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 by sea, though risky, remains one of the most popular migration options for many Sub-Saharan Africans. This study examines the drivers of irregular migration decisions using an incentivized lab-in-the field experiment in rural Gambia, the African country with the highest per-capita rate of irregular migration to Europe. We find that providing official data on the death risk increases migration by 2.4 percentage points, as migrants substantially overestimate this risk. Conversely, correcting overestimates about the chances of obtaining legal residence reduces migration by 2.1 points. Lab decisions correlate strongly with both subsequent migration intentions and realized migration. Our results highlight the importance of potential migrants' prior beliefs in shaping responses to information and suggest that poorly designed policies may backfire.

Keywords: International migration; Irregular migration; Migration intentions; Information campaigns; Prior updating; Migration policy; Lab-in-the-field experiment; West Africa.

JEL Codes: C93, D83, F22, J17, O15.

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1. Introduction

International migration has increased steadily in recent decades, reaching 281 million in 2020, or about 3.6 percent of the world population.[1] While most migration occurs through legal channels, there are large and increasing numbers of irregular migrants.[2] The number of irregular migrants detected crossing European borders reached nearly 2.3 million between 2016 and 2024.[3] A substantial share of these flows took place along the Central Mediterranean route from West Africa to Italy, locally known as the "*backway*". Despite high mortality and severe risks, including starvation and dehydration in the Sahara, trafficking and forced labor in Libya, and drownings in the Mediterranean Sea, this route remains the main entry point for irregular African migrants to Europe.[4]

In this context of extremely risky migration, it is important to understand the decision-making process leading individuals to migrate. Specifically, this paper focuses on establishing whether potential irregular migrants are adequately informed about the risks of irregular migration from West Africa to Europe, and experimentally measuring the effects on their migration decisions of providing them with information on the probability of dying *en route* to destination and of obtaining legal residency status in Europe upon arrival.

We examine the determinants of irregular migration decisions from West Africa to Europe in a high-incidence setting. For this purpose, we implemented an incentivized lab-in-the field experiment among potential migrants in rural Gambia, the country with the highest prevalence of irregular migration in the region.[5] Most Gambian "*backway*" migrants come precisely from the rural areas where our project took place, making this context particularly relevant for studying the role of information in migration decisions.

In our experiment, young men aged 15-25 played an incentivized migration game designed to elicit their willingness to migrate depending on varying chances of dying *en route* to destination

[1] United Nations (2020). "World Migration Report 2020: Highlights" (ST/ESA/SER.A/452). United Nations, Department of Economic and Social Affairs, Population Division.
[2] Throughout the paper we refer to irregular migrants as those whose migratory movements takes place outside the regulatory norms of sending, transit, or receiving countries, following the definition of the International Organization for Migration. https://home-affairs.ec.europa.eu/networks/european-migration-network-emn/emn-asylum-and-migration-glossary/glossary/irregular-migration_en
[3] FRONTEX (2025) "Detections of illegal border crossing statistics" (Last accessed on May 5, 2025, at https://www.frontex.europa.eu/assets/Copy_of_Monthly_detections_of_IBC_PRESS_v13_20250505.xlsx)
[4] See, for example, the *Missing Migrants Project* (2025) https://missingmigrants.iom.int [Last accessed on May 5, 2025]
[5] Between 2009 and 2024, 62,127 Gambians (about 2.3 percent of the resident population) were recorded arriving irregularly in Europe. In 2017 alone, 8389 Gambians reached Italy by sea, equivalent to 0.26 percent of the country's population and the highest per capita incidence of irregular migration in the region.

and of obtaining legal residency status in Europe upon arrival. The associated earnings varied across rounds depending on the migration circumstances faced. In each round, respondents made binary decisions about whether to migrate to Italy or stay in Gambia. In addition, respondents stated their willingness to pay to migrate and also reported the payment they would accept to forgo migration.

We find that potential migrants substantially overestimate the risks of irregular migration - and yet a majority of them are willing to take these risks. On average, respondents believed that nearly 40 percent of migrants died *en route*, almost twice the best available estimates. Despite these priors, intentions to migrate remained very high, with nearly half of respondents reporting willingness to take the "*backway*". This pattern shows that even exaggerated beliefs about mortality do not deter irregular migration aspirations.

Our results show that correcting misperceptions about risks and migration outcomes significantly shifts migration choices in our lab-in-the-field setting. Providing accurate information on mortality risk increased willingness to migrate by 2.4 percentage points (pp), while information on the probability of obtaining legal residence decreased willingness by 2.1 pp. These findings reflect systematic misperceptions as participants overestimated both the chances of dying *en route* and of obtaining a legal residence permit.

To assess the external validity of the incentivized migration choices, we collected follow-up data one year after the experiment. Our analysis of these data shows that migration decisions in the lab are predictive of actual international migration decisions and intentions one year after the experiment.

The findings of our study challenge the premise of many information campaigns aimed at discouraging irregular migration. Such interventions assume that potential migrants underestimate dangers, and therefore that information campaigns can deter irregular migration. Our results show the opposite: migrants may overestimate dangers, and providing accurate information may actually encourage migration. Effective policy design must therefore account for prior beliefs, as narrowly framed messages risk unintended effects.

