A Work Project, presented as part of the requirements for the Award of a Master's degree in Economics from the Nova School of Business and Economics.

THE ROLE OF MIGRANT GRIT CHARACTERISTICS AS A DETERMINANT OF REMITTANCES

MARGARIDA BARRADAS VELEZ CAROÇO

Work project carried out under the supervision of:

Cátia Batista

18/12/2023

Abstract

Financial remittances sent by Cape Verdean immigrants living in Portugal is a fundamental source of external funding for Cape Verde. The existing literature on remittances sets altruism and self-interest as the leading motives for migrants to send transfers abroad. This paper provides a new contribution by examining how the grit levels of migrants, a non-cognitive characteristic linked with perseverance, influences their decision to remit. It is found that higher degrees of grit significantly raise the likelihood of sending remittances to family in the home country, in addition to altruistic and self-interested motives to remit.

Keywords: International Migration, Remittances, Grit, Altruism, Self-Interest

This work used infrastructure and resources funded by Fundação para a Ciência e a Tecnologia (UID/ECO/00124/2013, UID/ECO/00124/2019 and Social Sciences DataLab, Project 22209), POR Lisboa (LISBOA-01-0145-FEDER-007722 and Social Sciences DataLab, Project 22209) and POR Norte (Social Sciences DataLab, Project 22209).

1. Introduction

The volume of migrant remittances has grown steadily over the years. Remarkably, remittances from international migrants sent to their origin countries have emerged as the predominant source of external finance for low- and middle-income countries. Remittance financial flows surpassed official development aid by more than threefold for over a decade (Ratha et al., 2022). Constituting a significant portion ranging from 5 to 50 percent of these countries' gross domestic product, the remitted inflows play a crucial role in alleviating poverty and fostering development.

There is a long-standing tradition of economics literature on migrant remittances and on the motivations for sending them. The different possible motives for migrants sending money home include pure altruism, reflecting the migrant's care for the family back in the origin country (Becker 1974, Lucas and Stark 1985), social responsibility to repay the first travel and migration costs (Osili 2007, Chort et al. 2012), household insurance to smooth consumption when faced with shocks in the home country (Yang 2007, Amuedo-Dorantes and Pozo 2006), migrant self-insurance to shocks encountered by migrants at destination (Batista and Umblijs 2016) or the desire to invest and inherit assets in the origin country as a way to increase the migrant's social prestige at origin (Lucas and Stark 1985). These main remittance motivations can be categorized broadly as altruistic, as opposed to all other self-interested motives (encompassing repayment, income smoothing, self-insuring, and social prestige).

Departing from the existing frameworks to study remittance motives, this paper will focus on the role played by individual characteristics of migrants, in specific a non-cognitive characteristic that may play an important role in remittance behavior. Grit, the tendency to pursue especially long-term goals passionately and persistently, is a non-cognitive characteristic that has been shown to predict significant success and achievement across various individual performance domains such as leadership, organization, and job performance

(Southwick et al. 2019). Individuals with grit levels that are higher than average have greater overall performance and a higher chance of keeping their jobs (Lucas et al. 2015). Being more permanently employed guarantees a steady income flow, which is necessary to be able to remit money. In this way, grit may be important to explain migrant transfers sent home.

To the best of our knowledge, the relationship between immigrant grit characteristics and remittance behavior has not been studied before. This paper proposes and tests the hypothesis that migrants with high grit levels may have an improved chance of acquiring a job abroad due to enhanced performance and perseverance in facing challenges, increasing income and decreasing wage risk, henceforth being more likely to remit and remit larger amounts home.

As such, this paper will examine the determinants of remittance sending behavior by migrants. First, by analyzing altruistic motives, proxied by family networks, as certain relatives left behind may increase or decrease the economic and mental burden of sending money home (Batista and Neves 2022). Next, by examining self-interest motives through income fluctuations experienced by the immigrant in the destination country, the number of hours the immigrant worked and the employment status of their family at origin (Bettin 2012, Batista and Umblijs 2016). Finally, materializing our original contribution to the literature, we will also examine non-cognitive characteristics of remitting migrants by including measures for individual grit.

This paper adds to the existing literature by adding a new perspective on the factors influencing migrant remittances, the importance of non-cognitive migrant characteristics. Section 2 will examine the economics literature on migrant remittance patterns as well as literature on how to measure grit and its effects. Section 3 goes over the theoretical framework for accessing migrant motives for remitting. Section 4 gives context on the Cape Verdean community in Portugal and describes the data source and descriptive statistics, Section 5 the variables of interest, and Section 6 the empirical strategy. Finally, Section 7 presents the economic results and discussion, Section 8 checks for validity, and Section 9 concludes.

2. Literature Review

Lucas and Stark (1985) began the first theoretical discussion on the factors influencing transfers from migrants in Botswana. Their unit of study was the household, and they hypothesized pure altruism, self-interest, or an intersection of the two as primary motives for transfers. Pure altruism, the most natural to assume, accounts for the simple care that individuals have for one another. That is, migrants will remit more when their family is facing poverty, burdens to health or negative shocks to income because they care about their wellbeing. The self-interest motive relates to the immigrant's own well-being usually without the regard for others such as the desire to inherit or invest in assets.

To empirically test the motives, prior studies have predominantly employed two methodologies (Batista and Umblijs 2016). The first suggests that an inverse relation between the family income and the migrant remittances signifies altruism, whereas a positive correlation implies self-interest. That is, those remitting due to care for their relatives, will increase the amount remitted when their home networks are faced with lower income values. Alternatively, migrants increase remittances when home networks have higher income values, allowing for a higher individual payoff. In testing this theory empirically, economists have found both the self-interest motive to be driving, for instance, as a form of self-insurance (Lucas and Stark 1985) and the altruism motive to be driving (Faini 2007, Argawal and Horowitz 2002).

The second methodology involves the wage risks immigrants may encounter in the destination country. The prediction is that migrants will be more inclined to remit when confronted with wages that are more uncertain. Here, altruism and self-interest are likely at play together but it's easier to defend self-interest as riskier wages raise concern to protect oneself.

Overall, migrants tend to send transfers and transfer greater amounts when they place a higher value on their home networks (Chort et al. 2012). A positive relation has been identified between the family size back home and the proportion of transfers sent, suggesting that both

altruism and insurance motives are present simultaneously. Moreover, Amuedo-Dorantes and Pozo (2006) found that for each family member living back in the origin country increases the probability of migrants sending transfers.

Besides, Rapoport and Docquier (2006) found that it's a mixture of individual and family motives that work together to explain both the likelihood and volume of remittances sent. In another context, the estimation of remittances has allowed to conclude that disparities in unobservable characteristics of migrants are central in understanding how migrants self-select to remit (Funkhouser 1995). The decision to remit varies among migrants, with distinct categories of migrants exhibiting different reasons to remit (De la Briere 2002).

Focusing next on migrant non-cognitive characteristics, the literature is quite recent and finds that non-cognitive skills are crucial to migrant assimilation in the host country with increased labor market success (Akay and Yilmaz 2023) and a greater willingness to take risks. This allows the decision to immigrate to another country to take place and to tackle new challenges with passion (Ayhan et al. 2020). Additionally, migrants in Australia have been shown to be consistently more conscientious and open to experience, regardless of their gender (Nejad and Schurer 2022). Furthermore, a positive and significant correlation has been found between the migrants' desires to take risks and be entrepreneurs (Batista and Umblijs 2014). This is in line with the idea that migrants are more apt to take on challenges, such as self-employment, and be motivated in the long-term by perseverance and passion in doing so.

As for the non-cognitive skill grit, individuals with high grit levels have strong desires to complete long term goals, don't give up easily and are motivated to accomplish a task regardless of the time it takes to complete it. It is further known that students with more grit have a higher chance to successfully graduate from high school, and employees with a greater degree of grit are more likely to retain their jobs (Alan et al. 2019).

To measure grit, Duckworth (2007) created a self-report questionnaire known as the Grit Scale. This scale involves rating items, ranging from 1 = *not at all like me* to 5 = *very much like me*. Today, the official scale includes ten items ranging from passion towards individual goals, i.e., "new ideas and projects sometimes distract me from previous ones" and perseverance, i.e., "setbacks don't usually discourage me. I don't give up easily". With any self-report, the grit scale is susceptible to limitations such as social desirability bias, as participants may want to make themselves look better, but despite this, self-test instruments provide useful and valid measures (Lucas and Baird 2006).

The literature exploring grit in migrants is new[1] and as to what concerns remittances, the relation between grit characteristics and remittance behavior has not yet been explored to the best of our knowledge.

3. Theoretical Framework

To study the determinants of remittances from Cape Verdean immigrants in Portugal, we must first establish a clear theoretical framework. The model we propose illustrates the different motives for remittances, encompassing altruism, self-interest, and other exchange motives, while allowing for their potential combination. That is, in this model, all the different motives are at play simultaneously, provided that their marginal benefits are equalized, and thus the motives are non-exclusive. The model described serves as an augmentation of the theoretical frameworks put forth by Batista and Umblijs (2016) and Amuedo-Dorantes and Pozo (2006).

