Migration, Money Transfers and Mobile Money: Evidence from Niger

Background Paper

Jenny C. Aker

BLAVATNIK SCHOOL OF GOVERNMENT
UNIVERSITY OF OXFORD

Pathways for Prosperity Commission
Technology & Inclusive Development

Jenny C. Aker
The Fletcher School and Department of Economics
Tufts University, Medford, MA

Background Paper 16
October 2018

The Pathways for Prosperity Commission on Technology and Inclusive Development is proud to work with a talented and diverse group of commissioners who are global leaders from government, the private sector and academia. Hosted and managed by Oxford University's Blavatnik School of Government, the Commission collaborates with international development partners, developing country governments, private sector leaders, emerging entrepreneurs and civil society. It aims to catalyse new conversations and to encourage the co-design of country-level solutions aimed at making frontier technologies work for the benefit of the world's poorest and most marginalised men and women.

This paper is part of a series of background papers on technological change and inclusive development, bringing together evidence, ideas and research to feed into the commission's thinking. The views and positions expressed in this paper are those of the author and do not represent the commission.

Citation:
Aker, J. (2018) *Migration, Money Transfers and Mobile Money: Evidence from Niger.* Pathways for Prosperity Commission Background Paper Series; no. 16. Oxford, United Kingdom.

www.pathwayscommission.bsg.ox.ac.uk
@P4PCommission
#PathwaysCommission

Blavatnik School of Government
University of Oxford

Pathways for Prosperity Commission
Technology & Inclusive Development

Abstract

Internal and regional migration serves as an income source for millions of households in West Africa. Despite substantial volumes of remittances, the cost of cross-border payments in the West African Economic and Monetary Union (WAEMU) is estimated to be one of the highest in the world. The introduction of digital financial services – primarily mobile money – offers new opportunities for reducing the transaction costs associated with remittances. Nevertheless, the adoption of such services in West Africa remains low, and the majority of households are still highly dependent on informal money transfer systems. Using survey data in Niger from an eight-year period, we estimate the value of remittances from migrants from Niger, as well as the relative cost of money transfers. We find that mobile money adoption remains low in Niger, despite the fact that it is less costly compared to informal mechanisms. Mobile phone ownership is high and there is relatively high willingness among rural households to pay current or above market price for mobile money transfers. Willingness to pay seems to be relatively higher in areas with greater access to mobile money agents, despite similar rates of migration. This suggests that one of the primary barriers to mobile money adoption could be access to the necessary infrastructure.

Acknowledgements

I am extremely grateful for funding from the Hitachi Center for Technology and International Affairs at Tufts University in support of this project. This paper is based upon a background paper written for the Pathways for Prosperity Commission, hosted at the Blavatnik School of Government, Oxford University. I would also like to thank Tebello Qhotsokoane, Sophie Ochmann, Toby Phillips and Silvia Prina for helpful comments on drafts of this report. All errors or omissions remain the responsibility of the author.

Table of Contents

1. Introduction

Over the past few years, there has been increasing political and economic interest in the flows of refugees and migrants into the US and Europe. In 2016 alone, it was estimated that 400,000 refugees and migrants passed through Niger in transit to North Africa and Europe (IRIN 2017), often with tragic consequences (*New York Times* 2016). In response, a number of high-income countries have prepared development aid packages for poor countries in sub-Saharan Africa, often with the hopes of reducing migration flows. The European Union (EU) in particular has been looking to sign agreements linking millions in aid to 'migration controls' with five African countries – Niger, Nigeria, Mali, Senegal, and Ethiopia.[1]

While the current focus of this aid flow has been on *international* migration from sub-Saharan Africa, domestic and regional migration still predominates in West Africa (ICMPD 2015), with Nigeria and Ivory Coast as key destinations. In Niger, for example, 50% of households have at least one seasonal migrant, often migrating within Niger or to North and West Africa. Similar statistics exist for other West African countries (ICMPD 2015).[2]

Central Bank of West African States (BCEAO) data indicate that 34.5% of the West African Economic and Monetary Union (WAEMU) adult population held an account at a formal institution in 2014. This increases to 61% when 'mobile money' accounts are included. The Global Findex data estimate that 13% of adults have an account at a formal financial institution, rising to 18% when mobile money is included (CGAP 2016). Given this limited access to formal financial services, migrants often use other means – such as Western Union or MoneyGram, *hawalas*, friends or bus operators who act as money agents – to send remittances home.

West African migrants are often hit with a 'double whammy' of low wages and high money transfer costs. In fact, the cost of cross-border payments in the WAEMU is estimated to be one of the highest in the world, representing up to 30% of transfer value, while the global average is 8% (BMGF, GSMA 2015). For migrants in Niger, for whom the average transfer was $40 in 2015, this suggests that up to $12 was spent on money transfer costs, approximately equivalent to a household's grain consumption for one month.

Digital financial services (DFS), in particular mobile money, have generated considerable enthusiasm. For example, mobile money can be sent between two mobile money account holders (or to a non-account holder with a phone number) as long as the two are on the same mobile phone network.

[1] The EU recently signed a deal with Niger providing 610 million Euros in development aid (IRIN 2017, Reuters 2016).

[2] In Niger, migrants are divided equally between domestic and international migration – with a majority of destinations within West Africa (Nigeria, Ghana and Ivory Coast) and North Africa (Algeria and Libya), with the latter a primary destination prior to the collapse of the Gaddafi regime in October 2011.

The recipient receives a text message code to present to a mobile money agent to retrieve the funds – either the sender pays a transfer fee or the recipient pays a withdrawal fee. In theory, these services should reduce remittance fees for the rural poor.[3]

While only 34% of rural households in sub-Saharan Africa have access to a formal financial institution, over 67% own a mobile phone (Findex 2017). Despite significant growth in mobile money deployments across West Africa since 2014, mobile money adoption and usage remains relatively low and limited to specific countries (CGAP 2015, UNCDF 2016).[4,5] While numerous potential factors could explain low adoption, a key factor seems to be the density of the mobile money distribution network, which is affected by the regulatory framework and business model.[6]

Using panel data from Niger over an eight-year period, we show that migration plays a crucial role in the welfare of Nigerien households, with 50% of households having at least one seasonal migrant each year, or one million adults. On average, migrants send 1.5 transfers over the course of the year, with an average value of US$20. This suggests that migrants send approximately US$24 million to rural households each year.

Despite this potential demand for remittances, and rates of mobile phone ownership of over 90% in some rural regions, Nigerien households are still strongly dependent on informal financial services for their money transfers. More than 90% of households use the bus or a friend to send remittances, with much smaller percentages using international or domestic money transfer services, and less than 1% using mobile money services.

Using a modified version of the Becker-DeGroot-Marschak (BDM) mechanism, we estimate willingness to pay (WTP) for mobile money services in Niger. While the average WTP is at or above the actual cost, there is significant heterogeneity by gender and region. In addition, the modification of the experimental game may overestimate households' WTP. Yet these measures, combined with households' use of other money transfer services, suggest that households would be willing to pay for mobile money services. Given the low rates of adoption, a potential constraint is the low density of agent infrastructure. In one region of Niger, there are only four mobile money agents for three million people, and households are located an average of 15 km from the nearest mobile money agent.

---

[3] Research in Kenya by Jack and Suri (2013) shows that the introduction of M-Pesa reduced transaction costs, facilitated internal transfers and allowed households to smooth consumption in the face of shocks, with reductions in poverty in the medium term (2016). Research by Aker et al. (2016) in Niger shows that using mobile money in the context of a cash transfer programme reduces transfer costs for recipients and the implementing agency, improving household food security.

[4] In Ivory Coast, one of the largest mobile money markets, over 50% of registered clients report not having used their accounts within the past 90 days (CGAP 2015). In Senegal, only 8% have used mobile money (UNCDF 2016).

[5] Although the WAEMU region has common currency and central bank, there is virtually no interoperability between the region's 32 mobile money deployments and banks. Deployments and adoption in DFS are uneven across WAEMU, the eight countries and there are still important obstacles, including agent networks (CGAP 2016).

[6] Mobile money services with the highest activity rates have an average of 1.3 active agents per 1,000 adults, compared to 0.9 active agents for deployments with average activity rates, and 0.4 active agents for deployments with less than 15% activity rates (GSMA 2017).

This paper reinforces the literature that highlights the importance of remittances, and how transfer costs can affect welfare (Yang 2011; Ashraf, Aycinena, Martinez, and Yang 2015; Gibson, McKenzie, and Rohorua 2006). Overall, those studies found that even small changes in the variation of remittance fees can be quite large: a $1 reduction in remittance fees can lead to an increase in $25 of the average remittances sent per month (Ashraf et al. 2015), and that this can increase the frequency of remittances sent (Jack and Suri 2014).

