Understanding Willingness to Migrate Illegally:Evidence from a Lab in the Field Experiment*

Tijan L Bah†

Catia Batista‡

April 2019

Abstract

Illegal migration to Europe through the sea, though risky, remains one of the most popular migration options for many Sub-Saharan Africans. This study aims at improving our understanding of the determinants of the willingness to migrate illegally from West Africa to Europe. We implemented an incentivized lab-in-the field experiment in rural Gambia, the country with the highest rate of illegal migration to Europe in the region. Sampled male youths aged 16 to 25 were given hypothetical scenarios regarding the probability of dying en route to Europe, and of obtaining asylum or legal residence status after successful arrival. According to our data, potential migrants overestimate both the risk of dying en route to Europe, and the probability of obtaining legal residency status. The experimental results suggest that the willingness to migrate illegally is affected by hypothetical information on the chances of dying en route and of obtaining a legal residence permit. Our lab-in-the field experimental set up allows us to estimate what would have happened to willingness to migrate if respondents knew the actual chances of dying and obtaining residence status. Comparing the round with the actual fact of risk of dying and obtaining residency status with the average expectations, our estimated elasticities show that providing potential migrants with official numbers on the probability of obtaining a legal residence permit decreases their likelihood of migration by 2.88

*We are grateful for comments from Alex Coutts, Zack Barnett-Howell, Flore Gubert, David McKenzie, Julia Seither, Pedro Vicente, Abby Wozniak, and participants in seminars and conferences at the Notre Dame Kellogg Institute, Oxford CSAE 2018 Conference, PSE Casual Friday Development Seminar, DIAL-Dauphine Development Seminar, and the Stanford Eleventh International Conference on Migration and Development. We also gratefully acknowledge funding support from Nova School of Business and Economics and NOVAFRICA. The first author acknowledge the European Doctorate Degree in Economics - Erasmus Mundus (EDE-EM) Program for funding and support.

†Nova School of Business and Economics - Universidade Nova de Lisboa, NOVAFRICA, University of Paris 1 Panthéon Sorbonne, and IRD, DIAL.tijan.bah@novasbe.pt

‡Nova School of Business and Economics - Universidade Nova de Lisboa, CReAM, IZA and NOVAFRICA.catia.batista@novasbe.pt

percentage points (pp), while information on the risk of migrating increases their likelihood of migration by 2.29pp – although the official risk information provided may be regarded as a lower bound to actual mortality. Follow up data collected one year after the experiment show that the migration decisions reported in the lab experiment correlate well with actual migration decisions and intentions. Overall, our study indicates that the migration decisions of potential migrants are likely to actively respond to relevant information.

Keywords: International migration; Information; Expectations; Illegal migration; Willingness to migrate; Lab-in-the-Field Experiment; The Gambia.

JEL Codes: F22, D84, J17, J61, O15.

1 Introduction

Over the last decade, the world has witnessed a growing increase in the international movement of people. In 2015, the total stock of international migrants worldwide reached 244 million (3.3 per cent of the world population), compared to 173 million in the year 2000 (United Nations, 2016).

While most people migrate legally, there are large and increasing numbers of irregular migrants. Illegal migration is a risky endeavor. Between 2000 and 2014, more than 22,400 migrants were recorded as having lost their lives trying to reach Europe (IOM, 2014)[1]. Illegal migrants traveling from West Africa to Europe face a variety of serious challenges, including abductions for ransom, slavery, torture and other ill-treatment during the migration process especially in Libya[2]. Notwithstanding these risks, the Libyan route to Europe continues to be the main entry point of irregular migrants from Africa. In 2017, 101,448 African migrants were recorded as reaching Italy through the sea[3].

The main aim of our work is to understand what determines the willingness of individuals to migrate illegally from Western Africa to Europe. For this purpose, we implemented a lab-in-the field experiment among potential migrants in rural Gambia. The Gambia has an illegal emigration rate of 2%, making it the African country with the highest incidence of illegal migration relative to its total population (see Figure 3). Most of these emigrants come from the rural areas where our project took place.

Experimental subjects played an incentivized migration game designed to elicit willingness to migrate depending on varying chances of dying en route to destination, and of obtaining legal residency status. The experiment included 16 rounds, where each round provided different combinations of hypothetical probabilities of dying en route and of obtaining legal residency status in Europe upon arrival, while keeping hypothetical wages fixed depending on the migration circumstances faced. In each round, respondents made binary decisions about whether to migrate to Italy or stay in Gambia. They also reported their willingness to pay for the migration cost (out of their game endowment) and decided on how large a payment they were willing to accept in order to forgo migrating. While one of the rounds provides factual information on the risk of dying en route and the chances of obtaining residence status, this was unknown to respondents.

Our data show that 47 percent of the respondents are willing to migrate illegally. In addition, on average potential migrants overestimate both the chances of dying en route and of obtaining a legal residence permit. The expected probability of dying en route is 30pp higher than the actual probability reported by official numbers; while the expected chances of obtaining a residence permit are 7pp higher than the actual probability. Our experimental counterfactual results predict that providing potential migrants with accurate information on the probability of obtaining a legal residence permit would decrease their likelihood of migration by 2.88pp, while receiving accurate

[1] Additional information from Missing Migrants project documented that between 2014 and 2018, 17,390 migrants died in the Mediterranean(Missing Migrants Project, 2018)

[2] See Amnesty International (2015) and CNN (2017)

[3] The top country of origin includes Nigeria, Guinea, Côte d'Ivoire (see Figure 2)

information on the risk of migrating would increase their likelihood of migration by 2.29pp – although official numbers may be regarded as lower bounds to actual mortality. Overall, our study suggests that the migration decisions of potential migrants actively respond to information about relevant facts regarding costs and benefits of migration. These findings are shown to be robust to concerns related to the interpretation of the experimental migration decisions as related to actual migration decisions and intentions. One year after the experiment, follow up data reveal that decisions in the lab correlates to actual international migration decisions. Additionally, we provide evidence suggesting that lab decisions are positively correlated with the expected net benefit computed for each round.

This paper contributes to the limited existing economics literature on illegal migration. While we are not the first to use experimental techniques to study the willingness to migrate, our work is, to the best of our knowledge, the first to implement a lab-in-the field experiment aimed at examining the determinants of illegal migration.

Our methodological contribution is related to a number of studies utilizing lab experiments. Batista and McKenzie (2018) conduct an incentivized laboratory experiment to test various theories of migration departing from the neoclassical migration model of net expected income maximization, and considering also additional and more realistic factors such as migrant-skill self-selection, credit constraints, incomplete information and multiple destination choices. Using a sample of potential migrants (graduating university students in Kenya and Portugal), their results suggest that adding these realistic features to the neoclassical model, especially uncertainty and imperfect information, brings migration decisions to levels much more consistent with reality than the ones implied by simpler income maximization considerations. In a recent complementary piece of work,Barnett-Howell (2018) used a migration video game in a lab experiment to examine how individuals in the United States and Ethiopia make migration choices. He also found an important role for imperfect information in explaining lack of movement. Relatedly, Lagakos et al. (2018) conducted a discrete choice experiment in Bangladesh to understand the relative weights people place on migration related factors such as the quality of living, relative to wages or family separation in making internal migration decisions. Their setup allows respondents to hypothetically choose between staying put or migrating under two different scenarios. The options vary in terms of wages, unemployment rates, and amenities at destination (namely, availability of a latrine facility and regularity of family contacts). This study shows that unemployment risk and housing conditions are important determinants of (internal) migration decisions, while family separation seems to act as less of a deterrent to rural-urban migration. In our work, we follow this line of research in that we use an incentivized lab-in-the-field experiment to test for relevant determinants of the willingness to migrate, although our focus is more specifically on illegal migrants from West Africa and the extreme risks they face in their migration journey.

Our work is also related to the role of the access of information in determining international migration. The contributions of Shrestha (2017a,b) highlight the importance of access to information for potential migrants' expectations and their subsequent mi-

gration decisions. Shrestha (2017a) offers evidence on how the deaths of migrants in a district affect the subsequent migration decisions for up to 12 months. He argues that migrants are not fully informed on risk of migration and thus update their beliefs after the occurrence of the dead within a district. Furthermore, Shrestha (2017b) conducted a randomized field experiment providing information on mortality rates during the migration journey and documented how this information affected subsequent migration decisions in Nepal. More specifically, and consistent with our own findings, these experimental findings show that providing information on mortality rates lowers expected mortality rates and providing information on wages at destination reduces expected wages especially for less experienced migrants.

Though the phenomenon of illegal migration from Africa to Europe has attracted a lot of media attention as of lately, most literature on illegal migration has focused on illegal migration from Mexico to the USA, and particularly on the consequences of immigration policies on illegal migration from the US to Mexico. Orrenius and Zavodny (2003) show no long term impact of amnesty programs on the flow of undocumented migrants. Gathmann (2008) showed that stricter border control increased prices of border smugglers ('coyotes') by 17%, while the demand for smugglers remained unchanged. The strongest effect of tighter enforcement was a shift of illegal migrants to remote crossing places. Amuedo-Dorantes et al. (2013) show that tougher immigration measures such as E-verify that is a mandate obliging employers to check the work authorization of employees, have impact on deportation fears, interstate mobility, and reduces deportees' intentions to return to the US. Similarly,Amuedo-Dorantes and Lozano (2015) show that the SB1070 law in Arizona which made it crime for an alien not to carry proper documentation has little effect on reducing the share of undocumented immigrants.

