-.0980496
MURANGA	-.2187475	.0368504	-5.94	0.000	-.2909729	-.1465221
KIAMBU	-.2216537	.0351077	-6.31	0.000	-.2904635	-.1528439
MOMBASA	.1266194	.0368861	3.43	0.001	.0543241	.1989148
KWALE	.1266712	.052905	2.39	0.017	.0229794	.2303631
KILIFI	.1744676	.0501492	3.48	0.001	.0761771	.2727581
TANA RIVER	.1434067	.0622702	2.30	0.021	.0213592	.2654541
LAMU	-.030829	.0690365	-0.45	0.655	-.1661381	.1044801
TAITA TAVETA	-.0257956	.0515129	-0.50	0.617	-.1267591	.0751678
MARSABIT	-.0214886	.0472476	-0.45	0.649	-.1140922	.071115
ISIOLO	-.0892869	.0458117	-1.95	0.051	-.1790763	.0005024
MERU	-.1339995	.0366723	-3.65	0.000	-.2058758	-.0621231
THARAKA NITHI	-.2193964	.0399498	-5.49	0.000	-.2976965	-.1410964
EMBU	-.108739	.0407232	-2.67	0.008	-.1885549	-.028923
KITUI	-.0567958	.0414343	-1.37	0.170	-.1380055	.0244139
MACHAKOS	-.188132	.0345552	-5.44	0.000	-.2558589	-.1204052
MAKUENI	-.1828982	.0371888	-4.92	0.000	-.255787	-.1100095
GARISSA	-.0734322	.0470468	-1.56	0.119	-.1656423	.0187778
WAJIR	.0709438	.0533559	1.33	0.184	-.0336319	.1755195
MANDERA	.1657869	.0534685	3.10	0.002	.0609906	.2705832
SIAYA	-.0089911	.0541095	-0.17	0.868	-.1150439	.0970616
KISUMU	.0792623	.0489603	1.62	0.105	-.0166982	.1752228
MIGORI	.1502492	.0610552	2.46	0.014	.0305833	.2699152
HOMA BAY	.1299138	.0539363	2.41	0.016	.0242006	.235627
KISII	.010435	.0510059	0.20	0.838	-.0895347	.1104047
NYAMIRA	.0714525	.0535929	1.33	0.182	-.0335876	.1764926
TURKANA	.3404868	.0523793	6.50	0.000	.2378252	.4431483
WEST POKOT	-.0294153	.0542595	-0.54	0.588	-.1357621	.0769314
SAMBURU	.034774	.0642369	0.54	0.588	-.091128	.160676
TRANS NZOIA	-.0600652	.0497974	-1.21	0.228	-.1576663	.0375359
BARINGO	.0265433	.0656446	0.40	0.686	-.1021177	.1552044
UASIN GISHU	-.1203767	.0460874	-2.61	0.009	-.2107064	-.030047
ELGEYO MARAKWET	-.1054621	.0600034	-1.76	0.079	-.2230665	.0121424
NANDI	-.1444828	.0509428	-2.84	0.005	-.2443288	-.0446368
LAIKIPIA	-.1858309	.0494049	-3.76	0.000	-.2826627	-.0889991
NAKURU	-.0928579	.0401552	-2.31	0.021	-.1715606	-.0141551
NAROK	-.0439936	.0494799	-0.89	0.374	-.1409723	.0529852
KAJIADO	-.0730884	.042643	-1.71	0.087	-.1566672	.0104904
KERICHO	-.0944089	.0447999	-2.11	0.035	-.1822152	-.0066027
BOMET	.0013593	.0465965	0.03	0.977	-.0899683	.0926869
KAKAMEGA	.1473487	.0445285	3.31	0.001	.0600743	.234623
VIHIGA	.0953056	.0471381	2.02	0.043	.0029167	.1876946
BUNGOMA	.087156	.0457046	1.91	0.057	-.0024234	.1767353
BUSIA	.2766236	.0508809	5.44	0.000	.1768989	.3763483

Note: dy/dx for factor levels is the discrete change from the base level.

