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Migrant Networks as a Basis for Social Control : Remittance Obligations among Senegalese in France and Italy*

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Abstract

The economic literature provides much evidence of the positive impacts of social capital on migrants' economic outcomes, in particular through assistance upon arrival and insurance in times of hardship. Yet, although much less documented, migrant networks may well have a great influence on migrants' remittances to their home country and particularly to their origin household. Indeed, migrants are generally involved in kinship, friendship or fellow villagers networks that may put pressure on them, especially with regard to their financial obligations stemming from prevailing solidarity norms.

Given all the services provided by the network, the fear of being ostracized by its members and being left with no support system could well prevent migrants from reneging on these obligations. In this paper, we thus analyze to what extent migrant networks in the destination country influence the degree to which migrants meet the claims of those left behind. We first develop a simple principal-agent model in which remittances are the result of a contractual agreement between the migrant and his origin household and the network works as an enforcement device. We thus depart from existing models of motives for remitting which generally do not account for the close-knit networks migrants are embedded in. We then use an original data set covering Senegalese migrants residing in France and Italy to test the main predictions of our model.

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1 Introduction

The economic literature provides much evidence of a positive impact of social capital and networks on economic outcomes through a reduction of transaction costs, access to and exchange of information. In particular, social capital has been found to facilitate access to the labor market (Aguilera (2002); Drever and Hoffmeister (2008)) and to improve wages and/or occupational status (see, e.g. Aguilera (2005); Lin (1999)). This role is all the more essential for immigrants. Migrant networks, indeed, foster economic and social integration of immigrants in destination countries and, for example in the presence of discrimination in the labor market, may allow them to get access to a larger set of job opportunities (Mouw, 2002). But networks have also been found to provide freshly arrived migrants with shelter and assistance (Munshi (2003); Granovetter (1995)), and, in the course of their stay, offer them material support in times of hardship. Using data on Ghanaian migrants in the Netherlands, Mazzucato (2009) explores how migrant transnational networks are related to the ability of migrants to get secure employment or housing and to cope with problematic situations such as marital troubles, being imprisoned, losing a job or the funeral of a family member. She finds that migrant networks are essential in helping migrants address crises, especially when some financial assistance is needed. Additional evidence is provided by Menjívar (2002) who finds that Guatemalan immigrant women in Los Angeles who do not have access to formal health care tend to resort to alternative methods to get treatments, in which friends, family, neighbors and acquaintances are key actors.

As for Senegalese migrants in France and Italy, recent data collected in 2009 within the framework of the MIDDAS project (described in section 3) support the evidence that migrant networks play a key part along those two dimensions. On the one hand, we find that upon arrival, respectively 70% and 43% of migrants found a place to live and a job thanks to kinship members or Senegalese non-relatives. On the other hand, most of them got support from their kinship or Senegalese network during unemployment periods.

Data also suggest that those who found their first job by themselves stayed unemployed for a longer period.

Yet, another important feature of migrant networks is that they are vehicles of communication between migrants and their relatives in their origin country. Networks convey information but also social norms, and as such, they may exert a control on individual behaviors in order to guarantee the cohesion of the migrant community and preserve the link to the origin country. This may be particularly the case in the Senegalese community which is – or at least seems to be– structured by much demonstrated solidarity values. In this perspective, continuing interpersonal relationships established with kinship members or other co-ethnics may act as a constant reminder to the migrants of their commitment to their family and relatives back home. One specific consequence is that migrants are expected to remain closely connected with their origin country, thus inducing for migrants the obligation to send monetary transfers to those left behind, for fear of being condemned. And given the large amount of services networks can provide to them, ostracism and the fear of being left with no support can be an effective punishment for deviant individuals to prevent them from reneging on their remittance obligations.

Nevertheless, despite a pervasive and growing literature on remittance motives, very few papers have investigated the specific impact of migrant networks on migrants' transfer behavior. One exception is the anthropological material published by Philpott (1968) who argues that social control with regard to remittance obligations is largely rooted in migrant networks in the case of Montserratian migrants in Britain.

In this paper, we try to fill this gap in the economic literature and investigate to what extent social capital related to family, kin, fellow villagers or friends may influence the degree to which migrants meet the financial claims of those they have left behind. To that end, we explore the double dimension of networks as services supplier and communication device. We argue here that origin households can control migrants' access to network resources by manipulating reputations and spreading rumors through the very network.

Therefore, we first develop a basic principal-agent model with adverse selection to

represent the negotiation between migrants and their origin household for remittances, in which monetary transfers result from a contractual agreement between both parties and the network works as an enforcement device. We thus depart from existing models of motives for remitting which generally do not account for the close-knit networks migrants are embedded in. We then use data on a representative sample of 602 Senegalese migrants residing in France and Italy to test the main predictions of our model.

The remainder of this paper is organized as follows. Section 2 draws on the existing anthropological literature to get some key insights on the main features of Senegalese migrant networks. In section 3, we analyze migrant transfers in a principal-agent model with adverse selection, where network may be used by the principal (the origin household), as an audit-like device. Section 4 presents the survey data collected among Senegalese migrants in France and Italy and provides some descriptive statistics. Section 5 tests the main predictions of the model and discusses the results and section 6 concludes.

2 Senegalese Migrant Networks: a Literature Review

Due to strong data limitations, the economic literature exploring the role of migrant networks in the African context is rather poor. Existing studies have mainly analyzed the role of migrant networks on the migration decision. In the case of Senegal, a recent paper based on data from a nationally representative household survey provides convincing evidence that migrant networks play a powerful role in shaping patterns of international migration from this country (Chort, 2010). Most of this influence may be attributed to the assistance and resources offered by the networks to migrant candidates in the origin country and to newly arrived migrants in destination countries. Additional insights into the complex relationship between Senegalese migrants, their origin household and the Senegalese diaspora may however be found in the socio-anthropological literature. Regarding the matter in question, the recent papers by Mboup (2001), Elia (2006), Dia

(2007) and Dia (2009) are particularly instructive. Through in-depth interviews conducted among Senegalese migrants in France and Italy, they first provide strong evidence of network-based assistance and insurance mechanisms among Senegalese migrants. The following quotations illustrate the kind of help and assistance provided to newly-arrived migrants.

> *"So is African solidarity! Any Senegalese arriving in Italy is hosted by compatriots. He is offered free accommodation, is introduced among street vendors, gets credit to start his own business or is helped to get an undeclared job"* (Mboup (2001), p.47; authors' own translation)

> *"The newly arrived migrant receives an amount of cash from his peers to start his own commercial business. In addition, funds raised through a weekly tax are also granted to the unlucky newcomer whose goods have been seized."* (Elia (2006), p.44; authors' own translation)

As an additional insight, the papers provide evidence that networks transmit forms of social control that reward conform behaviors or, *a contrario*, condemn deviant ones. One mechanism through which social control works is through the spread of information. Indeed, as information flows easily through migrant networks, the news (or rumor) of any misbehavior may be quickly communicated not only among migrants but also back to the home country.[1] Information on misbehavior may also flow from origin households to network members in the destination country. In this perspective, the concept of "multi-located village" adopted by Dia (2009) well accounts for the network structure of the Senegalese diaspora, as well as for the circulation of information between its members and the origin country.

> *"The overall control through reputation, in other words rumor, plays as a permanent adjusting or re-adjusting mechanism for individual behaviors within the group."* (Dia (2009); authors' own translation)

Remitting funds to those left behind (be they members of the origin household, the extended family or the community) is one of the behavioral standards Senegalese mi-

[1] As suggested by Dia (2007), the new information and communication technologies, and in particular cellular phones, that have rapidly grown in Senegal have contributed to accelerate the diffusion of rumors.

grants are expected to conform to. Satisfying the financial requests emanating from the community of origin is thus socially rewarded.