There are only a few studies that study the willingness to migrate illegally from West Africa. Mbaye (2014) and Arcand and Mbaye (2013) provide the first papers describing the determinants of the willingness to migrate illegally in this context. They use data from a survey of about 400 individuals in Dakar to offer important contributions to the understanding of illegal migration from Senegal. Mbaye (2014) shows that potential migrants are willing to accept a high risk of dying en route and that they are mostly young, single, and lowly educated. Moreover, she argues that the price of illegal migration, migrant networks, high expectations, and tight immigration policy significantly explain willingness to migrate illegally. Arcand and Mbaye (2013) study how individual risk-aversion and time preferences affect the willingness to migrate illegally and to pay for smuggling services. They propose a theoretical model showing that the willingness to migrate and to pay a successful smuggler is influenced by risk aversion and time preferences. The empirical analysis confirms that the willingness to pay for a smuggler is an increasing function of an individual's intertemporal discount rate, and a decreasing function of risk-aversion. More recently, Guido et al. (2017) study the impact of distance on individual intentions to migrate from Africa into Europe. Using the demise of the Gaddafi regime in 2011 as an exogenous source of variation that affects the distance from Africa to Europe due to increase in the usage of the central Mediterranean route (Libya to Italy), they found negative effects of distance on the intentions to migrate. The effect

is especially larger for educated youth with a migration network.

Our paper builds on these contributions by offering additional evidence on the roles of the probability of dying en route and of obtaining permit on willingness to migrate illegally. Moreover, we conduct an incentivized lab-in-the-field experiment, which provides us with additional variation (relative to cross-section survey analysis) to power our empirical analysis. In addition, our experimental setup, while hypothetical, allow us to compare what would have happened to willingness to migrate illegally from a specific scenario to another.

Understanding the determinants of the willingness to migrate may have important consequences on economic development. Batista et al. (2012), for example, show that the probability of own future migration has important positive effects on educational attainment in Cape Verde – even on those individuals that end up not actually emigrating. The evidence suggests that a 10 pp increase in the probability of own future migration increases the probability of completing intermediate secondary education by 4 pp for individuals who do not migrate. Additionally, Docquier et al. (2014) show a strong correlation between the intention to migrate and subsequent actual migration. The evidence from the follow up survey we conducted one year after the experiment is in line with this finding, in that both actual migration decisions and intentions correlate well to the lab migration decisions taken one year earlier.

The rest of the paper is organized as follows. Section 2 presents the country context in which we conduct our analysis. Section 3 discusses the survey and sampling framework, the lab-in-the field experiment, and descriptive statistics. Section 4 presents the econometric approach and main empirical results. Section 5 presents some robustness checks using follow up data on actual migration decisions and intentions measured one year after the lab experiment. Section 5 offers concluding remarks.

2 Country Context

Sandwiched by Senegal, The Gambia is the smallest country in mainland Africa with a population of 2 million people. The country has an estimated GDP per capita of $1700 ranking 176 out of 190 countries, making it one of the poorest countries in the world. Over the last decade, the country registered an average growth rate of 2.8 percent per year with a high debt of 123 percent of GDP in 2017 (World Bank, 2018).

Since independence in 1965, the country has had three presidents: Dawda Jawara (1965-1994), Yaya Jammeh (1994-2016), and Adama Barrow from 2016 to date. Jammeh ousted Jawara through a bloodless coup. In December 2016, Jammeh's 22-year rule ended with Barrow's electoral victory making it the first democratic transition ever witnessed by the country.

Migration is an important phenomenon in The Gambia. The country attracts immigrants mostly from the sub region with Senegal dominating the flows. According to the 2013 census, immigrants constitute 5 percent of the population, while rural to urban migrants account for 7 percent. Additionally, emigration is a cornerstone aspect of the Gambian economy with remittances amounting to almost 20 percent of GDP (Ratha,

2016), which is equivalent to the whole contribution of the tourism sector to GDP.

Europe remains the main destination for many Gambians, who mostly migrate illegally ("Backway" as commonly called in The Gambia). In the early 2000s, many Africans embark on migration to Spain through Senegal and Mauritania. This route reached peak in 2006 during which more than 30,000 arrived in the Canary Islands with an estimated dead of 6000 migrants. In 2007, following bilateral agreements between Senegal, Mauritania, and Spain, arrivals through the route continue to plummet. Another route utilized by many is the western Mediterranean route (Morocco-Spain). The route attracted media attention when hundreds of migrants tried to scale the border fence in the Spanish enclave of Ceuta.

Perhaps the current most famous illegal migration route in Gambia is the Libya route, also known as the central Mediterranean route. Before the fall of the Gaddafi regime, many African migrants opted for Libya as a destination country with many job opportunities. However, the 2011 Libyan civil war crisis destabilized the region, subsequently making Libya as transit magnet for many economic migrants and refugees. Presently, this route is the riskiest option for many African migrants.

Gambian economic migrants continue to utilize the western and central Mediterranean route. This route mostly entails travelling from Gambia through Senegal, Mali, Niger and from there to Libya. There is no visa requirement for Gambians to enter these countries with the exception of Libya. The smuggling starts from Niger to Libya. In 2017, the latest year for which data are available, about 42,000 Gambians arrived in Europe through the sea which represents about 2% of the country's total population, making Gambia the largest sender country of illegal migrants as a percentage of total population.

The number of Gambian migrants crossing to Italy reached peak in 2016 with more than 11,000 entries. However, this number has reduced to just more than 5000 in 2017 marking an almost 50 percent reduction (Frontex, 2016). This reduction is perhaps due to the combined increase in the risk of migrating through Libya making many attempting the Morocco - Spain route instead and change of government in The Gambia. Before 2013, Spain served as the leading destination of Gambian migrants with an estimated number of 22,000 (Kebbeh, 2013). However, the current trends suggest that Gambians favor an initial transit to Italy, and subsequently to Germany.

3 Methodology

3.1 Survey and Sampling Framework

The survey data used in our work were collected using a representative sample of 584 households across 60 enumeration areas in the Upper River Region of the Gambia. The enumeration areas were randomly chosen using population size proportional sampling based on the Gambia 2013 census. In each enumeration area, a random sample of 10 eligible households was drawn. Eligibility was determined by asking whether there is young man with ages 16-25 belonging to the household. If the household have more than

one youth within the eligibility age category, one would be randomly selected. In each of these households, after surveying the household head, the sampled young males were also surveyed.

The households were sampled using a simple random walk within each EA. Enumerators surveyed every nth household, where the nth household depended on the size of the EA. Once they sampled the nth household, the participation criterion of the household was ascertained by asking the household whether the household had at least one young man with ages between 16-25 years. Households that did not satisfy this criterion were replaced by the geographically closest household to the right. Following this sampling procedure, 595 households were finally surveyed. Out of these households, a sample of 584 male youths were also surveyed, of which 406 participated in the experiment. Initially, enumerators were instructed to pick every second household to participate in the experiment. However, this strategy was subsequently discarded to allow one sampled young to participate in each household. The fieldwork took place in May 2017.

3.2 Lab in the Field Experiment

The experiment was implemented as a simple lab-in-the field game in which participants were hypothetically endowed with 100,000 Gambia Dalasis (GMD)[4]. We frame the participants' decisions as migration decisions with a 10-year time horizon. The precise framing of the experiment to players is provided in Appendix A.2.

The experimental subjects must play 16 different rounds of an incentivized game in where migration-related decisions must be made, depending on different combinations of four different scenarios for the probability of dying en route to the migration destination and for the probability of obtaining legal residence status at the destination.

The four scenarios in the games were 0, 10, 20, and 50 percent probability of dying in the migration route, and 0, 33, 50, and 100 percent probability of obtaining a legal residence permit or asylum status at destination. These numbers were determined based on data from our pilot survey, and other official databases. According to the International Organization for Migration (2017), 181,436 migrants arrived in Italy through the sea while 4,581 migrants lost their life from January to December 2016. These figures provide a lower bound for the mortality rate at sea, estimated at 2.46% deaths of attempted migration journeys. In addition, we obtained the probability of dying en route by adding the probability of dying en route before reaching the sea. The MHUB (2017) survey reports the incidences of cases where migrants report dead bodies along the way (including the Sahara Desert, Libya, and Mediterranean Sea). According to the data from the January 2017 survey, 44% of respondents reported witnessing one or more dead in Libya, 38% in the Sahara, 15% in the Sea, and 3% in transit countries such as Niger. Combining the probability of dying at sea of 2.5% and the incidences of witnessing migrant deaths en route of 15%, we estimated the overall probability of dying en route as 16.5%. In the experiment, we use 20% as a proxy for the actual death rate over the migration route given the likely undercount of fatalities. The 50% threshold

[4]Equivalent to 2,000 Euros (1 euro = GMD50 exchange rate)

for the probability of dying matches expectation data from our pilot survey. Our pilot survey elicited the expected probability of dying from 20 young males of ages 16 to 25 years from the region of the study. On average, the respondents expect that 5 out of 10 Gambians die along the "Backway", corresponding to a 50 percent probability of dying. In addition, this survey also reported the expected probability of obtaining a legal residence or asylum status.

