

Why do People Migrate Irregularly? Evidence from a Lab in the Field Experiment in West Africa*

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Abstract

Irregular migration to Europe through the sea, though risky, remains one of the most popular migration options for many Sub-Saharan Africans. This study examines the determinants of irregular migration from West Africa to Europe. We implemented an incentivized lab-in-the field experiment in rural Gambia, the country with the highest rate of irregular migration to Europe in the region. Male youths aged 15 to 25 were given hypothetical scenarios regarding the probability of dying *en route* to Europe, and of gaining legal residence status after successful arrival. According to the data we collected, potential migrants overestimate both the risk of dying *en route* to Europe, and the probability of obtaining legal residency status. In this context, our experimental results show that providing potential migrants with official numbers on the probability of getting a legal residence permit decreases their likelihood of migration by 2.88 percentage points (pp), while information on the death risk of migrating increases their likelihood of migration by 2.29pp – although the official numbers should 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 respond to relevant information.

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

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

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1. Introduction

The number of international migrants in the world has been rising, reaching 244 million (3.3 percent of the world population) in 2015.¹ While most people migrate legally, there are large and increasing numbers of irregular migrants. Estimates on the stocks of irregular migrants in the European Union in 2008 range between 1.8 and 8 million.² These numbers increased significantly in the last years with the European Border Agency (FRONTEX) recording almost 3 million irregular migrants crossing European borders since 2015.

Irregular migration is a particularly risky endeavor. Irregular migrants traveling from West Africa to Europe typically cross the Sahara desert to reach Libya, from where they cross the Mediterranean to reach Italy— the officially called Central Mediterranean route, locally known as the “backway”. In addition to the more widely reported deaths in the Mediterranean Sea, this journey entails a variety of other serious and more common challenges, including death from starvation in the desert, and abductions for ransom, slavery, torture and other ill-treatment especially in Libya.³ Between 2000 and 2014, more than 22,400 migrants were recorded as having lost their lives trying to reach Europe.⁴ The number of such deaths has been increasing, with 17,390 migrants dying in the Mediterranean between 2014 and 2018.⁵ Notwithstanding the risks, the Central Mediterranean route to Europe continues to be the main entry point of irregular migrants from Africa. In 2017 alone, 101,448 African migrants were recorded as reaching Italy through the sea.

Our work aims at understanding the motives driving individuals to migrate irregularly from Western Africa to Europe. For this purpose, we implemented a lab-in-the field experiment among potential migrants in rural Gambia. The irregular emigration rate of The Gambia in the period 2009-2017 was 2%, making it the West African country with the highest

¹ United Nations (2016). "International Migration Report 2015: Highlights" (ST/ESA/SER.A/375). United Nations, Department of Economic and Social Affairs, Population Division.

² These estimates are notoriously imprecise given the challenges in defining and tracking irregular migrants, as discussed by the International Organization for Migration's *World Migration Report 2018*.

³ CNN (2017) "People for Sale. Exposing migrant slave auction sales in Libya" (Last accessed on November 15, 2018, at <https://edition.cnn.com/specials/africa/libya-slave-auctions> .) Amnesty International (2015). 'Libya is Full of Cruelty' Stories of Abduction, Sexual Violence and Abuse from Migrants and Refugees. Last accessed on November 15, 2018, at:

http://www.amnesty.eu/content/assets/Reports_and_Briefings_2015/Libya_is_full_of_cruelty.pdf

⁴ Brian and Laczko (2014).

⁵ Missing Migrants Project (2018) <https://missingmigrants.iom.int> [Last accessed on November 15, 2018]

incidence of irregular migration relative to its total population.⁶ Most of these irregular migrants come from the rural areas where our project took place.

In our experiment, sampled males aged 15-25 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 a different combination of hypothetical probabilities of dying *en route* and of obtaining legal residency status in Europe upon arrival, with corresponding hypothetical wages in Europe 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 potential migrants overestimate both the chances of dying *en route* and of obtaining a legal residence permit: their expected probability of dying *en route* is 30pp higher than the 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 official numbers on the death risk of irregular migration would increase their likelihood of migration by 2.29pp – although official numbers should be regarded as lower bounds to actual mortality. Overall, our study suggests that the migration decisions of potential migrants may actively respond to information about relevant facts regarding costs and benefits of migration.

In order to evaluate the credibility of the (incentivized) migration decisions made in the context of our lab-in-the-field experiment, we collected follow-up data one year after the experiment. Our analysis of these data showed that decisions in the lab correlated well with actual international migration decisions and intentions one year after the experiment.