The results revealed several expected patterns. Internet access and higher education levels significantly reduce the probability of hunger by 6.3 and 8.9 percentage points, respectively, consistent with the literature on digital access and human capital as protective factors against food insecurity. M-PESA usage frequency, used as a proxy for user engagement with mobile money services, shows that more frequent usage is associated with lower hunger probability. With each step toward less frequent usage, the risk of hunger increases by 3.7 percentage points.

2.2. PRICE VOLATILITY

The analysis then moved on to looking at the impact of the M-PESA rollout on the price volatility. As with all DiD, we tested the parallel trend assumption by regressing price volatility on the interaction of treatment status and time trend for the pre-treatment period. The interaction coefficient was statistically insignificant (p = 0.137), indicating that Turkana and Nairobi followed parallel trends in price volatility before M-PESA rollout, supporting the validity of our identification strategy (see results below). For robustness, we also included region and time fixed effects. These help control for time-invariant regional characteristics (e.g. baseline infrastructure, climate) and common temporal shocks (e.g. inflation, national policy changes), further isolating the treatment effect of M-PESA rollout on price volatility.

Figure 4: Parallel Trend Assumption

```
. reg price_volatility Treatment##c.time_counter2 if Post==0
```

Source	SS	df	MS	Number of obs	=	638
				F(3, 634)	=	52.28
Model	1467.96653	3	489.322176	Prob > F	=	0.0000
Residual	5933.74123	634	9.3592133	R-squared	=	0.1983
				Adj R-squared	=	0.1945
Total	7401.70776	637	11.6196354	Root MSE	=	3.0593

price_volatility	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
1.Treatment	3.651511	.5008306	7.29	0.000	2.668024	4.634999
time_counter2	-.0046478	.0177318	-0.26	0.793	-.0394679	.0301722
Treatment#c.time_counter2						
1	-.0394131	.0264461	-1.49	0.137	-.0913456	.0125194
_cons	1.918379	.335742	5.71	0.000	1.259078	2.57768

Figure 5: Difference in Difference Regression

HDFE Linear regression — Number of obs = 1,678
Absorbing 2 HDFE groups — F(2, 1663) = 3.24
Prob > F = 0.0396
R-squared = 0.1350
Adj R-squared = 0.1277
Within R-sq. = 0.0039
Root MSE = 3.2095

price_volati~y	Coefficient	Robust std. err.	t	P>|t|	[95% conf.	interval]
1.Treatment	0	(omitted)				
1.Post	.3127331	.1967853	1.59	0.112	-.07324	.6987061
Treatment#Post						
1 1	-.8250038	.3244386	-2.54	0.011	-1.461355	-.1886527
_cons	3.195523	.1214684	26.31	0.000	2.957276	3.43377

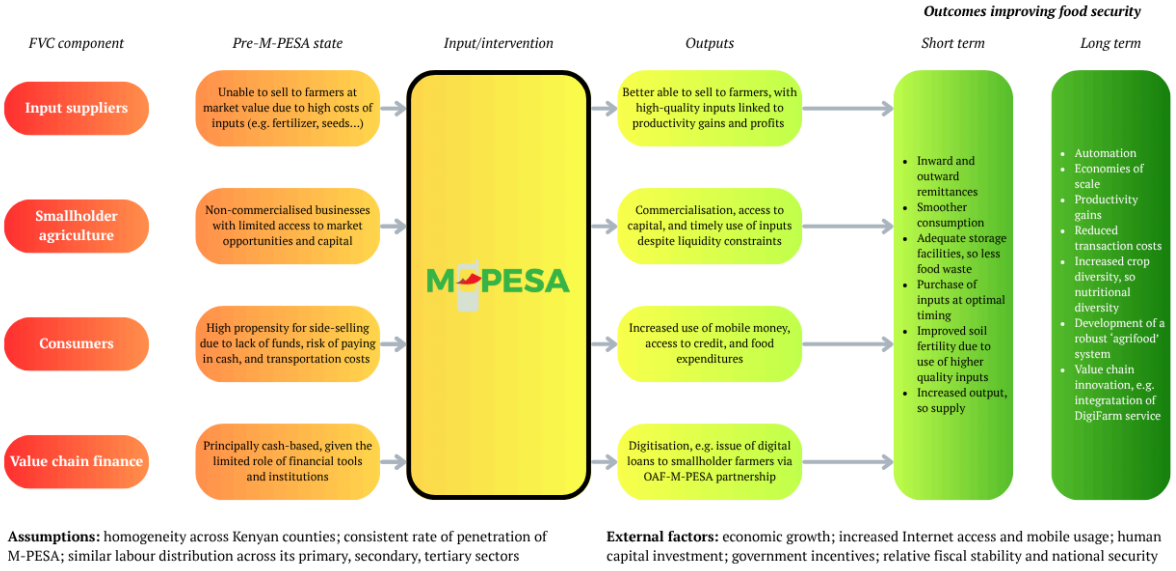
Our DiD analysis shows that M-PESA significantly reduced food price volatility by 0.825 index points (p = 0.011). Relative to the baseline volatility of 1.8 index points, this represents a 46% reduction in month-to-month price fluctuations. The DiD approach compares changes in price volatility between Nairobi (treatment) and Turkana (control) before and after the M-PESA rollout. The estimated coefficient captures the difference between these two regions' price volatility trajectories, with Turkana serving as the counterfactual for what would have occurred in Nairobi without M-PESA. This design controls for time-invariant regional characteristics and common time trends affecting both areas.