> *"Is considered as brave the migrant who sends money regularly so as to guarantee the material welfare of his community. He is said to care about his own."*(Dia (2009); authors' own translation)

By contrast, migrants not fulfilling their obligations expose themselves to the disapproval of their peers.

> *"Control becomes apparent and translates into warnings when the young's behavior weakens the link with either the origin or the migrants' community; i.e. when young migrants are reluctant to work, to send remittances, etc."* (Elia (2006), p.47; authors' own translation)

Pushing further their analyses, the authors provide several pieces of evidence suggesting that rumor spreading constitutes an effective means of controlling and influencing migrants' behavior. Indeed, as declared by the migrants themselves, deviating from the norm is expected to result in ostracism and the concomitant loss of access to some network services or resources.

> *"People are reluctant to adopt individualistic behavior because they fear ostracism from the migrants' community. The social cost of isolation is very high because it means no more reciprocity links in the destination country as well as in the origin country."* (Elia (2006), p.48; authors' own translation)

> *"When several members of the same family have migrated, it becomes uneasy and risky to curb the trend by not satisfying a financial request."* (Dia (2009); authors' own translation)

Of course, one may wonder whether the control exerted by the network is a necessary condition for the migrants to commit themselves to their remittance obligations. It could indeed be argued that solidarity norms are strongly internalized by Senegalese migrants, especially as alms-giving is an act of religious virtue in the Islamic religion. It could also be argued that migrants have altruistic feelings for those left behind, which ensures that

they fulfill their remittance obligations. What the anthropological literature actually suggests is that solidarity norms are cemented by migrant networks which act both as providers of insurance and as social control devices.

3 A Principal-Agent Model for Remittances

The model presented in this section aims at translating the anthropological material that has been presented so far into the language of standard microeconomics. More precisely, we focus on the influence migrant networks may exert on migrants' transfer behavior. Indeed, we expect networks to influence migrants' remitting behavior both through an assistance/insurance effect and an information effect. We intend to conceptualize the idea that being granted an access to network resources might provide an incentive for migrants to commit to their remittance obligations. Since ostracism represents a credible threat and has a high social cost, we argue that remittances can be represented as the result of a contractual agreement between the migrant and his origin household which is enforced through the mediation of the network. We do not pretend that other motives are ineffective, but argue that this social control may at least explain part of the variability in transfer behavior. We thus depart from existing models of motives for remitting which generally disregard the social context in which remittances take place and particularly do not account for the close-knit networks migrants are embedded in.

3.1 Description of the game

The transfer behavior of migrants is represented in a principal-agent model with adverse selection as the result of a strategic interaction between two players, one migrant and his origin household, with the mediation of a migrant network. The network here means all relatives or fellow countrymen at the destination place. Due to the age structure of both the population of migrants and that of stayers, social norms in Senegal, the movement

of individuals forming the network at any given moment in time[2], the household is assumed to control the network in the destination country. In particular, the household is assumed to control the migrant's access to network resources by spreading rumors about his potentially unsatisfactory or deviant behavior. And yet, the migrant derives a positive utility from having access to the networks' resources. Indeed, as illustrated above, the network may provide assistance to the migrant, and help him find a job or housing, but the network also realizes the link to the origin country, and represents a preponderant aspect of migrants' social life through feasts, family or community events for example.

We consider the origin household as a rational principal, maximizing the amount of remittances it can obtain from a population of heterogenous migrants by exploiting its control over the network's resources and the double function of networks: sociability and assistance supplier as well as communication or information device.

In order to emphasize the role of information conveyed by the network in the interaction between the migrant and his origin household, we first consider the case where the information flows conveyed by the network are unidirectional: the network receives information from the household but does not inform the household (on the type of the migrant). The household is thus assumed to control at no cost the amount of services the migrant can get from the network. Besides, since the network provides services to the migrant it enters positively his utility function.

3.1.1 Optimal contracts when the network does not communicate on the migrant's type

We introduce asymmetric information and heterogeneity in the population of migrants: we consider two types of migrants, differing in their valuation of the network's resources. The household does not know the type of the migrant but any other element of the game is assumed to be common knowledge.

The only objective of the household is assumed to be the maximization of the transfer

[2]the network may be considered as a moving interface between the origin and destination countries

it receives, t. Depending on the transfer received, the household provides at no cost[3] a given b ($0 \leq b \leq 1$) access to the network. The higher the transfer received, the higher the access to the network.

Denote θ_1 and θ_2 the migrant's type. θ represents the valuation of network resources. Type 1 migrants are assumed to value more network resources than type 2 migrants ($\theta_1 > \theta_2$). The share of type 1 migrants in the population is ν. The migrant has the utility function

$$u = Y_t + \theta_1 b \qquad \text{with probability } \nu \tag{3.1}$$

$$u = Y_t + \theta_2 b \qquad \text{with probability } 1 - \nu \tag{3.2}$$

The sequence of the game is as follows:

1. the migrant (the agent) discovers his type θ.
2. the household (the principal) offers a contract that consists in claiming an amount of remittances t associated with an access b to network services.
3. the migrant accepts or refuses the household's offer
4. the contract is executed

An incentive feasible menu of contracts $(t_1^{SB}, b_1^{SB}); (t_2^{SB}, b_2^{SB})$[4] is characterized by the following incentive compatibility constraints:

$$Y - t(\theta_1) + \theta_1 b(\theta_1) \geq Y - t(\theta_2) + \theta_1 b(\theta_2) \tag{3.3}$$

$$Y - t(\theta_2) + \theta_2 b(\theta_2) \geq Y - t(\theta_1) + \theta_2 b(\theta_1) \tag{3.4}$$

[3]This assumption relies on the fact that the migrant's access to network resources is controlled only by rumors, see above

[4]Superscripts SB refer to the second-best optimum obtained under asymmetric information

Each agent's participation constraint writes:

$$Y - t(\theta_1) + \theta_1 b(\theta_1) \geq Y \tag{3.5}$$

$$Y - t(\theta_2) + \theta_2 b(\theta_2) \geq Y \tag{3.6}$$

In order to simplify notations, we set Y to zero.

The household's optimization program is:

$$\max_{(t_1,b(theta_1));(t_2,b(theta_2))} \nu t(\theta_1) + (1-\nu)t(\theta_2) \qquad \text{subject to 3.3 to 3.6} \tag{3.7}$$

We define $u_1 = -t(\theta_1) + \theta_1 b(\theta_1)$ and $u_2 = -t(\theta_2) + \theta_2 b(\theta_2)$. With a change of variables, the principal's program writes:

$$\max_{(u_1,b(\theta_1));(u_2,b(\theta_2))} \nu[\theta_1 b(\theta_1) - u_1] + (1-\nu)[\theta_2 b(\theta_2) - u2] \text{ subject to 3.3 to 3.6} \tag{3.8}$$

Then, considering that the incentive compatibility constraint of the migrant valuing most the network (type 1 migrant) and the participation constraint of the type 2 migrant are binding and substituting them into 3.8, we obtain the following reduced program:

$$\max_{b(\theta_1);b(\theta_2)} \nu[\theta_1 b(\theta_1) - (\theta_1 - \theta_2)b(\theta_2)] + (1-\nu)[\theta_2 b(\theta_2)] \tag{3.9}$$

Maximization with respect to $b(\theta_1)$ yields $b^{SB}(\theta_1) = 1$. The first order condition of the maximization with respect to $b(\theta_2)$ gives:

$$-\nu(\theta_1 - \theta_2) + (1-\nu)\theta_2 = 0 \tag{3.10}$$

There is no interior solution, and $b(\theta_2^{SB})$ depends on the sign of $\theta_2 - \nu\theta_1$. If $\theta_2 - \nu\theta_1 > 0$, which means that the distance between both types is small or the proportion of type 1

migrants, ν is low, then the maximization with respect to $b(\theta_2)$ yields $b^{SB}(\theta_2) = 1$.[5] In that case, the optimal contract is pooling: the household chooses not to discriminate between types and offers the same contract to all migrants. The access to network resources is maximum $b^{SB}(\theta_1) = b^{SB}(\theta_2) = 1$ and the related claim of remittances is the same for all migrants $t^{SB}(\theta_1) = t^{SB}(\theta_2) = \theta_2$.