The official data on residence permits is obtained from the Asylum Information Database (2017). This database contains detailed numbers of migrants by nationality and by destination who applied for asylum and the final decision on the applications. In 2016, 8,930 migrants originating from the Gambia applied to asylum status in Italy. The rejection rate for these migrants was 67.5%. Using this rejection rate, we estimate at 33% the probability of obtaining asylum status or residence permit.

We therefore combined these two estimates (the first one based on existing data and the second one based on expectation from the pilot data) and two other extreme but interesting cases (0 and 10 percent chance of dying and 0 and 100 percent chance of obtaining residence or asylum status) to obtain the rounds for the game. For each round in the game, respondents were given showcards (shown in Figure 6) visually illustrating probabilities of dying en route and of obtaining residence status. Note that all rounds were framed as hypothetical scenarios and respondents were not informed that one of the rounds included the actual risk of dying and chances of obtaining residence/asylum permit.

Moreover, additional information on the corresponding wages was given. Specifically, we assumed, based on a pilot survey conducted in Italy among Gambian immigrants, that once migrants successfully reach Europe, they face two possible wages: a wage of 1000 Euros for those with legal residence status, and of 500 Euros for those without permit. This setting is consistent with the findings of Dustmann et al. (2017), who show that undocumented migrants consumed about 40% less than documented migrants in Italy, and about one quarter of these differences in consumption is due to undocumented migrants earning less than documented migrants.

In each round, given the respective information provided verbally by the interviewer and visually by the showcard given to the experimental subject, participants had to make three decisions: (1) willingness to migrate, (2) willingness to pay for the cost of migration using the endowment provided, and (3) willingness to be paid in order to forgo migrating. The order of the 16 rounds was randomized.

Once the experimental subjects finished playing the game, their payoffs within the game were determined by randomly selecting one of the rounds played. In the selected round, the payout was made using the corresponding probabilities. The average payoff payment was GMD 100, the equivalent to the pay for two days' work, using our survey data. This relevant monetary pay and the framing script were included in our design to incentivize experimental subjects to seriously consider the decisions made in the game. Note that while the hypothetical wages are fixed across rounds, the expected payoffs vary across rounds. For example, the expected payoff in terms of wages in a round with 0 percent probability of dying and 0 percent probability of obtaining residence/asylum

permit corresponds to 250 euros. Similarly, the round with 0 percent probability of dying and a 100 percent probability of obtaining residence/asylum permit corresponds to an expected monthly wage of 1000 euros. The expected wage was not specifically indicated in each round; only hypothetical endowment, wages, and the number of deaths and asylum permits granted per 10 migrants were showed.

3.3 Descriptive Statistics

Table 1 shows the descriptive statistics of the data on the 406 sampled young males who participated in the experiment. On average, the interviewed young is 20 years old with a monthly income of GMD 2,061. In terms of formal education, 32% of the young have some formal education with an average of 8 years of education. 38% of the respondents reported that they had already migrated outside their village for more than 6 months. The duration of the migration spell averages 23 months. Almost all of the sampled young (82%) know at least one person (be it a relative, a family member, or a friend) who has migrated outside their village (migration network). On average the size of migration network is 2.8 per young. We also elicited data on the number of migrants known by the respondent, that successfully travelled to Europe through the "Backway" and also the number of people who died along the way. The data indicates that on average, respondents know 11 persons who successfully reached Europe through the "Backway" and an average of 3.7 persons who lost their life en route to Europe.

Data on willingness or intention to migrate both internally and externally were elicited. To measure willingness to migrate, we asked the following question: Ideally, if you have the opportunity, are you willing to migrate elsewhere inside the Gambia? This question corresponds to intention or willingness to migrate internally. For those who answered in the affirmative, a follow-up question of their preferred destination was asked. The intention to migrate outside the Gambia was elicited in a similar way. The results from the data indicate an overwhelming majority of 82% willing to migrate within the Gambia while 91% of the respondents expressed a willingness to migrate outside the Gambia. This indicates the fact that indeed a majority of young males within the age category of 15 to 25 years desire to migrate and live elsewhere, outside their current settlements. Similarly, to elicit willingness to migrate illegally, we ask the following question: Ideally, if you have the opportunity, are you willing to migrate through the "Backway" /Illegal way? We used the name "Backway" as the illegal migration route is commonly known such in the Gambia. Almost half of the sampled young (47%) responded in the affirmative. The top 5 intended destinations are Italy (29%), Germany (27%), Spain (16%), the United States of America (6%) and the United Kingdom (4%). These statistics are consistent with the current top destination countries of migrants from the Gambia. In addition to their intended destination, we collected information on expected cost of migrating, expected monthly wages in destination country, and how much they were willing to accept per month in order to forgo migrating. The average expected cost of migration amounts to GMD 85,394. In order to forgo migrating, respondents on average are willing to accept GMD 28,370 (about 525 euros) per month. This indicates that young males are willing to accept a substantial risk of dying en route

Table 1: Summary Statistics: Sampled Participants in the Experiment

Variable	Mean	Std. Dev.	# of Obs.
Age	20.12	3.26	406
Formal education [Yes =1, No=0]	0.42	0.36	406
Years of formal education (if any)	8.17	2.35	172
Monthly income (GMD)	1696	3369	258
Has migrated before [Yes =1, No=0]	0.39	0.48	406
Duration of migration (if any) in months	21.75	24.14	159
Has relatives or friends abroad (migration network) [Yes =1, No=0]	0.76	0.42	406
No of relatives or friends (youth with migration network)	2.79	2.24	309
No of known successful migrants	9.88	11.74	406
No of known dead migrants en route	3.75	4.45	406
Has intention of migrating within the country [Yes =1, No=0]	0.81	0.39	406
Has intention of migrating outside the country [Yes =1, No=0]	0.92	0.26	406
Has intention of migrating illegally [Yes =1, No=0]	0.46	0.50	406
Top preferred destination (if intending to migrate illegally)			
Italy	0.29	0.45	208
Germany	0.27	0.4	208
Spain	0.16	0.37	208
United States	0.06	0.25	208
United Kingdom	0.04	0.19	208
Willingness to forgo migrating (GMD)	26232	35770	208
Expected cost of migration (GMD)	79274	97414	208
Expected monthly wage in destination (EUR)	1338	1598	208
Expected probability of dying en route	0.48	0.25	406
Expected probability of obtaining a permit	0.38	0.28	406
Household characteristics			
Household head age	50.03	15.39	406
Household size	10.52	7.29	406
Has internal migrants [Yes =1, No=0]	0.52	0.40	406
Has international migrants [Yes =1, No=0]	0.64	0.48	406
Has at least one illegal migrant [Yes=1, No=0]	0.43	0.49	260

Source: Authors calculations on the survey data.

instead of receiving a substantial amount compared to their current monthly earnings. This is in line with their average expected wage of 1478 Euros per month in Europe, which corresponds to more than GMD 70,000.

Furthermore, we elicited other expectations from the sampled young. Specifically, in addition to the expected cost of migrating, expected wage at destination and willingness to forgo migrating illegally, we elicited the expected probability of dying en route and the expected probability of obtaining a residence or asylum permit. Expected probabilities were collected using the following simple questions: Out of every 10 Gambian migrants, how many people do you think die on the way migrating to Europe through the "Back-way"/illegal way? Out of every 10 Gambian migrants, how many people do you think obtain residence or refugee status in Europe? The answers to these questions represent

the expected probabilities of dying en route and obtaining residence or asylum status. On average, respondents estimate at respectively 49% and 40% the probability of dying en route and of obtaining a permit. According to current estimates, the probability of dying is 20% while the probability of obtaining a permit is 33%, indicating that young on average overestimate the risk of dying en route while underestimating the probability of obtaining residence status.

Furthermore, we elicited time and risk preferences. Respondents were asked how much they are willing to invest in lottery with 50% chance of doubling their investment and 50% chance of loosing half of the investment out of a D1000 hypothetical endowment. The percentage of the endowment they were willing to invest in the lottery is our proxy for risk preference. On average, respondents were willing to invest 38% of the D1000 endowment. Similarly, to elicit time preference, we asked respondents suppose that we won D100,000 in a lottery, and they could choose either to wait for one year to be paid the full amount, or pay to receive the amount immediately. Using this information, the discount factor can be calculated as one minus the fraction they are willing to pay to receive the money immediately. The average discount factor is 0.90.

Who are those young willing to migrate illegally and who are those young not willing to migrate? Table 2 provides brief summary statistics on these groups of people. Out of the 406 sampled young, 380 (91%) express willingness to migrate outside the country, while the remaining 63 have no intention to migrate. Though the data suggest that more than 90% of the respondents aspire to migrate outside the country, however, a fewer fraction (46%) are willing to migrate illegally. This raw statistic is consistent with Mbaye (2014). Aspiring illegal migrants are relatively younger, with an average age of 19.92 years compared to 20.28 years for those not willing to migrate illegally. Those that are willing to migrate have 8.46 years of education compared to 8.56 for those not willing to migrate illegally. In addition, the former earn an average monthly income of GMD 1,517 compared to an average of GMD 2,130.21 for the latter. While the share of individuals with past migration experience is the same in both groups, (38%) potential illegal migrants have more migration experience in terms of number of months than those unwilling to migrate illegally (24.8 versus 21.6 months). In addition, both groups share the same fraction (82%) of having migration network, however, those willing to migrate illegally has larger average network of 3.01 persons versus 2.76 migrants for those not willing to migrate. Furthermore, potential illegal migrants know on average more people who successfully migrated illegally (11.6) compared to those not willing to migrate illegally (8.3). Comparing the number of people known by the two groups that lost their lives en route, we observe those who are not willing to migrate illegally know more people who lost their lives en route to Europe compared to potential illegal migrants (3.83 versus 3.67). The expected probability of dying en route for those willing to migrate averages 45% compared to 53% for non-potential illegal migrants. This implies that while both groups expect a higher probability of dying compared to the actual estimated probability (20%), however those willing to migrate expect lower risk of dying. Finally, potential illegal migrants expect a higher chance of obtaining residence status of 47% versus 33% for those not willing to migrate illegally. Finally, those willing

to migrate illegally on average willing to invest 44% of their hypothetical endowment versus 32% for those not willing to migrate implying that they are less risk averse.