We also reference the newer literature on DFS, such as mobile money and digital credit. Overall, those studies found that access to mobile money can help households to smooth consumption in the face of shocks (Jack and Suri 2014, Blumenstock et al. 2015) and reduce poverty in the longer term, primarily by allowing households to get more timely access to remittances from domestic migrants. While these studies discuss the potential cost reductions associated with mobile money as compared with other transfer services, they exist in countries where the mobile money agent infrastructure is quite developed.

The rest of this paper proceeds as follows: Section 2 provides a historical overview on migration trends and remittances in West Africa and Niger over the past seven years, a key doorway for international and regional migration; Section 3 outlines the data for this specific study; whereas Section 4 focuses on the specific remittance patterns and costs for migrant households in Niger; Section 5 provides insights into demand and use for a particular money transfer service – mobile money; and Section 6 concludes.

2. Setting

A: Regional migration and money transfer systems

Domestic, regional and international migration all play an important role in the welfare of West African households. While much of the international policy focus has been on international migration from sub-Saharan Africa to Europe and the US in recent years, regional and domestic migration still dwarfs international migration: In 2015, it was estimated that regional migration was seven times greater than flows from West African countries to other parts of the world, with Nigeria, Ivory Coast and Ghana as major destinations (ICPMD 2015).

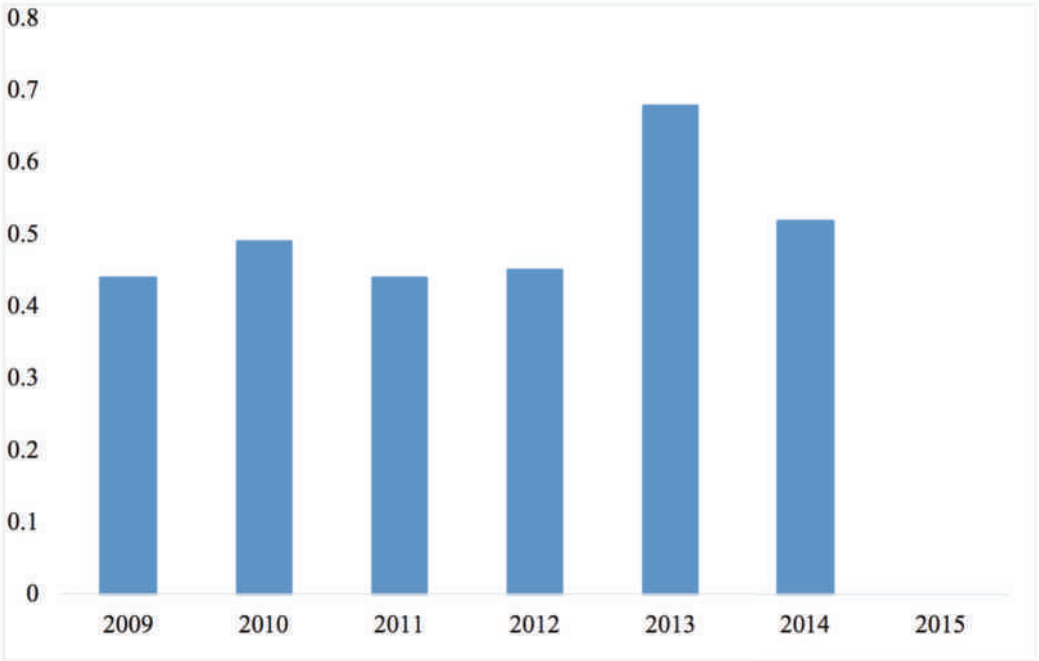
Money transfer fees are relatively high. Even though there is a common currency across eight of the WAEMU countries, the cost of cross-border transfers in the region is estimated to be one of the highest in the world (BMGF, GSMA 2015). These high costs are partly due to low levels of financial inclusion: less than 35% of the population in West Africa has access to an account at a formal financial institution, similar to the average in sub-Saharan Africa in 2017 (Findex 2017). As a result, migrants often use other services, such as local money transfer systems, *hawalas*, friends or buses.

While access to a regular savings account is low, two-thirds of households have access to a mobile phone in sub-Saharan Africa, with similar rates in the West Africa region. This, combined with multiple mobile money deployments in West Africa by Airtel, Orange, MTN and Tigo, offers opportunities to reduce the costs of money transfer services in remote rural areas. Yet, despite this potential, mobile money adoption and usage are still low: in 2017, it was estimated that 30% of households had a mobile money account, with marked variation within and across countries (GSMA 2017). Even in Ivory Coast, one of the largest mobile money markets, over 50% of registered clients report not having used their accounts within the past 90 days (CGAP 2015).

B: Migration and money transfers in Niger

The regional and domestic migration patterns across West Africa are mirrored in Niger, a landlocked country that is one of the poorest in the world. Using panel data from a number of surveys conducted in Niger between 2008 and 2015, approximately 50% of Nigerien households contained any migrant, with slight variations by year (Figure 1).

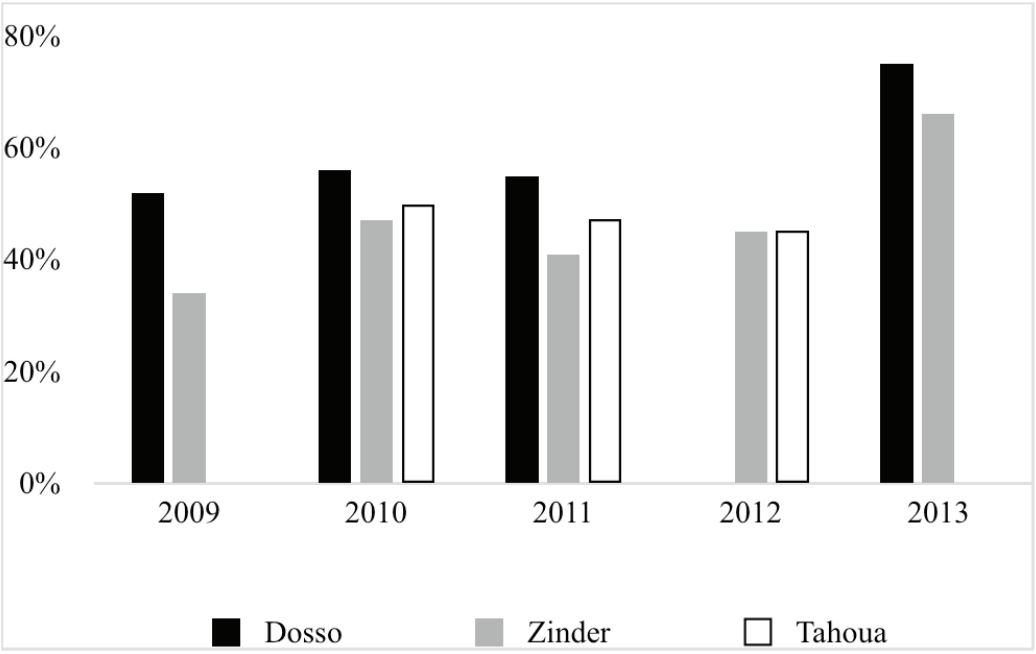
Figure 1: Percentage of households with any migrant in Niger



Source: These figures are calculated from nine household surveys conducted in four regions of Niger between 2009 and 2014. The sample of households was primarily drawn from illiterate households and stratified by gender, with over 95% of households engaged in agriculture and livestock as their primary income-generating activities.

While there are some variations in migration by region, overall, the density of migrants – as measured by the percentage of households reporting at least one migrant – is similar across the regions in the study sample (Figure 2).

Figure 2: Percentage of households with a migrant – by year and region



Source: These figures are calculated from nine household surveys conducted in four regions of Niger between 2009 and 2013. The sample of households was primarily drawn from illiterate households and stratified by gender, with over 95% of households engaged in agriculture and livestock as their primary income-generating activities.

The key destinations of migrants in Niger have also remained fairly stable over time, with 27% migrating internally within Niger, 15% migrating to Nigeria and 21% migrating to other destinations within West Africa, namely, Ivory Coast, Ghana and Senegal.[7] While there is a geographic pattern to destinations – with North Africa a more popular destination for households further north, and Nigeria a more popular destination for those households further south – overall, Nigeria, Ivory Coast and Ghana remain key destinations.

The historical correlates between migration and household and geographic characteristics in Niger are presented in Table 1.