⁶ FRONTEX (2018). “Detections of illegal border crossing statistics” (Last accessed on November 15, 2018, at https://frontex.europa.eu/assets/Migratory_routes/Detections_of_IBC_2018_09_05.xlsx)

In addition, we find that lab decisions are positively correlated with the expected net benefit of migration computed for each round.

This paper contributes to the limited existing academic economics literature on irregular 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 *irregular* migration.

Our methodological contribution is related to a few recent studies on international migration 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

irregular migrants from West Africa and the extreme risks they face in their migration journey. Nevertheless, our results are consistent with these prior studies in that lower expected benefits decrease the willingness to migrate.

Our work is also closely related to the role of information in determining international migration. The contributions of Shrestha (2019a, 2019b) highlight the importance of access to information for potential migrants' expectations and their subsequent migration decisions. Shrestha (2019a) 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 migration risks and thus update their beliefs after the occurrence of deaths within a district. Furthermore, Shrestha (2019b) 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 migration-related mortality rates and on wages at destination is effective in changing expectations, especially for less experienced migrants.

Though the phenomenon of irregular migration from Africa to Europe has attracted a lot of media attention as of lately, most economics literature has focused on irregular migration from Mexico to the USA - and particularly on the consequences of immigration policies on these irregular migration flows. 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 irregular migrants to remote crossing places. Amuedo-Dorantes et al. (2014) showed that tougher immigration measures such as *E-verify* (a mandate obliging employers to check the work authorization of employees) impacted deportation fears, interstate mobility, and reduced deportees' intentions to return to the US. Similarly, Amuedo-Dorantes and Lozano (2014) showed that the SB1070 law in Arizona, which made it a crime for an alien not to carry proper documentation, had little effect on the share of undocumented immigrants. While rather specific to the context of Mexico-US irregular migration flows, the findings provided by

this literature are consistent with our results in that they highlight the role of policy constraints shaping the riskiness of irregular migration as important determinants of migration decisions.

There are only a few studies that study the willingness to migrate irregularly from West Africa. Mbaye and Arcand (2013) and Mbaye (2014) describe the determinants of the willingness to migrate irregularly in this context. They use data from a survey of about 400 individuals in Dakar to offer important contributions to the understanding of irregular 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 irregular migration, migrant networks, high expectations, and tight immigration policy significantly explain willingness to migrate irregularly. Mbaye and Arcand (2013) study how individual risk-aversion and time preferences affect the willingness to migrate irregularly and to pay for smuggling services. They find 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, Friebel et. al (2018) 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 gaining legal status in shaping the willingness to migrate irregularly. Moreover, our incentivized lab-in-the-field experiment 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 use within-individual variation to compare what would have happened to the willingness to migrate irregularly from one 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. Consistent with their findings, the data from the follow-up survey we conducted one year after the experiment also points to both actual migration decisions and intentions correlating well with 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. In 2017, the country had an estimated GDP per capita of \$1700, ranking 176 out of 190 countries – which makes it one of the poorest countries in the world. Over the last decade, the country recorded an average growth rate of 2.8 percent per year.⁷

Politically, since independence from the United Kingdom in 1965, the country 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 for the country.

Migration is an important phenomenon in The Gambia. Emigration is a cornerstone aspect of the Gambian economy with remittances amounting to almost 20 percent of

⁷ World Bank Development Indicators, 2017.

GDP, which is equivalent to the whole contribution of the tourism sector to GDP.⁸ The country also attracts many regional immigrants mostly from Senegal. According to the 2013 census, international immigrants correspond to 5 percent of the population, while rural to urban migrants account for 7 percent.

Europe is the main international migration destination for many Gambians, who mostly emigrate irregularly - through the "*backway*", as this option is locally known.⁹ The most popular "backway" migration route in Gambia is currently the Libya route, also known as the Central Mediterranean route. This route entails travelling from Gambia through Senegal, Mali, Niger and from there to Libya, as illustrated in Figure 1. There are no visa requirements for Gambians to enter these transit countries. Illegal smuggling typically starts in Niger to reach Libya. 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 turning Libya into a transit magnet for many economic migrants and refugees. Presently, this route is the riskiest option for many African migrants, who face risks of maltreatment in Libya such as physical abuse, kidnapping, and slavery.¹⁰

Notwithstanding the risks, the Central Mediterranean route to Europe continues to be the main entry point of irregular migrants from Africa. According to Frontex (2018), 101,448 African migrants were recorded as reaching Italy through the sea in 2017 alone. As shown in Figure 2, in 2017, about 8,500 Gambians were detected arriving in Europe through the sea which represents about 0.4% of the country's total population - making Gambia the sender country with the largest incidence of irregular migrants to Europe. Note that in the period from 2009 to 2017 the number of recorded Gambian irregular migrants entering Europe was 43,400 – representing 2% of the country's resident population.