Table 2: Summary Statistics: Statistical Differences

	Willing to migrate Illegally		Not willing to migrate Illegally		Test of Differences
	N=189		N=226		N=406
VARIABLES	**Mean**	**SD**	**Mean**	**SD**	**P-Value**
Individual characteristics					
Age	19.86	3.23	20.40	3.27	0.0875
Years of formal education (if any)	8.18	2.33	8.18	2.37	0.9929
Monthly income (GMD)	1516	3118	2130	3448	0.0827
Has migrated before [Yes =1, No=0]	0.38	0.48	0.38	0.48	0.9951
Duration of migration (in months)	24.77	29.89	21.56	17.56	0.3365
Has relatives or friends abroad (migration network) [Yes =1, No=0]	0.77	0.41	0.75	0.43	0.5658
No of migration network	2.17	1.44	2.00	1.13	0.3164
No of known successful migrants	11.69	12.94	8.52	11.64	0.0086
No of known dead migrants en route	3.77	4.91	4.55	3.57	0.1482
Expected probability of dying en route	0.43	0.24	0.53	0.25	0.0002
Expected probability of obtaining a permit	0.46	0.29	0.29	0.25	0.0000
Household Characteristics					
Household head age	52.81	15.73	50.31	14.78	0.1323
Household size	10.14	6.4	9.94	6.9	0.7518
Has internal migrants [Yes =1, No=0]	0.60	0.48	0.59	0.49	0.7307
Has international migrants [Yes =1, No=0]	0.70	0.45	0.60	0.49	0.0213
Received remittances [Yes =1, No=0]	0.36	0.48	0.31	0.46	0.3014

Source: Authors calculations on the survey data.

4 Econometric approach and main empirical results

4.1 Estimation strategy

In order to analyze how the probability of successfully reaching Italy and the probability of obtaining a legal residence permit affect migration related outcomes such as the willingness to migrate, the willingness to pay for migration, and the willingness to receive to forgo migrating, we can estimate the following model:

$$O_{ir} = \alpha + \beta_1 PD_{ir} + \beta_2 PP_{ir} + \delta_i + \theta_r + \epsilon_{ir} \quad (1)$$

where O denotes our three outcomes of interest: willingness to migrate, to pay, and to forgo migrating. PD is the probability of dying en route an PP is probability of obtaining a permit. δ_i is individual fixed effects and θ_r is round fixed effects. Our

estimates of interest are β_1 and β_2. β_1 gives us the effect of probability of success on the three outcomes. While β_2 gives us the effect of probability of obtaining a residence permit on our outcome of interest. The advantage of our design is that due to the two variations of both within individuals and across individuals, we can include individual fixed effects which will allow us control for potential omitted variables.

4.2 Empirical Results

4.2.1 Main Results: Willingness to Migrate Illegally

Table 3 below shows the regression results from the lab-in-the field experiment. Respondents were given different hypothetical information on the probability of dying en route, the probability of obtaining residence permit and wages in destination country and given this hypothetical information, they made hypothetical decisions to migrate illegally or not. Thus, the dependent variable is whether individuals are willing to migrate illegally or not. We are interested in understanding how different factors affect the decisions to migrate illegally or not with special interest in the probabilities of dying en route and of obtaining asylum or residence permit.

We present results from a linear probability model with various specifications. Irrespective of the specifications, we observe that increasing the probability of dying en route reduces the probability of individuals' willingness to migrate. The coefficient is statistically significant at the 1% level. On the other hand, the chance of obtaining residence or asylum permit is positively correlated with the odds of migrating. This implies that potential migrants care about the likelihood of obtaining asylum status once they reach Europe. Columns (1) and (3) provide parsimonious correlations, while columns (2) and (4) estimate the model by including individual and round order fixed effects.

In column (1) of Table 3, the results show that a 1 percent increase in the probability of obtaining a residence permit increases the willingness to migrate by 0.19 pp highlighting that potential migrants care about the likelihood of obtaining residence permit once they reach Europe. Similarly, increasing the hypothetical mortality rate by 1 percent reduces the willingness to migrate illegally by 0.16pp. Once we control for both individual and round order fixed effects in column 2, the magnitude of effect reduces to 0.13 percent for the residence permit effect and 0.12 percent for the mortality effect. Note that this magnitude is very similar to the 0.15pp mortality effect estimated by Shrestha (2017b) in Nepal.

In columns (3) and (4) of Table 3, we restrict the sample by dropping respondents who do not to migrate and those who always migrate irrespective of the round. The resulting estimates double in magnitude. The coefficient on the legal permit increases to 0.42 pp, while the mortality effect also increases to 0.38 pp. The experimental setup allows us to evaluate changes in the willingness to migrate if potential migrants had accurate information about the chances of dying en route and obtaining residence permit. Table 4 presents results comparing the willingness to migrate of experimental subjects, when moving from their current expectations on migration risks to different probabilities of dying en route and of obtaining legal residence status. Column (1) of Table 4 shows

Table 3: Willingness to Migrate Illegally - Results from the Experiment

VARIABLES	(1) Migrate Illegally	(2) Migrate Illegally	(3) Migrate Illegally	(4) Migrate Illegally
Prob. of permit	0.1894***	0.1301***	0.4936***	0.4181***
	(0.0240)	(0.0165)	(0.0445)	(0.0384)
Prob. of dying	-0.1561***	-0.1175***	-0.3545***	-0.3789***
	(0.0441)	(0.0253)	(0.0998)	(0.0393)
Constant	0.3609***	0.34991***	0.4638***	0.3951***
	(0.0244)	(0.0072)	(0.0427)	(0.0211)
Individual Fixed Effects	No	Yes	No	Yes
Round Order Fixed Effects	No	Yes	No	Yes
N	6478	6478	2259	2527
n	406	406	115	115
R-squared	0.0236	0.8200	0.1667	0.5462

Source: Authors calculations on the survey data.
Notes: Regressions estimated using a Linear Probability Model. Migrate illegally is a binary variable taking value 1 if the respondent is willing to migrate illegally and 0 otherwise. Prob. of permit is the hypothetical probability of obtaining a residence permit (or asylum status) in Italy. Prob. of dying is the hypothetical probability of dying en route to Italy. N represents the total number of observations and n is the total number of respondents. Each individual has a maximum of 16 observations. In columns (3) and (4), estimation is conducted by dropping those who are willing to migrate in all rounds (102) and those that are not willing to migrate in any round (189). Estimates obtained using a linear probability model. Standard errors in the parentheses, clustered at the individual level. *Significant at 10%; **significant at 5%; ***significant at 1%.

that the expected 50 percent probability of dying en route and 50 percent probability of obtaining residence permit corresponds to 37 percent of all experimental subjects being willing to migrate, and 47 percent when including only the experimental subjects in the responsive sub-sample.

As is reported in column (1) of Table 4, we find that reducing the probability of dying to 0 percent increases the likelihood of migrating by 6.5 pp and increasing the increasing the probability of obtaining permit to 100 percent increases migration by 3.7 pp.

Recall that (based on the official numbers described above) the actual probability of dying en route is 20 percent and the probability of obtaining a legal residence permit is 30 percent. Our results suggest that knowing the probability of dying en route to be 20 percent instead of the average 50 percent expectation increases migration by 2.3 pp. Similarly, adjusting the probability of obtaining residence permit from 50 percent to 30 percent reduces migration by 2.9 pp. The difference between these coefficients is statistically different at the 1% significance level.

Column (2) in Table 4 shows that the willingness to migrate of responsive experimental subjects is reduced by 9.4pp when moving from the 50 percent expected probability to the actual 30 percent probability of obtaining a permit. In the same way, we observe

that the willingness to migrate increases by 7pp when the probability of dying en route changes from the expected probability of 50 percent to the 20 percent actual probability of dying en route. The difference between these coefficients is also statistically different.