Table 1. Correlates of migration

VARIABLES	(2) Household has any migrant	(3) Number of migrants
Number of household members	0.02***	0.02***
	(0.00)	(0.00)
Percentage of adults with education		0.10***
		(0.02)
Asset ownership	0.01***	0.01*
	(0.00)	(0.01)
Drought	-0.05***	-0.05***
	(0.01)	(0.02)
Observations	6,726	4,544
R-squared	0.07	0.04

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

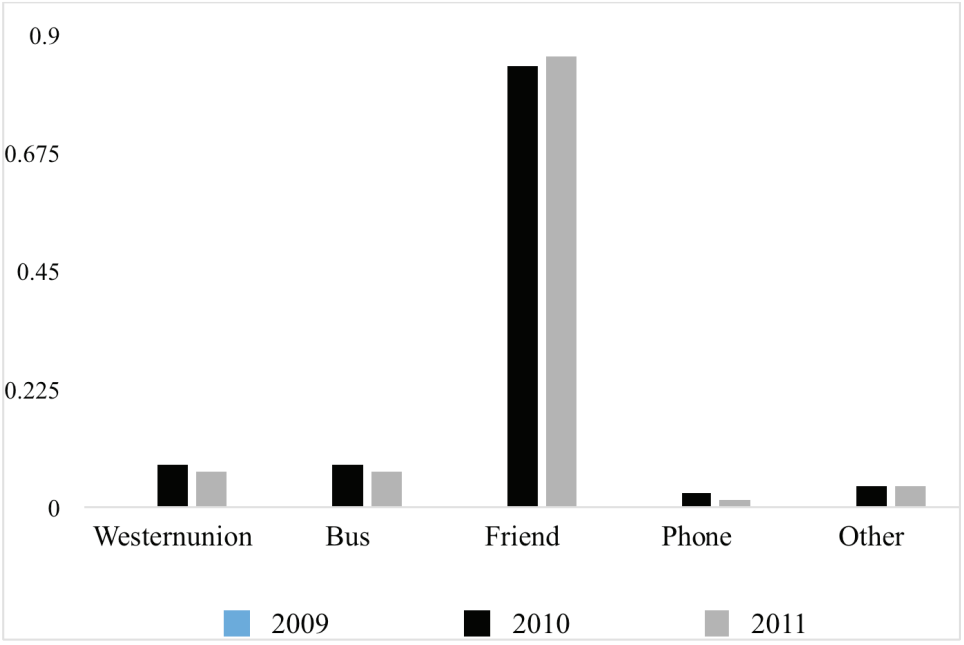
Overall, the key correlates of migration are household size, education and wealth, using asset ownership as a proxy: larger households are more likely to have a migrant, as well as those with more assets. Climatic shocks (such as drought) are negatively correlated with the likelihood of migration. Households are 5 percentage points less likely to send a migrant if there was a shock in the previous year. Turning to the intensive margin of migration, unsurprisingly, larger households with more assets have more migrants. While these are mere correlations, they suggest that financial constraints may be an important consideration in determining migration in Niger.[8]

Similar to the regional patterns, households have typically used informal systems to transfer remittances, namely the bus and friends and family members. (See Figure 3.)

[7] Prior to the Arab Spring in 2013, Libya was a key destination for 20% of migrants in Niger, especially those in the northern regions; since that time, migrants have relocated to other destinations.

[8] Estimating a regression with an interaction term for assets and drought suggests that this is the case, as households affected by drought with more assets are more likely to have a migrant.

Figure 3: Money transfer systems, 2009–2011



Very few households have used mobile money at all, or for remittances. This is partly due to the high rates of financial exclusion: Niger is one of the most financially excluded countries in sub-Saharan Africa. In 2015, it was estimated that there was one bank for every 100,000 people, and the 2017 Findex survey estimates that only 16% of adults have an account at a financial institution (Findex 2017). Within our sample of the poorest in remote rural areas, the rate is much lower, estimated at 2%. Despite that, there are 45 money transfer companies in Niger, ranging from Western Union to local money transfer services, mobile money, and bus agent services.

Despite the low rates of financial inclusion, mobile phone ownership has increased markedly over the past decade, from approximately 30 to 90% of households, depending on the region. Yet overall, mobile money adoption in Niger remains low in rural areas – approximately 2% – and has not significantly changed over the past five years.

3. Sample and Data

This study uses data from three primary sources:

- Household panel surveys: a series of surveys conducted in Niger as part of prior research conducted between 2009 and 2014, from four regions in Niger

- Survey of money transfer service providers: a survey of 42 money transfer services in Niger, collected in July 2017

- Household remittance survey: a survey of 450 households across three regions of Niger in 2017, taken from a larger sample.

A: Household panel surveys

The first data set is comprised of panel data (the longest duration for any panel is three years) of approximately 4,800 households from nine household surveys conducted in four regions of Niger between 2009 and 2014. It is part of four separate research projects:

- A mobile-phone enhanced adult education programme in Niger (ABC), comprised of approximately 1,100 households across 113 villages in the Dosso and Zinder regions between 2009 and 2011 (Aker et al. 2012)

- A mobile money cash transfer programme comprised of 1,200 households across 96 villages in the Tahoua region between 2010 and 2012 (Aker et al. 2016)

- A savings programme and comprised of 1,000 households across 70 villages in the Dosso region in 2013 and 2014 (Aker et al. 2018)

- A mobile phone-based monitoring programme of adult education teachers comprised of 1,500 households across 91 villages in the Maradi and Zinder regions in 2014 (Aker and Ksoll 2018).

Although these surveys were conducted for different research programmes, they all targeted poor and illiterate households in remote rural areas. The sampling strategy was the same for three of the surveys (the first, third and fourth data sets) as it was part of an adult education course – and stratified by gender. The sampling strategy for the second research project (using mobile money) focused on poor and vulnerable households and women, although many of the characteristics are similar to the other surveys. During the time the surveys were conducted, more than 95% of households were engaged in agriculture and livestock-raising as their primary income-generating activities.

All of these surveys collected data on a number of socio-demographic and economic characteristics in Niger, including household size, migration patterns, climatic shocks, remittances, education and assets. In our study, we use these data sets to provide summary statistics on the context and trends of migration, remittances and money transfer services in Niger between 2009 and 2014, prior to and immediately after the Arab Spring, and prior to recent trends in international migration.

B: Survey of money transfer service providers

In June 2017, we worked with a local survey firm to conduct a census of all money transfer service providers, including larger firms and individual moneylenders. Based on this census, we interviewed key stakeholders in each money transfer service. The survey contains key information on the location of money transfer agents, destinations for remittances and costs. This study uses these data to estimate reported costs and location of money transfer agents in Niger.

The summary statistics for this sample are provided in Table 2.

Table 2. Money transfer companies

	(1)	(2)	(3)	(4)	(5)
	All companies	Transport companies	Domestic companies	International Companies	Mobile Network Operators (MNOs)
	mean (s.d.)	mean (s.d.)	mean (s.d.)	Mean (s.d.)	Mean (s.d.)
Panel A: Transfer locations					
Company still transfers money	0.65	0.13	0.75	1.00	1.00
	(0.483)	(0.352)	(0.500)	(0)	(0)
Company has sub-offices within Niger	0.96	1.00	1.00	1.00	1.00
	(0.196)	(0)	(0)	(0)	(0)
Number of sub-offices nationally	20.29	3.00	20.00	33.75	11.00
	(16.36)	(1.414)	(.)	(20.56)	(.)
Company has sub-offices in rural areas	0.12	0.50	0.00	0.00	1.00
	(0.332)	(0.707)	(.)	(0)	(.)
Company has offices outside of Niger	0.65	0.00	1.00	1.00	1.00
	(0.485)	(0)	(0)	(0)	(0)
Office in Niger	0.18		0.00	0.50	0.00
	(0.393)		(0)	(0.577)	(0)
Office in Benin	0.94		1.00	1.00	0.67
	(0.243)		(0)	(0)	(0.577)
Office in Burkina	0.82		0.67	1.00	0.67
	(0.393)		(0.577)	(0)	(0.577)
Office in Mali	0.76		0.67	1.00	0.33
	(0.437)		(0.577)	(0)	(0.577)
Office in Ghana	0.35		0.33	1.00	0.00
	(0.493)		(0.577)	(0)	(0)
Office in Senegal	0.71		0.33	1.00	0.33
	(0.470)		(0.577)	(0)	(0.577)
Office in Ivory Coast	0.82		0.67	1.00	1.00
	(0.393)		(0.577)	(0)	(0)
Office in North Africa	0.29		0.00	0.75	0.00
	(0.470)		(0)	(0.500)	(0)
Offices in other parts of Africa	0.41		0.00	1.00	0.33
	(0.507)		(0)	(0)	(0.577)
Offices in Europe	0.41		0.00	1.00	0.00
	(0.507)		(0)	(0)	(0)
Total Number of countries with offices	4.58	0.00	4.67	11.00	4.00
	(4.042)	(0)	(1.155)	(0.816)	(0)

Panel B: Documentation for money transfers					
Require form to send money	0.19	0.00	0.00	0.00	0.00
	(0.402)	(0)	(0)	(0)	(0)
Require form to pick up money	0.08	0.00	0.00	0.00	0.00
	(0.272)	(0)	(0)	(0)	(0)
Require other documentation to pick up money	0.58	0.12	0.60	0.80	1.00
	(0.499)	(0.342)	(0.548)	(0.447)	(0)
No documentation required to send money	0.27	0.00	0.00	0.75	0.67
	(0.452)	(0)	(0)	(0.500)	(0.577)
Sender's phone number to send money	0.73	1.00	0.33	0.75	0.67
	(0.452)	(0)	(0.577)	(0.500)	(0.577)
Recipient's phone number to send money	0.81	1.00	0.67	1.00	0.67
	(0.402)	(0)	(0.577)	(0)	(0.577)
Personal testimony to send money	0.23	1.00	0.33	0.00	0.00
	(0.430)	(0)	(0.577)	(0)	(0)
Require other documentation to send money	0.58	0.12	0.60	0.80	1.00
	(0.499)	(0.342)	(0.548)	(0.447)	(0)
No documentation required to pick up money	0.04	0.00	0.00	0.00	0.33
	(0.196)	(0)	(0)	(0)	(0.577)
Sender's phone number to pick up money	0.73	1.00	0.00	1.00	0.67
	(0.452)	(0)	(0)	(0)	(0.577)
Recipient's phone number to pick up money	0.85	1.00	0.67	1.00	0.67
	(0.368)	(0)	(0.577)	(0)	(0.577)
Personal testimony to pick up money	0.15	1.00	0.33	0.00	0.00
	(0.368)	(0)	(0.577)	(0)	(0)
Number of observations	45	16	5	5	3

Overall, 45 money transfer services were identified in Niger (Table A1).