⁸ World Bank *Migration and Remittances Factbook 2016*. Last accessed on November 15, 2018, at: <https://openknowledge.worldbank.org/handle/10986/23743>

⁹ The Gambia Labour Force Survey (2018) shows that 63 percent of international emigrants from the Gambia migrated irregularly.

¹⁰ North Africa Mixed Migration Hub (2017). "Survey Snapshot, Italy".

3. Methodology

3.1 Survey and Sampling Framework

The survey data used in our work were collected using a representative sample of 406 households living in rural villages in the Upper River Region (URR) of the Gambia. According to the Gambia Labour Force Survey (2018), this region represents 12 percent of the country's population and has the highest share of irregular migrants relative to working population in the country - more than 5 percent).

The URR has 60 enumeration areas. The sampled 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 15-25 belonging to the household.¹¹ 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 n^{th} household, where the n^{th} household depended on the size of the EA. Once they sampled the n^{th} 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.

¹¹ Young men only were included in our sample because 99 percent of irregular Gambian emigrants are males according to the Gambia Labor Force Survey (2018).

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).¹² 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 A1.

The experimental subjects must play 16 different rounds of an incentivized game in which 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 as we now turn to describe. According to the International Organization for Migration, 181,436 migrants arrived in Italy through the sea, while 4,581 migrants lost their life from January to December 2016.¹³ 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 North Africa Mixed Migration Hub (2017) survey reports the incidences of cases where migrants report dead bodies along the way (including the Sahara Desert, Libya, and Mediterranean Sea).¹⁴ 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

¹² Equivalent to 2,000 Euros (1 euro = GMD50 exchange rate).

¹³ International Organization for Migration (2017). Mixed Migration of Flows in the Mediterranean and Beyond: Compilation of Available Data and Information - Reporting Period 2016. International Organization for Migration. http://migration.iom.int/docs/2016_Flows_to_Europe_Overview.pdf

¹⁴ North Africa Mixed Migration Hub (2017). "Survey Snapshot, Italy".

migration route given the likely undercount of fatalities. The 50% threshold 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 15 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 (AIDA, 2015).¹⁵ This database contains detailed numbers of migrants who arrive in Italy by nationality and by destination who applied for asylum and the final decision on the applications. We chose Italy because of it being the main entry country in Europe for Gambian migrants, as described in Section 2. 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 Appendix) 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 small pilot survey conducted in Italy among Gambian irregular migrants residing in the Siracusa and Catania regions, that once migrants successfully reach Europe, they face two possible wages: a wage of 1000 Euros for those with legal

¹⁵ Asylum Information Database (AIDA) 2015 - Country Report: Italy. European Council on Refugees and Exiles (ECRE).

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.

3.4 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.

[TABLE 1 HERE]

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 irregularly, we ask the following question: Ideally, if you have the opportunity, are you willing to migrate through the "Backway" /Irregular way? We used the name "Backway" as the irregular 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* 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.

We also elicited further expectations from our sample. Specifically, in addition to the expected cost of migrating, expected wage at destination and willingness to forgo migrating irregularly, 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 "backway"/irregular 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 probabilities of dying *en route* and of obtaining a permit. According to our best estimates, as described in the previous section, the probability of dying is 20% while the probability of obtaining a permit is 33%, indicating that our experimental subjects substantially overestimate, on average, the risk of dying *en route*, while also overestimating the probability of obtaining residence status. These expectation biases should be taken with some caution, as the official estimates are not only prone to measurement error,¹⁶ but they are also averages over individuals – whereas our respondents may have relevant individual information that makes their expectations less biased than an average comparison may suggest.

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 losing 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

¹⁶ As discussed before, these estimates, particularly those on the death risk of irregular migration, are likely to suffer from measurement error. For example, the expected probability of dying is calculated based on body counts and reports from witnesses of deaths *en route*. The probability of obtaining legal migration status upon arrival is less prone to error as it only covers those that actually reached Europe and applied for asylum status.

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. See the appendix for the exact framing of the risk and time preference.

