

## The impact of remittances on household consumption: evidence from Morocco

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## The impact of remittances on household consumption: Evidence from Morocco

### Abstract:

Remittances play a very important role in a country's economic growth and development, while at the same time having a substantial impact on improving household well-being at the microeconomic level. This paper uses propensity score matching as an econometric model to assess the impact of remittances on household consumption. The main source of the analysis is the National Survey on Household Consumption and Expenditure (ENCDM) conducted by the High Commission for Planning (HCP) during the period 2013-2014. This method consists of associating each household that has received remittances from a Moroccan Resident Abroad (MRA) with a household with similar demographic, socio-economic and geographical characteristics but which, for its part, has not received remittances.

The results show that there is a significant and positive relationship between remittances and consumption. As an additional income, remittances increase household consumption expenditure which indicates that higher the level of remittances, higher would be the consumption. As a consequence, these remittances decrease household poverty levels.

**Keywords:** Consumption, Migration, Morocco, Poverty, Propensity score matching, Remittances.

JEL Classification : F24

**Paper type:** Empirical Research

### Résumé :

Les transferts de fonds jouent un rôle très important dans la croissance économique et le développement d'un pays en même temps qu'ils affectent substantiellement, au niveau microéconomique, l'amélioration du bien-être des ménages. Cet article utilise l'appariement sur score de propension en tant que modèle économétrique afin d'évaluer l'impact des transferts de fonds sur la consommation des ménages. L'enquête nationale sur la consommation et les dépenses des ménages (ENCDM) réalisée par le Haut-Commissariat au Plan (HCP) durant la période de 2013-2014, constitue la source principale de l'analyse. Cette méthode consiste à associer à chaque ménage ayant reçu des transferts de fonds de la part d'un Marocain Résidant à l'Étranger (MRE) un ménage présentant des caractéristiques démographiques, socio-économiques et géographiques similaires mais qui, pour sa part, n'a pas reçu de transfert de fonds.

Les résultats montrent qu'il existe une relation significative et positive entre les transferts de fonds et la consommation. En tant que revenu supplémentaire, les transferts de fonds augmentent les dépenses de consommation des ménages, ce qui indique que plus le niveau des transferts de fonds est élevé, plus la consommation est importante. Par conséquent, ces transferts de fonds réduisent les niveaux de pauvreté des ménages.

**Most clés :** Consommation, Migration, Maroc, Pauvreté, Appariement sur score de propension, transferts de fonds.

**Classification JEL :** F24

**Type du papier :** Recherche Empirique

## Introduction

Remittances refer to money and goods that are transmitted to households by migrant workers working outside of their origin community (Adams and Cuecuecha 2010). They have been growing rapidly in the past few years and now represents the largest source of foreign income for many developing economies and plays consequently an important role in the economic and social development of these countries. In addition to the investments that remittances may create, they contribute to increasing household income in the countries of origin and thus to raising the consumption of household (Ismaili Idrissi, 2020).

It is hard to estimate the exact size of remittance flows because many take place through unofficial channels. According to the World Bank, Remittances to low- and middle-income countries (LMICs) withstood global headwinds in 2022, growing an estimated 5% to \$626 billion. This is sharply lower than the 10.2% increase in 2021. Remittances are a vital source of household income for LMICs. They alleviate poverty, improve nutritional outcomes, and are associated with increased birth weight and higher school enrollment rates for children in disadvantaged households. Studies show that remittances help recipient households to build resilience, for example through financing better housing and to cope with the losses in the aftermath of disasters (World Bank, 2022).

This paper uses an econometric model to assess the impact of remittances on consumption in Morocco by using the propensity score matching method based on the National Survey on Household Consumption and Expenditure (ENCDM) of 2013-2014 conducted by the High Commissioner for Planning. Unfortunately, the access to the most updated survey (2018-2019) was impossible. However, it is interesting to highlight that this research has never been conducted in Morocco. The only analysis has covered the remittances and its relations with energy consumption within the Moroccan context (Akçay & Demirtaş, 2015).

The paper is structured in three (3) sections. The first section is about Moroccan diaspora and remittances trends in Morocco. The second section provides a review of literature on remittances and consumption from theoretical and empirical perspectives and the final section presents the econometric model used to estimate the impact of remittances on consumption and consequently on poverty.