Table A1. Money transfer companies in Niger

Company name	Type
Bnif Afuwa (BNIF)	Transfer company
Al Izza	Transfer company
Rissala	Transfer company
Nita S.A.	Transfer company
Rimbo	Transportation company
Azawad	Transportation company
STM	Transportation company
3STV	Transportation company
Sounna	Transportation company
Sonitrav	Transportation company
Africa Assalam	Transportation company
NIJMA	Transportation company
Sonef	Transportation company
Nour Transport	Transportation company
Say Tessam	Autogare
Kollo Tessam	Autogare
Ouallam Tessam	Autogare

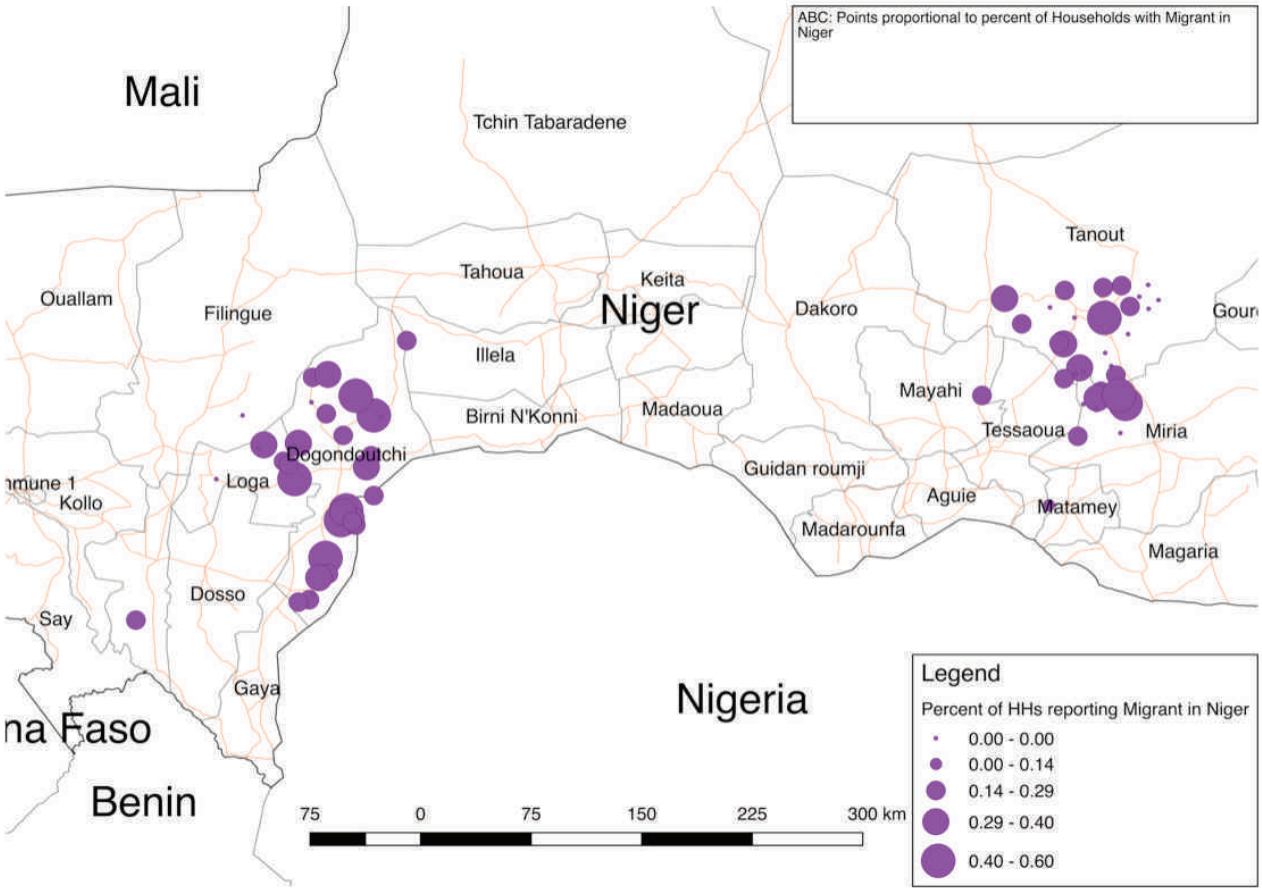
Kongou Tessam	Autogare
Tillabery Tessam	Autogare
Ecogare	Autogare
ECOBANK	Bank
SONIBANK	Bank
BAGRI	Bank
Banque Atlantique	Bank
Orabank	Bank
BINCI	Bank
BSIC	Bank
BOA	Bank
BIA	Bank
ASUSU S.A.	Bank
Capital Finance	Bank
TANADI	Bank
MoneyGram	Bank partner
Western Union	Bank partner
Wari	Bank partner
RIA	Bank partner
Orange	Telecommunications company
Airtel	Telecommunications company
Moov	Telecommunications company
La Poste	Postal service
Wassika Express	Postal service
Monnaieur	Moneychanger
Other	Other

These are primarily dominated by transport companies (36%), banks (27%), international and domestic money transfer services (11%) and mobile phone operators (6%). While all of the companies have sub-offices in Niger, only 12% have offices in rural areas, primarily the transport companies and Mobile Network Operators (MNOs) – see Table 2, Panel A. With the exception of the transport companies, most of these companies send and receive transfers internationally, primarily within West Africa. While the documentation and identification required to send and receive money varies by the type of money transfer company, it does not appear to be a major barrier: in many cases, items such as the sender's and receiver's phone numbers, a code or 'personal testimony' – that is, a trusted person within the community who vouches for the recipient – could be used.

C: Household remittance survey

The third data set is a household survey of 460 households across three regions in Niger: Dosso, Maradi and Zinder (Figure 4), with Dosso further west and Maradi and Zinder further east.

Figure 4. Map of Niger showing percentage of households reporting having a migrant



All regions are in the same agroclimatic zone, and are located along the main West-East axis in the country. Within each region, we looked at panel data from villages where household-level information was collected between 2013 and 2014. The sampling strategy used for village and household selection was similar. Among these 161 villages and 2,500 households, we stratified by region, department and prior treatment status. We randomly selected a subset of villages within each region for a total sample of 30 villages, with 10 villages in each region. Within each village, we returned to the original sample of 15 households per village. Hence, we have an intended sample of 460 households across 30 villages in three regions. This information is used to estimate recent migration patterns in Niger, as well as the amount and frequency of remittances.[9] We also elicited households' beliefs about the location and costs of different money transfer services, even if they had never used the service. Summary statistics for the households in the data set are in Table 3.

[9] As part of this survey, we also contacted a subset of the migrants who were located in Niger to ask about their money transfer experiences. Among all households with a migrant in Niger, we stratified by region and randomly selected 30 migrants. The analyses included in this paper exclude the data from the migrants.