A key assumption is that treatment and control regions would have followed parallel trends absent the intervention. While we tested this assumption pre-treatment, potential violations could arise from differential time-varying factors post-treatment. For example, if Nairobi experienced infrastructure improvements that simultaneously enhanced mobile networks and food distribution systems post M-PESA adoption, this could bias our results upward.

3. LOGIC MODEL AND DISCUSSION

While both the GIS map and the regression analysis support our research hypothesis that M-PESA usage increases food security, lending support to our hypothesis, they do not provide explanation on the underlying mechanisms between M-PESA and enhancements in food security. Beyond aggregate data, individual- and community-level experiences with mobile finance equally illustrate its potential for significant change. Therefore, to complement the above analyses, we produced a logic model.

Figure 6: Logic model



As Figure 6 illustrates, each selected component of Kenya's FVC transformed in some manner following the launch of M-PESA. Past research indicating the positive effect of improving FVCs on food security (Graef et al., 2014) inspired this approach.

First, input suppliers struggled to sell to smallholder farmers at market rates (Mattern & Ramirez, 2017). With the advent of M-PESA, however, high-quality inputs such as chemical fertilisers penetrated the agricultural sector and were associated with greater productivity and profits (Kikulwe, Fischer & Matin Qaim, 2014).

Second, smallholder agriculture accounts for 78% of total agricultural output and 23.5% of Kenyan GDP (Wahome et al., 2024). Before M-PESA, it principally consisted of cash-based and non-commercialised businesses constrained by

financial exclusion (Government of Kenya, 2010), a lack of market opportunities, infrastructure, and working capital (Eburajolo, 2024; Mattern & Ramirez, 2017). Nevertheless, with capital increasingly available, smallholders could purchase inputs at optimal timing (Kikulwe, Fischer & Matin Qaim, 2014; Nagarajan & Haas, 2011) and scale up production faster (Nagarajan & Haas, 2011). M-PESA users demonstrated 37% higher agricultural commercialisation and 35% higher profits per acre than non-users (Kirui et al., 2013; Kikulwe, Fischer & Matin Qaim, 2014), meaning more food reached markets (Nagarajan & Haas, 2011).

Third, consumers often resorted to side-selling to mitigate the risk and immediate cost of paying in cash (Mattern & Ramirez, 2017), with little access to affordable credit. M-PESA's rapid and unmatched success (Graham, 2010) saw over 70% of Kenyans use the service by 2011 (Fabregas & Yokossi, 2022), many from rural agricultural communities (Nagarajan & Haas, 2011; Plyler, Haas & Nagarajan, 2010). Over 90% of sampled households in rural Kibera, Murang'a, and Kitui adopted mobile money within several years (Kikulwe, Fischer & Matin Qaim, 2014). Remittances and loans facilitated smoother consumption of agricultural goods, enabling more consumers to meet their food needs.