Who are those young willing to migrate irregularly 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, 370 (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 irregularly. This raw statistic is consistent with Mbaye (2014). Aspiring irregular migrants are relatively younger, with an average age of 19.92 years compared to 20.28 years for those not willing to migrate irregularly. Those that are willing to migrate have 8.46 years of education compared to 8.56 for those not willing to migrate irregularly. 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 irregular migrants have more migration experience in terms of number of months than those unwilling to migrate irregularly (24.8 versus 21.6 months). In addition, both groups share the same fraction (82%) of having migration network, however, those willing to migrate irregularly has larger average network of 3.01 persons versus 2.76 migrants for those not willing to migrate. Furthermore, potential irregular migrants know on average more people who successfully migrated irregularly (11.6) compared to those not willing to migrate irregularly (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 irregularly know more people who lost their lives *en route* to Europe compared to potential irregular 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 irregular 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 irregular migrants expect a higher chance of obtaining residence status of 47% versus 33% for those not willing to migrate irregularly. Finally, those willing to migrate irregularly 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 HERE]

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:

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

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* and 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 effects 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

a. Main Results: Willingness to Migrate Irregularly

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 irregularly or not. Thus, the dependent variable is whether individuals are willing to migrate irregularly or not. We are interested in understanding how different factors affect the decisions to migrate irregularly 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.

[TABLE 3 HERE]

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 irregularly 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 (2019b) 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 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 HERE]

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 9 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 HERE]

b. 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 irregular 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 6A and 6B 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 6A 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 effect, 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 6B, 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.

[TABLES 6A and 6B HERE]

c. 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 (1960), 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 irregularly. 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, Census 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 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 irregularly? In other words, are respondents behaving rationally, i.e., are respondents choosing to migrate when the net gain 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 irregularly (2 percent). When we analyze the cases in which the expected net gain of migration was positive, we observe a 41 percent rate of willingness to migrate irregularly. Table 7 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.

[TABLE 7 HERE]

d. 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 irregular migration (through smugglers) and the willingness to receive a payment to forgo migrating irregularly. Recall that in the experiment, subjects were hypothetically endowed with D 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 8 describes how the risk of dying *en route* and the chances of obtaining a residence permit affect the willingness to pay for irregular 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 8, 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 8 HERE]

5. 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 9, 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 irregular 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 irregularly.

[TABLE 9 HERE]

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 10, 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 irregularly.

[TABLE 10 HERE]

6. Concluding Remarks

This study aims at improving our understanding of the determinants of the willingness to migrate irregularly 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 irregular migration to Europe. 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 irregularly, 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 irregularly. Our findings suggest that the willingness to migrate irregularly 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 irregularly. Overall, our study suggests that the migration decisions of potential migrants actively respond to information about relevant facts regarding costs and benefits of migration.

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Tables

Table 1: Summary Statistics of Sampled Participants in the Experiment

Variable	Mean	SD	No of Obs.
Individual characteristics			
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)	1639	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 <i>en route</i>	3.75	4.45	406
Has intention of migrating within the country	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 irregularly [Yes=1, No=0]	0.46	0.50	406
<i>Top preferred destination (if intending to migrate irregularly)</i>			
Italy	0.29	0.45	208
Germany	0.27	0.40	208
Spain	0.16	0.37	208
United States	0.06	0.25	208
United Kingdom	0.04	0.19	208
Monthly value required to forgo migrating (EUR)	525	715	208
Expected cost of migration (GMD)	79274	9741	208
Expected monthly wage in destination (EUR)	1338	1598	406
Expected probability of dying <i>en route</i>	0.48	0.25	406
Expected probability of obtaining of permit	0.38	0.28	406
Time preference	0.89	0.16	406
Risk preference	0.37	0.30	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 irregular migrants [Yes=1, No=0]	0.43	0.49	260
Received remittances	0.36	0.48	406

Table 2: Summary Statistics: Test of Statistical Differences

Variable	Willing to migrate irregularly		Not willing to migrate irregularly		Test of differences
	N=189		N=226		N=406
	Mean	SD	Mean	SD	P-value
Individual characteristics					
Age	18.86	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 (if any) 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 relatives or friends (youth with 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 <i>en route</i>	3.77	4.91	4.55	3.57	0.1482
Has intention of migrating within the country	0.87	0.33	0.74	0.43	0.1010
Has intention of migrating outside the country [Yes=1, No=0]	0.96	0.17	0.87	0.32	0.0004
Expected probability of dying <i>en route</i>	0.43	0.24	0.53	0.25	0.0002
Expected probability of obtaining permit	0.46	0.29	0.29	0.25	0.0000
Time preference	0.89	0.17	0.89	0.18	0.2723
Risk preference	0.44	0.29	0.30	0.29	0.0000
Household characteristics					
Household head age	52.81	15.73	50.31	14.78	0.1323
Household size	10.15	6.40	9.94	6.90	0.7518
Has internal migrants [Yes=1, No=0]	0.60	0.48	0.59	0.46	0.7307
Has international migrants [Yes=1, No=0]	0.70	4.45	0.60	0.49	0.2013
Received remittances [Yes=1, No=0]	0.36	0.48	0.31	0.46	0.3014