Table 3. Household summary statistics	
Panel A: Socio-demographic characteristics	
	Mean (s.d.)
Age of respondent	40.46
	(13.13)
Size of household	12.84
	(6.444)
Respondent is female	0.62
	(0.487)
Polygamous marriage	0.45
	(0.498)
Widowed	0.05
	(0.217)
Any schooling	0.89
	(0.314)
Coranic schooling	0.12
	(0.328)
Primary school completed	0.01
	(0.0743)
Adult education course	0.83
	(0.373)
Numbers test (out of 5)	2.89
	(1.584)
Letters test (out of 5)	0.77
	(1.649)
Panel B: Economic characteristics	
Household owns a mobile phone	0.83
	(0.374)
Household has harvested cowpea in last year	0.7
	(0.46)
Panel C: Household migration	
Household has at least one temporary migrant	0.54
	(0.499)
Number of temporary migrants	0.80
	(0.930)
Respondent has migrated in the past year	0.13
	(0.338)
Household head has migrated	0.21
	(0.408)
Son has migrated	0.68
	(0.466)
Migration within Niger	0.61
	(0.488)
Migration to Nigeria	0.30
	(0.460)
Household has a permanent migrant	0.17
	(0.378)
Number of observations	406

Households are quite large – more than 12 people – and approximately half are polygamous. While 90% of the sample reported having any schooling, this is primarily due to their participation in an adult education programme: 83% had attended an adult education programme at some point, but only 1% had completed primary school. Despite the high rates of adult education participation, the rates of letter and number recognition are low; on average, households can identify three numbers (out of four) and one letter (out of five). A majority of households in the sample engage in agriculture and raising livestock. More than 70% have harvested cowpea, a primary food and cash crop in the country. The mobile phone ownership rate is high, with 83% of households owning a mobile phone (Panel C).

In addition to agriculture and livestock-raising, migration plays a crucial role in the income-generating strategies of Nigerien households. This is similar to the historical data from 2009–2014. More than 50% of households in the sample have at least one temporary migrant, meaning that the household member leaves for part of the year, typically between the harvest and next rainy period (Panel C). Migration is heavily male-dominated in Niger, primarily by male household heads and their sons. The primary destinations are urban centres within Niger, Nigeria and other destinations within West Africa. In addition to temporary migration, 17% of households have permanent migrants, primarily in Nigeria and Ivory Coast. This high rate of migration suggests that Nigerien households heavily depend on remittances for part of their livelihood.

In an effort to measure households' WTP for a 'new' money transfer services – mobile money – we used an incentivised BDM mechanism to elicit households' WTP for using mobile money to make a money transfer. We found out the WTP from each respondent in a two-stage, incentive-compatible game. The enumerator first explained the game, showed the respondent how mobile money worked, and described its attributes. In the first stage, the respondent was presented a sequence of hypothetical prices, ranging from 0 CFA (free) to 500 CFA, to be able to send 500 CFA to a friend or family member located in another village. For each price, the respondent was asked to indicate whether he or she would be willing to pay that amount, that day, to 'purchase' the mobile money service. Once the respondent provided an answer for all prices, the enumerator confirmed the highest price that the respondent was willing to pay that day.

During the second stage, a price was randomly drawn from those on the list. If the respondent's maximum WTP was greater than or equal to the drawn price, the mobile money service was 'sold' to the respondent at the drawn price. Otherwise, no sale took place. The sales transaction had to be completed before the team left the village that day. This provided respondents with a 'cooling off' period, as well as time to gather cash or tap their networks for a loan. While 9% of respondents refused to play the game, all respondents paid the drawn price if they won.

If the respondent fully understood the product offered and the game, and had no deceptive intentions, this mechanism should induce a truthful revelation of the maximum WTP from among the list of prices.[10] In theory, this would be a lower bound of the demand at each price, as the respondent's true maximum WTP could lie in-between two of the price options provided; in this case, the respondent would choose the lower option.

[10] We decided to use the price list, rather than allow open-ended responses, after multiple pilots in Niger. The prices included 0, 10, 20, 25, 40, 50, 60, 75, 90, 100, 250 and 500 CFA.

Given the nature of the mobile money product – which is a transfer service – we had to modify the game. Recognising that households may not need to send money (or 500 CFA) to an individual on that day, and given that we could not provide vouchers to households to send money at a later date, we modified this standard BDM mechanism as follows. We offered to send the 500 CFA to a person of their choice, with the respondent responsible for paying the transfer fees. The transfer could not be made to the household, but had to be sent to another household living in a different geographic location. Thus, while we did not provide a direct income transfer to the household, it was a transfer to someone within the person's social network. Obviously, the income transfer could increase households' WTP for mobile money, and hence any WTP will be an upper bound on true WTP. We address this in detail in the next section to suggest reasonable bounds.

4. Remittances and money transfers in Niger

A: Remittance patterns

Based on Table 3, it is evident that Nigerien households need both domestic and international remittance services. Table 4 lends additional support to this.

Table 4: Receiving remittances	
Panel A: Household remittances	Mean (s.d.)
Household received transfer in the past year	0.68
	(0.465)
Household received transfer during cold season	0.38
	(0.487)
Household received transfer during hot season	0.70
	(0.458)
Household received transfer during harvest	0.09
	(0.281)
Western Union/MoneyGram	0.01
	(0.0847)
Local money transfer (BNIF, Al Izza Group)	0.37
	(0.483)
Bus	0.08
	(0.265)
Friend/family member	0.74
	(0.437)
Mobile money	0.03
	(0.167)
Number of observations	406
Panel B: Recipient costs for last transfer	
Amount of last remittance	40078.88
	(182334.9)
Remittance sent to buy food	0.77
	(0.419)
Remittance sent for agriculture	0.13
	(0.340)
Fee paid by recipient	0.06
	(0.247)
Amount paid by recipient	2739.29
	(2362.5)
Sender paid to send money	0.46
	(0.500)

Transport fees paid to collect money	0.28
	(0.452)
Amount of transport fees paid	1040.51
	(812.4)
Travelled within village to pick up money	0.54
	(0.500)
Travelled to urban centre to pick up money	0.27
	(0.443)
Pick up took less than one hour	0.76
	(0.428)
Pick up took between one and two hours	0.20
	(0.402)
Total fees as a proportion of the transfer	0.02
	(0.04)
Identification shown to pick up money	0.34
	(0.473)
Had any problems with pick up	0.07
	(0.253)
Number of observations	278

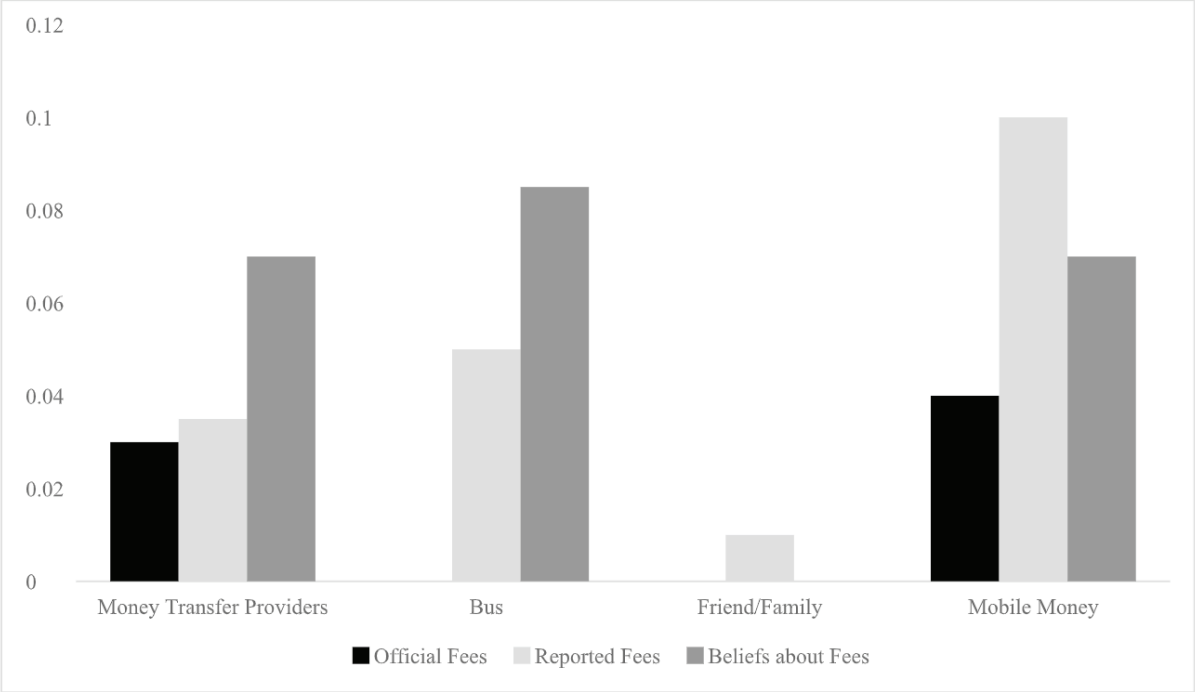
Over the course of the previous year, 68% of households had received remittances, between five and 10 transfers per year (Panel A). These transfers were primarily made during the hot season – the period of highest migration in Niger – or immediately after the harvest. The primary means used for these transfers were friends or family members (via the bus system), followed by local money transfer systems and the bus (without a friend or family member). Only 3% of household used mobile money for these transfers. Households reported that, rather than cost, the main reasons for using a given mechanism were trust and knowing the local agent.