## 1. Remittances in Morocco

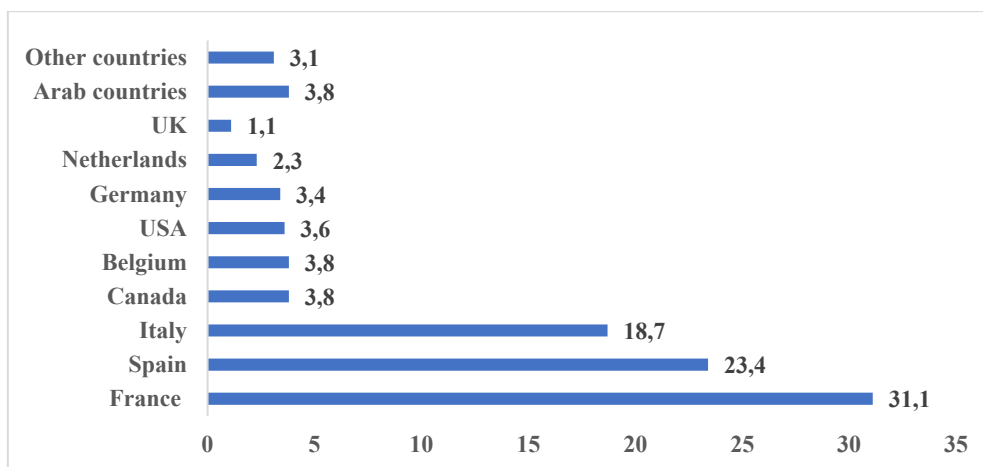
### 1.1. Moroccan Diaspora across the world

Morocco's large diaspora, estimated to comprise up to 15% of the population, has changed considerably since the Second World War when blue-collar workers moved to Europe to help rebuild (Oxford business group, 2016). The number has increased due to migration policies of host countries. In addition to increased use of family migration (reunification and family formation), Migration policies in Europe have been marked by several regularization procedures of undocumented migrants especially in Spain and Italy. Being considered as countries of emigration, Spain and Italy and even Portugal have emerged as new destination countries from the middle 1980s. Following the restrictive policies implemented by Europe based mainly on its absorption capacities, new emigration destinations have emerged. These concern the Arab countries, the countries of North America and, to a lesser extent, the countries West Africa. Despite some major shifting trends, the diaspora is still concentrated in Europe and reflects the presence of a strong diverse Moroccan community in term of age, gender, socio-professional categories, social status, living standards, expectations and needs (Ismaili Idrissi, 2020).

According to the latest National Survey on International Migration conducted by HCP during 2018-2019 (HCP, 2020), Europe receives most Moroccan migrants 86.4%. France comes in

first position with 31.1% followed by Spain (23.4%) and Italy (18.7%). North America attracts 7.4% of these migrants (3.8% for Canada and 3.6% for the USA) and the Arab countries 3,8% (figure n°1 below).

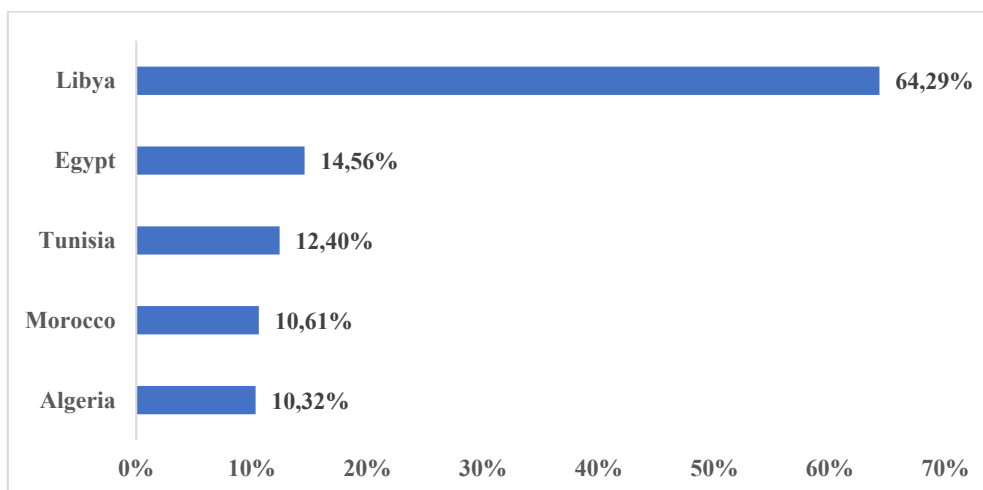
**Figure 1: Geographic distribution of Moroccan living abroad (in %)**