If $\theta_2 - \nu\theta_1 < 0$, which means that the two types are very different or the proportion of type 1 migrants, ν, is high, then the maximization with respect to $b(\theta_2)$ yields $b^{SB}(\theta_2) = 0$.[6] In that case, the shutdown policy is optimal: the household claims no transfer from the type 2 migrant, valuing less network services, and deprives him of network resources. On the contrary, the household offers a maximum access to network services to type 1 migrants and claims $t^{SB}(\theta_1) = t^*(\theta_1) = \theta_1$, where $t^*(\theta_1)$ would be the first-best optimum, without asymmetric information.

3.1.2 Optimal contracts when the network communicates on the migrant's type

We now add to the previous model the possibility for the household to observe *ex-post* the true type of the migrant, and punish him if he lied by depriving him of network resources. Now that we relaxe the assumption that the network does not communicate, the network can work as an audit mechanism. This audit mechanism has no cost for the household: since the network conveys information and rumors, the household can use it to obtain information on the migrant's private characteristics (his valuation of network resources), besides controlling the migrant's access to network facilities. Denote q the probability for the migrant to be detected if he lied (and claimed to be type 2 and value less the network). q is assumed to depend on the migrant's actual use of network resources, $q = q(b(\theta))$.

[5] The two remaining constraints (incentive compatibility constraint of type 2 migrant participation constraint of type 1 migrant) are indeed satisfied.

[6] The incentive compatibility constraint of type 1 migrant is verified and the participation constraint of type 1 migrants is weakly satisfied ($u_1^{SB} = 0$)

The incentive compatibility constraints 3.3 and 3.4 now write:

$$Y - t(\theta_1) + \theta_1 b(\theta_1) \geq Y - t(\theta_2) + \theta_1 b(\theta_2)[1 - q(b(\theta_2))] \tag{3.11}$$

$$Y - t(\theta_2) + \theta_2 b(\theta_2) \geq Y - t(\theta_1) + \theta_2 b(\theta_1)[1 - q(b(\theta_1))] \tag{3.12}$$

Both participation constraints are unchanged. Again, we set Y to zero, and consider that constraints 3.6 and 3.11 are binding. The household's problem becomes:

$$\max_{b(\theta_1);b(\theta_2)} \nu[\theta_1 b(\theta_1) - (\theta_1 - \theta_2)b(\theta_2) + \theta_1 b(\theta_2)q(b(\theta_2))] + (1 - \nu)[\theta_2 b(\theta_2)] \tag{3.13}$$

Again, the maximization with respect to $b(\theta_1)$ gives $b^{SB}(\theta_1) = 1$.

Optimizing with respect to $b(\theta_2)$ yields:

$$-\nu\theta_1 + \theta_2 + \nu\theta_1 q(b(\theta_2)) + \nu\theta_1 b(\theta_2)q'(b(\theta_2)) = 0 \tag{3.14}$$

Consider the case where q is linear and $q(b) = \alpha b$, with $0 \leq \alpha \leq 1$ and α representing for example the network's efficiency in revealing the migrant's private information about his type. Equation 3.14 rewrites:

$$-\nu\theta_1 + \theta_2 + 2\nu\theta_1\alpha b(\theta_2) = 0 \tag{3.15}$$

Different cases emerge:

- 1.1: First if $-\nu\theta_1 + \theta_2 > 0$ (the distance between types is small or the proportion of type 1 is low), there is no interior solution, and the principal's objective function increases in $b(\theta_2)$, which leads to the second-best optimum $b^{SB}(\theta_2) = 1$. Nonetheless, in that case, the participation constraint of type 1 migrants is satisfied only if $\theta_1 - \theta_2 \geq \theta_1\alpha$, which means that the distance between types is large enough or the efficiency of the network is small enough. Both conditions are summarized by the

following expression:

$$\nu < \frac{\theta_2}{\theta_1} \leq 1 - \alpha \tag{3.16}$$

If condition 3.16 is satisfied, both types are offered the same (and maximum) access to network services, $b^{SB}(\theta_1) = b^{SB}(\theta_2) = 1$ and $t^{SB}(\theta_2) = \theta_2$ and $t^{SB}(\theta_1) = \theta_2 + \alpha\theta_1$

- 1.2: If $-\nu\theta_1 + \theta_2 > 0$ and $\theta_1 - \theta_2 < \theta_1\alpha$, the optimal contract offered to type 2 migrants imply to maximize $b^{SB}(\theta_2)$ provided that type 1 migrants participate. Considering that constraints 3.11 and 3.6 are binding, the utility function of type 1 migrants writes:

$$u_1 = b(\theta_2)[\theta_1 - \theta_2 - \theta_1\alpha b(\theta_2)] \tag{3.17}$$

The maximal value for $b(\theta_2)$ still compatible with the participation of type 1 migrants is thus $b^{SB}(\theta_2) = \frac{\theta_1 - \theta_2}{\theta_1\alpha}$ Note that since $\theta_1 - \theta_2 < \theta_1\alpha$, $b^{SB}(\theta_2)$ is now < 1. Since $b^{SB}(\theta_1) = 1$, we have $t^{SB}(\theta_1) = \theta_1$ and $t^{SB}(\theta_2) = \theta_2\frac{\theta_1 - \theta_2}{\theta_1\alpha}$.

- 2.1: If $-\nu\theta_1 + \theta_2 < 0$, there is an interior solution if and only if $\nu\theta_1 - \theta_2 < 2\alpha\nu\theta_1$. In that case, constraints 3.12 and 3.5 are both satisfied and $b^{SB}(\theta_1) = 1$, $b^{SB}(\theta_2) = \frac{\nu\theta_1 - \theta_2}{2\alpha\nu\theta_1}$, with the related transfers $t^{SB}(\theta_1) = \theta_1 - \frac{\nu\theta_1 - \theta_2}{2\alpha\nu\theta_1}[(\theta_1 - \theta_2) - \frac{\nu\theta_1 - \theta_2}{2\nu}]$ and $t^{SB}(\theta_2) = \theta_2\frac{\nu\theta_1 - \theta_2}{2\alpha\nu\theta_1}$. Note that the expression in parentheses $(\theta_1 - \theta_2) - \frac{\nu\theta_1 - \theta_2}{2\nu}$ is always positive since it writes $\frac{1}{2}\theta_1 - (1 - \frac{1}{2\nu})\theta_2$ and $0 < \nu < 1$. It implies that $t^{SB}(\theta_1) < \theta_1$ and $t^{SB}(\theta_1)$ is increasing in α. The transfer asked to type 1 migrants when the network provides an audit-like device is thus lower than the tranfer asked to type 1 migrants without audit, but the more efficient the network (the higher α), the smaller the gap between these two claims.

- 2.2: Finally, if $-\nu\theta_1 + \theta_2 < 0$, and $\nu\theta_1 - \theta_2 > 2\alpha\nu\theta_1$, there is no interior solution, and the optimal contract entails the shut-down of type 2: $b^{SB}(\theta_1) = 1$, $b^{SB}(\theta_2) = 0$, with $t^{SB}(\theta_2) = 0$, $t^{SB}(\theta_1) = \theta_1$. This solution is the same as what is obtained

without network audit.

3.2 Interpretation

The model presented here investigates the role of the network in the negociation between a migrant and his origin household over the control of monetary resources, taking the form of remittances. Since a key parameter in this negotiation is the control exerted by network members on individual migrants, the presentation aimed at isolating this effect: first, the network is assumed not to be able to provide information to the household. Then, in the second part of the model, this assumption is relaxed, and the network additionnally provides audit-like services.