Focusing on the last transfer the household received (Panel B), households received 40.000 CFA, or US$72, primarily to cover food and agricultural expenses, via friend or family, a local transfer company or the bus. Only 6% of transfer recipients reported having to pay anything to pick up their transfer, paying US$6. These amounts were the same for friends/family members and the local money transfer systems. By contrast, recipients reported that half of senders had to pay something to send the money, although they often did not know the amounts. About one-third of recipients had to pay for transport to pick up the money – about US$2 – and a similar percentage had to travel to an urban centre to pick up the money. Yet the distances were less than 2 hours, or approximately 10 km by foot. Overall, recipients had to pay approximately 2% of the value of the transfer in pick-up fees or in transport costs, excluding the senders' costs. Only 7% reported having any problems with picking up their transfer, and those who did faced financial constraints.

B: Official and actual money transfer costs

The results in Table 4 show the money transfer system from the recipients' perspective, and primarily for three transfer systems: friends and family; the bus system; and local money transfer systems. How do the costs compare with those reported by the money transfer companies? To assess these costs, we focus on the experiences of remittance senders within our sample, some of whom were previous migrants. While 70% of households in our sample reported receiving transfers at some point over the past year, approximately 30% of households also had experience of sending transfers, using many of the same methods used by recipients. Of these, over 90% of transfers were sent within Niger, with the remaining transfers sent to Nigeria, Benin, Burkina Faso or North Africa. Figure 5 compares the 'official' costs of sending money – according to the money transfer providers – with the experiences of remittance senders.

Figure 5. Comparison of Official versus Reported Fees for Domestic Transfers (less than US$1000)



While transfer costs depend on the amount sent, the location and the destination, our comparison focuses on domestic transfers worth less than 400.000 CFA (US$750), which represents over 90% of the transfers sent in our sample.

Three things are worth noting:

- The fees that senders paid for all of the money transfer services – domestic transfer providers, the bus system and mobile money – are higher than the official rates, with a greater gap between the bus (which reports no official fees) and mobile money. However, it should be noted that the costs for mobile money are estimated from an extremely small sample, as only 4% of households had sent transfers via this mechanism.

• The official fees for transfer services provided via mobile money and domestic transfer services are similar in magnitude.

• Households' beliefs about the cost of different money transfer services – elicited from among all households, not just those who had received or sent transfers in the past year – was substantially higher than the official or reported fees. Nevertheless, households reported similar fees for local money transfer services and mobile money, which is in line with their actual experiences.

C: Beliefs about money transfer systems

One key component of the technology-adoption process is learning about the features and uses of a new technology, relative to the existing options. To understand households' perceptions of the location and costs of mobile money relative to other remittance mechanisms, we used a standardised set of questions to elicit subjective expectations.

Respondents were presented with the following scenario:

> "Suppose that you wanted to send 10.000 CFA to a person in another village using money transfer mechanism X. Where would you need to travel to send this money, how much would it cost to send 10.000 CFA, would the recipient receive the 10.000 CFA and how long would it take?"

We asked these questions for each of the following choices of the money transfer mechanism: the bus, the domestic money transfer company (BNIF Afuwa, Al Izza Group) and the mobile money company.

The results of this exercise are shown in Table 5 for the entire sample, as well as for the sub-sample of households that had received or sent transfers in the past year.

Table 5. Beliefs about different money transfer systems		
	Full sample	Remittance households
Panel A: Bus		
Respondent has ever used the bus to send money	0.10	0.11
	(0.295)	(0.314)
Cost to send 10.000 CFA via bus	847.29	844.15
	(342.6)	(347.9)
Believe that recipient will receive intended amount via bus	0.97	0.99
	(0.163)	(0.113)
Money will arrive the same day or next day via bus	0.87	0.91
	(0.335)	(0.293)
Closest bus agents are in urban areas	0.40	0.42
	(0.491)	(0.494)
Closest bus agents are in nearby villages	0.42	0.39
	(0.494)	(0.488)
Panel B: Local money transfer services		
Respondent has ever used the BNIF to send money	0.17	0.19
	(0.372)	(0.397)
Cost to send 10.000 CFA via BNIF	736.33	714.77
	(347.6)	(329.5)
Believe that recipient will receive intended amount via BNIF	0.96	0.97
	(0.189)	(0.159)
Money will arrive the same day or next day via BNIF	0.99	0.99
	(0.121)	(0.0984)
Closest BNIF agents are in urban areas	0.75	0.80
	(0.433)	(0.404)
Closest BNIF agents are in nearby villages	0.00	0.00
	0	(0)
Panel C: Mobile money		
Respondent has ever heard of mobile money	0.37	0.33
	(0.483)	(0.473)
Respondent has ever used mobile money	0.12	0.16
	(0.327)	(0.364)
Cost to send 10.000 CFA via mobile money	662.22	632.57
	(345.9)	(345.8)
Believe that recipient will receive intended amount via mobile money	0.93	0.94
	(0.249)	(0.229)
Money will arrive the same day or next day via mobile money	0.97	0.97
	(0.163)	(0.159)
Closest mobile money agents are in urban areas	1.00	1.00
	(0)	(0)
Number of observations	406	308

Overall, only about one-fifth of the sample had had any experience using any of these money transfer systems *directly*, mainly the local money transfer system.[11] Across all three mechanisms, respondents believe that mobile money is the cheapest way to send money (with a 6% rate), followed by the local money transfer services (BNIF/Al Izza Group) and the bus system, with money transfer rates between 6–8%. Overall, trust in these systems is high, with almost 90% of respondents believing that the full amount sent would be received within one to two days. The greatest variation is in the location of agents: whereas 40% of respondents believe that they could send money via the bus system in a neighbouring village (as compared with an urban centre), 75% of respondents believe that BNIF and mobile money agents can only be found in urban areas. These results are broadly similar when the sample is restricted to those respondents whose households had received or sent transfers in the past year. This belief about the location of agents is remarkably accurate: almost all money transfer agents for BNIF and mobile money are located in larger urban centres, with few in remote rural areas.

[11] While 70% of households had received a money transfer, the question in this section asked respondents about their specific experience with the money transfer service. This explains the difference between the reported use.

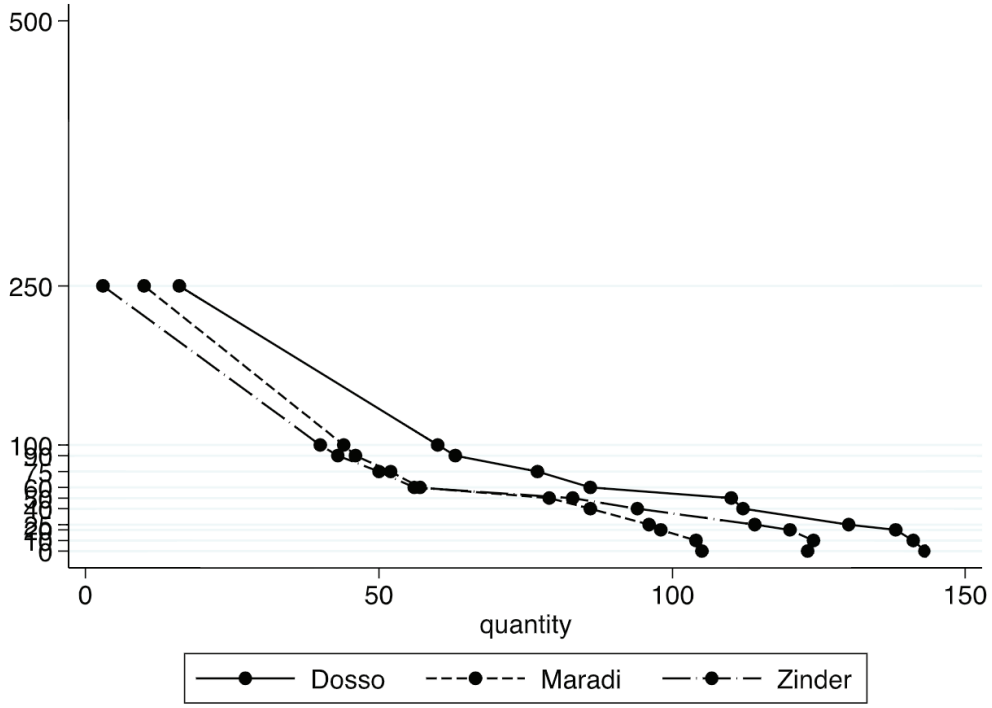
5. Mobile money

A: Demand for mobile money

Given the demand for money transfers in rural Niger – as well as high rates of mobile phone ownership and equivalent or lower costs as compared to other transfer systems – it seems as if there is potential demand for mobile money in rural regions. This section reports the results of the incentivised BDM mechanism used to elicit WTP for mobile money. In eliciting WTP rather than willingness-to-accept from respondents, we implicitly focused on their role in sending the transfer, leaving aside the fact that most of our respondents also received transfers.

The region-specific demand curves for respondents are shown in Figure 6.