Table 4: Willingness to Migrate Illegally - Results from the Experiment

VARIABLES	(1) Migrate Illegally	(2) Migrate Illegally
0% Prob. of permit	-0.0985***	-0.3154***
	(0.0139)	(0.0370)
30% Prob. of permit	-0.0288**	-0.0935**
	(0.0092)	(0.0292)
100% Prob. of permit	0.0370***	0.1196***
	(0.0093)	(0.0276)
0% Prob. of dying	0.0648***	0.2097***
	(0.0129)	(0.0368)
10% Prob. of dying	0.0353***	0.1101***
	(0.0102)	(0.0322)
20% Prob. of dying	0.0229**	0.0709**
	(0.0115)	(0.0300)
Constant	0.3745***	0.4742***
	(0.0154)	(0.4742)
Individual Fixed Effects	Yes	Yes
Round Order Fixed Effects	Yes	Yes
N	6478	1835
n	406	115
R-squared	0.8219	0.8157

Source: Authors calculations on the survey data
Notes: Regressions estimated using a Linear Probability Model. Migrate illegally is a binary variable taking value 1 if the respondent is willing to migrate illegally and 0 otherwise. Prob. of permit is the hypothetical probability of obtaining a residence permit (or asylum status) in Italy. Prob. of dying is the hypothetical probability of dying en route to Italy. N represents the total number of observations and n is the total number of respondents. Each individual has a maximum of 16 observations. The omitted category corresponds to the average expected probabilities of dying en route (50%) and of obtaining a permit (50%). In column (2), estimation is conducted by dropping those who are willing to migrate in all rounds (102) and those that are not willing to migrate in any round (189). Standard errors in the parentheses, clustered at the individual level. *Significant at 10%; **significant at 5%; ***significant at 1%.

Table 5 describes predictors of the experimental subjects' responsiveness (in terms of migration decisions) to the information provided in the various rounds of the lab experiment. Column (1) in Table 5 describes how individuals who choose to never migrate in any of the experimental rounds are less likely to know current emigrants, and more likely to know past migrants who died en route to Europe. They tend to have relatively low expectations regarding the probability of obtaining a residence permit and expect

that the probability of dying en route is relatively high. They are substantially more risk averse than those individuals who migrate in at least some of the experimental rounds. Column (2) shows a different story for experimental subjects who responded to the varying information provided across the different experimental rounds: these responsive subjects know few past migrants who died in route to Europe, and had relatively high expectations regarding the probability of obtaining a legal residence permit. Finally, column (3) of Table 5 showed that subjects who do not respond to the information provided in the different experimental rounds because they always chose to migrate tend to have a relatively low expectation about the probability of dying en route.

Table 5: Predictors of Experimental Subjects' Responsiveness to Information Provided in the Lab Experiment

	(1)	(2)	
VARIABLES	Never Migrate	Migrate Sometimes	Migrate Always
No of known migrants	-0.0064***	0.0030	0.0034
	(0.0016)	(0.0024)	(0.0023)
No of known dead migrants	0.0107*	-0.0179***	0.0073
	(0.0054)	(0.0039)	(0.0057)
Expected permit	-0.0490***	0.0495***	-0.0005
	(0.0079)	(0.0088)	(0.0081)
Expected dead	0.0252**	-0.0065	-0.0187*
	(0.0095)	(0.0092)	(0.0083)
Risk preference	-0.2848***	0.1781*	0.1067
	(0.0816)	(0.0813)	(0.0737)
Constant	0.5120***	0.0555	0.4325**
	(0.1449)	(0.1356)	(0.1447)
N	359	359	359
R-squared	0.2032	0.1595	0.0510

Source: Authors calculations on the survey data

Notes: Regressions estimated using a Linear Probability Model. Never migrate is binary variable taking value 1 if respondent is not willing to migrate in all rounds and 0 otherwise. Migrate sometimes is binary variable taking value1 if respondent expressed willingness to migrate in some rounds and 0 otherwise. Migrate always is binary variable taking value 1 if respondent is willing to migrate in all rounds and 0 otherwise. No of known migrants is the number of known migrants who migrated, no of known dead migrants is the number of known "backway" migrants who died en route to Italy. Expected permit is the expected probability of obtaining a residence/asylum permit. Expected dead is the expected probability of dying en route to Italy. Risk preference is measured as willingness to take a gamble. Robust standard errors in the parentheses. *Significant at 10%; **significant at 5%; ***significant at 1%.

4.2.2 Heterogeneous effects: expectations

One alternative interpretation of the migration choices made by potential migrants in our lab experiment is that they do not necessarily reflect migration decisions, and they can instead simply translate the experimental subjects' preferences for risky behavior. The

implication would be that lab decisions would perhaps be similar if framed in a different context, such as tobacco use or gambling. In this section, we examine the robustness of our main empirical findings by presenting how experimental migration decisions vary with expectations about the probability of dying during the illegal migration journey, as well as expectations about the probability of acquiring legal status after successful arrival to Europe. These results show how these migration-related expectations are significantly linked to the experimental migration decisions made.

Results in Table 6 and 7 illustrate how, in addition to the expected effects of the probabilities of dying en route and of obtaining a legal residence permit, over-expectation of both of these probabilities also gives rise to the expected effects: overestimating the probability of obtaining a legal permit after arrival in Europe has a positive significant effect on the probability of migration, whereas overestimating the probability of dying en route to Europe has a significant negative effect on the decisions to migrate.

Panel 2 of Table 6 further shows that for those who overestimate the probability of obtaining a legal permit, the impact of additional increases in the probability of a permit will have a positive significant effect, but lower than the impact on those who underestimate this probability. In this same instance where subjects overestimate the probability of a permit, an increase in the probability of dying en route seems to have a negative effects, but this cannot be statistically distinguished from the effect of this probability on those who underestimate the probability of obtaining a permit.

Similarly, in Table 7, we observe that for those overestimating the probability of dying en route, the marginal effects of increased probabilities of obtaining a permit and of dying en route have the expected signs but cannot be distinguished from the effect of those probabilities on the subjects who underestimate the probability of dying.

4.2.3 Are experimental subjects behaving rationally?

A final check on the robustness of our findings is to evaluate whether experimental decisions to migrate are rational in the sense of net income maximizing.

According to the neoclassical theory of migration initially put forward by Sjaastad (1962), the decision to migrate is governed by utility maximization based on expected net income flows. Individuals migrate if their expected net income from migration is positive. Using our experimental setup, we can compute the expected net income of migrating illegally. Our experimental set up assumes that individuals face two types of wages; 1000 euros of monthly wage for those who have a legal residence permit, and 500 euros for those without permit. To compute the expected benefit of migrating, for each round, we employed the respective probabilities of dying and chances of obtaining permit applied in each round. Similarly, we compute the expected benefit of staying in Gambia. We assume that individuals who chose to stay in the country are faced with the existing labor market outcomes and earn their reported salary or the average national monthly salary of those who live in rural Gambia. Since those who stay within the country are also faced with a non-trivial risk of dying (0.35 percent, Gambia Bureau of Statistics (2013)), though negligible compared to the risk of dying en route, we employed this fatality rate to compute the benefit of staying put. Additionally, for computational

Table 6: Heterogeneous Effects Based on Expected Permit

VARIABLES	(1) Migrate Illegally	(2) Migrate Illegally
Prob. of permit	0.1172***	0.0890***
	(0.0237)	(0.0182)
Prob. of dying	-0.1055***	-0.0708***
	(0.0364)	(0.0221)
Overestimate prob. of permit	0.1425***	
	(0.0451)	
Overestimate prob. of permit × Prob. of permit	0.0774**	0.0883***
	(0.0360)	(0.0305)
Overestimate prob. of permit × Prob. of dying	-0.0734	-0.1027**
	(0.0582)	(0.0412)
Constant	0.2972***	0.3722***
	(0.0305)	(0.0068)
Individual Fixed Effects	No	Yes
Round Order Fixed Effects	No	Yes
N	6478	6478
n	406	406
R-squared	0.0262	0.8237

Source: Authors calculations on the survey data

Notes: Regressions estimated using a Linear Probability Model. Migrate illegally is a binary variable taking value 1 if the respondent is willing to migrate illegally and 0 otherwise. Prob. of permit is the hypothetical probability of obtaining a residence permit (or asylum status) in Italy. Prob. of dying is the hypothetical probability of dying en route to Italy. Overestimate probability of permit corresponds to subjects with an expectation above the actual probability of obtaining a legal residence permit (30 percent). Standard errors in parentheses, clustered at the individual level. *Significant at 10%; **significant at 5%; ***significant at 1%.

purposes, we assume the cost of migration to be 2000 euros, the gain from dying en route or dying in the country corresponds to zero payoff, and the migration period lasts for 10 years. Finally, for discounting purpose, we utilized the average lending rate of 22.63% published by the central bank at the time of the survey (May 2017).

The computation exercise yields an average net present gain of migration of 29, 311 euros if we assume the reported monthly salary of our respondents; 29,185 euros assuming the average monthly salary of GMD 2000; and 28,027 euros when we utilize the national monthly average of GMD.