Let us examine a two-period model where the individual is the migrant. In period 1, individuals earn a sure income of Y_H and in period 2, the individuals earn an uncertain amount Y_H or Y_L given that $Y_H > Y_L$. As such, the inter-temporal utility function of the immigrant is:

$$U = \omega \ln C_1 + (1 - \omega) \ln a + \delta \ln C_2 + \gamma \ln N \quad (1)$$

[1] Tovar-García 2017, Zhang et al. 2022

The weighing parameter, ω, where $0 < \omega < 1$, denotes the migrant's consumption utility in period 1, C_1, in comparison to the altruistic transfers made to the relatives in the origin country, a. Next, the discount factor $\delta < 1$, specifies the migrant's relative tastes between current and future consumption, C_2. Finally, γ being $0 < \gamma < 1$, represents the weighing parameter associated with the utility derived from the migrant's non-cognitive characteristic grit, N. We assume that preference parameters, ω, δ, γ, are time-invariant and exogenously given.

Given the uncertainty in income earned in period 2, the migrant has the option to self-insure for personal protection. Specifically, the migrant can opt to make a payment x to their family at home, during time 1, leading to a linear payoff $h(x)$ in time 2. Making more payments in time 1 enhances protection, as denoted by $h'(x) > 0$, but at a diminishing rate, $h''(x) < 0$. We further assume the amount of self-insurance is not complete, $h(x) < Y_H - Y_L$.

In this model, the primary difference between altruism and self-interest is that the altruistic payment entails that the migrant does not expect anything in return from the family members at home, whereas with the self-interest payment, namely self-insurance, there is an exchange among the migrant and the receiving family member if the uncertain scenario occurs in period 2 and the migrant receives Y_L.

Additionally, migrants have the option to invest by setting aside an amount z from their income in time 1, Y_H. This investment will later yield interest with return rate r in time 2, irrespective of which state of nature takes place. In a broader interpretation, z can represent savings, asset investment or a transfer motivated by exchange from the immigrant to their family at home, yielding returns in period 2 at a rate of $(1 + r)$. Note that this investment is always available to the migrant in period 2 even if the bad state Y_L occurs.

Moreover, the non-cognitive characteristic grit is assumed to affect migrant remittances sent in two distinct ways. The first is by increasing the likelihood of the good state of nature and the second is through an increase in income levels, Y_H and Y_L. That is, the chances of the bad state

of nature occurring are smaller when the migrant exhibits higher grit, and migrants are also able to receive more income regardless of the state of nature because grit is correlated with enhanced work performance[2].

As such, the migrant budget constraints for periods 1 and 2 are defined as follows:

$$C_1 \leq Y_H - x - z - a \tag{2}$$

$$C_2 \leq (1 - f(N))(Y_L(1+\text{g(N)}) + h(x) + \text{z}(1 + r)) + f(N)(Y_H(1+\text{g(N)}) + \text{z}(1 + r)) \tag{3}$$

During period 1, consumption is thus constrained by the migrant's decision to allocate their income for self-insurance, altruism, or savings. In period 2, the non-cognitive characteristic, N is assumed to raise the probability of the good state of nature. The migrant thus expects the occurrence of the bad state with probability (1- $f(N)$) and the good state with probability $f(N)$, in which the function $f(N)$ is increasing in migrant grit levels, N. Additionally, note that with higher grit levels, the income level is greater in both states of nature. The income the migrant receives increases based on their grit level as denoted by the function g(N) which is also increasing in grit levels. If the unfavorable state of nature unfolds, consumption is limited by the lower income amount Y_L (1+g(N)), the payoff from home $h(x)$ and the principal and return z(1 + r). Conversely, if the good state of nature takes place, consumption is constrained by the higher income amount Y_H(1+g(N)) and the principal and return z(1 + r).

Hence, the migrant must maximize their expected inter-temporal utility (1) conditional on the budget constraints (2) and (3). The migrant will choose their consumption for period 1 and 2 (C_1 and C_2 respectively) as well as the amount of altruistic payments (a), self-insurance from family members (x), and how much to invest or save (z).

The first order condition with respect to altruism is expressed as:

$$\frac{\partial U}{\partial a} = \omega a - C_1(1 - \omega) = 0 \quad \text{or} \quad \frac{a}{1-\omega} = \frac{C_1}{\omega} \tag{4}$$

[2] Duckworth 2007, Southwick 2019, Alan et al. 2019

Which states that at the optimal, the altruistic payments and the migrant's period 1 consumption are consistent with the weights towards their own utility and their family's utility back in the origin country, that is, depending on their preference parameter, $(1-\omega)$ and ω respectively.

Next the two first order conditions with respect to self-insurance and savings are given by:

$$\frac{\partial U}{\partial x} = \omega C_2 - C_1\delta(1-f(N))h'(x) = 0 \quad \text{or} \quad C_2 = \frac{C_1}{\omega}\delta(1-f(N))h'(x) \tag{5}$$

$$\frac{\partial U}{\partial z} = \omega C_2 - C_1\delta(1+r) = 0 \quad \text{or} \quad C_2 = \frac{C_1}{\omega}\delta(1+r) \tag{6}$$

At the optimum, the migrant's relative consumption in time 2 to consumption in time 1 depends on the marginal contribution of the insurance given by the family at origin and on the marginal contribution of saving or investing an amount of their income.

Using the implicit function theorem with the conditions derived above we obtain[3] :

$$\frac{\partial a}{\partial N} = 0 \tag{7}$$

$$\frac{\partial x}{\partial N} < 0 \quad \text{or} \quad \frac{\partial x}{\partial N} > 0 \tag{8}$$

The results give us testable hypotheses for migrant remittances and the migrant non-cognitive characteristic grit. First, expression (7) states that altruistic payments are independent of grit levels and expression (8) states that migrants grit levels affect self-insurance transfers in an indetermined manner. On one hand, higher grit levels decrease remittances sent by the decrease in the likelihood of the poor state occurring and the need for self-insurance transfers is lower. On the other, higher grit levels increase migrant remittances as it is assumed that higher degrees of grit increase income levels on average. Hence, migrants with higher grit characteristics will either be more likely to remit and in greater quantities because of their higher income, or the opposite, remit less due to the decreased risk in facing the bad state of nature.

---

[3] $\frac{\partial x}{\partial(1-f(N))} = -\frac{\frac{\partial FOC_x}{\partial(1-f(N))}}{\frac{\partial FOC_x}{\partial x}} = -\frac{w(h(x)+Y_L(1+g(N)-Y_H(1+g(N))-C_1\delta h'(x)}{w(1-f(N))h'(x)-C_1\delta f(N)h''(x)+\delta(1-f(N))h'(x)} > 0$

$\frac{\partial x}{\partial g(N)} = -\frac{\frac{\partial FOC_x}{\partial g(N)}}{\frac{\partial FOC_x}{\partial x}} = -\frac{w((1-f(N))Y_L(1+g(N))+f(N)Y_H(1+g(N)))}{w(1-f(N))h'(x)-C_1\delta f(N)h''(x)+\delta(1-f(N))h'(x)} < 0$

4. Empirical Strategy

Following the theory presented, we wish to understand how altruistic and self-interested motives drive remittance behavior, and whether the grit characteristics of immigrants influence the remittances sent by either decreasing the immigrant wage risk or by increasing income levels.

We regress two dependent variables, whether the immigrant sends transfers and the amount of transfers sent in euros on a set of variables. The equations are summarized below:

$$R_i = \alpha + \beta_1 altruism_i + \beta_2 self\ interest_i + \delta X_i + \varepsilon_i \quad (9)$$

$$R_i = \alpha + \beta_1 altruism_i + \beta_2 self\ interest_i + \beta_3 Grit_i + \delta X_i + \varepsilon_i \quad (10)$$

i denotes individual *i*. R_i thus takes two values to determine remittances behavior. First, a dummy variable which equals 1 when migrants have sent either cash or in-kind remittances within the last year. Second, the continuous variable with the value of cash and in-kind remittances sent by the migrant in euros within the last twelve months. Finally, X_i represents the vector of migrant control variables which include the individual migrant characteristics such as *age*, *income*, *education,* and *gender* - all of which serve to counter any potential omitted variable bias and ensure precision in estimation.

The first equation (9) includes the two main factors that help explain remittance behavior, altruistic motives and self-interest motives. For each of the two main motives, we chose a set of variables that are associated with the respective reason for remitting. The altruism motive, $altruism_i$, is encompassed by the three close family members at the origin country, that is parents, partners, and children of the migrant living in Cape Verde. The self-interest motive, $self\ interest_i$, is proxied by three variables: the migrant employment contract duration which serves to understand the risk the migrant encounters to income in the destination country, the employment of the origin household to comprehend earnings of family members in Cape Verde,

and finally the hours worked by the migrant to recognize effort behind earnings. Altogether, the purpose of this equation is to discern the driving factors for Cape Verdean migrants to remit.

The second equation (10) is a repetition of the first but with the new addition of the migrant grit index. $Grit_i$ gives the level of the non-cognitive characteristic grit for each migrant *i*. The measurement and more details on grit are described further below. The objective of this second equation is to observe how the non-cognitive characteristic grit influences remittance behavior in migrants. Based on the theoretical hypotheses discussed above in which migrants with higher grit levels have a higher income on average and are further able to decrease the risk they face from an increased likelihood in observing the good state in period 2. We expect grit to impact the remittances sent by migrants.

We estimate equations (9) and (10) using Ordinary Least Squares. Our main coefficient of interest is β_3, which gives the effect of migrant grit characteristics on sending remittances. Moreover β_1 and β_2 will also be important to better understand the relative importance of altruism and self-interest as motives for sending remittances.