Figure 6: Willingness to pay to send a 500 CFA transfer via mobile money



No one in the sample answered "No" when we asked whether they would be willing to pay 0 CFA to transfer 500 CFA to someone else; similarly, no one in the sample answered "Yes" when we asked whether they would be willing to pay 500 CFA to transfer 500 CFA. Therefore, both of these bound the demand curve.

Perhaps the most striking aspect of Figure 6 is the between-region variation in demand. At any price, more respondents in Dosso (140 km from Niamey, the capital city) are willing to pay for a 500 CFA transfer than respondents in either of the other two regions. The gaps are sizable. At a price of 75 CFA, demand in Dosso is 50% greater than the sum of demand from Maradi and Zinder. Approximately half of the sample is willing to pay the actual cost of the money transfer, which is between 20–60 CFA, depending on whether the person is a mobile money account holder.

As discussed above, the variation in migration patterns and destinations differs by region, even if this wasn't explicitly discussed throughout the study. While average migration rates are 50% across regions, there is some variation across regions: 66% of households in Dosso have one seasonal migrant, as compared with 52% in Zinder and 42% in Maradi. This is somewhat surprising, as both Dosso and Zinder are close to the border with Nigeria. In addition, mobile phone ownership is 90% in Dosso, as compared with 87% and 78% in Maradi and Zinder, respectively.

To better understand sources of variation in WTP, we estimate descriptive regressions of the following form:

$$maxWTP_i = \gamma + \alpha maradi + \beta zinder + \delta female + \vartheta knowmobilemoney + X_i'\sigma + \varepsilon_{iv}$$

In this equation, *maximum WTP* is the maximum amount that respondent *i* is willing to pay to send 500 CFA to another individual in the BDM game (in CFA); *female* is a binary variable that takes a value of 1 if the respondent is female, and 0 otherwise; *maradi* is a binary variable that takes a value of 1 if the respondent is in Maradi, and 0 otherwise; *zinder* is a binary variable that takes a value of 1 if the respondent is in Zinder, and 0 otherwise; and X_i represents other individual characteristics potentially correlated with WTP – such as assets and whether the household has had a migrant in the past year – as a proxy measure for wealth. Standard errors are clustered at the village level.

The results of these regressions are shown in Table 6.

Table 6. Determinants of willingness to pay

	(1)	(2)
Maradi	-0.51	1.18
	(10.27)	(10.80)
Zinder	-16.96*	-14.99
	(8.37)	(8.98)
Female	-9.16	-10.51
	(6.26)	(6.27)
Ever heard of mobile money	7.57	6.60
	(6.41)	(6.68)
Household has migrant		4.79
		(6.80)
Household has mobile phone		8.38
		(9.01)
Received transfer in past year		-7.32
		(8.38)
Sent transfer in past year		-3.37
		(6.14)
Observations	371	370

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Average WTP by a male Dosso respondent who had not heard of mobile money is 88 CFA, above the market price of 20–60 CFA (Column 1). Female respondents exhibit lower WTP than male respondents, representing a 10% reduction. Supporting the graphs, mean WTP is higher in the Dosso region and lowest in the Zinder region, with a statistically significant difference between Zinder and the other two regions.

The regression results presented in Column 2 examine whether variation in WTP is driven by differences in respondents' migration or remittances. None of these variables has a statistically significant association with WTP. Having a migrant or a mobile phone is positively correlated with WTP, whereas receiving or sending remittances in the past year are negatively correlated with WTP. The estimated coefficient on the variable for the Zinder region is slightly attenuated after conditioning on these additional variables and no longer statistically significant, perhaps because it is correlated with lower mobile phone ownership and migration patterns.

A key question is whether the above results are primarily driven by the 500 CFA transfer allocated to respondent households' social network. As mentioned previously, while a price list would provide us with a lower bound on maximum WTP, the 500 CFA transfer would provide an upper bound on maximum WTP. While the latter is of concern, we feel that these results are not completely driven by the income transfer to the households' social network. First, average WTP in the sample is 76 CFA, or 15% of the transfer value. This is in line with households' beliefs about the cost of mobile money (which was elicited prior to the game), and close to the actual upper bound for the cost of transferring 500 CFA via mobile money (60 CFA). Second, if the respondents treated the 500 CFA transfer as a pure income transfer, then we might expect that a larger proportion of households would have accepted 250 or 500 CFA as a transfer price; however, no respondent accepted the 500 CFA transfer price, and only 7% of the sample accepted 250 CFA. And finally, the transfer had to be made to a person outside of the village, and it would have been costly to transfer any part of the 500 CFA back to the respondent. Thus, while we cannot reject the hypothesis that the results are partly driven by the income effect from the transfer, we feel comfortable that respondents would have paid the lower bound of the mobile money transfer cost, or 20 CFA.

B: Supply of mobile money infrastructure

The previous results suggest that rural households in Niger have demand for money transfer services. Also, despite the limitations of the WTP exercise, households seem to have demand for mobile money in particular. If this is the case, why isn't mobile money used more frequently by migrants and their households? While in theory mobile money transfers require an account, the mobile money service providers in Niger (as well as other countries) allow households to send

and receive money without having a mobile money account; all that is needed is a mobile phone number, and money transfers can be made via a 'code'. This alleviates the constraints associated with other mobile money operators.[12]

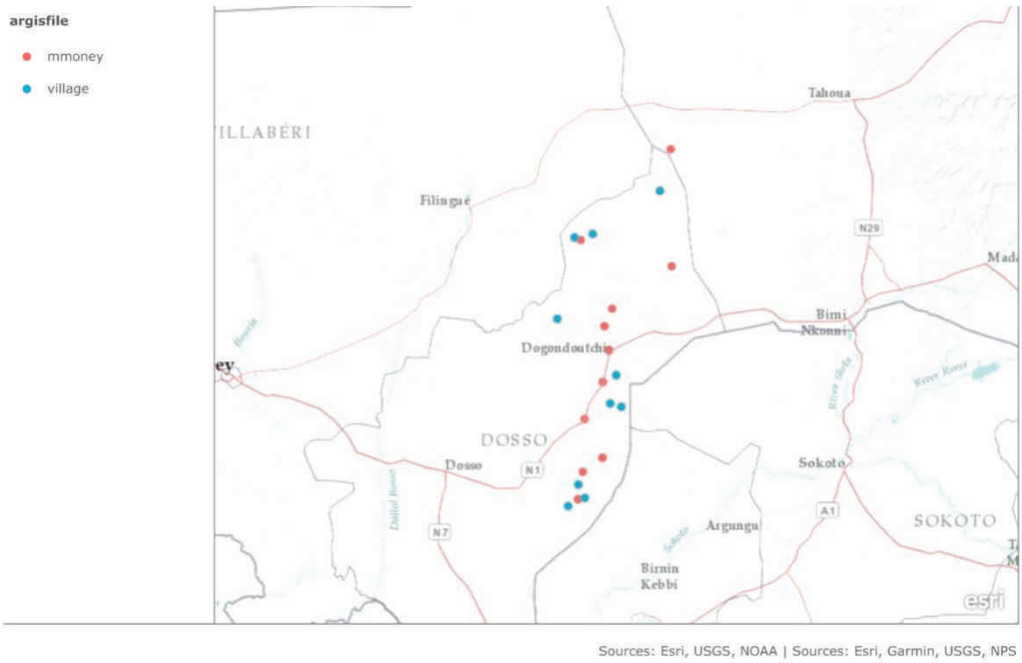
The major potential constraint appears to be the mobile money agent network in rural areas. Across the three regions, there were few mobile money agents in general, with the highest density in Dosso (with agents in 12 locations), followed by Maradi (seven locations) and Zinder (three locations). In most of these cases, there is only one agent per location. This suggests that it is costlier to find mobile money agents in Zinder, the region with the lowest WTP. There is also less competition in this area, which suggests that the agents could potentially charge higher prices than the official fees. It also concurs with respondents' beliefs.

[12] Mobile money typically can be sent between two mobile money account holders, or from a mobile money account holder to a non-mobile money account holder with a phone number (called "*envoi code*" in French). The recipient receives a message with a code on his or her phone, and must then present this code to a mobile money agent. This can only be done between senders and recipients with the same mobile phone network provider. In the former case, the sender must pay 60CFA, and the recipient must pay 150 CFA for every 5000 CFA withdrawn (3%). In the latter case, the sender bears all of the transfer fees (4%), and the recipient pays nothing to withdraw.