Our paper builds on a rich tradition modeling migration decisions (Sjaastad 1967; Harris and Todaro 1970; Borjas 1987; Rosenzweig and Stark 1989; Chiquiar and Hanson 2005). The empirical challenge in assessing these theories has been that most drivers of international migration cannot be varied in isolation, which makes it difficult to establish causal relationships. A recent line of research addresses this limitation using incentivized lab-in-the-

field experiments that exogenously vary factors influencing migration decisions. Batista and McKenzie (2023), for example, examine the international migration decisions of graduating college students in Kenya and Portugal and establish the empirical importance of imperfect information and uncertainty as determinants of migration decisions. Lagakos et al. (2023) established how people in Bangladesh prioritized factors like housing conditions, wages, unemployment risk and family separation when deciding on internal migration. Similarly, Barnett-Howell (2018) used a migration video game experiment to examine migration decisions, finding a significant role for imperfect information in explaining why individuals do not migrate more often. More recently, Batista et al. (2025) worked with potential migrants in Cape Verde to identify the most relevant determinants of international study migration. This lab-in-the field experimental approach to study migration follows earlier work using lab-in-the-field experiments to understand migrant remittance behavior – e.g. Batista et al. (2015) and De Arcangelis et al. (2015). We build on this literature by using an incentivized lab-in-the-field experiment to identify the determinants of migration willingness, although focusing more specifically on irregular migrants from West Africa and the roles of extreme journey risks and the probability of obtaining legal status in Europe. While our paper is not the first to use experimental techniques to study the willingness to migrate, it is, to the best of our knowledge, the first to implement an incentivized lab-in-the-field experiment to examine the determinants of *irregular* migration.

An important strand of literature has examined the role of information in migration decisions. Early work established the relevance of information asymmetries in transnational households – for example, McKenzie et al. (2013), Ashraf et al. (2015), and Batista and Narciso (2018). In our context, this implies that potential migrants often rely on inaccurate information from their networks, a problem that may be particularly serious for irregular migration from Africa to Europe, in a context where immigration policies change quickly. In response to this challenge, several randomized experiments have been implemented to assess the impact of providing information to potential migrants. Most related to our work are Bryan et al. (2014) in Bangladesh, Beam (2016) and Beam et al. (2016) in the Philippines, Shrestha (2020) in Nepal, Bah et al. (2023) in the Gambia, Baseler (2023) in Kenya, Frohnweiler et al. (2024) in Ghana and Uganda, and Battiston et al. (2025) in Guinea. The experimental results from these studies highlight the varying role of information for both internal and international migration decisions, similar to our results. However, these studies typically deliver bundled information, making it difficult to identify whether changes stem from migration risk, returns, or other dimensions on

their own. Our experimental design allows us to isolate the role of the mortality risk and of the asylum probability as separate channels.

Economics research on the determinants of irregular migration from West Africa to Europe is a growing field. Arcand and Mbaye (2013), Mbaye (2014) and Friebel et al (2024) describe how potential migrants' valuation of irregular migration varies with their demographic characteristics. Several studies have evaluated information campaigns on irregular migration in West Africa. Dunsch and Tjaden (2021) and Tjaden and Gninafon (2022) document short-term changes in awareness and intentions following IOM screenings in Senegal and Guinea. Mesplé-Somps and Nilsson (2021) find no effect of documentaries in rural Mali, attributing this result to persistent high migration aspirations. Beber and Scacco (2022) illustrate how potential irregular migrants from Nigeria, while recognizing the risky journey and underestimating outcomes at destination, still have high intentions to migrate irregularly given their overoptimism about their own probability of succeeding. Battiston et al. (2025) show that providing information to Guinean students shifted beliefs and reduced migration intentions, although not actual migration outcomes. Most related to our work, Bah et al (2023) conducted a randomized field experiment in rural Gambia. They evaluated policy interventions offering alternatives to irregular migration, namely vocational training and facilitation of regional migration. These programs reduced intentions to migrate irregularly and increased regional mobility, although any possible effects on actual irregular migration were too small to be identified. These existing studies have examined the effects of migration risks through bundled information treatments, providing comprehensive messages on both dangers and outcomes without isolating the distinct effects of mortality risk and asylum prospects upon arrival in Europe. In general, evidence on the role of immigration policies as determinants of migration decisions remains particularly limited. An exception is Beber et al. (2024), who use a conjoint experiment to measure how intentions to migrate from Senegal respond to policy changes in Germany. Our study extends this literature by separately identifying the effects of mortality risk and asylum prospects upon arrival in Europe on irregular migration decisions using an incentivized lab-in-the-field experiment.

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 robustness checks using follow up data on actual

migration decisions and intentions measured one year after the lab experiment. Section 6 offers concluding remarks.

2. Country Context

The Gambia is the smallest country on mainland Africa, bordered by Senegal and the Atlantic Ocean. According to the 2024 Census, its population is 2.4 million.[6] At the time of our fieldwork in 2017, GDP per capita was estimated at $2156, placing the country 176th out of 190 globally – which made it one of the poorest countries in the world. Over the preceding decade, the country recorded an average null per capita growth rate.[7]

Migration plays a central role in The Gambia, where emigration is a key economic driver. Remittances from abroad accounted for nearly 22 percent of the country's GDP in 2023.[8] The country attracts a fair number of regional immigrants mostly from Senegal and Guinea, which amount to, respectively, 1.7% and 1.5% of the resident population.[9]

Europe is the main destination for Gambian emigrants, most of whom migrate irregularly - through the "*backway*", as this option is locally known.[10] The most popular *"backway"* migration route is the Central Mediterranean route. This route entails travelling from The Gambia through Senegal, Mali, Niger and from there to Libya. 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 destabilized the region, subsequently turning Libya into a transit magnet for many economic migrants and asylum seekers. This route is extremely risky for African migrants, who face documented risks of maltreatment in Libya such as physical abuse, kidnapping, and forced labor.[11]