The intuition of what happens when an audit technology is available in an adverse selection model (and we moreover assume here that the audit has no cost) is the following: by decreasing the utility of lying for type 1 migrants, it enlarges the set of incentive compatible contracts acceptable by type 1 migrants. The household is thus expected to extract a larger share of type 1 migrants' information rent. In order to evaluate the consequences of network audit, we can thus compare the amount of transfers asked to type 1 migrants. First, if the distance between both types is low or the proportion of good types (type 1) is low (cases 1.1 and 1.2) the transfer asked from type 1 migrants is higher when the household can use the network as an information and punishment device (when the household obtains information *ex-post* on the true type of the migrant and punishes by depriving the migrant from network resources if the migrant happens to have lied). In that case, the audit-like technology allows a better screening of the types.

Second, if the distance between types is large or the proportion of good type migrants is high, then using the network as a free audit mechanism has indeed a cost: it induces an excessive screening of types, as compared to the first model presented here where the network does not communicate about the migrant's type. The amount of transfer obtained from type 1 migrants and the expected utility of the household are at best equal than without network audit.

4 Data and Summary Statistics

We focus our analysis on Senegalese migrants that have been contacted in France and Italy through the MIDDAS project. 300 Senegalese migrants in France and 302 Senegalese migrants in Italy have been interviewed over the year 2009 using common sampling methodology and questionnaire. Detailed information on migrants' personal networks in France and Italy has been recorded together with data on remittances sent to the origin household and home community, savings, investment projects and migrants' individual characteristics.

4.1 Sampling Method

Any attempt to carry out a survey focused on migrants faces the problem that international migrants represent a very small proportion of the population of a given country and that no survey frame is available[7]. To mitigate these two problems, we applied the same survey method as the one adopted by Lydié, Guilbert, and Sliman (2007) in their survey on Sub-Saharan Africans in Greater Paris. We first used the most recent population censuses in France and Italy to construct three strata according to the density of the Senegalese population in each district. Districts were then randomly drawn within each stratum with probabilities proportional to the number of Senegalese in those districts. We then defined the number of migrants to be surveyed in each selected district using the relative weight of each district in the total Senegalese population[8]. Surveyors were sent in the selected districts and tasked with getting in contact with Senegalese in the public space (streets, markets or shopping centers, metro stations, etc.). To be eligible, interviewees had to meet three criteria: being aged 18 and over; residing in the district; and either being a Senegalese national or a former Senegalese national.

[7]For a detailed discussion on the difficulties raised by migrant surveys and a comparison of the performance of alternative survey methods, refer to McKenzie and Mistiaen (2009)

[8]Further details on the sampling methodology can be provided upon request

4.2 Sample Composition and Migrants' Main Characterisitics

Summary statistics on the migrants' characteristics are given in tables 1 and 2. Because men are over-represented among Senegalese in France and Italy with an estimated ratio of respectively 1.4 and 5.5 men for 1 woman according to the last censuses, the samples are strongly biased in favor of males. By contrast, the age distribution shows a clear under-representation of people at retirement ages and an over-representation of people of working age. As regards educational attainment, Senegalese appear much less educated on average than host populations. They are indeed clearly over-represented among low-educated people (with either no diploma or Primary School Leaving Certificate Examination (PSLCE)) and under-represented among highly-educated people. Interestingly enough, a large majority of migrants in our sample who attended formal school also attended Koranic school at least for a few years, suggesting that both school careers are considered relevant educational choices by Senegalese households. This is especially true for Senegalese in Italy who mostly belong to the Muridiyya and have, for that reason, studied at *daaras* for several years. Last, migrants in our samples mainly come from Dakar, the capital city of Senegal (respectively 48.7% and 56% for France and Italy). In the case of France, the next most represented regions of origin are areas located along the Senegal River, namely Saint-Louis, Matam and Tambacounda while Senegalese in Italy come from other regions such as Diourbel, Louga and Thies. Network effects explain part of these differentiated patterns, with individuals originating from the same place quite naturally choosing to migrate in the same destination countries.

Table 2 presents descriptive statistics on migrants' living conditions in France and Italy. Overall, our data challenge the widespread representation of Senegalese migration flows to France being mainly made up by young and single male workers who live together in *foyers*. Indeed, more than a third of all migrants interviewed in France actually live with their spouse and/or children, and an additional 26% reside with other relatives or friends. In addition, 71% of Senegalese migrants in France live in a flat or a house. In the case of Italy, most migrants are found to co-reside either with their spouse and/or

children or with other relatives or friends.

4.3 Migrants' Labour Market Performances

Given the age distribution of the migrants in our samples, most of them are either employed or looking for a job (table 3). On average, Senegalese in France are found to have more favourable working conditions than those residing in Italy: their unemployment rate is lower (14.3% against 20.9%) and their employment status less precarious (85% of those who are employed are wage earners among which 63% have a permanent contract, against 73% and 59% respectively in the Italian case). Contrasted patterns can also be observed with regards to the socioeconomic classification of the migrants. Nearly a quarter of Senegalese in Italy are either small employers or self-employed while this share boils down to zero in the case of France, where the great majority of Senegalese migrants occupy either lower technical or lower services, sales and clerical positions. In both countries, however, Senegalese are concentrated in the lower part of the income distribution.

4.4 Migrant Networks and Networks' Service Position

The MIDDAS survey provides detailed information on each migrant's social capital. The questionnaire has been designed to account for different forms of social capital that may affect migrants' behavior in various ways (family networks, hometown associations, etc.). Family networks are measured by the number of relatives living in France or Italy and the strength of the network inferred from the frequency of the migrant's contacts with his relatives. Survey results show that respectively 64.4% and 45% of migrants in France and Italy had a relative already living in France (Italy) at the time they migrated. At the time they were interviewed, 31.3% (28.5%) declared that other members of their origin household were residing in France (Italy), elsewhere than in their own household. Social capital is also measured by the migrants' participation to social, religious, cultural or even

sports associations formed by fellow countrymen or hometown members. Respectively 25% and 48% of the migrants surveyed in France and Italy belong to at least one association, and 14% and 13% to a hometown or community-based organization. In addition, between 14 and 15% of the migrants participate to a rotating savings and credit association (ROSCA) in both countries. Last, when asked to give the names and details of the persons they trust and regularly interact with, migrants in our sample cited between two and three persons on average, most of them being also Senegalese migrants.

Table 4 provides insights on the type of financial and non financial support received by migrants from the members of their network. Support to find a job or a place to live is acknowledged by a majority of migrants : respectively 52% and 45% declare that they were helped by their family to find a housing at the time they arrived in France and Italy; and 16% and 9% still relied on their family to find their current housing. In terms of job access, the support provided by other Senegalese has been key for 25% of the migrants at the time they arrived in France, and 16% of them found their current job thanks to Senegalese acquaintances. The figures are even slightly higher in the case of Italy (27% and 18% respectively). Financial support from the family and members of the Senegalese community in France and Italy in times of hardship is also cited by a majority of our sample migrants: 57% (56%) of those who experienced periods of unemployment in France (Italy) in the past said that they received support from family or other Senegalese. There is thus strong evidence of the importance of the numerous services offered to migrants by their network in our data.

4.5 Migrants' Remitting Behavior

As reported in table 5, a remarkable feature of the migration pattern is the high proportion of remittance senders among Senegalese migrants. In the French (Italian) sample, 83.3% (79.1%) of them sent remittances either in cash or in kind to Senegal in the twelve months preceding the survey, a proportion that is slightly higher for men (85.9% in France and 81.1% in Italy) than for women (75.3% in France and 72.5% in Italy).