5. Cape Verde Context, Data Source and Descriptive Statistics

Cape Verdean Community in Portugal

Cape Verde became independent from Portugal in 1975 and has grown into a country of migration since the 1990s. At the same time, Portugal began receiving inflows of people from various nationalities. During the decade leading up to 2021, immigrant residents in Portugal increased by 40%. Meanwhile in 2021, 61.9% of Cape Verdean migrants chose to go to Portugal and 56.2% of those migrants were aged 15 to 29 (INE CV 2021). Moreover, according to INE 2021, Cape Verdean immigrants constitute 8.6% of the resident population in the Lisbon Metropolitan Area and 6.7% of the resident population in Portugal, making up the third largest immigrant community in Portugal. This is important for what regards labor force participation

as in Cape Verde, approximately 71.8% of the total population constitutes the labor force, population aged 15 or older (IMC 2022). Whereas in Portugal, only approximately half of the total population constitutes the labor force (World Bank data 2022).

Regarding remittances, the scale of transfers received in Cape Verde is substantial, accounting for approximately 15% of GDP in 2021 (World Bank data 2022). These remittances include both monetary and non-monetary transfers such as clothes, toys, and books. In fact, remittances from migrants abroad are the greatest source of external financial flows in Cape Verde. Of the entire Cape Verdean community living abroad, the migrants in Portugal send the greatest number of remittances as seen in Figure 1 in the Appendix. It is crucial to further mention that these are all official numbers which do not account for informal transfers, meaning that these results are likely underestimated, and the number of transfers may be even greater.

Data Source

The data utilized in this paper was gathered from a series of interviews that took place during September 2020 to June 2021. The sample of interest consists of a representative pool of the community of immigrants from Cape Verde in the Lisbon Metropolitan Area. There are a total of 819 immigrants aged 18 to 65, all of which arrived in Lisbon at least five years before the survey was conducted and reside in the Lisbon Metropolitan Area. Finally, to ensure the highest probability of surveyed individuals having contacts in the home country, the migrants could not have any nationality besides from Cape Verde.

Next, the interrogation was conducted in Cape Verdean Creole and by Cape Verdean enumerators to maximize trust, ease communication and ensure the highest quality answers. The enumerators underwent trainings led by the research coordinators and received ongoing supervision from research team members to enhance data quality. Additionally, the collected data was reviewed daily and checked for abnormalities or inconsistencies. Moreover, all individuals taking part in the survey were told that the collected data was treated anonymously

and made confidential, solely for research and academic purposes. Altogether, the researchers and field coordinators met once a week where they discussed overall progress and ensured quality procedures were being followed. The survey's design and the execution of the data collection guarantee an accurate representation of the community of immigrants from Cape Verde in the Lisbon Metropolitan Area.

Descriptive Statistics

All the descriptive statistics of the Cape Verdean immigrants surveyed are found in Table A1 in the Appendix. The immigrants interviewed are 28 years old on average. 57% are female and 43% are male. In terms of education, approximately 1% have no schooling, 53% have completed high school, and the remaining 46% have enrolled in college. Of those in college, only 13% were able to complete their education (includes Bachelors, Masters and PhD). Those employed are more than half of the sample, 64%, and most of them have temporary contracts for less than a year, 42%, while 25% have a permanent contract. At home, 91% speak Cape Verdean Creole and only 9% speak Portuguese. Finally, the great majority of the sample is catholic, 77%.

The most popular reason to migrate to Portugal in this sample is to study, 50%, and next for better job opportunities, 17%. The following reasons include family 9%, health 8%, looking for a better job 6%, wanting to stay after visiting 5% and lastly for financial reasons 4%.

88% of immigrants have close family members living in Cape Verde which include, parents, partners, or children. That is, back in the origin country, 90% have their parents, 16% have their partners, and 35% have their children.

In our sample, 65% of immigrants sent remittances in cash within the last twelve months and 39% sent in-kind remittances within the last year. The average value of cash transfers sent is 495 euros and the average amount of in-kind remittances sent within the last twelve months is 108 euros. Furthermore, despite the female average monthly income being lower at 442 euros

compared to the male average monthly income of 622 euros, the proportion of females who remit cash is greater, 60%. Overall, females sent on average 443 euros in cash within the last twelve months whereas males sent on average 565 euros in cash within the last twelve months. That is, if the average monthly female income was higher, then females would likely remit more abroad. Finally, 95% of cash remittances are used for consumption, 4% for in school expenses, 3% for household investment, another 3% for health expenses, 1% for business investment and another 1% for savings.

6. Description of Variables

Dependent Variable

To study the main determinants of remittances, we use two variables aimed at measuring remittance behavior: A dummy variable, that equals 1 if the migrant sent cash or in-kind remittances to close family members (parents, partners or children living in Cape Verde) during the last twelve months and 0 if not, and, a continuous variable which tells the value of cash and in-kind remittances, in euros, sent to the close family members during the last twelve months. Both variables only account sending remittances to the three close family members that are back in the home country, as this paper intends to look closely at the role of each member on remittances sent. On average, 73% of migrants in our survey sent remittances within the last twelve months, which include both monetary and non-monetary transfers, and the value that is sent within the same time span is 603 euros on average.

Variables of Interest

To understand remittance behavior, we include proxies for altruism and self-interest motives as well as a measure for migrant grit levels.

The variables behind the altruism motive include a dummy variable for each close family member in Cape Verde. $Kids_i$ is a dummy variable which equals 1 if the migrant i has kids

back in Cape Verde and 0 otherwise. $Parents_i$ is a dummy variable that equals 1 if the migrant *i* has parents living in Cape Verde and 0 if not. Finally, $Partner_i$ is a dummy variable which equals 1 if the migrant *i* has their partner back in Cape Verde and 0 otherwise.

Next, the self-interest motive is proxied by four variables. The employment contract duration, temporary or permanent, serves to understand the risk the migrant experiences to income in the destination country (Amuedo-Dorantes and Pozo 2006, Batista and Umblijs 2016). First, $permanent\ contraact_i$, a dummy variable that equals 1 if the employment contract is permanent, meaning there is no set end date, and equal to 0 otherwise. Second, $temporary\ contraact_i$, another dummy variable that equals 1 if the employment contract is temporary, being either for less than a year or for more than a year, and the value 0 otherwise. Contracts that are temporary involve more risk than permanent contracts as there is more risk associated with a job that has a for sure end date within the near future. Next, the variable $newtork\ employment_i$, a dummy variable that equals 1 if the migrant's family network at origin is employed and 0 if not, which serves as a proxy for their respective income levels. This is important in what regards the insurance payoff received from the migrant sending transfers home as insurance. Lastly is included $hours\ worked_i$, a continuous variable that gives the number of working hours for a migrant during an average week at the destination country. The time spent working serves to account for the migrant's effort to receive greater earnings.

Finally the variable $grit_i$, an index calculated by summing the average result of a set of statements used to assess migrant commitments to achieving long-term goals and levels of perseverance. Each statement constitutes of a phrase that is associated with for instance, completing a certain task or the passion in persevering towards a specific goal. Examples include "I finish what I start" and "I can easily explain what I wish to accomplish in life". The complete interview questions with the set of statements on grit are in Table A3 in the Appendix. Finally, the index ranges from 1 – *not at all like me* to 5 – *very much like me*. That is, a high

value closer to 5 is associated with the migrant seeing themselves in accordance with the statement whereas as a lower value closer to 1 is the opposite, the migrant does not see themselves as the statement proposes. On average, the migrants surveyed have an overall grit index of 3.6 out of 5, a high value, as expected, because the decision to leave the home country and start new abroad requires determination. Finally, to ease interpretation in the regression, we normalized the index scale from negative 1 – *not at all like me*, to positive 1 – *very much like me*. Values closer to negative 1 indicate lower grit and closer to positive 1 is higher grit.

Control Variables

Moreover, the set of controls for the migrant include the following variables: total net monthly income, level of education, age, and gender. First, it is important to account for the net monthly earnings of the migrant, as the probability of sending transfers tends to increase with higher income levels (De la Briere et al. 2002, Yang 2007, Batista and Narciso 2018). Next, the education level of the immigrant is also included as a dummy variable that equals 1 if the migrant completed at least the high school level education, and 0 otherwise. The effect of education has been shown to either increase remittances (Ratha 2003, Doquier 2017) or decrease them (Faini 2007, Niimi 2010). Finally, the age and gender of the migrant are also accounted for to control for differences in the two.

7. Econometric Results and Discussion

The outcomes of the estimation models (9) and (10) using the two dependent variables are shown below. The dependent variable sending or not remittances is reported in Table 1, and the dependent variable with the value of remittances sent is shown in Table 2.

Probability of Sending Remittances

In Table 1 column (1), we find that both altruism and self-interest motives are present. Looking first at the family members, the child left back significantly increases the likelihood

of sending remittances. Having a child back in the origin country shows to be the most significant determinant in sending remittances and this remains true for all columns in Table 1. That is, even with the addition of the migrant controls in column (3), the only close family member living in Cape Verde that significantly increases the probability and number of transfers sent at the 1% significance level, is the child. Having one more kid back in the home country significantly increases the likelihood of the migrant sending transfers by 15.9 p.p. per year. Moreover, having a parent or partner living in the origin country does not seem to significantly increase the probability of sending transfers.