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

	(1)	(2)	(3)	(4)
	Migrate Irregularly	Migrate Irregularly	Migrate Irregularly	Migrate Irregularly
Prob. of permit	0.1894*** (0.0240)	0.1301*** (0.0148)	0.4936*** (0.0445)	0.4181*** (0.0384)
Prob. of dying	-0.1561*** (0.0193)	-0.1175*** (0.0253)	-0.3545*** (0.0582)	-0.3789*** (0.0393)
Constant	0.3609*** (0.0244)	0.3491*** (0.0072)	0.4638*** (0.0427)	0.3951*** (0.0211)
Individual fixed effects	No	Yes	No	Yes
Round order fixed effects	No	Yes	No	Yes
<i>N</i>	6478	6478	1815	1815
<i>n</i>	406	406	115	115
<i>R</i> -squared	0.0236	0.8200	0.1667	0.5462

Notes: Regressions estimated using a Linear Probability Model. Migrate irregularly is a binary variable taking value 1 if the respondent is willing to migrate irregularly 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 5%; ***significant at 1%.

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

	(1) Migrate Irregularly	(2) Migrate Irregularly
0% prob. of permit	-0.0985*** (0.0139)	-0.3154*** (0.0370)
30% prob. of permit	-0.0288*** (0.0092)	-0.0935*** (0.0292)
100% prob. of permit	0.0370*** (0.0093)	0.1196*** (0.0276)
0% prob. of dying	0.0648*** (0.0114)	0.2097*** (0.0368)
10% prob. of dying	0.0353*** (0.0102)	0.1101*** (0.0322)
20% prob. of dying	0.0229*** (0.0115)	0.0709*** (0.0300)
Constant	0.3745*** (0.0154)	0.4742*** (0.0496)
Individual fixed effects	Yes	Yes
Round order fixed effects	Yes	Yes
N	6478	1835
n	406	115
R^2	0.8219	0.8157

Notes: Regressions estimated using a Linear Probability Model. Migrate irregularly is a binary variable taking value 1 if the respondent is willing to migrate irregularly 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 5%; ***significant at 1%.

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

	(1) Never Migrate	(2) Migrate Sometimes	(3) Migrate Always
No of known migrants	-0.0064*** (0.0016)	0.0030 (0.0024)	0.0034 (0.0023)
No of known dead migrants	0.0107* (0.0054)	-0.0179*** (0.0039)	0.0073 (0.0057)
Expected permit	-0.0490*** (0.0079)	0.0495*** (0.0088)	-0.0005 (0.0081)
Expected dead	0.0252** (0.0095)	-0.0065 (0.0092)	-0.0187* (0.0083)
Risk preference	-0.2848*** (0.0816)	0.1781* (0.0813)	0.1067 (0.0737)
Constant	0.5120*** (0.1449)	0.0555 (0.1356)	0.4325** (0.1447)
N	359	359	359

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 value 1 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 (see appendix for the precise question). Robust standard errors in the parentheses. *Significant at 10%; significant at 5%; **significant at 5%; ***significant at 1%.

Table 6A: Heterogeneous Effects Based on Expected Permit

	(1) Migrate irregularly	(2) Migrate irregularly
Prob. of permit	0.1094*** (0.0236)	0.0806*** (0.0171)
Prob. of dying	-0.1007*** (0.0373)	-0.0759*** (0.0230)
Overestimate prob. of permit	0.1448*** (0.0452)	
Overestimate prob. of permit * Prob. of permit	0.0858** (0.0359)	0.0959*** (0.0299)
Overestimate prob. of permit * Prob. of dying	-0.0806 (0.0579)	-0.0919** (0.0417)
Constant	0.2993*** (0.0306)	0.3761*** (0.0067)
Individual fixed effects	No	Yes
Round order fixed effects	No	Yes
Observations	6478	6478

Note: Regressions estimated using a Linear Probability Model. Migrate irregularly is a binary variable taking value 1 if the respondent is willing to migrate irregularly 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. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 6B: Heterogeneous Effects Based on Expected Probability of Dying *en route*