How does this affect experimental subjects' decisions to migrate illegally? In order words, are respondents behaving rationally, i.e., are respondents choosing to migrate when the net grain of migrating is positive? The descriptive results suggest that the respondents are indeed behaving rationally, in that all the 38 cases with negative net gain of migrating, only one case responded willing to migrate illegally (2 percent). When we analyze the cases in which the expected net gain of migration was positive, we observe

Table 7: Heterogeneous Effects Based on Expected Dead

VARIABLES	(1) Migrate Illegally	(2) Migrate Illegally
Prob. of permit	0.1296***	0.0980***
	(0.0376)	(0.0273)
Prob. of dying	-0.1288*	-0.1382**
	(0.0656)	(0.0544)
Overestimate prob. of dying	-0.1330**	
	(0.0598)	
Overestimate prob. of dying × Prob. of permit	0.0343	0.0414
	(0.0427)	(0.0325)
Overestimate prob. of dying × Prob. of dying	-0.0110	0.0232
	(0.0730)	(0.0585)
Constant	0.4718***	0.3724***
	(0.0544)	(0.0067)
Individual Fixed Effects	No	Yes
Round Order Fixed Effects	No	Yes
N	6478	6478
n	406	406
R-squared	0.0452	0.8225

Source: Authors calculations on the survey data

Notes: Regressions estimated using a Linear Probability Model. Migrate illegally is a binary variable taking value 1 if the respondent is willing to migrate illegally and 0 otherwise. Prob. of permit is the hypothetical probability of obtaining a residence permit (or asylum status) in Italy. Prob. of dying is the hypothetical probability of dying en route to Italy. Overestimate probability of dying corresponds to subjects with an expectation above the actual probability of dying en route (20 percent). Standard errors in parentheses, clustered at the individual level. *Significant at 10%; **significant at 5%; ***significant at 1%.

a 41 percent rate of willingness to migrate illegally. Table 8 below shows the impact of the net gain of migration on the willingness to migrate. Depending on our assumption on computing the benefit of staying in the country, we observe for every 1 percent increase in the expected net gain of migration, an increase in the willingness to migrate of about 11 percent. It is worth highlighting that our assumption of zero payoff for the dead outcome renders our estimated net gain of migration as an upper bound.

4.3 Willingness to pay to migrate and willingness to receive to forgo migration

As a final robustness check, we examine how the probabilities of dying en route and of obtaining a legal permit to stay in Europe affect the willingness to pay for illegal migration (though smugglers) and the willingness to receive a payment to forgo migrating illegally. Recall that in the experiment, subjects were hypothetically endowed with D

Table 8: Willingness to Migrate Illegally and Expected Net Gain of Migration

VARIABLES	(1) Migrate Illegally	(2) Migrate Illegally	(3) Migrate Illegally
ln(NPV1)	0.1130***		
	(0.0160)		
ln(NPV2)		0.1144***	
		(0.0125)	
ln(NPV3)			0.1083***
			(0.0118)
Constant	-0.7366***	-0.7728***	-0.7050***
	(0.1643)	(0.1282)	(0.1209)
Individual Fixed Effects	Yes	Yes	Yes
Round Order Fixed Effects	Yes	Yes	Yes
N	4421	6478	6478
n	248	406	406
R-squared	0.8219	0.8157	0.8215

Source: Authors calculations on the survey data

Notes: Regressions estimated using a Linear Probability Model. Migrate illegally is a binary variable taking value 1 if the respondent is willing to migrate illegally and 0 otherwise. NPV1 is estimated using the individual reported monthly wage, NPV2 is done with the average monthly wage of GMD 2000, and NPV3 uses the national average monthly wage rate of GMD 3000. Standard errors in parentheses, clustered at the individual level. *Significant at 10%; **significant at 5%; ***significant at 1%.

100,000 of which they can choose how much they are willing to pay in order to finance migration costs. The measures we use are obtained through this hypothetical, non-incentivized, experiment.

Column (1) of Table 9 describes how the risk of dying en route and the chances of obtaining a residence permit affect the willingness to pay for illegal migration costs and the opportunity cost of migrating. These results show that the hypothetical probabilities of dying en route have negative but insignificant effects on the willingness to pay for migration cost. However, the probability of obtaining a residence permit has a positive and significant effect on the amount potential migrants are willing to pay for the migration cost. A one percent increase in the chance of obtaining a permit increases the willingness to pay for migration by 5.6 pp. Furthermore, in column (2) of Table 9, we observe that both the risk of dying and chances of obtaining residence permit affect the opportunity cost of migrating. The elasticities suggest that for every one percent increase in the risk of dying, willingness to receive in order to forgo migration reduces by 9 pp. Similarly, respondents are willing to accept to 6 percent more for every one percent increase in the chances of obtaining residence permit.

Table 9: Regression Results from Experiment - Willingness to Pay and Receive

VARIABLES	(1) log(Willingness to Pay)	(2) log(Forgo Migration)
Probability of obtaining a residence permit	0.0566**	0.0627*
	(0.0388)	(0.0354)
Probability of dying en route	-0.0001	-0.0903*
	(0.0559)	(0.0517)
Constant	10.7625***	9.5828***
	(0.0148)	(0.0154)
Individual Fixed Effects	Yes	Yes
Round Order Fixed Effects	Yes	Yes
N	2,733	2,731
n	205	205
R-squared	0.7352	0.9330

Source: Authors calculations on the survey data

Notes: Regressions estimated using OLS. Willingness to pay for migration is the hypothetical amount (in GMD) respondents are willing to pay for the cost of migrating illegally. Compensation to forgo migration is the amount (in GMD) per month respondents are willing to accept in order to forgo migrating illegally. N represents the total number of observations and n is the total number of respondents. Each individual has a maximum of 16 observations. Standard errors in the parentheses, clustered at the individual level. *Significant at 10%; **significant at 5%; ***significant at 1%.

4.4 Do lab migration decisions reflect actual migration decisions?

An alternative interpretation of the migration choices made by experimental subjects in our lab experiment is that they may not translate into actual migration decisions. To check the robustness of our findings relative to this concern, we collected follow-up data via telephone calls. As is described in Table 10, the research team managed to re-contact 263 out of the initial 406 experimental subjects that participated in the lab experiment. This large attrition rate may mask the occurrence of more international migration than we could measure in the follow-up survey, as it is particularly difficult to track illegal migrants to Europe, even though the research team tried to contact these experimental subjects via social media, in addition to telephone contacts.

Of those we could re-interview, 22% had actually migrated, although only 3% had migrated internationally – and mostly to Senegal. In terms of intentions to migrate, 77% of re-interviewed experimental subjects intended to migrate in the future, although only 33% in the following year, and also 33% expressed an intention to emigrate illegally.

The actual decisions and intentions to migrate correlate very significantly with the experimental migration decisions, although the magnitude of this correlation is small. As displayed in Table 11, reporting experimentally to migrate is associated with an increase by 1.75pp in the probability of actual migration, and with an increase of 10.8pp in the intention to migrate illegally.

Table 10: Descriptive Statistics from Follow-up Survey

VARIABLES	N	Mean	SD	Min	Max
Migrated	263	0.2243	0.4179	0	1
Migrated internally	263	0.1901	0.4007	0	1
Migrated internationally	263	0.0304	0.2016	0	1
Migrated to Senegal	263	0.0342	0.1910	0	1
Intent to migrate	248	0.7661	0.4241	0	1
Intent to migrate next year	248	0.3266	0.4699	0	1
Intent to migrate illegally	248	0.3306	0.4718	0	1

Source: Follow-up survey and own calculations.
Notes: Migrated is a binary variable taking value 1 if the respondent migrated and 0 otherwise. Migrated internally takes value 1 if respondent migrated within the country and 0 otherwise. Migrated internationally takes value 1 if the respondent migrated outside the country and 0 otherwise. Intent to migrate takes value 1 if the respondent is willing to migrate.

Table 11: Lab Willingness to Migrate Illegally and Follow-up Actual Migration Decisions and Intentions

	(1) Migrated internationally	(2) Intent to migrate	(3) Intent to Migrate next year	(4) Intent to migrate illegally
Lab Willingness to Migrate	0.0213***	0.0392***	0.0704***	0.1071***
	(0.0073)	(0.0136)	(0.0154)	(0.0155)
Constant	0.0336**	0.7550***	0.3010***	0.2913***
	(0.0144)	(0.0275)	(0.0306)	(0.0309)
Round order fixed effects	Yes	Yes	Yes	Yes
N	3356	3912	3912	3912
n	243	243	243	243
R^2	0.003	0.002	0.005	0.012

Source: Authors calculations on the follow-up survey data
Notes: Regressions estimated using a Linear Probability Model. Lab willingness to migrate is binary variable taking value 1 if respondent is willing to migrate illegally in the lab-in-the-field experiment, and 0 otherwise. N represents total number of observations and n is the total number of respondents. Each individual has maximum of 16 observations. Standard errors in the parentheses, clustered at the individual level. *Significant at 10%; **significant at 5%; ***significant at 1%.

5 Conclusion

This study aims at improving our understanding of the determinants of the willingness to migrate illegally from West Africa to Europe. To this end, we implemented an incentivized lab-in-the field experiment using a sample of 406 households in rural Gambia, a country with the largest intensity (as percent of population) of illegal migration to Eu-

rope. In the incentivized experiment, subjects faced scenarios with differing probabilities of successfully reaching Europe, and of obtaining asylum or other residence status that will allow them to travel and work legally upon arrival. In each scenario, respondents made choices on whether to migrate illegally, on their willingness to pay for migration, and on the amount, they were willing to accept in order to forgo migrating.

Our results suggest that potential migrants overestimate the risk of dying en route to Europe, and the probability of obtaining legal residency status. Moreover, on average, we found evidence of youth willing to reject a substantial amount of money per month than forgo migrating illegally. Our findings suggest that the willingness to migrate illegally is not only driven by the risk of dying en route, but also by the chances of obtaining asylum or a legal residence permit. Additional evidence also shows that prior expectations may act as important determinants of the willingness to migrate illegally. Overall, our study suggests that the migration decisions of potential migrants actively respond to information about relevant facts regarding costs and benefits of migration.

References

Amnesty International (2015). *"Libya is full of cruelty": Stories of Abduction, Sexual Violence, and Abuse from Migrants and Refugees.*

Amuedo-Dorantes, Catalina and Fernando Lozano (2015). On the effectiveness of SB1070 in Arizona, *Economic inquiry* 53.1, pp. 335–351.