[6] Gambia Bureau of Statistics, 2024. *Preliminary Report of the 2024 Census in The Gambia*. Last accessed on May 5, 2025, at: https://gambia.unfpa.org/en/publications/preliminary-report-2024-census-gambia
[7] World Bank Development Indicators, 2025. Last accessed on May 5, 2025, at: https://databank.worldbank.org/source/world-development-indicators
[8] *Ibidem*.
[9] Gambia Bureau of Statistics, 2024. *Preliminary Report of the 2024 Census in The Gambia*. Last accessed on May 5, 2025, at: https://gambia.unfpa.org/en/publications/preliminary-report-2024-census-gambia
[10] The Gambia Labour Force Survey (2018) shows that 63 percent of international emigrants from The Gambia migrated irregularly. The survey covers 6260 households from 313 EAs nationwide.
[11] North Africa Mixed Migration Hub (2017). "Survey Snapshot, Italy".

Despite substantial risks, the Central Mediterranean route remains the main entry route for irregular African migrants to Europe. In 2017, 101,448 arrivals to Italy were recorded by FRONTEX via this route, including 8,389 Gambians (Appendix Figure A2). This flow represented 0.26 percent of The Gambia's population, the highest incidence of irregular migration to Europe of any African country that year. Between 2009 and 2024, 62,127 Gambian irregular migrants were recorded entering Europe, which represents about 2.3 percent of the resident population. [12] These flows are driven by a combination of economic hardship, limited opportunities in rural areas, and the perceived aspirational returns of migration to Europe. Although flows declined during the COVID-19 pandemic, intentions to migrate via the backway remained high, and departures quickly rebounded afterward (Bah et al. 2024).

3. Methodology

3.1 Survey and Sampling Framework

The survey data used in our work were collected using a representative sample of 407 households living in rural villages in the Upper River Region (URR) of the Gambia. According to the Gambia Labour Force Survey (2018), this region represented 12 percent of the country's population and had the highest share of irregular migrants relative to working population in the country at the time - more than 5 percent.

The 60 sampled Enumeration Areas (EAs) were randomly chosen from a population of 526 EAs using population size proportional sampling based on the Gambia 2013 census. In each enumeration area, a random sample of 10 eligible households was drawn. Households were sampled using a simple random walk within each EA. Enumerators surveyed every n^{th} household, with *n* determined by the size of the EA. Upon reaching a selected household, enumerators confirmed eligibility by asking whether the household included at least one young man aged 15 to 25 years.[13] Households that did not meet this criterion were replaced by the geographically closest household to the right. If a household had more than one youth within

[12] FRONTEX (2025) "Detections of illegal border crossing statistics" (Last accessed on May 5, 2025, at https://www.frontex.europa.eu/assets/Copy_of_Monthly_detections_of_IBC_PRESS_v13_20250505.xlsx

[13] 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).

the eligible age range, one was randomly selected. In each of these households, the household head was first surveyed, followed by the sampled young male individuals.

Following this sampling procedure, 595 households were finally surveyed. Out of these households, a sample of 584 male youths were also surveyed, of which 407 agreed to participate in the experiment. The fieldwork took place in May 2017.

3.2 Lab-in-the-field experimental design

Our experimental design uses an incentivized lab-in-the-field experiment. Participants played a sequence of decision-making games, where decisions were explicitly framed as choices concerning irregular migration to Europe over a 10-year time horizon. Each experimental subject was endowed with an hypothetical amount of 100,000 Gambian Dalasis (GMD),[14] which translated into actual monetary payoffs as detailed in the explanations that follow. The precise instructions detailing the experimental framing of the experiment to players are provided in Appendix A1.

The experimental subjects played 16 rounds of an incentivized game in which they made migration-related decisions based on different combinations of two factors: the probability of dying *en route* to the migration destination and the probability of obtaining legal residence status upon arrival, each with four possible scenarios. The four scenarios corresponded, respectively, to 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 thresholds were selected to reflect prior beliefs (informed by our pilot survey data), as well as estimated probabilities of dying *en route* and of obtaining residency upon arrival in Europe (informed by multiple data sources, described in Appendix A2). Participants were also informed of potential wages upon successful migration to Europe: €1000 with legal residence status and €500 without a permit.[15] The choice of the parameters used in the experiment is described in detail in Appendix A2.

[14] Equivalent to about 2,000 Euros, using the 1 EUR ~ GMD 50 OANDA exchange rate from May 2017. This exchange rate is used for conversions throughout the remainder of the paper.

[15] These values were based on an additional small survey we conducted in Italy among Gambian irregular migrants residing in the Siracusa and Catania regions. This setting is consistent with the findings of Dustmann et al. (2017) who show that undocumented migrants consumed about 40 percent less than

For each round in the game, respondents were given showcards (shown in Appendix Figure A1) visually illustrating the probabilities of dying *en route* and of obtaining residence status upon successful arrival in Europe. Note that all rounds were framed as hypothetical scenarios and respondents were not informed that one of the rounds included estimates of the actual risk of dying *en route* and of the chances of obtaining a residence/asylum permit.

In each game 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) a binary decision on their willingness to migrate; (2) a measure of their willingness to pay for the cost of migration (out of the endowment they were provided with); and (3) a measure of their willingness to be paid in order to forgo migrating. The order of the 16 rounds was randomized.