	(1) Migrate irregularly	(2) Migrate irregularly
Prob. of permit	0.1199*** (0.0354)	0.0916*** (0.0257)
Prob. of dying	-0.1341** (0.0571)	-0.1436*** (0.0533)
Overestimate prob. of dying	-0.1368** (0.0592)	
Overestimate prob. of dying * Prob. of permit	0.0421 (0.0409)	0.0437 (0.0311)
Overestimate prob. of dying * Prob. of dying	-0.0056 (0.0658)	0.0295 (0.0578)
Constant	0.4785*** (0.0537)	0.3763*** (0.0066)
Individual fixed effects	No	Yes
Round order fixed effects	No	Yes
Observations	6478	6478

Note: Regressions estimated using a Linear Probability Model. Migrate irregularly is a binary variable taking value 1 if the respondent is willing to migrate irregularly 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. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 7: Willingness to Migrate Irregularly and Expected Net Gain of Migration

	(1) Migrate irregularly	(2) Migrate irregularly	(3) Migrate irregularly
ln(NPV1)	0.1082*** (0.0155)		
ln(NPV2)		0.1109*** (0.0123)	
ln(NPV3)			0.1050*** (0.0117)
Constant	-0.7034*** (0.1609)	-0.7281*** (0.1267)	-0.6621*** (0.1195)
<i>N</i>	4421	6478	6478
<i>n</i>	248	406	406

Notes: Regressions estimated using a Linear Probability Model. Migrate irregularly is a binary variable taking value 1 if the respondent is willing to migrate irregularly 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. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 8: Results from the Experiment – Willingness to Pay and Receive

	(1) log (Willingness to Pay for Migration)	(2) Log (Compensation to Forgo Migration)
Prob. of permit	0.0566** (0.0388)	0.0627* (0.0277)
Prob. of dying	-0.0001 (0.0559)	-0.0903* (0.0517)
Constant	10.765*** (0.0148)	9.5633*** (0.0350)
Individual fixed effects	Yes	Yes
Round order fixed effects	Yes	Yes
<i>N</i>	2733	2731
<i>n</i>	205	205
<i>R</i> -squared	0.7352	0.9330

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 irregularly. Compensation to forgo migration is the amount (in GMD) per month respondents are willing to accept in order to forgo migrating irregularly. *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 5%; ***significant at 1%.

Table 9: Descriptive Statistics from Follow-up Survey

	N	Mean	SD	Min	Max
Migrated	263	.2243346	.4179387	0	1
Migrated internally	263	.1901141	.3931391	0	1
Migrated internationally	263	.0342205	.1821418	0	1
Migrated to Senegal	263	.0304183	.1720626	0	1
Intent to migrate	248	.766129	.4241471	0	1
Intent to migrate next year	248	.3266129	.4699227	0	1
Intent to migrate irregularly	248	.3306452	.4713968	0	1

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 10: Lab Willingness to Migrate Irregularly 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 irregularly
Lab willingness to migrate	0.0175*** (0.0059)	0.0394*** (0.0136)	0.0700*** (0.0154)	0.1077*** (0.0155)
Constant	0.0269** (0.0114)	0.7515*** (0.0276)	0.2994*** (0.0306)	0.2874*** (0.0306)
Round order fixed effects	Yes	Yes	Yes	Yes
<i>N</i>	4151	3912	3912	3912
<i>n</i>	263	248	248	248
<i>R</i> ²	0.002	0.002	0.005	0.013