Amuedo-Dorantes, Catalina, Thitima Puttitanun, and Ana P Martinez-Donate (2013). How do tougher immigration measures affect unauthorized immigrants?, *Demography* 50.3, pp. 1067–1091.

Arcand, Jean-Louis L and Linguère Mously Mbaye (2013). *Braving the Waves: The Role of Time and Risk Preferences in Illegal Migration from Senegal.* Tech. rep. IZA Discussion Paper.

Barnett-Howell, Zack (2018). "Should I Stay or Should I Go: Microeconomic determinants of migration". *Mimeo*, University of Wisconsin-Madison.

Batista, Catia, Aitor Lacuesta, and Pedro C. Vicente (2012). Testing the brain gain hypothesis: Micro evidence from Cape Verde, *Journal of Development Economics* 97.1, pp. 32–45.

Batista, Catia and David McKenzie (2018). "Testing Classic Theories of Migration in the Lab". *Mimeo*, Universidade Nova de Lisboa and World Bank.

CNN (2017). *People for Sale: Exposing Migrant Slave Auctions in Libya.* URL: `https://edition.cnn.com/specials/africa/libya-slave-auctions` (visited on 10/15/2018).

Docquier, Frédéric, Giovanni Peri, and Ilse Ruyssen (2014). The cross-country determinants of potential and actual migration, *International Migration Review* 48, S37–S99.

Dustmann, Christian, Francesco Fasani, and Biagio Speciale (2017). Illegal migration and consumption behavior of immigrant households, *Journal of the European Economic Association* 15.3, pp. 654–691.

Frontex (2016). *Annual Risk Analysis 2016. Technical Report.*

Gambia Bureau of Statistics (2013). *The Gambia 2013 Population and Housing Census Preliminary Results.*

Gathmann, Christina (2008). Effects of enforcement on illegal markets: Evidence from migrant smuggling along the southwestern border, *Journal of Public Economics* 92.10-11, pp. 1926–1941.

Guido, Friebel, Manchin Miriam, Mendola Mariapia, and Prarolo Giovanni (2017). *Human Smuggling and Intentions to Migrate: Global Evidence from a Supply Shock along Africa-to-Europe Migration Routes.* Tech. rep. Working Paper 375, University of Milano-Bicocca.

International Organization for Migration (2017). *Mixed Migration of Flows in the Mediterranean and Beyond: Compilation of Available Data and Information - Reporting Period 2016.*

IOM (2014). *Fatal Journeys: Tracking Lives Lost During Migration* International Organisation for Migration. ISBN: 9789210571173.

Kebbeh, C Omar (2013). The Gambia: Migration in Africa's' Smiling Coast', *The Online Journal of the Migration Policy Institute*.

Lagakos, David, Ahmed Mushfiq Mobarak, and Michael E Waugh (2018). *The Welfare Effects of Encouraging Rural-Urban Migration*. Tech. rep. National Bureau of Economic Research.

Mbaye, Linguère Mously (2014). "Barcelona or die": understanding illegal migration from Senegal, *IZA Journal of Migration* 3.1, p. 21.

Missing Migrants Project (2018). *Missing Migrants: Tracking Deaths Along Migratory Routes*. URL: https://missingmigrants.iom.int (visited on 10/15/2018).

North African Mixed Migration Hub (2017). *Survey Snapshot, Italy*. URL: http://www.mixedmigrationhub.org/wp-content/uploads/2017/02/Italy-MHub-Survey-Snapshot-Jan-2017.pdf (visited on 10/15/2018).

Orrenius, Pia M and Madeline Zavodny (2003). Do amnesty programs reduce undocumented immigration? Evidence from IRCA, *Demography* 40.3, pp. 437–450.

Ratha, Dilip (2016). *Migration and Remittances Factbook 2016: Third Edition* The World Bank.

Shrestha, Maheshwor (2017a). *'Get rich or die tryin': perceived earnings, perceived mortality rate and the value of a statistical life of potential work-migrants from Nepal* The World Bank.

— (2017b). *Death scares: How potential work-migrants infer mortality rates from migrant deaths* The World Bank.

Sjaastad, Larry A. (1962). The Costs and Returns of Human Migration, *Journal of Political Economy* 70.5, pp. 80–93.

The Asylum Information Database (2016). *Country Report, Italy*. URL: https://www.asylumineurope.org/sites/default/files/report-download/aida_it_2016update.pdf.

United Nations, Department of Economic & Social Affairs Population Division (2016). *International Migration Report 2015: Highlights ({ST/ESA/SER.A/375})*.

World Bank (2018). *The World Bank in The Gambia*. URL: http://www.worldbank.org/en/country/gambia/overview (visited on 10/15/2018).

A Appendix

A.1 Flows of Illegal Migrants into Europe

Figure 1: Total Flow of Migrants Crossing the Central Mediterranean Route (2009-2017)

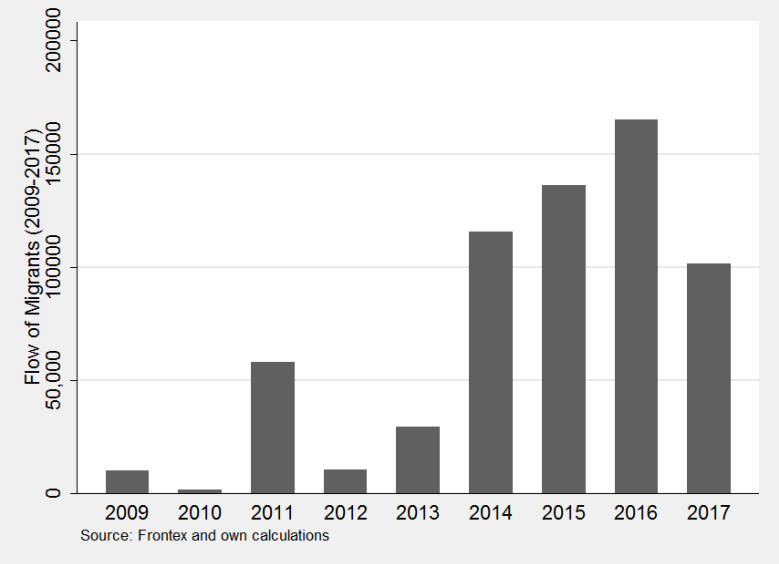


Figure 2: Total Flow of Migrants Crossing the Central Mediterranean Route by Top 10 countries of origin (2009-2017)

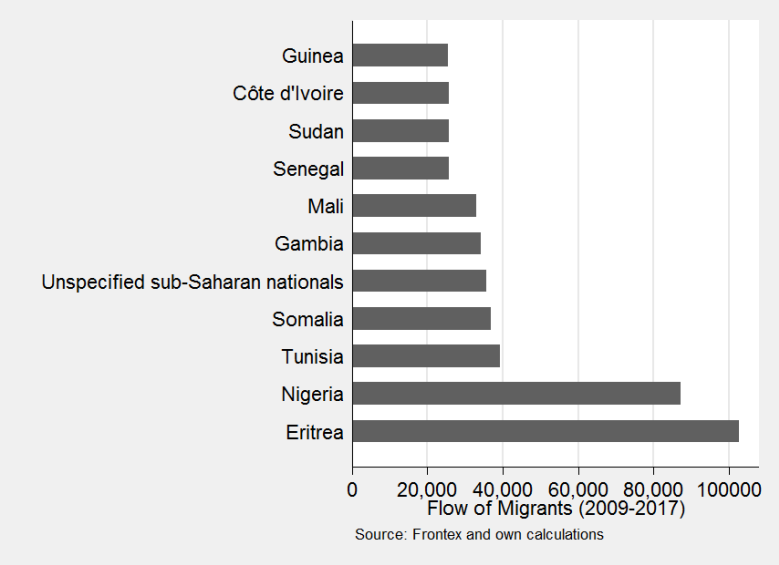


Figure 3: Total Flow of Migrants as a Percentage of Origin Population Crossing the Central Mediterranean Route in 2017 by Top 10 countries of origin

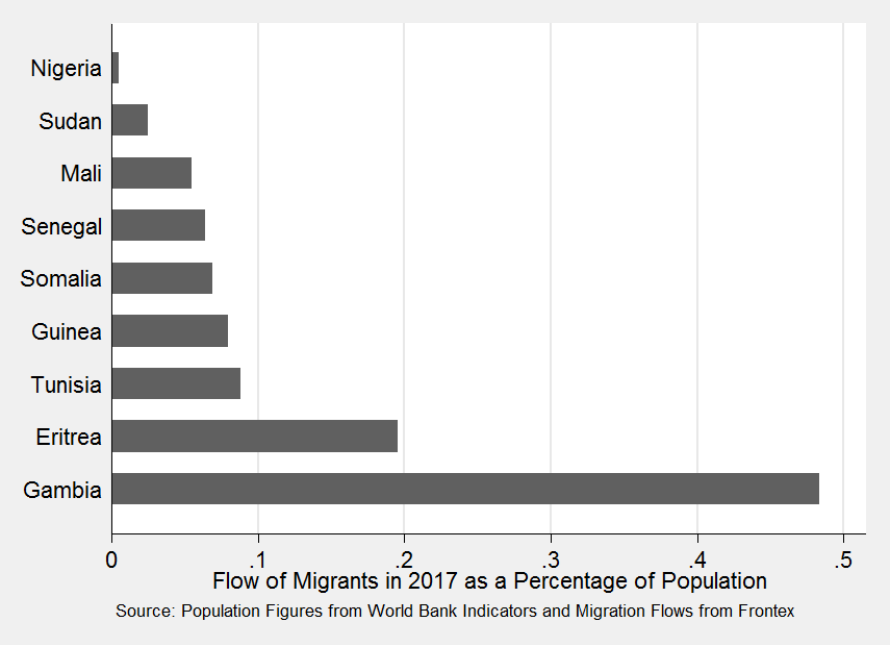


Figure 4: Total Flow of Gambian Migrants Crossing the Central Mediterranean and Western Mediterranean Routes (2009-2017)