Table 1 – Determinants on the Probability of Sending Remittances

	Probability of Sending Remittances		
	(1)	(2)	(3)
	Altruism and Self-Interest	Grit	Migrant Controls
Kids	0.155***	0.146***	0.159***
	(0.036)	(0.036)	(0.040)
Partner	0.077*	0.071	0.076
	(0.047)	(0.046)	(0.047)
Parents	-0.006	0.005	0.010
	(0.059)	(0.059)	(0.060)
Temporary Contract	0.103**	0.098**	0.107**
	(0.045)	(0.045)	(0.048)
Permanent Contract	0.119**	0.119**	0.130**
	(0.052)	(0.052)	(0.055)
Network Employment	-0.021	-0.019	-0.027
	(0.037)	(0.037)	(0.038)
Hours Worked	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)
Grit		0.178***	0.177***
		(0.065)	(0.066)
Age			-0.002
			(0.003)
Income			0.000
			(0.000)
Education			-0.103
			(0.359)
Female			0.026
			(0.035)
Constant	0.696***	0.634***	0.738*
	(0.078)	(0.080)	(0.394)
N	427	427	422
r2	0.084	0.101	0.106
F	5.509	5.841	4.033

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Next, the outcomes for the employment contract duration are all statistically significant at the 5%. Meaning that both a temporary and permanent contract significantly increase the probability of the migrant sending remittances. In column (3), with the migrant controls, a permanent contract increases the likelihood of sending remittances by 13.0 p.p per year and a temporary contract by 10.7 p.p. per year. In this case, a permanent contract increases the likelihood of transfers sent per year by a few more percentage points than a temporary contract. Next, neither the employment of the family network at origin or the number of hours worked by the migrant significantly increase the chances of migrant's sending transfers.

As for our main variable of interest grit, we observe significance at the 1% level in columns (2) and (3). Higher levels of grit characteristics in migrants are positively related with the probability of sending remittances and this result is significant. Such goes in line with the theory discussed as with greater levels of grit, the more income the migrant may have available for transfers. An increase in the migrant's level of grit by one unit, increases the probability of sending remittances by 17.7 p.p per year. This is a greater increase in percentage points in comparison to the increase that was observed for either having a child back in the home country or for the employment contract duration being temporary or permanent.

Amount of Remittances Sent (in euros)

Now in Table 2, on the value of migrant remittances sent, having kids back in the origin country shows, once more, to be the most significant determinant. In this case a child of a migrant left back in Cape Verde positively and significantly increases the amount of money sent at the 1% level. Having one more kid living back in Cape Verde increases the number of transfers sent by 840 euros per year on average, as seen in column (3) when all the migrant controls are added. This is truly a significant amount of money sent, being much larger in comparison with the other coefficients in the regression. We can conclude that the only close family member that significantly increases the behavior of remittances sent and the amount in

euros sent is children. As before, a parent or partner back in the home country does not significantly increase the number of transfers.

Next, on the income risk lived by the migrant. Having a permanent contract does not seem significant while a temporary employment contract significantly increases the amount of money sent at both the 1% and 5% levels. With the migrant controls, a temporary contract increases the number of remittances by 345 euros per year on average. This goes in line with the self-insurance motive, as with higher wage risks, the need to self-insure as protection is greater.

Table 2 – Determinants on the Amount of Remittances Sent (in euros)

	Amount of Remittances Sent		
	(1)	(2)	(3)
	Altruism and Self-Interest	Grit	Migrant Controls
Kids	976.467***	958.454***	840.980***
	(128.356)	(128.796)	(143.893)
Partner	-172.978	-184.376	-200.743
	(167.465)	(167.435)	(168.840)
Parents	118.402	140.618	203.926
	(210.792)	(211.081)	(214.747)
Temporary Contract	422.294***	415.330**	345.170**
	(161.672)	(161.536)	(169.910)
Permanent Contract	275.611	278.011	150.471
	(185.683)	(185.452)	(195.109)
Network Employment	-7.031	-3.253	69.613
	(132.610)	(132.466)	(135.661)
Hours Worked	-0.958	-0.906	-3.245
	(3.878)	(3.874)	(4.232)
Grit		338.366	212.069
		(234.045)	(237.748)
Age			22.790**
			(10.409)
Income			0.457
			(0.278)
Education			883.569
			(1287.759)
Female			77.042
			(126.512)
Constant	177.144	57.558	-1689.419
	(278.358)	(290.046)	(1409.352)
N	432	432	427
r2	0.151	0.156	0.175
F	10.810	9.744	7.330

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Lastly, the grit characteristic in migrants is no longer significant when measuring the amount of transfers sent. That is, the level of grit displayed by the migrant does not seem to have an impact on the quantity of money that is transferred to the household in Cape Verde. Although not significant, the coefficient for the grit index remains positive.

Discussion

Overall, our results suggest that there is evidence of altruism at play by the significant and positive relation between having a child in Cape Verde and the likelihood of sending transfers plus the amount in value that is sent. Given that this remains true with the controls, migrants are indeed sending remittances due to the fact of having a child back in the origin country which likely stems from an altruism motive. Such is not true however for the other close family members left back which tells us that the level of altruism differs depending on the relation to the relative. In this case, having children is a crucial determinant and can be justified by the fact that a child perhaps requires more aid and the bond within a parent and their child is stronger.

Moreover, in line with previous studies[4], migrants on temporary employment contracts tend to send higher transfer amounts as they face greater wage risks. That is, migrants who have a greater uncertainty regarding the income they receive, will send more remittances abroad as a means of self-insurance, which is encompassed in the self-interest motive. These results are further in accordance with Figure 2 in the Appendix in which a diagram depicts the motives for sending transfers and includes the self-insurance motive as precautionary savings in the case of increased exposure to risk in the destination country.

Finally, there is no doubt that grit proves to be a significant non-cognitive characteristic among migrants. However, the number of remittances sent in euros is not significantly greater for those with higher grit levels. In this paper, we present compelling new evidence demonstrating that grit influences the migrant decision to remit. Taking a step back, we

[4] Amuedo-Dorantes and Pozo (2006), Dustmann and Mestres (2008), Batista and Umbljis (2014)

computed comparative statics on the migrant grit characteristic in the theoretical framework of our model which stated that migrant grit levels would affect remittance behavior in two ways; either decreasing or increasing transfers sent. That is, we hypothesized that migrants with more levels of grit would either send less remittances through a decrease in wage risk or be more likely to send transfers through an increase in existing income levels. What holds in our results is that higher grit levels increase the probability of transfers as shown in Table 1. Such is indicative that the effect that dominates is that higher levels of grit further increase income levels and consequently increases the likelihood of the migrant to remit as self-insurance.

To further understand how the grit characteristics in migrants affect remittance decisions we include in Table A4 in the Appendix, a regression with multiple interactions of the grit index and the other determinants of remittances. Looking at the altruistic motives interacted with the grit index, there are no significant results. This goes in line with our hypothesis that altruistic payments made by the migrant are independent of migrant grit characteristics. Moreover, there are no statistically significant interactions in either altruistic or self-interest motives, that is, we are unable to identify the channel for which grit affects the determinants of remittances. A reason as to why may be due to the lack of variation in our sample.

Our sample is representative of the Cape Verdean migrant community in Lisbon but within this pool of individuals, the differences in grit characteristics may not be so large. Almost all immigrants in our study completed high school and further enrolled in college despite not completing their degrees. Furthermore, more than half of the sample is employed. This means that the migrants in our sample are already quite similar to each other, in what regards academics and labor force, making such that identifying the resulting effect of differences in grit levels may be harder as the differences in employment and education (variables likely affected by grit) are not as large. In this way, with smaller variation in our sample it is harder to distinguish how the grit characteristics influence the likelihood of sending transfers.

In future studies, to identify the effect through which grit characteristics affect migrant remittance behavior, it would be necessary to look at a sample of migrants with greater variation, for example, in education and employment levels. Additionally, it is critical to note that the decision to migrate is likely linked to higher grit levels as individuals who take the leap and live abroad in a new country are also the ones with higher non-cognitive characteristics of commitment and perseverance to achieve long term goals (Alaoui 2021, Southwick 2019). As such, the variation in grit levels of migrants may also not be so large to begin with and being able to find the effect that together with grit leads to more transfers becomes challenging.

8. Robustness Checks

As an initial robustness check we included an estimation model that broadened the sample to other family relatives and close friends of the migrant. That is, not just accounting for the parents, partner and kids left back in Cape Verde but also other close family friends and relatives. The results are given in Table A5 in the Appendix and yield similar estimation outcomes when comparing with the original models studied above. Additionally, we restricted the age of the children to being under 18 years old in another model, as shown in Table A6, and the outcomes are also in line with our main findings.

Moreover, we included an additional estimation model in Tables A7 and A8 which account for the varying levels of grit. High grit represents the migrants who based on their interview responses have higher grit levels, and low grit represents the migrants with lower grit levels. We note that higher levels of grit show statistical significance in both the likelihood and amount in euros of migrant transfers sent. Meanwhile low levels of grit are not significant in either. This serves as a robustness check for the measurement of our migrant grit index.

Subsequently, to be sure that the results obtained from the estimation models (9) and (10) are capturing altruism motives and migrant grit characteristics on remittance behavior, we must

ensure that there are no problems of endogeneity, for instance sample selection bias from migrants' self-selection to remit. It could be possible that there are certain unobservable migrant characteristics, not accounted for in the estimation models, that result in some individuals deciding to remit and others deciding not to. For example, individual abilities, intelligence, and talents that contribute to migrant performance or even enhance the ability to form networks in the destination country but are not directly observable, may impact career opportunities and financial prospects. In this way, with the possibility of sample selection, our results may be biased. In fact, the existing literature has explored the issue of self-selection bias when studying the likelihood of sending transfers and used the Heckman Selection Model to verify the results and their robustness (Bettin 2012, Ainhoa 2018). We will thus estimate our own Heckman Selection Model to ensure the robustness of our results and address any potential bias. In this context, it is crucial to note that the selection equation used is assumed to be exogenous.