Remittances sent to the origin household amount to 2,232 euros on average for the pooled sample when restricted to remittance senders only, with a very small difference between migrants in France and Italy, which suggests a contribution of 186 euros per migrant per month. Interestingly enough, there is no clear evidence of a correlation between the amount of remittances sent by the migrants and the perceived wealth of their origin households. While altruistic models of remittances would predict higher amounts of remittances to poorer origin households, simple descriptive statistics using our data do not bring support to this assumption. Most migrants use money transfer services to send funds to their origin country, and most of them send funds on a regular and frequent basis.

In order to investigate whether the provision of information and services by the network influence the remittance behavior of our sample migrants, we now turn to a multivariate analysis of remittances determinants.

5 Regression Analysis of Remitting Behavior

In this section, we empirically explore whether our data bring support to the main predictions of our model. Basically, the model yields remarkable conclusions on both the likelihood and the amount of remittances. On the one hand, since it predicts screening of types and therefore the potential "exclusion" from the contractual agreement of migrants who value the network less, we expect the likelihood of remittances to be positively correlated with the migrant's type (θ_i), as well as with the efficiency of the network in providing resources and exerting credible threats (α). On the other hand, and under the assumption that the heterogeneity of the migrant population is sufficiently low, since the ability of the origin household to extract the information rent of "good" migrants is higher when the network works as an effective audit-like mechanism, we also expect the amount of remittances to increase along those two dimensions.

5.1 Econometric specification

We estimate the following reduced-form equations for the determinants of the likelihood and amount of remittances on the whole sample of migrants residing in France and Italy:

$$R_{ih} = \alpha + \beta X_i + \gamma X_h + \delta \theta_i + \rho \alpha_n + \epsilon_{ih} \tag{5.1}$$

where R_{ih} is a dummy equal to 1 if the migrant i sent remittances in cash or kind to his origin household h over the past 12 months ; X_i is a set of migrant's characteristics, including gender, age and age squared, migration duration in the destination country (in years), total income including social benefits and the link to the head of his origin household (a dummy equal to 1 if the migrant is a child or spouse of the household head); X_h is a set of origin household's characteristics including size, wealth index[9] and a dummy equal to 1 if the household has other international migrants in Europe; θ_i is migrant i's type; α_n is the network's efficiency and ϵ_{ih} is an individual error term. We run probit estimations of the above equation.

and:

$$T_{ih} = \alpha + \beta X_i + \gamma X_h + \delta \theta_i + \rho \alpha_n + \epsilon_{ih} \tag{5.2}$$

where T_{ih} is the amount of remittances in cash or kind sent by migrant i to his origin household h over the past 12 months and other variables are defined as above. As the dependent variable is left-censored since some migrants do not transfer anything to their origin household, we run tobit regressions of the above equation.

One major difficulty with our empirical setting is that migrant i's type and the network's efficiency in providing resources and exerting control are not directly observable

[9]The wealth index corresponds to the first component of a principal component analysis on household's goods, such as fridges, freezers, TV, CD, DVD and radio sets, electric fans, bicycles, motorcycles and cars.

and measurable. We thus have to resort to proxies for these two variables in our regressions. We use a dummy for past spells of unemployment as an indicator of the migrant's type, considering that those migrants who incurred spells of unemployment are also those who need and value the most network services, due to an hysteresis effect. We use the share of Senegalese in migrant's i close network as an indicator of the network's efficiency since the close network is defined in the survey as those people the migrant is in close contact with and relies on the most. However, as this measure stems from the migrant's self declaration, it is likely to be highly endogenous. Moreover, it could also be considered as an indicator of the migrant's type since migrants whose valuation of the Senegalese network is high are more likely to spend most of their time with fellow countrymen. Therefore, we also include in the regressions the share of Senegalese in the community of residence (city or district), computed from the national censuses, as a more exogenous proxy for the potential network's efficiency.

5.2 Results

Table 6 presents some descriptive statistics regarding our dependent variables. Tables 7 to 9 present our main regression results. Overall, our results bring some support to the idea that those migrants who value most the network are also those who are more likely to remit and to send higher amounts of remittances.

Having being through spells of unemployment in the past, which we use as a proxy of the migrant's potential reliance on the network given the hysteresis effect of the incidence of previous spells out of work, is indeed found to significantly increase the amount of remittances sent to the origin household. The effect is particularly robust when the sample of migrants is restricted to the French sample only, as past unemployment in this case is found to impact both the probability to remit and the level of remitted funds.

The network's efficiency in revealing the migrant's type, which is proxied by the size and composition of the network, is also found to increase remittances although the variables are not always statistically significant. On average, both the size and composition

of the network appear as strong determinants of the amount of remittances sent to the origin household in the Italian case, while only the composition of the network seems to matter in the French case. Of course, alternative explanations for the positive impact of network's size and composition on remittances can be found. It could be for example that migrant networks facilitate the access to some job opportunities and allow the migrants to get higher paid jobs and hence to remit more to their origin household. However, since we include the migrant's income in the regression, this effect is already controlled for.

If we now turn to the variables included to control for a number of other individual characteristics, most of our results are in line with those found in previous research. Remittances tend to increase with the migrant's age up to a certain point (around 42 years in the Italian case), and to decrease afterwards as in de la Briere et al. (2002) or Durand et al. (1996). This suggests that middle-aged migrants are more likely to have transfer obligations to fulfill than younger or older migrants. Remittances are also found to increase with the migrant's income and with her proximity with the head of the recipient household.

By contrast, neither the size, nor the wealth of the origin household is found to be a strong determinant of the likelihood to remit and the level of remittances. Surprisingly enough, we tried alternative sets of regressors to control for the characteristics of the origin household, and none of them happened to be jointly significant. Having spouse and biological children in the origin household, for example, has no impact on the level of remittances sent by the migrant.

In order to check the robustness of our results and to test for the presence of an omitted variable bias, we re-run the same regressions after including other potential strong determinants of the migrants' remitting behavior in the set of regressors. In particular, to control for the internalization of norms by the migrant, we include a variable measuring the number of years of Koranic schooling the migrant attended to. As mentioned above indeed, alms-giving is an act of religious virtue in the Islamic religion. It is thus likely that those migrants who spent many years in Koranic school are more committed to their

remittance obligations. As a consequence they should be more likely to remit, and should remit significantly more. Results in table 8 bring some support to this assumption since this variable is significant and positive in the French case. However, it should also be emphasized that adding this variable to the set of regressors does not affect our initial results.

Also, it could be argued that those migrants who encountered past spells of unemployment are not remitting more funds because they value more network resources, but are doing so because, given the precariousness of their position in the labor market, they intend to return soon. In other words, they would remit more because they would prepare their coming back. To check for this possibility, we included a dummy variable taking the value 1 for those migrants who declared that they intend to return among the set of regressors. Results are provided in table 9. Here again, adding this variable does not modify our initial results. In particular, the variable relating to past spells of unemployment is still significant using French and pooled data.

6 Conclusion

This paper invests a neglected area in the study of the determinants of migrants' remittances to their origin household. Indeed, if one excludes some studies by socio-anthropologists, very few papers have explicitly assessed the role of migrant networks in migrants' remitting behavior.

Our aim in this paper is thus to explore this issue both theoretically and empirically using representative data on Senegalese migrants that we collected in France and Italy in 2009.

We start with a theoretical model of remittances in which we account for the double function of migrant networks as providors of services or assistance to their members, but also as conveyors of information between home and host countries. Thanks to (or because of) this double function, we argue that migrant networks may be used by household mem-

bers in the home country to control a substantial share of migrants' monetary resources. The classical principal (household) - agent (migrant) model with adverse selection we develop is based on the assumption that the migrant population is heterogenous, with some migrants being in greater need of network resources than others. The household's ability to extract migrants' information rent (individual valuation of network services) is found to depend on the distribution of migrants' types, and on the efficiency of the network.