*Source: HCP, the National Survey on International Migration 2018-2019.*

In the North Africa region, Morocco is ranked in the 4th place in terms of migrants (10,61%) during the period 2013-2018, just after Tunisia. Libya occupies the first place with a percentage of 64.29% between 2013 and 2018 due to the consequences of the Arab Spring. Libya has experienced a crisis of governance and a security vacuum that has resulted in the fragmentation of political forces allied to powerful-armed militias, the establishment of terrorist groups, the opening of a path of mass migration to Europe, and an impoverishment of its population (SENAT, 2018).

**Figure 2: Migrants flow from North Africa region during 2013-2018**



*Source : INSEE, population census, main exploitation*

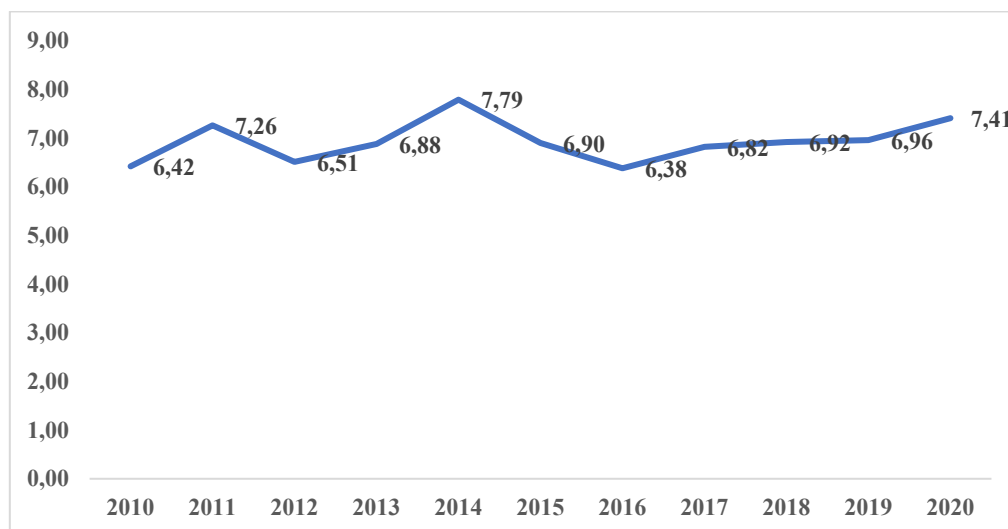
## 1.2. Trend of remittances to Morocco

Remittances from Moroccans living abroad play an important role in the economic and social of the country's development. They contribute strongly in Morocco's external financial balances. Those transfers have undergone major changes in line with the dynamics of Moroccan emigration and changes in the migration policy of countries of residence, especially those in Europe (Ismaili Idrissi, 2020).

In 2013, the volume of remittances from Moroccans abroad reached 57.9 billion MAD, representing 6.6% of Morocco's GDP. This proportion rose exceptionally in 2007 to 9% of GDP, before declining in 2008 due to the international economic crisis. The average share of remittances from Moroccans living abroad was around 7.5% of GDP during the period 2002-2013 (Ismaili Idrissi, 2020).

During the 2010-2020, the average of remittances sent by Moroccans living abroad was around 6\$ billion per year during the period, despite the coronavirus pandemic, remittances from Moroccans living abroad showed remarkable resilience, increasing by 6.5% in 2020 compared to 2019 (7.4\$ billion in 2020 versus 6.9\$ billion in 2019) (figure n°3 below).

**Figure 3: Remittances from Moroccans living abroad (in billions of \$) during the period 2010-2020**



**Source: World Bank**

According to the latest statistics from the exchange office, remittances by Moroccans living abroad amounted to more than 110,7 billion of MAD in 2021, compared with 95,5 billion of MAD, representing an increase of 16.97%.