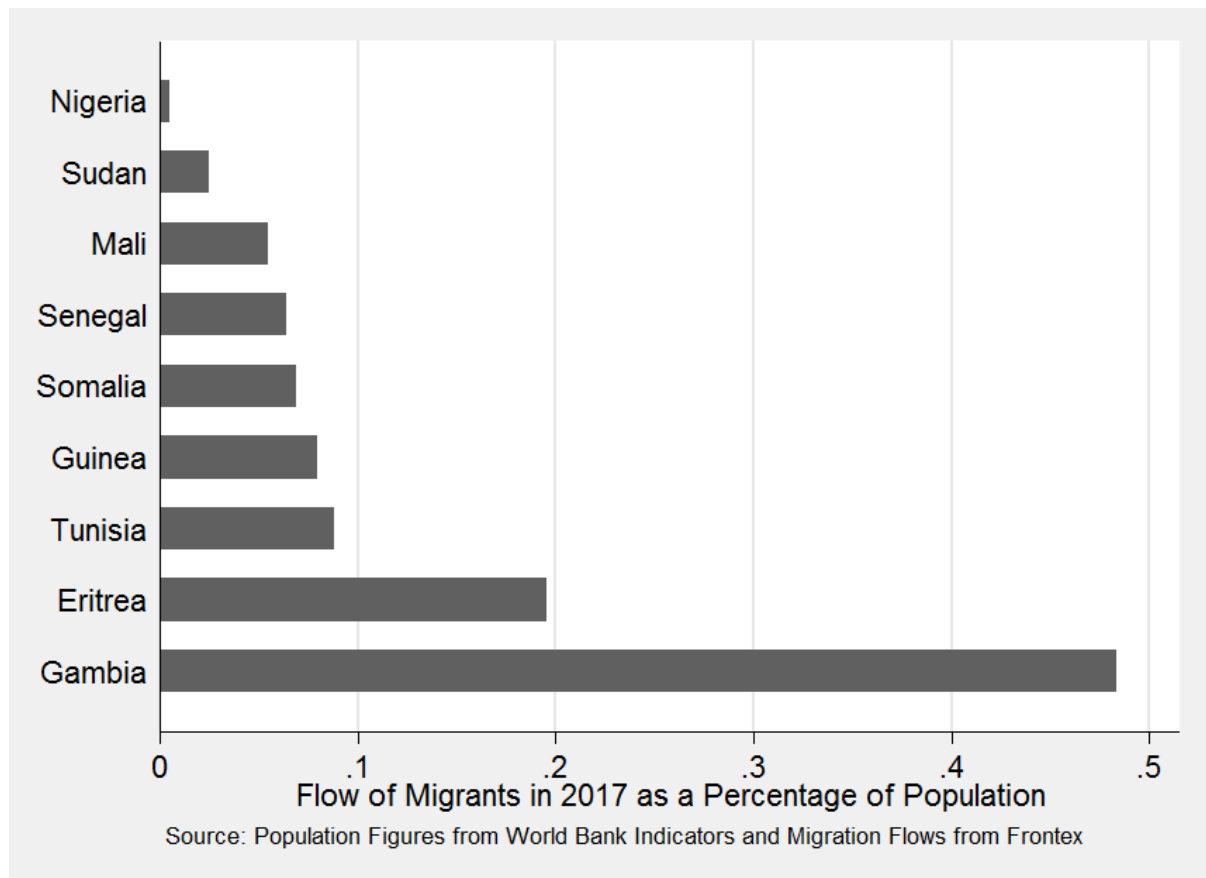
Notes: Regressions estimated using a Linear Probability Model. Lab willingness to migrate is binary variable taking value 1 if respondent is willing to migrate irregularly in the lab-in-the-field experiment, and 0 otherwise. *N* represents total number of observations and *n* is the total number of respondents. 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 5%; ***significant at 1%.

Figures

Figure 1: Irregular Migration Routes from The Gambia to Italy



Figure 2: Total Flow of Migrants as a Percentage of Origin Population Crossing the Central Mediterranean Route in 2017 by Top 10 countries of origin



Appendices

A1: 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.

A2: Preferences

Risk Preferences

Imagine you won a gift of 1,000 Dalasis without any indication of how you should spend this amount. You are now given the possibility to use that money in a game. In this game you can win or lose. Usually, in every 10 people who play this game, 5 win and 5 lose. If you win, you get 150% of the amount invested in the game (1,500 Dalasis if you invest 1,000 Dalasis) within a year. If you lose, you get half (500 Dalasis if you invest 1,000 Dalasis) within a year too. You can choose to invest in the whole game (1,000 Dalasis), only part or nothing.

How much would you like to play in this risky but potentially lucrative investment?