We then proceed exploring whether these predictions are consistent with empirical evidence. To this end, we use an original representative dataset of 600 Senegalese migrants living either in France or Italy. The results from our multivariate analyses, while not challenging those from previous studies of the determinants of remittances as regards to age or migrants' income, suggest that network characteristics play a non negligible role in explaining migrants' transfer behavior. Migrants are indeed found to be more likely to remit and remit significantly more when they are expected to value more network services and/or when the efficiency of the network in providing resources and exerting control tends to be higher. These results hold after including proxies for migrants' altruism or intention to return.

Obviously, one should be very careful to draw strong and definitive conclusions from these findings. The empirical evidence, although fully consistent with our theoretical model, is based both on a small sample of migrants and on cross-sectional data which makes it difficult to deal adequately with unobserved heterogeneity. This paper should rather be seen as an attempt to conceptualize the way family and kinship ties may affect individuals' transfer behavior in the context of a community of migrants. While providing assistance and insurance, migrant networks may indeed have a non negligible cost materialized by remittances. Implications in terms of welfare remain however an open question that is left for further investigations.

7 Tables

Table 1: **Migrant's main characteristics**

	France	**Italy**	**Total**
	%	%	%
Male	75.7	77.2	76.4
Age groups			
18-25 years	11.0	9.6	10.3
25-35 years	35.7	33.8	34.7
35-45 years	28.3	39.7	34.1
45-60 years	22.0	16.9	19.4
60-75 years	3.0	0.0	1.5
Schooling			
No schooling	20.3	11.6	15.9
Elementary school	15.0	12.3	13.6
Middle school	15.3	24.8	20.1
High school	14.3	18.9	16.6
Vocational	9.7	6.3	8.0
University	25.3	26.2	25.7
Last grade completed			
none	31.3	17.2	24.3
CEP	16.0	13.2	14.6
BEPC	8.7	22.8	15.8
CAP/BEP	1.3	4.6	3.0
Bac/brevet	19.0	21.9	20.4
undergraduate	6.0	11.3	8.6
university, graduate	17.7	8.9	13.3
Type of schooling			
None	2.7	2.3	2.5
Koranic only	15.3	10.3	12.8
Formal only	17.3	12.3	14.8
Both koranic and formal	64.7	75.2	69.9
Region of origin			
Dakar	48.7	56.0	52.3
Thies	7.7	10.9	9.3
Diourbel	2.3	11.3	6.8
Fatick	1.0	0.7	0.8
Kaolack	2.7	4.3	3.5
Louga	0.7	10.3	5.5
Saint-Louis	2.0	2.3	2.2
Matam	6.0	0.7	3.3
Ziguinchor	6.0	0.7	3.3
Kolda	3.3	0.7	2.0
Tambacounda	16.0	0.7	8.3
Other country	1.7	0.3	1.0
Unknown	2.0	1.3	1.7
Observations	**300**	**302**	**602**

Source: MIDDAS Survey, 2009

Table 2: **Migrant's situation in host country**

	France	**Italy**	**Total**
	%	%	%
Place of residence			
Main cities	72.3	47.0	59.6
Other cities	27.7	53.0	40.4
Type of household			
Alone	39.3	14.2	26.7
With spouse and/or children	34.7	36.4	35.5
With other relatives or friends	26.0	49.3	37.7
Household size			
1	39.3	14.2	26.7
2	25.3	20.2	22.8
3	13.3	28.1	20.8
4	7.3	20.5	14.0
5	5.0	8.6	6.8
More than 5	9.7	8.3	9.0
Date of arrival			
Born here or arrived aged under 15	9.3	2.6	6.0
Arrived before 1990	21.0	11.6	16.3
1990-2000	23.7	32.8	28.2
After 2000	46.0	53.0	49.5
Type of accommodation			
house	4.0	9.3	6.6
flat	67.3	87.7	77.6
foyer	21.0	0.7	10.8
room	3.3	1.0	2.2
meubl	3.0	0.0	1.5
other	1.3	1.3	1.3
Observations	**300**	**302**	**602**

Source: MIDDAS Survey, 2009

Table 3: **Migrant's labour status and income**

	France	**Italy**	**Total**
	%	%	%
Labour status			
Regularly employed	73.0	68.9	70.9
Occasionally employed	4.0	2.6	3.3
Unemployed	14.3	20.9	17.6
Inactive	6.3	4.0	5.1
Other	2.3	3.6	3.0
Observations	**300**	**302**	**602**
Employment status			
Unknown	0.5	0.5	0.5
Unpaid family members	0.5	1.4	0.9
Self-employed/Entrepreneur	13.7	25.5	19.4
Wage workers	85.4	72.6	79.2
Permanent contract	62.6	58.9	60.9
Fixed-term contract	19.3	16.6	18.0
Temporary/Interim	11.2	7.3	9.5
Apprenticeship	2.1	0.7	1.5
Informal/No contract	4.3	13.9	8.6
Unknown	0.5	2.6	1.5
Socioeconomic classification			
Lower technical occupations	45.7	50.0	47.8
Lower services, sales and clerical occupations	28.8	7.2	18.3
Intermediate occupations	6.4	3.4	4.9
Small employers and self-employed occupations	0.0	24.0	11.7
Large employers, higher grade professional, managerial occupations	5.5	1.9	3.7
Other	11.9	10.1	11.0
Unknown	1.8	3.4	2.6
Wage categories			
less than 500 euros	3.2	9.1	6.1
500 to 1000 euros	22.4	23.6	23.0
1000 to 1250 euros	26.5	28.8	27.6
1250 to 1500 euros	17.8	14.9	16.4
1500 to 2000 euros	17.8	9.1	13.6
2000 to 2500 euros	4.6	0.5	2.6
2500 to 3000 euros	0.5	2.4	1.4
3000 to 5000 euros	2.7	1.0	1.9
5000 to 8000 euros	0.5	0.0	0.2
Unknown	4.1	10.6	7.3
Observations[(a)]	**219**	**208**	**427**

[(a)] one observation per regularly employed migrant
Source: MIDDAS Survey, 2009

Table 4: **Source of financial and non-financial support received by migrants**

	France	Italy	Total
	%	%	%
Access to housing			
How did you find a housing upon arrival ?			
No support	11.0	7.3	9.1
Family	51.7	45.4	48.5
Senegalese non relatives	14.0	28.1	21.1
Friends from host country	5.0	12.9	9.0
Other	13.0	4.3	8.6
Unknown	5.3	2.0	3.7
How did you find your current housing?			
No support	18.0	43.0	30.6
Social services	17.7	5.3	11.5
Family	16.0	7.6	11.8
Senegalese non relatives	18.0	9.6	13.8
Friends from host country	16.0	12.3	14.1
Other	7.3	18.9	13.1
Unknown	7.0	3.3	5.1
Access to job			
How did you find a job upon arrival? [(a)]			
No support	13.1	9.5	11.2
Social services	7.4	7.2	7.3
Family	13.1	19.3	16.3
Senegalese non relatives	25.4	26.9	26.2
Friends from host country	11.9	27.3	19.9
Other	19.3	5.7	12.2
Unknown	9.8	4.2	6.9
How did you find your current job? [(b)]			
No support	31.0	15.9	24.3
Social services	13.9	25.8	19.2
Family	9.1	4.0	6.8
Senegalese non relatives	16.0	17.9	16.9
Friends from host country	12.8	23.8	17.8
Other	13.9	11.9	13.0
Unknown	3.2	0.7	2.1
Financial support during unemployment periods			
When unemployed, who did you get support from? [(c)]			
No support	33.8	28.2	30.8
Family	39.7	43.6	41.8
Senegalese non relatives	16.9	12.3	14.4
Friends from host country	7.4	8.6	8.0
Other	0.0	6.1	3.3
Unknown	2.2	1.2	1.7
Since unemployed, who have you got support from? [(d)]			
No support	29.1	35.2	32.5
Family	30.9	47.9	40.5
Senegalese non relatives	9.1	4.2	6.3
Friends from host country	10.9	1.4	5.6
Other	5.5	11.3	8.7
Unknown	14.5	0.0	6.3