To do so, we used as our identifying variable, the number of years since the migrant arrived in Portugal from Cape Verde. The reason for choosing this variable is because we believe that this variable may be related to the unobserved characteristics in migrants that enhance migrant performance in the destination country. As such, this variable is likely correlated with the probability of sending remittances and the amount sent through the ability to form networks in the host country and increasing career opportunities. At the same time, the variable accounting for migrant years since migration is likely uncorrelated with our variables of interest, the altruism and self-interest motives and the grit characteristic in migrants.

The Heckman Selection Model is found in Table A9 in the Appendix. The variable $Years\ Since\ Migration_i$ is significant at the 5% significance level as a selection variable for the likelihood of sending remittances.

Comparing the Heckman Selection Model to our Ordinary Least Squares estimation for the probability of sending remittances, we observe that the results are practically unchanged. The

variables $Kids_i$ and $Grit_i$ remain significant in determining the likelihood of sending transfers at the 1% significance level. And the variables for employment contract duration also remain significant at the 5% level. As such we can confirm that the number of years since the migrant arrived in Cape Verde are not associated with selectivity concerns in sending transfers. That is, we are not concerned with sample selection bias from potential unobserved characteristics in migrants that stem from their assimilation in the destination country. The key findings of our study hold: migrants with kids in Cape Verde are more likely to remit and do so in higher amounts, those with temporary contracts increase the amount of money sent as a means of self-insurance and migrants with higher grit levels have a higher probability to remit.

9. Conclusion

The goal of this paper was to gain deeper insights on the motives that drive immigrants to send transfers to their families in the home country. This paper examines how individual characteristics of migrants impacts both the probability and the number of migrant transfers to their home country, contributing to the existing literature on altruism and self-interest motives. Our main original contribution to the literature is to measure and include migrant grit levels as determinants of remittance behavior, a relation that had not previously been studied to the best of our knowledge.

Our empirical analysis included an index for the migrant grit level and proxies for altruism and self-interest motives to further comprehend remittance behaviors. We found that higher degrees of grit are related with a statistically significant increase in the probability of the migrant remitting, although they do not significantly increase the number of transfers in money sent back home. Altruism and self-interest motives are both found to act as significant determinants of remittance behavior.

A powerful altruistic motive is the finding that immigrants with a child living back in Cape Verde have a significantly higher probability and greater value of transfers sent. As for the other close family members living in the home country, there are no statistically significant results. This signals a strong care for the children left back but not for the other close family members which implies that there are differing levels of altruism depending on the relation to the relative.

Next, there is evidence of self-interested motives given by the migrant employment contract duration. Migrants with temporary contracts, lasting more than or less than a year, significantly increase the probability of remittances and the value in euros sent. This goes in line with the self-insurance motive as temporary contracts involve more risk and thus the migrant sends transfers as a means for self-insurance – i.e. of increasing the probability that the network back home supports the migrant in case of a bad outcome at the destination country.

Finally, in light of the findings presented in this paper, it would be interesting for subsequent research to explore the interactions between the migrant grit levels and the determinants of remittances. For this purpose, it would be valuable to include a sample that exhibits a larger variation in grit levels to be better able to distinguish effects significantly. Specifically, to be able to study the channels through which grit characteristics in migrants increases the likelihood and value of remittances sent. That is, whether differences in education levels or the type of employment or other variables for instance are related to higher levels of grit and, in this way, with the remittances sent.

Bibliography

Agarwal, Reena, and Andrew W. Horowitz. 2002. "Are International Remittances Altruism or Insurance? Evidence from Guyana Using Multiple-Migrant Households." *World Development* 30 (11) : 2033–44. https://doi.org/10.1016/s0305-750x(02)00118-3.

Akay, Alpaslan, and Levent Yilmaz. 2023. "Non-Cognitive Skills and Labour Market Performance of Immigrants." *Plus One* 18, (5): http://doi.org/10.1371/journal.pone.028 1048.

Alan, Sule, Teodora Boneva, and Seda Ertac. 2019. "Ever Failed, Try Again, Succeed Better: Results from a Randomized Educational Intervention on Grit." *The Quarterly Journal of Economics*. https://doi.org/10.1093/qje/qjz006.

Alaoui, Larbi, and Christian Fons-Rosen. 2021. "Know When to Fold'em: The Flip Side of Grit." *European Economic Review* 136: 103736.

Amuedo-Dorantes, Catalina, and Susan Pozo. 2006. "Remittances as Insurance: Evidence from Mexican Immigrants." *Journal of Population Economics* 19, (2): 227–54.

Aparicio Fenoll, Ainhoa, and Zoë Kuehn. 2018. "Immigrant Networks and Remittances: Cheaper Together?" *World Development* 111: 225–45.

Ayhan, Sinem H., Kseniia Gatskova, and Hartmut Lehmann. 2020. "The Impact of Non-Cognitive Skills and Risk Preferences on Rural-to-Urban Migration in Ukraine." *Journal of Comparative Economics* 48, (1): 144–62.

Batista, Catia, and Gaia Narciso. 2018. "Migrant Remittances and Information Flows: Evidence from a Field Experiment." *The World Bank Economic Review* 32(1): 203-219.

Batista, Catia, and Rita Neves. 2022. "Social networks and mental health: the experience of Cape-Verdean migrants in Portugal." *NOVAFRICA Working Paper Series* 2204.

Batista, Catia, Daniel Silverman and Dean Yang. 2015. "Directed giving: Evidence from an inter-household transfer experiment," *Journal of Economic Behavior & Organization* 118(C): 2-21

Batista, Catia, and Janis Umblijs. 2014. Migration, risk attitudes, and entrepreneurship: evidence from a representative immigrant survey" *IZA Journal of Migration* 3(1):1-25.

Batista, Catia, and Janis Umblijs. 2016. "Do Migrants Send Remittances as a Way of Self-Insurance?" *Oxford Economic Papers* 68, (1): 108–30.

Becker, Gary S. 1974. "A Theory of Social Interactions." Journal of Political Economy 82, (6): 1063–93.

Bettin, Giulia, Riccardo Lucchetti, and Alberto Zazzaro. 2012. "Endogeneity and Sample Selection in a Model for Remittances." *Journal of Development Economics* 99, (2): 370–84.

Bollard, Albert, David Mckenzie, Melanie Morten, and Hillel Rapoport. 2011. "Remittances and the Brain Drain Revisited: The Microdata Show That More Educated Migrants Remit More." *The World Bank Economic Review* 25, (1): 132–56.

Borghans, Lex, Angela Lee Duckworth, James J. Heckman, and Bas ter Weel. 2008. "The Economics and Psychology of Personality Traits." *Journal of Human Resources* 43, (4): 972–1059. https://doi.org/10.3368/jhr.43.4.972.

Borjas, George J. 1987. "Self-Selection and the Earnings of Immigrants." *The American Economic Review* 77, (4): 531–53. http://www.jstor.org/stable/1814529.

Boyd, Monica. 1989. "Family and Personal Networks in International Migration: Recent Developments and New Agendas." *The International Migration Review* 23, (3): 638–70. https://doi.org/10.2307/2546433.

Brière, Bénédicte de la, 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): 309–28. https://doi.org/10.1016/s0304-3878(02)00015-9.

Brown, Richard P.C. 1997. "Estimating Remittance Functions for Pacific Island Migrants." *World Development* 25, (4): 613–26. https://doi.org/10.1016/s0305-750x(96)00122-2.

Chort, Isabelle, Flore Gubert, and Jean-Noël Senne. 2012. "Migrant Networks as a Basis for Social Control: Remittance Incentives among Senegalese in France and Italy." *Regional Science and Urban Economics* 42, (5): 858–74.

Cox, Donald, Bruce E. Hansen, and Emmanuel Jimenez. 2004. "How Responsive Are Private Transfers to Income? Evidence from a Laissez-Faire Economy." Journal of Public Economics 88, (9–10): 2193–2219. https://doi.org/10.1016/s0047-2727(03)00069-0.

Docquier, Frédéric, Hillel Rapoport, and Sara Salomone. 2012. "Remittances, Migrants' Education and Immigration Policy: Theory and Evidence from Bilateral Data." Regional Science and Urban Economics 42, (5): 817–28.

Duckworth, Angela L., Christopher Peterson, Michael D. Matthews, and Dennis R. Kelly. 2007. "Grit: Perseverance and Passion for Long-Term Goals." *Journal of Personality and Social Psychology* 92, (6): 1087–1101.

Dustmann, Christian, and Josep Mestres. 2010. "Remittances and Temporary Migration." *Journal of Development Economics* 92, (1): 62–70.

Faini, Riccardo. 2007. "Remittances and the Brain Drain: Do More Skilled Migrants Remit More?" *The World Bank Economic Review* 21, (2): 177–91.

Funkhouser, Edward. 1995. "Remittances from International Migration: A Comparison of El Salvador and Nicaragua." *The Review of Economics and Statistics* 77, (1): 137–46.

Giambra, Samuele, and David McKenzie. 2021. "Self-Employment and Migration." *World Development* 141: 105362. https://doi.org/10.1016/j.worlddev.2020.105362.

Heckman, James J., and Yona Rubinstein. 2001. "The Importance of Noncognitive Skills: Lessons from the GED Testing Program." *The American Economic Review* 91, (2): 145–49. http://www.jstor.org/stable/2677749.