Participants' actual earnings from the game were determined post-experiment via a randomized incentive system. One round was randomly selected for payment, and the outcome within that round was realized according to its specified probabilities. The average realized payment was GMD 100, equivalent to approximately two days' wages based on our survey data. This financial stake, combined with the framing detailed in Appendix A1, aimed to ensure participants engaged seriously with the experimental decisions.

Note that while the wages were constant, the expected payoffs varied across rounds due to differing probabilities of mortality and obtaining legal status. For instance, the expected wage payoff was €500 in a round with 0% mortality and 0% permit probability, compared to €1000 in a round with 0% mortality and 100% permit probability. Participants received information on the hypothetical endowment, potential wages, and event probabilities (presented as rates per 10 migrants), but not the pre-calculated expected wage for each round.

3.3. Descriptive statistics

Table 1 summarizes descriptive statistics for the 407 experimental subjects who participated in our lab-in-the-field incentivized experiment. All participants were male, and they were,

documented migrants in Italy, and that about one quarter of these differences in consumption was due to undocumented migrants earning less than documented migrants.

on average, 20 years old. They earned an average monthly income of GMD 1175 (~EUR 23). In terms of education, only 36 percent of the sample completed some level of formal education – and 14 percent of respondents only completed primary schooling. Risk preferences were elicited using a hypothetical lottery. Participants reported an average 37% fraction of a hypothetical D1000 endowment they would invest in a 50/50 double-or-halve lottery. Time preferences were assessed via maximum willingness to pay (WTP) for immediate versus one-year receipt of a hypothetical D100,000 prize, implying a mean annual discount factor (1 - WTP fraction) of 0.89. The precise framing used for these elicitations is detailed in Appendix A3.

In terms of individual migration history and network, 39 percent of the respondents reported having migrated outside their village for at least 6 months. The duration of past migration spells averaged 24 months. Most of the sampled youth (77 percent) knew at least one person (be it a relative or a friend) who had migrated outside their village, a proxy for their migration network. On average the size of the migration network was 2 individuals per respondent. Respondents were also asked how many migrants they knew that had successfully reached Europe via the "*backway*", and how many had died attempting the journey. On average, they knew 9 successful migrants and 4 migrants who died *en route*.

We document high migration intentions among respondents in our sample. 81 percent expressed a willingness to migrate internally, and 92 percent intended to migrate abroad. 47 percent of the sample reported their willingness to migrate irregularly via the "*backway*" route. Preferred destinations of "backway migration" were Italy (32%), Germany (28%), Spain (16%), the U.S. (6%), and the U.K. (5%), consistent with recorded migration patterns.

Respondents reported an average expected "*backway*" migration cost of GMD 84,893 (~ EUR 1,698 EUR) and an expected monthly wage abroad of EUR 1,452. On average, they were willing to forgo migration in exchange for GMD 26,797 (~ EUR 540) per month. These reports suggest substantial perceived gains from migration relative to local earnings, presumably offset by the perceived riskiness of the "backway" journey, as well as any local amenities.

Beliefs about the risks and outcomes of "*backway*" migration reveal systematic biases. We elicited the expected probability of dying *en route* and the expected probability of obtaining asylum or a residence permit. On average, respondents estimated a 38% chance of dying *en route* and a 51% chance of obtaining legal status. According to our best estimates (explained

in Appendix A2), the probability of dying was around 20 percent at this time, while the probability of obtaining a permit was 33 percent. This implies that experimental subjects substantially overestimated, on average, both the death risks and legal residency outcomes of "*backway*" migration.

These expectation biases should be interpreted cautiously. First, official statistics may suffer from measurement error and aggregation bias, while respondents may incorporate individual-specific information not reflected in population averages.[16] Second, limited access to reliable information likely contributes to these misperceptions. Asymmetric information remains a persistent barrier, even within transnational households as documented by McKenzie et al., 2013; Ashraf et al., 2015; Batista and Narciso, 2018. Potential migrants often receive inaccurate information from their networks, and this problem is likely to be especially serious in the context of "*backway*" migration from Africa to Europe, where immigration policy changes rapidly and information access is limited in isolated rural origin regions.

4. Identification strategy and main empirical results

4.1. Identification strategy

Using the variation from individual migration decisions made in the laboratory experiment, we estimate the following model using a Linear Probability Model (LPM):

$$M_{ir} = \alpha + \beta_1 . PD_{ir} + \beta_2 . PP_{ir} + \delta_i + \theta_r + \varepsilon_{ir} \qquad (1)$$

where M_{ir} denotes individual i's migration decision in round r; PD_{ir} is the probability of dying *en route* faced by individual i in round r; and PP_{ir} is the probability of obtaining a legal residence permit faced by individual i in round r. δ_i denotes individual fixed effects and θ_r stands for round fixed effects. Standard errors are clustered at the individual level.

Our estimates of interest β_1 and β_2 provide us respectively with the effects of the probabilities of dying *en route* and of obtaining a legal residence permit on the probability that experimental subjects choose to engage in irregular migration. The advantage of our

[16] As discussed in Appendix A2, existing official 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.

design is that due to the availability of variation both within and across individuals, we can include individual fixed effects in our specification, which allow us to control for potentially relevant omitted individual variables.