[(a)] Among those who ever worked since arrival

[(b)] Among those regularly employed

Source: MIDDAS Survey, 2009

Table 5: **Remittances behavior**

	France		Italy		Total	
	mean	sd	mean	sd	mean	sd
Remittances to any household						
- In cash (%)	76.0	(-)	62.3	(-)	69.1	(-)
- Total amount in euros	2277	(2024)	2551	(1983)	2401	(2008)
- In cash or kind (%)	83.3	(-)	79.1	(-)	81.2	(-)
- Total amount in euros	2338	(2063)	2594	(2051)	2454	(2059)
Remittances to the origin household						
- In cash (%)	75.3	(-)	59.9	(-)	67.6	(-)
- Total amount in euros	2117	(1941)	2373	(1930)	2232	(1938)
- In cash or kind (%)	75.3	(-)	60.3	(-)	67.8	(-)
- Total amount in euros	2177	(1979)	2420	(2002)	2285	(1990)
Observations[(a)]	**300**		**302**		**602**	
Frequency of money transfers (%)						
Monthly	50.4	(-)	66.2	(-)	58.3	(-)
Bimonthly	7.4	(-)	4.5	(-)	5.9	(-)
Quarterly	4.2	(-)	0.3	(-)	2.2	(-)
Annually	0.3	(-)	0.3	(-)	0.3	(-)
Irregularly	36.1	(-)	27.5	(-)	31.8	(-)
Unknown	1.6	(-)	1.3	(-)	1.4	(-)
Sending channel (%)						
Money transfer services	66.8	(-)	83.0	(-)	74.9	(-)
Bank	1.3	(-)	3.1	(-)	2.2	(-)
Post office	6.3	(-)	4.2	(-)	5.3	(-)
Hand-to-hand	9.2	(-)	2.4	(-)	5.8	(-)
Fax/telephone/shopkeeper	14.0	(-)	0.3	(-)	7.1	(-)
Other	0.3	(-)	0.8	(-)	0.5	(-)
Unknown	2.1	(-)	6.3	(-)	4.2	(-)
Observations[(b)]	**379**		**382**		**761**	

[(a)] one observation per migrant

[(b)] one observation per recipient in the origin household

[(b)] remitted amounts are computed on the subsample of migrants with non zero transfers

Source: MIDDAS Survey, 2009

Table 6: **Summary statistics (independent variables)**

	N	mean	sd	min	max
Migrant's characteristics					
Male	602	0.76	(-)	0	1
Age	602	36.45	9.78	18	72
Schooling	602	2.64	1.78	0	5
Migration duration (years)	601	12.10	8.88	1	57
Migrant's income	602	998.84	882.55	0	11250
Permanent occupation	602	0.48	(-)	0	1
Once unemployed	602	0.51	(-)	0	1
Koranic schooling (years)	602	4.37	4.42	0	42
Origin household's characteristics					
Size of origin household	586	11.95	8.87	1	61
Housing score	583	-0.01	0.99	-8.13	0.73
Wealth score	583	-0.00	1.82	-2.42	11.20
Network					
Received help from network for housing	602	0.60	(-)	0	1
Received help from network for job search	602	0.25	(-)	0	1
Received help from network when unemployed	602	0.39	(-)	0	1
Received help from network	602	0.85	(-)	0	1

Source : MIDDAS Survey, 2009

Table 7: **Regression results**

	Probit			Tobit		
	France	**Italy**	**Pooled**	**France**	**Italy**	**Pooled**
Migrant characteristics						
Male	0.2	-0.3	-0.0	419.2	-151.4	214.5
	(0.2)	(0.2)	(0.1)	(302.2)	(436.5)	(254.8)
Age	0.1	0.1*	0.1**	98.5	296.9*	217.2**
	(0.1)	(0.1)	(0.0)	(87.5)	(158.0)	(78.1)
Age squared	-0.0	-0.0	-0.0*	-0.7	-3.5*	-2.3**
	(0.0)	(0.0)	(0.0)	(1.1)	(2.1)	(1.0)
Time since arrival	-0.0	0.0	-0.0	-17.0	83.0**	17.4
	(0.0)	(0.0)	(0.0)	(19.9)	(36.3)	(17.7)
Total income	0.0**	0.0**	0.0***	1.2***	1.0***	1.0***
	(0.0)	(0.0)	(0.0)	(0.2)	(0.2)	(0.2)
Unemployed once	0.3*	0.3	0.3**	515.4*	292.3	375.7*
	(0.2)	(0.2)	(0.1)	(266.3)	(372.0)	(219.0)
Child/spouse of household head	0.2	-0.0	0.1	939.8**	63.5	556.4**
	(0.2)	(0.2)	(0.1)	(287.4)	(375.3)	(233.5)
Dummies for education level	*(Included but not shown)*			*(Included but not shown)*		
Origin household characteristics						
Size	-0.0	0.0**	0.0	-12.9	16.3	-1.9
	(0.0)	(0.0)	(0.0)	(13.1)	(25.7)	(12.4)
Wealth score	0.1	-0.0	0.0	118.8	75.0	79.8
	(0.1)	(0.0)	(0.0)	(86.9)	(94.4)	(63.1)
Other migrants in Europe	-0.0	0.3*	0.2	-33.4	337.1	216.3
	(0.2)	(0.2)	(0.1)	(284.5)	(353.8)	(221.6)
Network variables						
Share of Senegalese in close network	0.4**	0.2	0.3**	155.9	714.5*	453.6*
	(0.2)	(0.2)	(0.1)	(321.5)	(415.6)	(253.1)
Share of senegalese in community	0.2	0.0	-0.0	-325.3	209.8**	161.3*
	(0.3)	(0.0)	(0.0)	(480.3)	(98.8)	(85.3)
Country dummy			0.6***			550.2**
			(0.1)			(245.9)
Constant	-1.4	-3.6**	-3.0***	-2288.3	-8330.0**	-5870.2***
	(1.2)	(1.3)	(0.8)	(1716.6)	(2828.0)	(1511.2)
Observations	**274**	**289**	**563**	**274**	**289**	**563**

Standard errors in parentheses
* (p<0.10), ** (p<0.05), *** (p<0.01)
Source: MIDDAS Survey, 2009

Table 8: **Regression results, robustness check with Koranic Schooling**

	Probit			Tobit		
	France	**Italy**	**Pooled**	**France**	**Italy**	**Pooled**
Migrant characteristics						
Male	0.1	-0.3	-0.1	332.4	-143.1	178.3
	(0.2)	(0.2)	(0.1)	(304.0)	(438.4)	(256.2)
Age	0.1	0.1*	0.1**	94.7	298.8*	213.5**
	(0.1)	(0.1)	(0.0)	(87.0)	(158.3)	(78.1)
Age squared	-0.0	-0.0	-0.0*	-0.7	-3.6*	-2.3**
	(0.0)	(0.0)	(0.0)	(1.1)	(2.1)	(1.0)
Time since arrival	-0.0	0.0	-0.0	-11.8	82.7**	19.2
	(0.0)	(0.0)	(0.0)	(19.9)	(36.3)	(17.7)
Total income	0.0**	0.0**	0.0***	1.2***	1.0***	1.0***
	(0.0)	(0.0)	(0.0)	(0.2)	(0.2)	(0.2)
Unemployed once	0.4*	0.3	0.3**	610.3**	296.6	396.7*
	(0.2)	(0.2)	(0.1)	(269.6)	(372.6)	(219.3)
Child/spouse of household head	0.1	-0.1	0.1	900.8**	61.4	548.7**
	(0.2)	(0.2)	(0.1)	(286.4)	(375.4)	(233.3)
Dummies for education level	*(Included but not shown)*			*(Included but not shown)*		
Koranic schooling (years)	0.0	-0.0	0.0	61.1*	-7.4	29.6
	(0.0)	(0.0)	(0.0)	(32.4)	(36.9)	(24.3)
Origin household characteristics						
Size	-0.0	0.0**	0.0	-12.3	16.4	-1.7
	(0.0)	(0.0)	(0.0)	(13.1)	(25.7)	(12.4)
Wealth score	0.1	-0.0	0.0	121.4	75.7	79.4
	(0.1)	(0.0)	(0.0)	(86.3)	(94.4)	(63.0)
Other migrants in Europe	-0.1	0.3*	0.2	-75.4	337.9	200.3
	(0.2)	(0.2)	(0.1)	(283.8)	(353.8)	(221.7)
Network variables						
Share of Senegalese in close network	0.4*	0.2	0.3**	142.7	720.9*	442.8*
	(0.2)	(0.2)	(0.1)	(319.5)	(416.8)	(252.8)
Share of senegalese in community	0.2	-0.0	0.0	-303.6	205.4**	179.0**
	(0.3)	(0.0)	(0.0)	(478.0)	(101.3)	(86.3)
Country dummy			0.7***			567.6**
			(0.1)			(246.1)
Constant	-1.4	-3.6**	-3.0***	-2480.8	-8320.9**	-5961.2***
	(1.2)	(1.3)	(0.8)	(1711.6)	(2828.1)	(1512.0)
Observations	**274**	**289**	**563**	**274**	**289**	**563**