INE – Instituto Nacional de Estatística. 2021. "Estatísticas Demográficas 2021." Portal Do INE https://www.*ine.pt/xurl/pub/13932532*

INE CV – Instituto Nacional de Estatística Cabo Verde. 2021 "Migrações". https://ine.cv/statística/statís-estatistico-de-cabo-verde-2020/

IMC. 2022. "Estatísticas do Mercado de Trabalho – 2022." *Instituto Nacional de Estatística de Cabo* Verde. https://ine.*cv/quadros/statísticas-do-mercado-de-trabalho-imc-2022/*

Kuhnen, Camelia M., and Brian T. Melzer. 2018. "Noncognitive Abilities and Financial Delinquency: The Role of Self-Efficacy in Avoiding Financial Distress." *The Journal of Finance* 73, (6): 2837–69. http://www.jstor.org/stable/26656033.

Lucas, Gale M., Jonathan Gratch, Lin Cheng, and Stacy Marsella. 2015. "When the Going Gets Tough: Grit Predicts Costly Perseverance." *Journal of Research in Personality* 59: 15–22. https://doi.org/10.1016/j.jrp.2015.08.004.

Lucas, Richard E., and Brendan M. Baird. 2006. "Global Self-Assessment." *Handbook of Multimethod Measurement in Psychology.*, 29–42. https://doi.org/10.1037/11383-003.

Lucas, Robert, and Oded Stark. 1985. "Motivations to Remit: Evidence from Botswana." *Journal of Political Economy* 93, (5): 901–18.

Mckenzie, David, and Hillel Rapoport. 2010. "Self-Selection Patterns in Mexico-u.s. Migration: The Role of Migration Networks." *The Review of Economics and Statistics* 92, (4): 811–21. http://www.jstor.org/stable/40985796.

McKenzie, David, John Gibson, and Steven Stillman. 2013. "A Land of Milk and Honey with Streets Paved with Gold: Do Emigrants Have over-Optimistic Expectations about Incomes Abroad?" *Journal of Development Economics* 102: 116–27.

Munshi, Kaivan. 2003. “Networks in the Modern Economy: Mexican Migrants in the U. S. Labor Market.” *The Quarterly Journal of Economics* 118, (2): 549–99.

Naghsh Nejad, Maryam, and Stefanie Schurer. 2022 “Cognitive and Non-Cognitive Abilities of Immigrants: New Perspectives on Migrant Quality from a Selective Immigration Country.” *Journal of Economic Behavior & Organization* 203: 107–24.

Niimi, Yoko, Caglar Ozden, and Maurice Schiff. 2010. “Remittances and the Brain Drain: Skilled Migrants Do Remit Less.” *Annals of Economics and Statistics*, (97/98): 123–41.

Osili, Una Okonkwo. 2007. “Remittances and Savings from International Migration: Theory and Evidence Using a Matched Sample.” Journal of Development Economics 83, (2): 446–65. https://doi.org/10.1016/j.jdeveco.2006.06.003.

Rapoport, Hillel, and Frédéric Docquier. 2006. “Chapter 17 the Economics of Migrants’ Remittances.” *Handbook of the Economics of Giving, Altruism and Reciprocity*, 1135–98. https://doi.org/10.1016/s1574-0714(06)02017-3.

Ratha, Dilip. 2018 “Workers’ Remittances: An Important and Stable Source of External Development Finance.” Global Development Finance. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3201568.

Ratha et al. 2022. Migration and Development Brief 31. “Remittances Brave Global Headwinds.” The World Bank Group. https://www.worldbank.org/en/news/press-release/2022/11/30/remittances-grow-5-percent-2022.

Sana, Mariano. 2005 “Buying Membership in the Transnational Community: Migrant Remittances, Social Status, and Assimilation.” *Population Research and Policy Review* 24, (3): 231–61. http://www.jstor.org/stable/40230905.

Sjaastad, Larry A. 1962. “The Costs and Returns of Human Migration.” *Journal of Political Economy* 70, (5): 80–93. http://www.jstor.org/stable/1829105.

Southwick, Daniel A., Chia-Jung Tsay, and Angela L. Duckworth. 2019 “Grit at Work.” *Research in Organizational Behavior*: 100126. https://doi.org/10.1016/j.riob.2020.100126.

Stark, Oded, and Robert Lucas. 1988 “Migration, Remittances, and the Family.” *Economic Development and Cultural Change* 36, (3): 465–81.

Tovar-García, Edgar Demetrio. 2017“The Impact of Perseverance and Passion for Long Term Goals (GRIT) on Educational Achievements of Migrant Children: Evidence from Tatarstan, Russia.” *Psicología Educativa* 23, (1): 19–27. https://doi.org/10.1016/j.pse.2017.02.003.

The World Bank Data, 1980-2022. “Personal Remittances, Received (% of GDP) – Cabo Verde.” The World Bank Open Data. Accessed December 8, 2023. https://data.worldbank.org/indicator/BX.TRF.PWKR.DT.GD.ZS?end=&locations=CV

The World Bank Data, 1990-2022. “Labor Force, Total – Portugal.” World Bank Open Data. https://data.worldbank.org/indicator/SL.TLF.TOTL.IN?locations=PT.

Yang, Dean, and Hwajung Choi. 2007. “Are Remittances Insurance? Evidence from Rainfall Shocks in the Philippines.” *The World Bank Economic Review* 21, 2 (2): 219–48.

Yang, Dean. 2011. “Migrant Remittances.” *Journal of Economic Perspectives* 25, (3): 129–52.

Zhang, Yan, Bo Jiang, Ding-Liang Tan, and Ting-Ting Lei. 2022. “The Relationship between Perceived Discrimination and Chinese Migrant Children’s School Adjustment: A Moderated Mediation Model of Identity Conflict and Grit.” Journal of Pacific Rim Psychology 16: 183449092211016. https://doi.org/10.1177/18344909221101668.

Appendix

Table A1 – Summary Statistics of the Individual Characteristics of Cape Verdean Migrants, Remittances, and Characteristics of Networks in Cape Verde

	Obs.	Mean	Std. Dev.	Max.	Min.
Individual Characteristics					
Female	819	0.57	0.49	0	1
Age	819	27.57	7.29	18	65
Income	819	520.09	347.57	0	2600
Grit	819	0.31	0.27	-1	1
Years Since Migration	819	2.79	1.40	0	5
Married	819	0.12	0.33	0	1
Occupation					
Self-Employed	819	0.03	0.17	0	1
Employee	819	0.64	0.48	0	1
Student	819	0.16	0.04	0	1
Unemployed	819	0.16	0.36	0	1
Hours Worked	819	26.50	21.45	0	120
Level of Education					
No Schooling	819	0.01	0.06	0	1
High School Completed (up to 12th grade)	819	0.53	0.50	0	1
College Completed	819	0.13	0.34	0	1
Employment					
Permanent contract	526	0.25	0.43	0	1
Temporary contract, more than 1 year	526	0.15	0.36	0	1
Temporary contract, less than 1 year	526	0.42	0.49	0	1
No Contract	526	0.17	0.38	0	1
Reason to Migrate to Portugal					
Looking for a job	819	0.06	0.22	0	1
Financial reasons	819	0.04	0.18	0	1
Better job opportunities	819	0.17	0.37	0	1
To study	819	0.50	0.50	0	1
Family reasons	819	0.09	0.29	0	1
Health expenses	819	0.08	0.26	0	1
Went on vacation and decided to stay	819	0.05	0.23	0	1
Language spoken at home					
Cape Verdean Creole	819	0.91	0.28	0	1
Portuguese	819	0.09	0.28	0	1
Religion					
Catholic	819	0.77	0.42	0	1

Remittances in last 12 months					
Send cash and in kind remittances	721	0.73	0.44	0	1
Amount of cash and in kind remittances	819	603.22	1067.13	0	20000
Send cash remittances	721	0.65	0.48	0	1
Amount of cash remittances sent	819	495.76	961.31	0	20000
Females who send cash remittances	417	0.60	0.49	0	1
Send in kind remittances	720	0.39	0.49	0	1
Amount of in kind remittances sent	819	107.47	302.06	0	6000
Frequency of Cash Remittances					
Weekly	721	0.01	0.09	0	1
Monthly	721	0.26	0.44	0	1
Every 2 to 3 months	721	0.32	0.47	0	1
Every 6 months	721	0.07	0.25	0	1
Once a year	721	0.09	0.29	0	1
Use of Remittances					
Consumption	452	0.95	0.22	0	1
Household investment	452	0.03	0.17	0	1
Health expenses	452	0.03	0.17	0	1
School expenses	452	0.04	0.19	0	1
Business investment	452	0.01	0.07	0	1
Savings	452	0.01	0.07	0	1
Home Networks in Cape Verde					
Close family member	723	0.88	0.32	0	1
Kids	723	0.35	0.48	0	1
Young kids (below age 18)	723	0.34	0.47	0	1
Parents	723	0.90	0.30	0	1
Partner	723	0.16	0.36	0	1
Employed	723	0.70	0.46	0	1

Table A2 – Description of all the Variables used in the Estimation

Variable	Description
Outcome Variables	
Remittances Sent	Dummy variable where 1 = sent cash or in kind remittances within the last 12 months and 0 = did not send cash or in kind remittances within the last 12 months.
Amount of Remittances	Amount of cash and in kind remittances sent by immigrants within the last 12 months in euros.
Main Interest Variables	
Grit	Index that ranges from 1 - Very much unlike me to 5 - Very much like me and is calculated by suming the average result of a set of statements regarding perserverance.
Kids	Dummy variable equal to 1 if immigrant has their kids back in Cape Verde and equal to 0 if not.
Parents	Dummy variable equal to 1 if immigrant has their parents back in Cape Verde and equal to 0 if not.
Partner	Dummy variable equal to 1 if immigrant has their partner back in Cape Verde and equal to 0 if not.
Permanent Contract	Dummy variable equal to 1 if the employment contract has no set end date and equal to 0 otherwise.
Temporary Contract	Dummy variable equal to 1 if the employment contract is less than or more than a year, and equal to 0 otherwise.
Network Employment	Dummy variable equal to 1 if the family network in the origin country is employed and equal to 0 if not.
Hours Worked	Continuous variable with the number of hours the immigrant worked during an average work week.
Control Variables	
Age	Continuous variable with the age of immigrant.
Income	Continuous variable with the income of the immigrant.
Education	Dummy variable equal to 1 if completed at least 12th grade education and equal to 0 if did not complete any education before the 12th grade.
Female	Dummy variable equal to 1 if immigrant is female and equal to 0 if not.
Employment Status	Dummy variable equal to 1 if immigrant is employed and equal to 0 if not.
Years Since Migration	Difference between the year that the immigrant took the survey and the year that the immgirant arrived in Portugal.