4.2. Empirical results

Table 2 presents the main estimation results. Consistent with theoretical predictions, individuals are more willing to migrate irregularly when perceived risks are lower and expected returns are higher. Column (1) indicates that a one percentage point (pp) increase in the perceived probability of obtaining a residence permit in Europe raises the likelihood to migrate irregularly by 0.15 pp, statistically significant at the 1% level. Conversely, a one pp increase in the perceived probability of dying en route reduces migration willingness by 0.14 pp. Column (2) adds individual and round-order fixed effects, slightly attenuating the magnitude of the estimated coefficients to 0.13 and -0.12 pp, respectively, but still statistically significant at the 1% level. These LPM estimates are robust to alternative specifications, including probit and logit models.

When we restrict the estimation sample to experimental subjects that are responsive to variation in the probabilities under consideration (i.e. those who do not always choose to migrate or not to migrate independently of the lab round), the resulting estimates more than triple in magnitude. Columns (3) and (4) of Table 2 show that the coefficients on the legal permit probability increases to between 0.42 and 0.49 pp, while the mortality risk effect also increases its magnitude to about 0.36pp.

These results show that the experimental subjects' lab migration decisions responded significantly to the information provided. Varying probabilities of dying *en route* and of obtaining legal residence status led to substantial revisions in irregular migration decisions, in light with what one would theoretically expect.

To further assess the impact of information provision, we computed counterfactual average migration responses. In this simulation, we assumed subjects were provided with information on mortality risks and legal residency, and we compared the decision they would make in this scenario relative to the migration decision they would make in a scenario close to their prior beliefs. Figure 1 shows the results.

Our estimates show that experimental subjects respond to good and bad news as could be theoretically anticipated: lower risk than expected about negative outcomes increases their willingness to migrate irregularly. Our estimates show that learning that the probability of dying *en route* is 20 percent (relative to a baseline average prior belief of 50 percent) would significantly increase the migration probability by 2.4 pp. Similarly, knowing that the probability of obtaining a residence permit is 30 percent (relative to a baseline average prior belief of 50 percent) would significantly reduce migration by 2.1 pp. The difference between these coefficients is statistically significant at the 1 percent level.

Our findings suggest that correcting migrants' overestimation of mortality risks may increase, rather than reduce, the willingness to migrate irregularly - contrary to the intended effect of most information awareness campaigns aimed at deterring such migration. However, our results also indicate that providing more accurate information about the probability of obtaining asylum reduces willingness to migrate irregularly, as subjects tend to also overestimate their chances of receiving legal residence upon arrival in Europe.

Table 3 describes how individual beliefs and characteristics predict experimental subjects' willingness to migrate irregularly in the lab experiment across all rounds. We find that prior beliefs on the likelihood of obtaining a residence permit and the presence of successful irregular migrants in one's network are the most important predictors. A one–standard deviation (SD) increase in the expected probability of obtaining a residence permit raises willingness to migrate by 11 pp – an effect statistically significant at the 1% level, obtained from specification (3) with all controls. Equally significant although with a less pronounced effect, a one SD increase in knowing successful *"backway"* migrants also predicts a 0.8 pp higher willingness to migrate. By contrast, negative beliefs and information appear to matter less: a one SD increase in the expected probability of dying *en route* lowers migration willingness by 3.9 pp, but this effect is only marginally significant, while the number of known deceased migrants has no significant effect. These results suggest that potential migrants assign more weight in their decision-making process to information on uncertain positive outcomes, rather than on negative ones.

In terms of individual characteristics, risk preferences are the key determinant of lab "*backway*" migration decisions are risk preferences. A one–standard deviation increase in risk preferences increases the willingness to migrate by 6.5 pp – an effect statistically significant at the 1% level. Age is only weakly associated with lab irregular migration

decisions: each additional year of age is associated with a 1.3 pp lower probability of deciding to migrate. Individual time preferences and formal education display no significant effects.

5. Do Lab Migration Decisions Reflect Actual Migration Decisions?

Migration choices elicited in a laboratory setting may, in principle, differ from actual behavior. To examine this possibility, we conducted a follow-up survey about one year after the experiment. The evidence contradicts this concern: we document a strong correlation between laboratory choices and both realized migration outcomes and stated migration intentions.

The follow-up survey was conducted by phone approximately one year after the initial lab experiment. The research team successfully re-contacted 263 of the original 407 participants. 22 percent of the re-interviewed individuals had actually migrated one year after the experiment, although only 3.4 percent had migrated internationally—and mostly to Senegal. In terms of future intentions to migrate, 77 percent still intended to migrate in the future, with 33 percent planning to do so in the following year. Notably, 33 percent expressed an intention to emigrate irregularly.

Attrition in the follow-up survey is likely to underestimate actual migration, particularly irregular migration, which is more difficult to track. Despite extensive efforts to reach all participants, including through other contacts in the village, some migrants could not be located, raising the possibility that attritors are disproportionately irregular migrants. Our estimates should therefore be interpreted as a lower bound on the strength of the correlation between laboratory migration decisions and actual migration.

The actual migration and intentions to migrate measured in the follow-up survey correlate very significantly (at the 1 percent significance level) with the experimental migration decisions, although the estimated magnitudes are small. Table 4 reports results from LPM regressions of the lab migration decisions on realized or intended migration outcomes. The estimates indicate that lab migration decisions are associated with an increase of 1.7 pp in the probability of actual international migration, 3.94 pp in the intention to migrate at some

point in the future, 7 pp in the intention to migrate within one year and 10.77 pp in the intention to migrate irregularly.