Standard errors in parentheses
* (p<0.10), ** (p<0.05), *** (p<0.01)
Source: MIDDAS Survey, 2009

Table 9: **Regression results, robustness check with intention to return**

	Probit			Tobit		
	France	**Italy**	**Pooled**	**France**	**Italy**	**Pooled**
Migrant characteristics						
Male	0.2	-0.3	-0.0	444.1	-188.6	219.4
	(0.2)	(0.2)	(0.1)	(302.4)	(436.2)	(254.2)
Age	0.1	0.1*	0.1**	106.6	290.8*	221.0**
	(0.1)	(0.1)	(0.0)	(87.5)	(157.8)	(78.0)
Age squared	-0.0	-0.0	-0.0*	-0.8	-3.4	-2.4**
	(0.0)	(0.0)	(0.0)	(1.1)	(2.1)	(1.0)
Time since arrival	-0.0	0.0	-0.0	-17.8	80.5**	16.0
	(0.0)	(0.0)	(0.0)	(19.9)	(36.2)	(17.6)
Total income	0.0**	0.0**	0.0***	1.2***	1.0***	1.0***
	(0.0)	(0.0)	(0.0)	(0.2)	(0.2)	(0.2)
Unemployed once	0.3*	0.3	0.3**	516.4*	294.8	375.2*
	(0.2)	(0.2)	(0.1)	(265.7)	(371.0)	(218.4)
Child/spouse of household head	0.2	-0.1	0.1	936.0**	53.5	550.3**
	(0.2)	(0.2)	(0.1)	(286.9)	(374.3)	(233.0)
Dummies for education level	*(Included but not shown)*			*(Included but not shown)*		
Intend to return to Senegal	0.2	0.3	0.2	325.4	460.1	384.2*
	(0.2)	(0.2)	(0.1)	(274.9)	(365.5)	(224.7)
Origin household characteristics						
Size	-0.0	0.0**	0.0	-14.0	17.3	-2.7
	(0.0)	(0.0)	(0.0)	(13.1)	(25.6)	(12.4)
Wealth score	0.1	-0.0	0.0	118.6	78.6	82.2
	(0.1)	(0.0)	(0.0)	(86.7)	(94.3)	(63.0)
Other migrants in Europe	-0.0	0.4**	0.2*	-7.0	398.1	258.9
	(0.2)	(0.2)	(0.1)	(284.8)	(356.3)	(222.5)
Network variables						
Share of Senegalese in close network	0.4*	0.2	0.3**	83.2	667.1	389.7
	(0.2)	(0.2)	(0.1)	(326.6)	(416.3)	(255.2)
Share of senegalese in community	0.2	-0.0	-0.0	-272.0	199.4**	154.7*
	(0.3)	(0.0)	(0.0)	(481.4)	(98.9)	(85.1)
Country dummy			0.7***			551.8**
			(0.1)			(245.3)
Constant	-1.6	-3.7**	-3.1***	-2491.8	-8297.5**	-5978.5***
	(1.2)	(1.3)	(0.8)	(1722.2)	(2823.8)	(1510.2)
Observations	**274**	**289**	**563**	**274**	**289**	**563**

Standard errors in parentheses
* (p<0.10), ** (p<0.05), *** (p<0.01)
Source: MIDDAS Survey, 2009

References

Aguilera, Michael Bernabé. 2002. "The Impact of Social Capital on Labor Force Participation: Evidence from the 2000 Social Capital Benchmark Survey." *Social Science Quarterly* 83 (3):853–874.

———. 2005. "The impact of social capital on the earnings of Puerto Rican migrants." *Sociological Quarterly* 46 (4):569–592.

Chort, Isabelle. 2010. "Migration Networks in Senegal."

de la Briere, Benedicte, Elisabeth Sadoulet, Alain de Janvry, and Sylvie Lambert. 2002. "The roles of destination, gender, and household composition in explaining remittances: an analysis for the Dominican Sierra." *Journal of Development Economics* 68 (2):309–328.

Dia, Hamidou. 2007. "Le portable dans la vallée du fleuve Sénégal." *Agora* 46:70–80.

———. 2009. *Espaces domestiques, espaces villageois, espaces urbains multi-situés. Cinquante de migrations à partir de la moyenne vallée du fleuve Sénégal (1960-2010).* Ph.D. thesis, University of Paris V.

Drever, Anita I and Onno Hoffmeister. 2008. "Immigrants and Social Networks in a Job-Scarce Environment: The Case of Germany." *International Migration Review* 42 (2):425–448.

Durand, Jorge, William Kandel, Emilio A. Parrado, and Douglas S. Massey. 1996. "International Migration and Development in Mexican Communities." *Demography* 33 (2):249–264.

Elia, Anna. 2006. *Les Foulbé de la vallée du Sénégal en Italie.* Paris: L'Harmattan.

Granovetter, M.S. 1995. *Getting a job: a study of contacts and careers.* University of Chicago Press.

Lin, Nan. 1999. "Social Networks and Status Attainment." *Annual Review of Sociology* 25:pp. 467–487.

Lydié, N., P. Guilbert, and G. Sliman. 2007. "Exemple de méthodologie pour une enquête auprès des populations d'Afrique subsaharienne." Colloque francophone sur les sondages.

Mazzucato, Valentina. 2009. "Informal Insurance Arrangements in Ghanaian Migrants' Transnational Networks: The Role of Reverse Remittances and Geographic Proximity." *World Development* 37 (6):1105 – 1115.

Mboup, Mourtala. 2001. *Les Sénégalais d'Italie.* Paris: L'Harmattan.

McKenzie, David J. and Johan Mistiaen. 2009. "Surveying migrant households: a comparison of census-based, snowball and intercept point surveys." *Journal of the Royal Statistical Society* 172 (2):339–360.

Menjívar, Cecilia. 2002. "The Ties that Heal: Guatemalan Immigrant Women's Networks and Medical Treatment." *International Migration Review* 36 (2):437–466.

Mouw, Ted. 2002. "Racial differences in the effects of job contacts: Conflicting evidence from cross-sectional and longitudinal data." *Social Science Research* 31 (4):511 – 538.

Munshi, Kaivan. 2003. "Networks in the Modern Economy: Mexican Migrants in the U. S. Labor Market." *The Quarterly Journal of Economics* 118 (2):549–599.

Philpott, Stuart B. 1968. "Remittance Obligations, Social Networks and Choice Among Montserratian Migrants in Britain." *Man* 3 (3):pp. 465–476.