Table A3 – Set of Statements Included in the Survey and Corresponding Answer Likert Scale to Measure the Grit Levels of Migrants

Please indicate to what extent you identify with the following statements:
a) I stay interested in my goals even if it takes a long time (months or years) to achieve them.
b) I can explain, in less than 10 words, what I intend to accomplish in my life.
c) My work aligns with my most important personal values.
d) I identify with the work I do. For me, my work is not just what I do, but an essential part of who I am.
e) For some reason, I never get bored with my work. I'm always learning new things.
f) I think about my work even in dreams and when I daydream.
g) I'm very hardworking. I continue to work even when others decide to take a break.
h) Obstacles don't discourage me. I don't give up easily.
i) Every day I try to do something better than I did the day before.
j) I'm constantly asking other people for information about how I can improve.
k) I am never completely satisfied with my performance.
l) I finish what I start.

Answers - Likert Scale:
1 - Not at all like me, 2 - Not much like me, 3 - Somewhat like me, 4 - Like me, 5 - Very much like me

Notes: the Grit index variable was calculated by taking the average results of each of the twelve statements above and summing the results.

Table A4 –Interaction of Determinants of Remittances with Grit Index

	Probability of Sending Remittances (1)	Amount of Remittances Sent (2)
Grit	-0.016	-216.626
	(0.333)	(1194.597)
Kids	0.215***	735.797***
	(0.062)	(222.854)
Kids x Grit	-0.178	308.400
	(0.144)	(517.963)
Partner	0.124	48.138
	(0.089)	(321.141)
Partner x Grit	-0.154	-712.708
	(0.211)	(761.843)
Parents	-0.112	-16.415
	(0.111)	(398.916)
Parents x Grit	0.282	524.662
	(0.229)	(828.839)
Temporary Contract	0.081	350.153
	(0.082)	(291.980)
Temporary Contract x Grit	0.079	-16.959
	(0.214)	(751.294)
Permanent Contract	0.153*	337.686
	(0.090)	(320.531)
Permanent Contract x Grit	-0.069	-594.714
	(0.231)	(815.899)
Employed Network	-0.024	97.209
	(0.039)	(137.707)
Hours Worked	0.000	-3.412
	(0.001)	(4.289)
Age	-0.002	23.326**
	(0.003)	(10.499)
Income	0.000	0.407
	(0.000)	(0.453)
Income x Grit	-0.000	0.159
	(0.000)	(0.922)
Education	-0.064	953.600
	(0.360)	(1296.320)
Female	0.026	85.647
	(0.035)	(127.360)
Constant	0.789*	-1606.452
	(0.405)	(1455.814)
N	422	427
r2	0.117	0.180
F	2.979	4.980

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A5 – Determinants on the Likelihood of Sending Remittances and the Amount of Remittances Sent (in euros) Including Close Family Friends

	Probability of Sending Remittances			Amount of Remittances Sent		
	(1)	(2)	(3)	(4)	(5)	(6)
	Altruism and Self-Interest	Grit	Migrant Controls	Altruism and Self-Interest	Grit	Migrant Controls
Kids	0.160***	0.150***	0.162***	1002.473***	985.048***	858.478***
	(0.036)	(0.036)	(0.040)	(128.368)	(128.925)	(143.658)
Partner	0.081*	0.074	0.080*	-152.643	-163.809	-178.249
	(0.047)	(0.046)	(0.047)	(167.008)	(167.071)	(168.628)
Parents	-0.002	0.008	0.013	136.670	156.328	219.954
	(0.059)	(0.059)	(0.060)	(210.053)	(210.389)	(214.144)
Family Friends	0.006	0.005	0.005	31.588**	30.439**	29.494**
	(0.004)	(0.004)	(0.004)	(14.606)	(14.618)	(14.879)
Temporary Contract	0.105**	0.100**	0.112**	433.665***	426.881***	368.972**
	(0.045)	(0.045)	(0.048)	(161.061)	(160.999)	(169.738)
Permanent Contract	0.125**	0.124**	0.137**	305.400	306.511*	191.197
	(0.052)	(0.052)	(0.055)	(185.396)	(185.232)	(195.505)
Network Employment	-0.017	-0.016	-0.024	15.318	17.960	88.619
	(0.037)	(0.037)	(0.038)	(132.442)	(132.339)	(135.523)
Hours Worked	0.000	0.000	0.000	-1.287	-1.227	-2.987
	(0.001)	(0.001)	(0.001)	(3.865)	(3.861)	(4.219)
Grit		0.173***	0.173***		309.520	190.988
		(0.065)	(0.066)		(233.539)	(237.150)
Age			-0.002			23.970**
			(0.003)			(10.389)
Income			0.000			0.366
			(0.000)			(0.281)
Education			-0.114			821.570
			(0.359)			(1283.608)
Female			0.026			76.234
			(0.035)			(126.067)
Constant	0.669***	0.612***	0.727*	27.034	-76.895	-1763.039
	(0.080)	(0.082)	(0.394)	(285.717)	(296.037)	(1404.883)
N	427	427	422	432	432	427
r2	0.088	0.104	0.109	0.161	0.164	0.183
F	5.061	5.357	3.837	10.125	9.211	7.116

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A6 – Determinants on the Likelihood of Sending Remittances and the Amount of Remittances Sent (in euros) with Children Below 18 Years Old

	Probability of Sending Remittances			Amount of Remittances Sent		
	(1)	(2)	(3)	(4)	(5)	(6)
	Altruism and Self-Interest	Grit	Migrant Controls	Altruism and Self-Interest	Grit	Migrant Controls
Kids	0.146***	0.138***	0.142***	766.635***	750.055***	620.397***
(<18 yrs old)	(0.036)	(0.035)	(0.038)	(131.377)	(131.455)	(138.389)
Partner	0.077*	0.070	0.074	-151.622	-165.793	-194.078
	(0.047)	(0.046)	(0.047)	(171.941)	(171.768)	(171.706)
Parents	-0.016	-0.003	0.008	14.550	43.541	167.747
	(0.059)	(0.059)	(0.060)	(215.085)	(215.297)	(218.305)
Temporary Contract	0.112**	0.106**	0.113**	492.344***	482.429***	377.970**
	(0.045)	(0.045)	(0.048)	(165.179)	(164.921)	(172.524)
Permanent Contract	0.123**	0.123**	0.130**	311.619	313.676*	143.505
	(0.052)	(0.052)	(0.055)	(190.292)	(189.879)	(198.247)
Network Employment	-0.025	-0.023	-0.027	-57.196	-51.513	56.725
	(0.037)	(0.037)	(0.038)	(135.622)	(135.367)	(137.822)
Hours Worked	0.000	0.000	0.000	-1.346	-1.277	-3.383
	(0.001)	(0.001)	(0.001)	(3.989)	(3.980)	(4.311)
Grit		0.185***	0.179***		405.062*	232.187
		(0.065)	(0.066)		(239.377)	(241.504)
Age			-0.000			35.209***
			(0.003)			(10.023)
Income			0.000			0.414
			(0.000)			(0.282)
Education			-0.184			624.309
			(0.362)			(1318.831)
Female			0.029			85.684
			(0.035)			(128.774)
Constant	0.714***	0.647***	0.780**	365.772	218.262	-1647.935
	(0.077)	(0.080)	(0.396)	(282.725)	(295.268)	(1439.140)
N	427	427	422	432	432	427
r2	0.079	0.097	0.102	0.107	0.113	0.149
F	5.159	5.611	3.886	7.281	6.757	6.017

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A7 – Determinants on the Likelihood of Sending Remittances and the Amount of Remittances Sent (in euros) with High Grit