If we interpret lab migration decisions as (unrestricted) migration intentions, an additional argument for the relevance of our experimental results is the well-established empirical finding that migration intentions are strong predictors of subsequent migration outcomes. This relationship holds at both the macro level (e.g., Tjaden et al., 2019; Docquier et al., 2014; Bertoli and Ruyssen, 2018) and the micro level (e.g., Chort, 2014; Creighton, 2013; Van Dalen and Henkens, 2013). For instance, Tjaden et al. (2019) show that a 1 percent increase in migration intentions, as measured in the Gallup World Poll, corresponds to a 0.8 percent increase in actual bilateral migration flows. Similarly, Chort (2014) finds that migration intentions reported in the 2002 wave of the Mexican Family Life Survey significantly predict subsequent migration recorded in the 2005–06 follow-up wave.

Overall, consistent with this literature, the follow-up survey conducted one year after the lab experiment reveals that both actual migration decisions and migration intentions are closely aligned with the migration choices made earlier in the lab, further validating the external relevance of our experimental measure.

6. Concluding Remarks

This study examines the drivers of irregular migration from West Africa to Europe through an incentivized lab-in-the-field experiment with rural households in The Gambia—the country with the highest per-capita rate of irregular migration to Europe at the time of data collection. In the incentivized experiment, participants faced scenarios varying the chances of reaching Europe and of obtaining asylum or legal residence. In each scenario, respondents decided whether to migrate irregularly, how much they were willing to pay to migrate, and the minimum amount they would accept to forgo migration

Our findings highlight the central role of information in shaping migration decisions. We show that providing official statistics on the death risk of irregular migration increased the likelihood of choosing to migrate by 2.4 pp, while accurate information about the probability of obtaining legal residence decreased it by 2.1 pp. These effects reflect substantial misperceptions: participants overestimated, on average, both the probability of

dying *en route* (by 30 pp) and the likelihood of obtaining legal residence (by 7 pp). Taken together, the results demonstrate that migration choices are likely to respond to information about the costs and benefits of migration.

A striking implication of our findings is that information campaigns aimed at deterring irregular migration may yield unintended consequences. In particular, providing information about the risks of irregular migration can backfire, increasing rather than reducing migration intentions. This pattern is consistent with our finding that potential migrants appear to place greater weight on information about uncertain positive outcomes than on negative ones. While this result is not based on experimentally assigned heterogeneity, it underscores the need for further research on how individuals process and respond to different types of migration-related information.

Overall, the evidence suggests that the effectiveness of information campaigns hinges critically on the alignment between potential migrants' prior beliefs and the content of the information provided. Policies that fail to account for these priors or that emphasize risks in isolation may generate counterproductive outcomes. Future research should explore how different pieces of information and their alignment with potential migrants' prior beliefs may shape irregular migration decisions.

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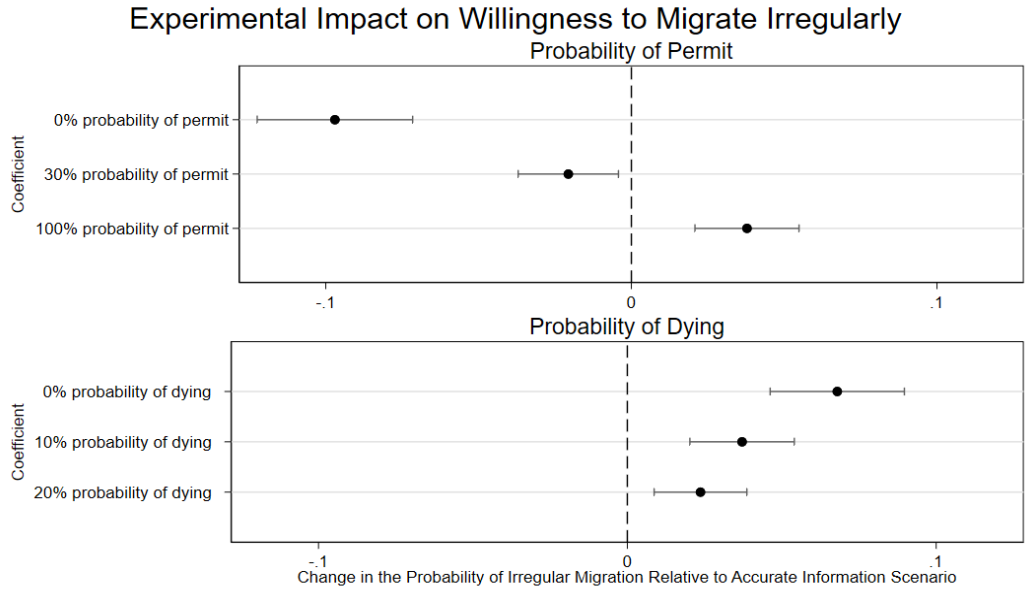
Figures