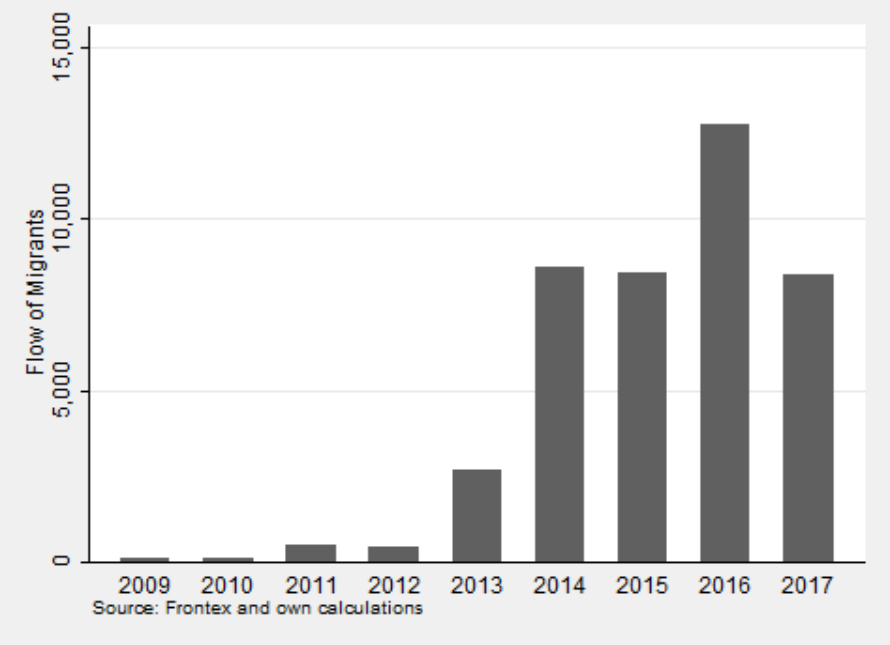
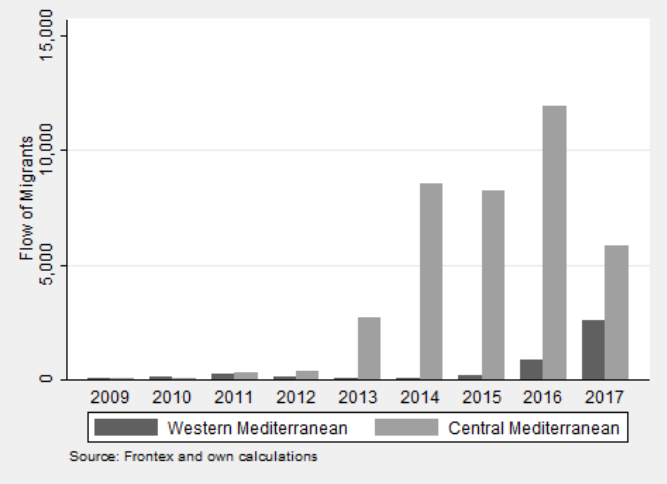


Figure 5: Total Flow of Gambian Migrants by Routes (2009-2017)



A.2 Information about the Lab-In-The-Field-Experiment

A.2.1 Lab-In-The-Field-Experiment Framing

Imagine that you have/given 100,000 Gambian Dalasis. You can decide what to do with the money. You can either keep it or use it migrate to Europe through the "Backway". Now I will give you 16 different scenarios, and for each scenario, you will decide whether you will migrate or not, how much you are willing to pay for migration cost, and how much you are willing to accept in order to stop migrating. In this game, depending on what you choose to do, you stand the chance to win real money at the end of the game.

For every 20000 Euros (D1,000,000) you win, we will pay you 1-real euro (D50). You have the opportunity to win a minimum of D5 up to a maximum of D300.

For example, people who choose not to migrate can keep the gift of D100,000 which is equivalent to a payoff of D5. While those who choose to migrate can either win D0 if they die along the way, D150 if they reach but do not obtain a permit/asylum. And finally those who migrate and obtain a permit wins D300.

Before playing the game, as you may know, migration to Europe while profitable can also be risky. The rules of the game are as follows: If you choose to migrate, you can either successfully reach to Europe or you will die along the way. This depends on the chances we will be providing. All those who successfully reach in Europe, some will have residence permit/asylum papers, while others will not. Those who obtain the permit have the opportunity to earn more money compared to those who do not. Moreover, the people who obtain the permit will also have the opportunity to come visit their family back in Africa.

At the end of the game, we will randomly choose one scenario from the sixteen scenarios to pay you. The case that we choose will determine how much you will earn; therefore we advise that you take each decision equally seriously. We will play the chances of dying en route and the chances of obtaining a residence permit for that chosen round.

A.2.2 Show Cards

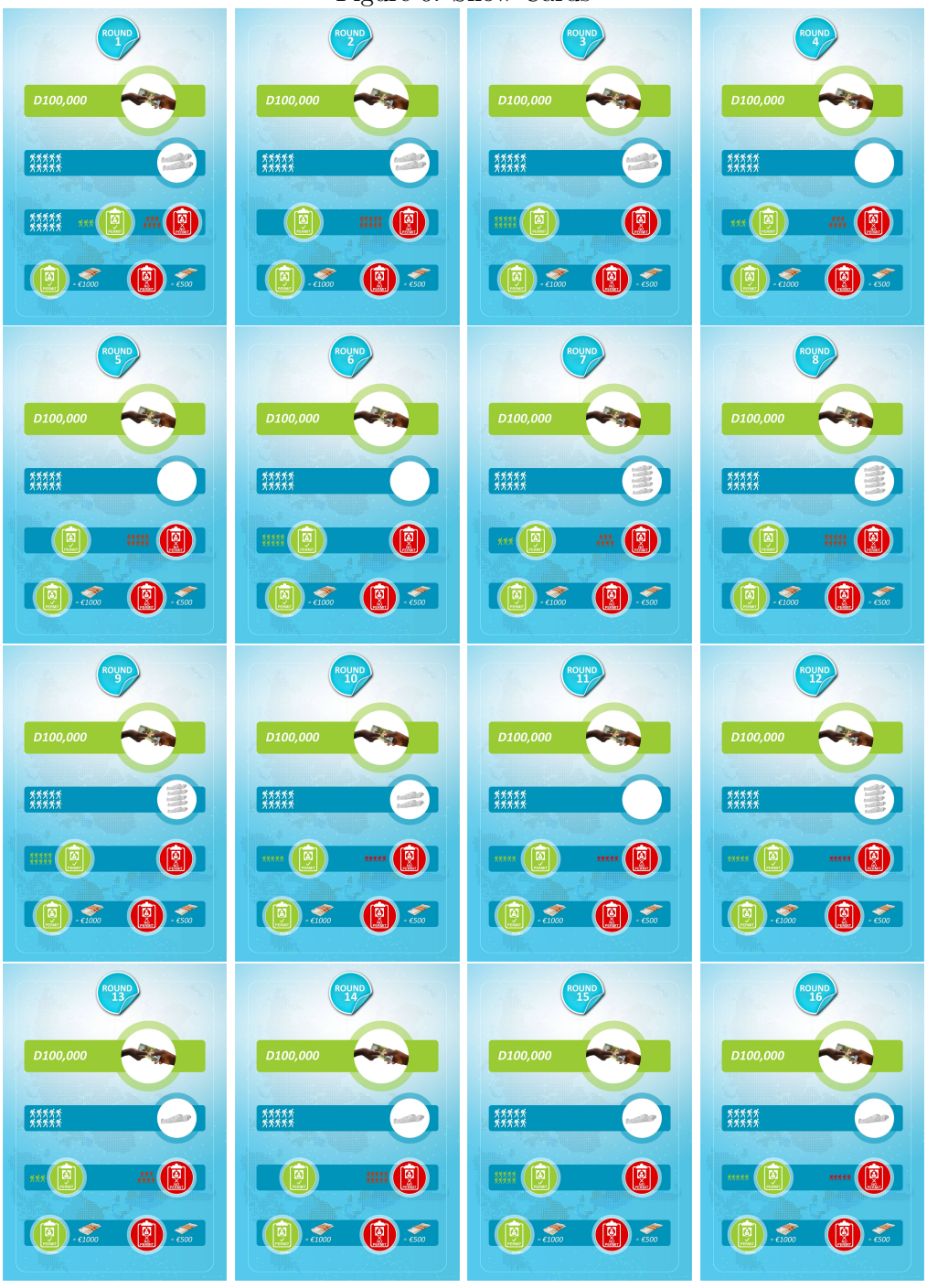



Figure 6: Show Cards