	Probability of Sending Remittances			Amount of Remittances Sent		
	(1)	(2)	(3)	(4)	(5)	(6)
	Altruism and Self-Interest	Grit	Migrant Controls	Altruism and Self-Interest	Grit	Migrant Controls
Kids	0.155***	0.144***	0.157***	976.467***	941.951***	830.997***
	(0.036)	(0.037)	(0.041)	(128.356)	(137.915)	(154.138)
Partner	0.077*	0.076	0.082*	-172.978	-177.134	-190.689
	(0.047)	(0.046)	(0.047)	(167.465)	(174.401)	(176.424)
Parents	-0.006	0.015	0.018	118.402	181.098	244.009
	(0.059)	(0.059)	(0.061)	(210.792)	(219.718)	(224.377)
Temporary Contract	0.103**	0.085*	0.095*	422.294***	410.308**	332.901*
	(0.045)	(0.046)	(0.049)	(161.672)	(170.289)	(179.938)
Permanent Contract	0.119**	0.125**	0.138**	275.611	333.393*	208.511
	(0.052)	(0.052)	(0.055)	(185.683)	(195.568)	(205.511)
Network Employment	-0.021	-0.003	-0.012	-7.031	20.810	93.721
	(0.037)	(0.038)	(0.039)	(132.610)	(141.794)	(145.626)
Hours Worked	0.000	-0.000	-0.000	-0.958	-4.698	-6.452
	(0.001)	(0.001)	(0.001)	(3.878)	(4.201)	(4.549)
High Grit		0.169**	0.170*		521.744*	394.260
		(0.084)	(0.086)		(315.402)	(321.900)
Age			-0.002			21.515**
			(0.003)			(10.813)
Income			0.000			0.413
			(0.000)			(0.291)
Education			-0.140			647.402
			(0.349)			(1303.383)
Female			0.013			35.123
			(0.036)			(135.819)
Constant	0.696***	0.651***	0.812**	177.144	60.538	-1383.982
	(0.078)	(0.085)	(0.387)	(278.358)	(317.974)	(1441.543)
N	427	378	373	432	383	378
r2	0.084	0.092	0.097	0.151	0.151	0.169
F	5.509	4.699	3.235	10.810	8.327	6.184

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A8 - Determinants on the Likelihood of Sending Remittances and the Amount of Remittances Sent (in euros) with Low Grit

	Probability of Sending Remittances			Amount of Remittances Sent		
	(1)	(2)	(3)	(4)	(5)	(6)
	Altruism and Self-Interest	Grit	Migrant Controls	Altruism and Self-Interest	Grit	Migrant Controls
Kids	0.155***	0.260	0.284	976.467***	1133.849***	1028.159**
	(0.036)	(0.177)	(0.248)	(128.356)	(271.373)	(375.356)
Partner	0.077*	0.025	0.018	-172.978	487.865	444.408
	(0.047)	(0.267)	(0.318)	(167.465)	(410.401)	(481.970)
Parents	-0.006	-0.018	-0.030	118.402	-60.991	-89.598
	(0.059)	(0.374)	(0.398)	(210.792)	(574.523)	(603.329)
Temporary Contract	0.103**	0.345	0.384	422.294***	62.758	-60.032
	(0.045)	(0.230)	(0.256)	(161.672)	(353.047)	(388.615)
Permanent Contract	0.119**	0.262	0.338	275.611	-575.746	-736.180
	(0.052)	(0.313)	(0.349)	(185.683)	(480.456)	(529.453)
Network Employment	-0.021	-0.120	-0.148	-7.031	-832.253**	-775.671**
	(0.037)	(0.219)	(0.237)	(132.610)	(336.712)	(358.643)
Hours Worked	0.000	0.002	0.002	-0.958	2.132	-4.084
	(0.001)	(0.005)	(0.007)	(3.878)	(7.388)	(9.978)
Low Grit		0.429	0.414		-384.390	-317.238
		(0.477)	(0.510)		(733.055)	(772.840)
Age			-0.004			14.757
			(0.026)			(39.680)
Income			-0.000			0.605
			(0.000)			(0.698)
Education			0.000			0.000
			(.)			(.)
Female			0.119			10.009
			(0.189)			(285.909)
Constant	0.696***	0.531	0.543	177.144	965.646	557.461
	(0.078)	(0.413)	(0.786)	(278.358)	(634.480)	(1190.927)
N	427	35	35	432	35	35
r2	0.084	0.267	0.284	0.151	0.526	0.550
F	5.509	1.183	0.830	10.810	3.614	2.553

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

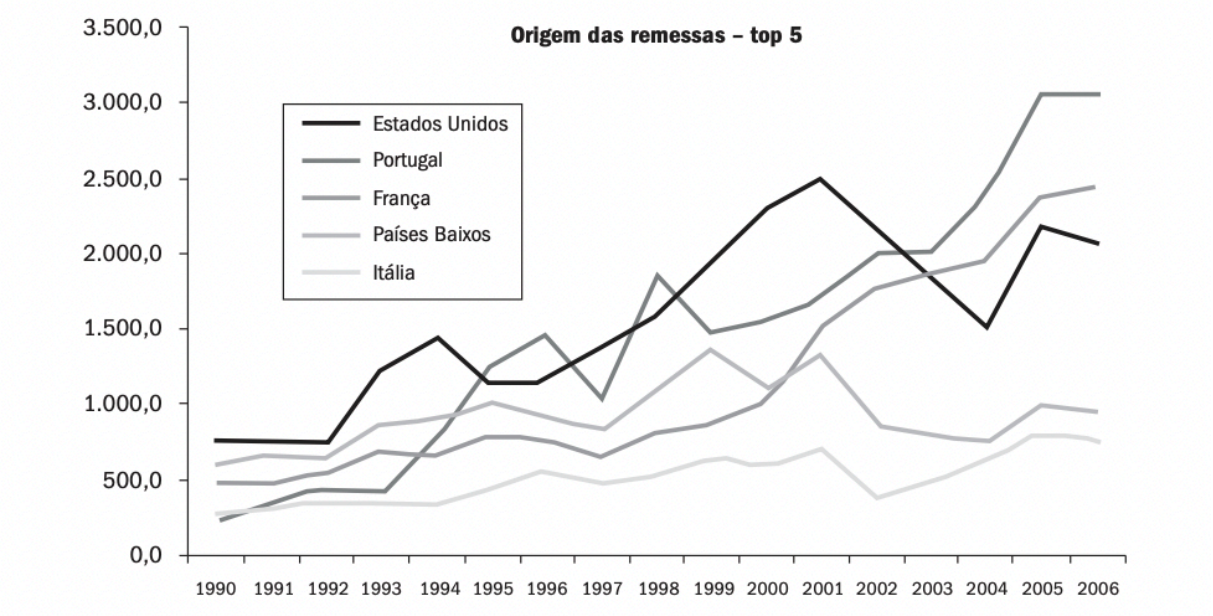
Table A9 – Heckman Selection Model on the Probability of Sending Remittances using Years Since Migration as the Selection Variable

	Probability of Sending Remittances (1)
Kids	0.164***
	(0.040)
Partner	0.083*
	(0.047)
Parents	0.012
	(0.059)
Temporary Contract	0.104**
	(0.047)
Permanent Contract	0.123**
	(0.055)
Network Employment	-0.027
	(0.037)
Hours Worked	0.000
	(0.001)
Grit	0.175***
	(0.065)
Age	-0.002
	(0.003)
Income	0.000
	(0.000)
Education	-0.090
	(0.345)
Female	0.022
	(0.035)
Constant	0.641
	(0.399)
Select	
Years Since Migration	-0.097**
	(0.047)
Constant	1.153***
	(0.154)
Inverse Mills Ratio	
Lambda	0.301
	(0.376)
N	523
Selected	422
Nonselected	101
Wald chi2(10)	49.67
Prob > chi2	0.000
Rho	0.7841
Sigma	0.3835

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

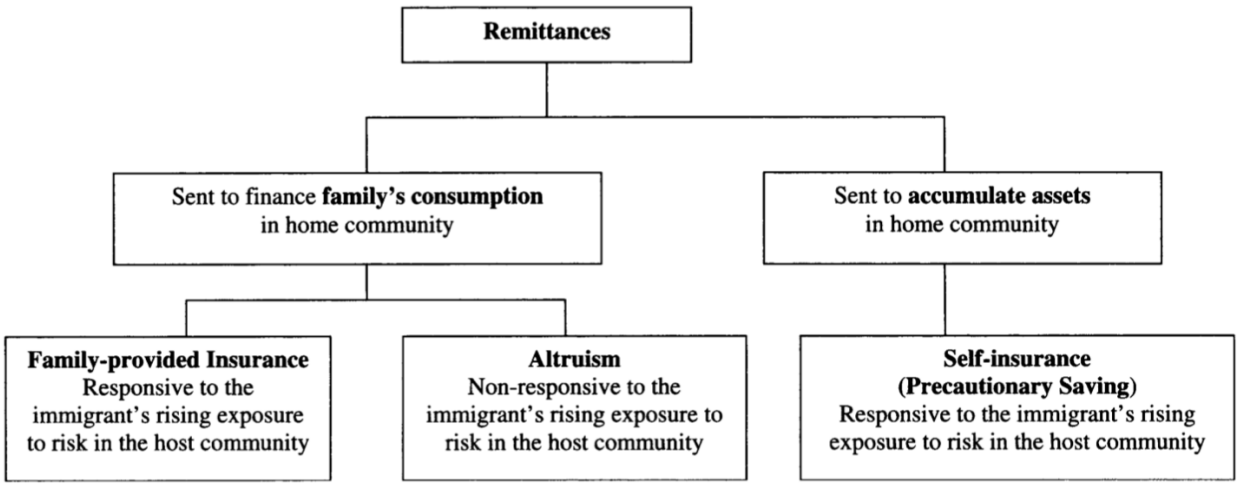
Figure 1 – Distribution of Remittances Sent from Cape Verdean Immigrants in the Top 5 Countries with the Highest Concentration of Cape Verdean Immigrants



Notes: Since 2003, Cape Verdean immigrants living in Portugal send the greatest number of remittances back home to Cape Verde.

Source: Banco de Cabo Verde, 2007

Figure 2 – Diagram with Motives for Remitting



Source: Amuedo-Dorantes and Pozo (2006)