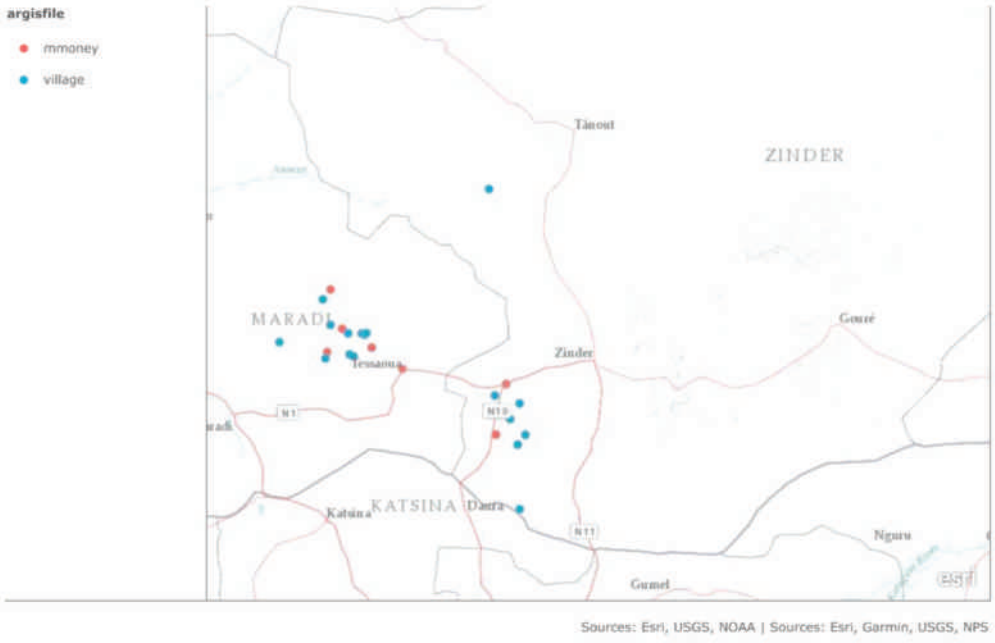
Figure 7 shows this, with a map of mobile money agents compared with village locations in Dosso, Maradi and Zinder.

Figure 7: Location of mobile money agents and villages in the sample

Dosso



Maradi and Zinder



On average, respondents in Dosso must travel 31 km to reach the nearest mobile money agent, whereas those in Maradi and Zinder must travel 17 and 43 km, respectively, representing 3–8 hours' walk. While villages in Maradi are, on average, closer to mobile money agents than those in other locations, the variation is quite high in all regions, ranging from 3 km to 138 km. In addition, while the distance to mobile money agents in similar in Dosso and Maradi, the number of mobile money agents is highest in Dosso and lowest in Zinder. This correlates with the relatively higher WTP in Dosso and lower WTP in Zinder.

6. Conclusion

Overall, existing research shows that technology, in the form of mobile money, is reducing the cost of transferring money between individuals and businesses in sub-Saharan Africa as compared with traditional money transfer systems. Money transfers are a crucial part of the Nigerien economy, with a high proportion of seasonal migrants, similar to other countries in West Africa. Based on a sample of rural Nigerien households, where more than 70% had received money transfers in the past year, respondents seem willing to pay for the technology. However, more research is needed. Despite potential demand, mobile money is failing to take off in West Africa at rates similar to those in East and Southern Africa. Potentially, this is because of the agent infrastructure, in turn affected by the regulatory framework and mobile phone operator's business model.

Bibliography

Aker, Jenny C., Rachid Boumnijel, Amanda McClelland and Niall Tierney. 2016. "Payment Mechanisms and Anti-Poverty Programs: Evidence from a Mobile Money Cash Transfer Experiment in Niger." 65(1). Economic Development and Cultural Change.

Ashraf, Nava, Diego Aycinena, and Claudia Martinez A and Dean Yang. "Savings in Transnational Households: A Field Experiment Among Migrants from El Salvador." Review of Economics and Statistics, Vol. 97, No. 2, May 2015, pp. 332-351.

CGAP 2016.

Gibson, J., McKenzie, D. & Rohorua, H.T.S. (2006). How cost elastic are remittances? Estimates from Tongan migrants in New Zealand. (Department of Economics Working Paper Series, Number 2/06). Hamilton, New Zealand: University of Waikato.

Jack, William and Tavneet Suri. 2014. "Risk Sharing and Transaction Costs: Evidence from Kenya's Mobile Money Revolution". American Economic Review Vol. 104, No. 1 (2014): 183-223.

Yang, Dean. 2011. "Migrant Remittances." Journal of Economic Perspectives, Vol. 25, No. 3, Summer 2011, pp. 129-152.

Aker, Jenny C., and Christopher Ksoll. 2018. "Can ABC Lead to Sustained 123? The Medium-Term Effects of a Technology-Enhanced Adult Education Program." Economic Development and Cultural Change, September. https://doi.org/10.1086/700558.

Aker, Jenny C, Christopher Ksoll, and Travis J Lybbert. 2012. "Can Mobile Phones Improve Learning? Evidence from a Field Experiment in Niger." American Economic Journal: Applied Economics 4 (4): 94–120. https://doi.org/10.1257/app.4.4.94.

Aker, Jenny, Melita Sawyer, Michael O'Sullivan, Marcus Goldstein, and Margaret McConnell. "Just a Bit of Cushion: The Role of a Simple Savings Device in Planned and Unplanned Expenditures in Niger." Working paper. World Development, 2018.

Aker, Jenny C., Rachid Boumnijel, Amanda McClelland, and Niall Tierney. 2016. "Payment Mechanisms and Antipoverty Programs: Evidence from a Mobile Money Cash Transfer Experiment in Niger." Economic Development and Cultural Change 65 (1): 1–37. https://doi.org/10.1086/687578.

"Annual Report 2015." n.d. Bill & Melinda Gates Foundation. Accessed November 17, 2018. https://www.gatesfoundation.org/Who-We-Are/Resources-and-Media/Annual-Reports/Annual-Report-2015.

Ashraf, Nava, Diego Aycinena, and Claudia Martinez A and Dean Yang. "Savings in Transnational Households: A Field Experiment Among Migrants from El Salvador." Review of Economics and Statistics, Vol. 97, No. 2, May 2015, pp. 332-351.

Asli Demirgüç-Kunt, Leora Klapper, Dorothe Singer, Saniya Ansar, and Jake Hess. n.d. "The Global Findex Database 2017." The Global Findex Database 2017. World Bank Group.

Blumenstock, Joshua, Gabriel Cadamuro, and Robert On. 2015. "Predicting Poverty and Wealth from Mobile Phone Metadata." Science (New York, N.Y.) 350 (6264): 1073–76. https://doi.org/10.1126/science.aac4420.

"CGAP Annual Report 2016" n.d. CGAP. Accessed November 17, 2018. https://www.cgap.org/about/key-documents/cgap-annual-report-2016.

"Financial Inclusion 2015." n.d. CGAP. Accessed November 17, 2018. http://www.cgap.org/research/publication/financial-inclusion-2015.

Gibson, John, David McKenzie, and Halahingano Rohorua 2006. "How Cost Elastic Are Remittances? Estimates from Tongan Migrants in New Zealand." Working Papers in Economics. University of Waikato. https://econpapers.repec.org/paper/waieconwp/06_2f02.htm.

Gilbertson, Ashley. 2016. "Opinion | The Child Migrants of Africa." The New York Times, June 10, 2016, sec. Opinion. nytimes.com/2016/06/12/opinion/sunday/the-child-migrants-of-africa.html.

"GSMA Mobile Economy 2015." n.d. Mobile Economy 2015. Accessed November 17, 2018. https://www.gsma.com/mobileeconomy/global/2015/.

"GSMA Mobile Economy 2017." n.d. Mobile Economy 2017. Accessed November 17, 2018. https://www.gsma.com/mea/the-mobile-economy-2017.

Jack, William, Adam Ray, and Tavneet Suri. 2013. "Transaction Networks: Evidence from Mobile Money in Kenya." American Economic Review 103 (3): 356–61. https://doi.org/10.1257/aer.103.3.356.

Jack, William, and Tavneet Suri. 2014. "Risk Sharing and Transactions Costs: Evidence from Kenya's Mobile Money Revolution." American Economic Review 104 (1): 183–223. https://doi.org/10.1257/aer.104.1.183.

"Migration EU Expertise 2009-2016." n.d. Accessed November 17, 2018. https://www.icmpd.org/fileadmin/ICMPD-Website/ICMPD_General/Publications/2015/MIEUX-Publications-web_en.pdf.

Siegfried, Kristy. 2017. "EXCLUSIVE: EU Migrant Policy in Africa Built on Incorrect Niger Data." IRIN. January 31, 2017. https://www.irinnews.org/news/2017/01/31/exclusive-eu-migrant-policy-africa-built-incorrect-niger-data.

UNCDF (2016). 2016 Annual Report. Accessed November 17, 2018. http://www.uncdf.org/article/2092/annual-report-2016

Yang, Dean. 2011. "Migrant Remittances." Journal of Economic Perspectives 25 (3): 129–52. https://doi.org/10.1257/jep.25.3.129.


BLAVATNIK
SCHOOL OF
GOVERNMENT
UNIVERSITY OF
OXFORD


Pathways
for Prosperity
Commission
Technology &
Inclusive Development