Fourth, the digitisation of smallholder agricultural finance (Mattern & Ramirez, 2017) facilitated access to credit. For instance, in 2014, One Acre Fund (OAF) started issuing digital loans via M-PESA to rural Kenyan smallholders seeking to buy agricultural inputs; by 2015, the average farmer using OAF reported 48% higher earnings (Better than Cash Alliance, 2017).

M-PESA paved the way for short- and long-term structural change to Kenya's FVC. Its 'agrifood system' showed transformation consistent with lower-middle-income countries (Diao et al., 2023). Food production increased due to the timely purchase of agricultural inputs, even during barren seasons (Nagarajan & Haas, 2011; Plyler, Haas & Nagarajan, 2010). With smallholders increasingly able to purchase high-quality fertilisers, high-yielding seeds (c.f. Tabetando, Matsumoto & Raoul, 2022), and storage facilities, the amount of infertile soil and food waste plausibly decreased. Innovative mechanisms (Mattern & Ramirez, 2017) such as DigiFarm, which leverages payments via M-PESA, provide integrated input financing between suppliers and farmers (Kiaka, 2024). This strategy is likely to remain, with the Kenyan government championing 'digital innovation' at the UN Food Systems Summit in 2021 (de Jong et al., 2024).

In tandem with findings from the GIS map and the regression analysis, the logic model provides a comprehensive explanation of the intermediary mechanisms linking M-PESA to increased food security in Kenya. Such narratives help bridge the gap between the statistical relationship and actual outcomes. Since smallholder agriculture remains Kenya's breadbasket, including low-income rural populations in the financialised regional and global economy seemingly enhanced the accessibility, durability, quality, and quantity of food in Kenya.

LIMITATIONS

However, while the results are encouraging, we should also recognise the various negative externalities engendered by M-PESA. Notwithstanding the convenience it offers to users, its 91% share of the mobile money market in Kenya (Dabafinance, 2025) enables it to charge users transaction fees as high as 10%, compared to 3-5% in neighbouring countries with greater price competition. With Safaricom vertically integrating much of Kenya's digital and financial infrastructure, its quasi-monopoly renders M-PESA a mechanism of extraction; poorer users disproportionately pay market participation costs (Lapavitsas, 2013; Sun, 2024; Finch and Kocieniewski, 2022). Financial inclusion by means of rent extraction may thus disempower users (Standing, 2011) because exorbitant transaction fees directly reduce household purchasing power, which indirectly affects food security.

Moreover, with annualised interest rates above 90% and short repayment periods, servicing M-PESA debt is challenging for users (Baborska et al., 2020). Such obligations divert an increasing share of household income away from essential expenditures, which reduces short-term food access and long-term agricultural productivity (Guermond et al., 2022; Finch and Kocieniewski, 2022). Over-indebted households may compensate by selling land, livestock, or farming equipment (Guermond, 2022; Sun, 2024). Furthermore, Kenya's vulnerability to disruptions, such as failed harvests or staple price inflation, can trigger distress sales or further borrowing (Guermond et al., 2022). Households may thus prioritise cheap staples over protein- and micronutrient-dense foods under this pressure (Guermond et al., 2023; Morel et al., 2024), decreasing dietary adequacy and nutritional diversity. This may lead to a cycle of debt and food insecurity.

CONCLUSION

Beneficiary of an unregulated and monopolistic Kenyan mobile money market, M-PESA has little incentive to reduce transaction fees and support users' long-term welfare. However, our study aims not to extol this particular service, but to determine the potential for mobile money, and microfinance more broadly, to increase food security. We share concerns regarding the negative externalities engendered by mobile money services and invite researchers to analyse them more thoroughly. One must not view M-PESA as a panacea, but one solution among many.

Amid rising food insecurity and the proliferation of digital finance in the developed world, our research set out to determine the extent to which the latter can assist in global efforts to eradicate hunger and famine. With, for instance, US president Donald J. Trump recently ceasing all USAID operations (Gedeon & Tait, 2025), 40% of the world's land area vulnerable to frequent and severe droughts (OECD, 2025), and Sub-Saharan Africa accounting for 51% of the global mobile money sector (Fintech News Africa, 2025), our findings might inform policymakers and organisations navigating a rapidly modernising yet increasingly hungry world.

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