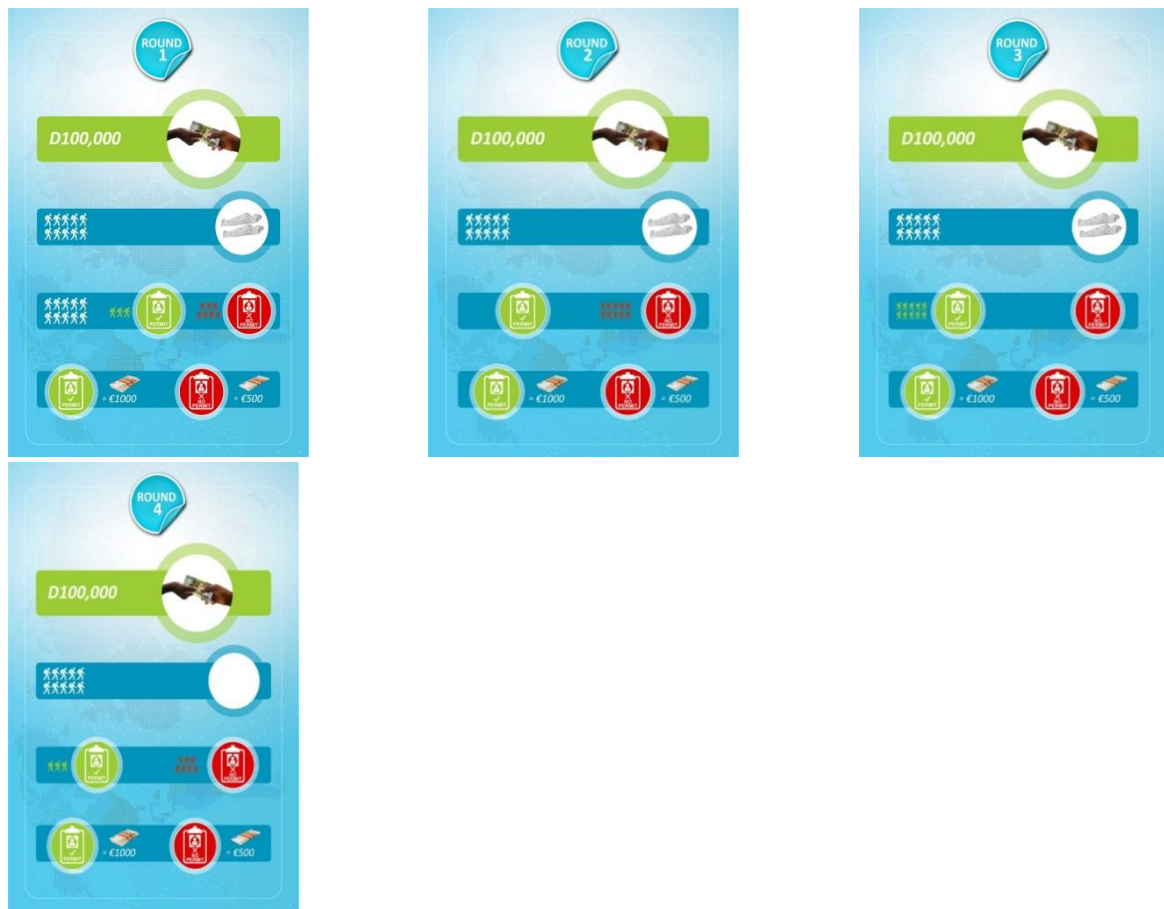
<i>Nothing, I will decline playing</i>	<i>0</i>
<i>100 Dalasis</i>	<i>1</i>
<i>200 Dalasis</i>	<i>2</i>
<i>300 Dalasis</i>	<i>3</i>
<i>400 Dalasis</i>	<i>4</i>
<i>500 Dalasis</i>	<i>5</i>
<i>600 Dalasis</i>	<i>6</i>
<i>700 Dalasis</i>	<i>7</i>
<i>800 Dalasis</i>	<i>8</i>
<i>900 Dalasis</i>	<i>9</i>
<i>1000 Dalasis</i>	<i>10</i>
<i>Don't know [Interviewer: Do not read.]</i>	<i>99</i>

Time Preferences

Suppose you have won GMD 100,000 in a lottery. However, the lottery will not pay out the prize to you until exactly one year from now. How much are you willing to pay to receive the GMD 100,000 immediately rather than one year from now?

GMD.....

Appendix Figure A1: Show Cards



ROUND 5

D100,000

XXXXXX
XXXXXX

= €1000
 = €500

ROUND 6

D100,000

XXXXXX
XXXXXX

= €1000
 = €500

ROUND 7

D100,000

XXXXXX
XXXXXX

= €1000
 = €500

ROUND 8

D100,000

XXXXXX
XXXXXX

= €1000
 = €500

ROUND 9

D100,000

★★★★★

★★★★★

€1000

€500

ROUND 10

D100,000

★★★★★

★★★★★

€1000

€500

ROUND 11

D100,000

★★★★★

★★★★★

€1000

€500

ROUND 12

D100,000

★★★★★

★★★★★

€1000

€500

ROUND 13

D100,000

€1000

€500

ROUND 14

D100,000

€1000

€500

ROUND 15

D100,000

€1000

€500

ROUND 16

D100,000

€1000

€500