Figure 1



Tables

Table 1: Summary Statistics of Participants in the Experiment

Variable	Mean	SD	N
Individual characteristics			
Age	20.25	3.24	407
Formal education [Yes=1, No=0]	0.36	0.48	407
Years of formal education	2.87	4.30	407
Monthly income (GMD)	1,174.62	2,970.85	407
Risk preferences (0-1 scale, where 1 is maximum risk taking)	0.36	0.30	394
Time preferences (0-1 scale, where 1 is maximum patience)	0.89	0.18	380
Has migrated before [Yes=1, No=0]	0.39	0.49	391
Duration of migration (if any) in months	24.04	25.65	142
Has relatives or friends abroad (migration network) [Yes=1, No=0]	0.77	0.42	389
Number of relatives or friends abroad	2.01	2.04	401
Number of known successful *"backway"* migrants	9.47	11.62	403
Number of known dead migrants en route	3.93	4.63	400
Intentions to migrate and prior beliefs			
Has intention of migrating within the country [Yes=1, No=0]	0.81	0.39	404
Has intention of migrating outside the country [Yes=1, No=0]	0.92	0.28	406
Has intention of migrating irregularly [Yes=1, No=0]	0.47	0.50	406
Top preferred destination (if intending to migrate irregularly)			
Italy [Yes=1, No=0]	0.32	0.47	179
Germany	0.27	0.44	179
Spain	0.17	0.37	179
United States	0.06	0.24	179
United Kingdom	0.05	0.22	179
Monthly value required to forgo migrating (GMD)	26,796.55	39,169.57	174
Expected monthly wage in destination (EUR)	1,451.57	1,724.13	185
Expected cost of migrating (GMD)	84,893.49	104,786.86	169
Expected probability of dying en route	0.38	0.29	398
Expected probability of obtaining of permit	0.51	0.26	396
Household characteristics			
Household head age	42.70	63.81	367
Household size	10.35	6.49	407
Has internal migrants [Yes=1, No=0]	0.58	0.49	382
Has international migrants [Yes=1, No=0]	0.65	0.48	405
Received remittances [Yes=1, No=0]	0.36	0.48	397

Table 2: Willingness to Migrate Irregularly - Results from the Lab Experiment

	(1)	(2)	(3)	(4)
Probability of obtaining a permit	0.154***	0.128***	0.494***	0.419***
	(0.018)	(0.015)	(0.045)	(0.038)
Probability of dying en route	-0.144***	-0.123***	-0.355***	-0.360***
	(0.029)	(0.020)	(0.100)	(0.067)
Constant	0.369***	0.388***	0.464***	0.487***
	(0.023)	(0.013)	(0.043)	(0.025)
Individual fixed effects	No	Yes	No	Yes
Round order fixed effects	No	Yes	No	Yes
N	6483	6483	2527	2527
n	407	407	126	126
R^2	0.016	0.823	0.166	0.549

Notes: Regressions estimated using a Linear Probability Model. The dependent variable is a binary variable taking value 1 if the respondent is willing to migrate irregularly and 0 otherwise. Probability of obtaining a permit is the hypothetical probability of obtaining a residence permit (or asylum status) in Italy. Probability of dying en route 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 (91) and those that are not willing to migrate in any round (190). Standard errors in the parentheses, clustered at the individual level. *Significant at 10%; **significant at 5%; ***significant at 1%.

Table 3: Predictors of Lab Willingness to Migrate Irregularly

	(1)	(2)	(3)
Expected probability of obtaining a residence permit	0.445***	0.399***	0.368***
	(0.072)	(0.074)	(0.077)
Expected probability of dying *en route*	-0.188**	-0.158*	-0.149*
	(0.082)	(0.083)	(0.084)
Number of known successful irregular migrants		0.006***	0.007***
		(0.002)	(0.002)
Number of known dead migrants		-0.003	-0.002
		(0.005)	(0.005)
Age (in years)			-0.013*
			(0.007)
Has formal education (binary)			0.017
			(0.046)
Risk preferences			0.218***
			(0.075)
Patience			-0.16
			(0.121)
Constant	0.359***	0.301***	0.626***
	(0.064)	(0.068)	(0.198)
N	6214	6167	5689
n	390	387	357
R^2	0.089	0.106	0.129

Notes: Regressions estimated using a Linear Probability Model, including round fixed effects. The dependent variable is a binary variable taking value 1 if the respondent is willing to migrate irregularly and 0 otherwise. "Expected probability of obtaining a residence permit" and "Expected probability of dying en route" are both elicited in the baseline survey prior to the experiment taking place. Risk preferences are measured using an hypothetical lottery on a 0-1 scale, where 1 is maximum risk taking. Patience is measured on a 0-1 scale, where 1 is maximum patience. *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%.

Table 4: Lab Willingness to Migrate Irregularly and Follow-up Migration Outcomes

	(1) Migrated internationally	(2) Intention to migrate	(3) Intention to migrate next year	(4) Intention to migrate irregularly
Lab willingness to migrate	0.017***	0.039***	0.070***	0.108***
	-0.006	-0.014	-0.015	-0.015
Constant	0.027**	0.751***	0.299***	0.287***
	-0.011	-0.028	-0.031	-0.031
N	4151	3912	3912	3912
n	261	246	246	246
R-squared	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 a maximum of 16 observations. Standard errors in the parentheses, clustered at the individual level. *Significant at 10 percent; **significant at 5 percent; ***significant at 1 percent.

ONLINE APPENDICES

Appendix A1: Lab-In-The-Field-Experiment Framing

Given the specificities of the local context, with low literacy levels and prevalence of local languages, the experimental subjects were verbally given the following game instructions, in their local language by enumerators of local origin – but not from the same village, to ensure there were no personal acquaintances or connections.

Suppose that you are 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" and stay living there for 10 years. 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 D0 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 Europe, 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. From those who successfully reach 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.

Appendix A2: Lab-In-The-Field-Experiment Choice of Parameters

The lab-in-the-field experiment consisted of 16 incentivized rounds in which experimental subjects made migration-related decisions based on different combinations of two factors: the probability of dying *en route* to the migration destination and the probability of obtaining legal residence status upon arrival—each with four possible scenarios.

The four scenarios corresponded, respectively, to 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 thresholds were selected based on their relevance, as indicated by our pilot survey data and other sources, which we now turn to describe.

According to the International Organization for Migration, 181,436 migrants arrived in Italy through the sea during the year 2016, while 4,581 migrants lost their life from January to December 2016.[1] These figures provide a lower bound for the mortality rate at sea, estimated at 2.46 percent deaths of attempted sea crossings. In addition, we estimated a 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).[2] According to the data from the January 2017 survey, 44 percent of respondents reported witnessing one or more dead in Libya, 38 percent in the Sahara, 15 percent in the Sea, and 3 percent in transit countries such as Niger. Combining the probability of dying at sea of 2.5 percent and the incidences of witnessing migrant deaths *en route* of 15 percent, we estimated the overall probability of dying *en route* as 16.5 percent. In the experiment, we use 20 percent as a proxy for the actual death rate over the migration route given the likely undercount of fatalities. The 50 percent threshold for the probability of dying matches prior beliefs from the pilot survey. Our pilot survey elicited the expected probability of dying *en route* from 20 young males of ages 15 to 25 years from the region of the study. On average, the respondents expected that 5 out of 10 Gambians would die along the "backway", corresponding to a 50 percent probability of dying.

[1] 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. https://reliefweb.int/sites/reliefweb.int/files/resources/2016_Flows_to_Europe_Overview.pdf

[2] North Africa Mixed Migration Hub (2017). "Survey Snapshot, Italy".

We analyzed official data on residence permits granted in Italy from the Asylum Information Database (AIDA, 2016).[3] This database contains detailed numbers of individuals who arrive in Italy by nationality and by destination and who apply for asylum. It also includes information on the final decision on the asylum applications. Italy was the main entry country in Europe for Gambian migrants at the time of our fieldwork, as described in Section 2. In 2016, 8,930 migrants originating from the Gambia applied to asylum status in Italy. The rejection rate of asylum requests for these migrants was 67.5 percent. Using this rejection rate, we estimate at 33 percent the probability of obtaining asylum status or residence permit. This is substantially lower than the 50 percent expectation measured in our pilot survey.

We combined these two thresholds (the first based on existing data and the second based on the prior beliefs 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 set the parameters for the different game rounds.

The showcards shown in Appendix Figure A1 visually illustrate the probabilities of dying *en route* and of obtaining residence status upon successful arrival in Europe. These showcards were shown to experimental subjects to facilitate visualization of the risks presented in each lab round of the experiment.

[3] Asylum Information Database (AIDA) 2016 - Country Report: Italy. European Council on Refugees and Exiles (ECRE). https://www.asylumineurope.org/sites/default/files/report-download/aida_it_2016update.pdf [Last accessed on February 11, 2022]

A3: Measures of risk and time 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 percent 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?**

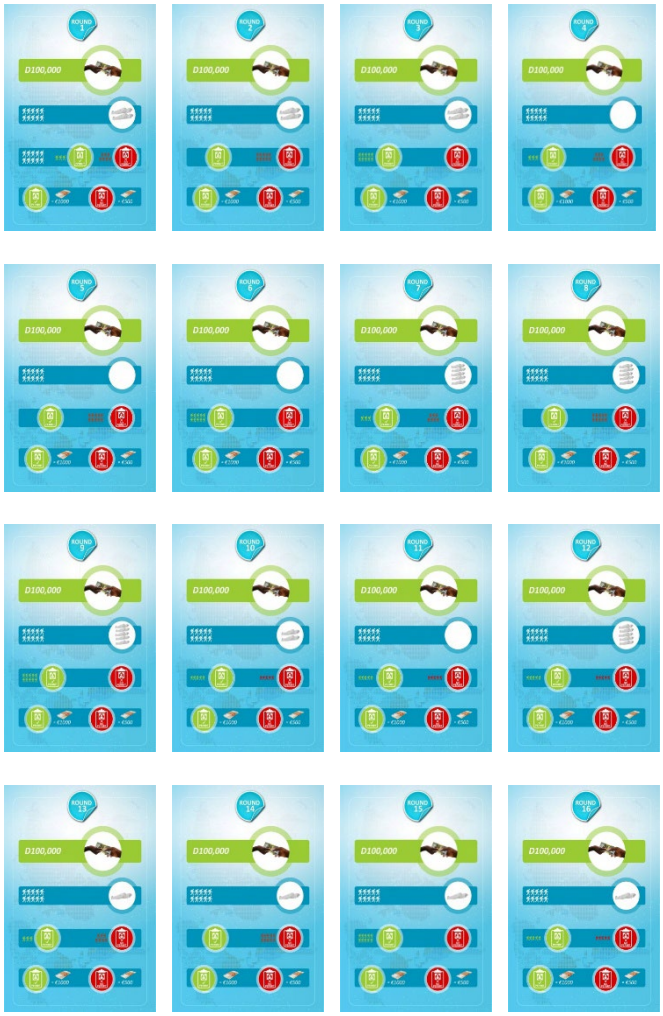
Nothing, I will decline playing	*0*
100 Dalasis	*1*
200 Dalasis	*2*
300 Dalasis	*3*
400 Dalasis	*4*
500 Dalasis	*5*
600 Dalasis	*6*
700 Dalasis	*7*
800 Dalasis	*8*
900 *Dalasis*	*9*
1000 *Dalasis*	*10*
Don't know [*Interviewer:* Do not read.]	*99*

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?**

Appendix Figures

Appendix Figure A1: Show Cards corresponding to 16 Game Rounds



Appendix Figure A2: Total Flow of Migrants as a Percentage of Origin Population Crossing the Central Mediterranean Route in 2017 by Top 10 countries of origin