The importance of remittances from Moroccans living abroad by country generally reflects the positioning of the Moroccan community, France tops the list of remittances countries due to the size of the Moroccan migrants in this country followed by Spain and Italy as they are the main recipients of Moroccan migrants in Europe. However, the average remittances per migrant reflect another reality in so far as the Emirates United Arab countries lead the way, followed by the United States of America and Saudi Arabia. In these three countries, migrants send more remittances to Morocco than migrants in Europe (Ismaili Idrissi, 2020). The origins of migrant remittances reveal a growing diversity in the destination countries of Moroccan migration and the strong links with families and communities back home maintained by the diaspora in these countries (Sorensen, 2004). These remittances have known an increase during the period 2013-2020 for all countries (table 1 below).

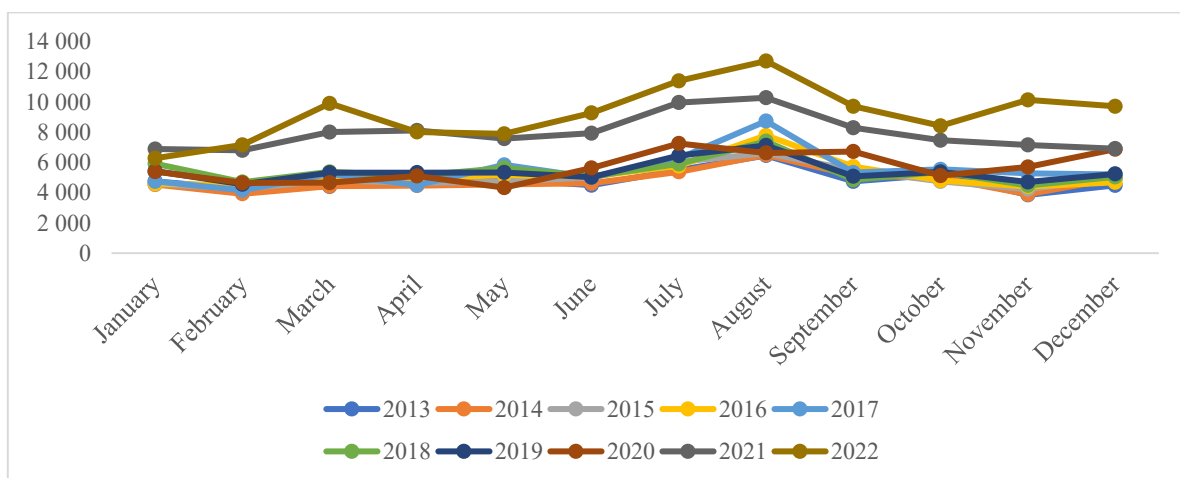
**Table 1: Geographic origin of migrant remittances to Morocco (in millions of MAD) (2013-2020)**

<b>Remittances by country</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
France	21 451,50	20 909,60	21 498,20	22 252,80	23 419,60	23 016,30	23 038,70	23 426,40
Spain	5 039,20	5 085,80	5 275,60	5 436,00	5 767,00	5 611,90	5 716,70	8 625,90
Italy	5 640,00	5 632,90	5 810,30	5 997,80	6 240,60	6 102,60	5 816,30	6 772,00
Saudi Arabia	3 202,10	3 342,50	3 921,20	4 299,20	4 696,10	4 549,20	4 719,50	4 327,20
United states	3 238,80	3 379,70	3 402,40	3 515,00	3 600,90	3 576,10	3 631,80	4 044,60
Germany	2 162,80	2 146,80	2 219,10	2 326,30	2 463,50	2 471,70	2 494,90	3 049,80
Belgium	3 137,60	3 207,30	3 136,60	3 224,10	3 346,90	3 358,10	3 376,70	3 204,60
United Arab Emirates	3 805,70	2 947,80	3 521,50	3 903,40	4 344,60	4 206,90	4 176,10	3 138,50
Netherlands	1 788,30	1 790,90	1 962,90	2 020,00	2 148,70	2 098,60	2 021,00	2 610,50
United Kingdom	1 320,50	1 485,90	1 559,20	1 629,20	1 716,10	1 670,10	1 710,10	1 533,40
Canada	860,2	808,4	805,5	825,9	852	849,6	852,9	1 135,70
Qatar	712,6	840,6	1 070,30	1 148,60	1 231,40	1 261,00	1 286,10	1 134,20
Switzerland	938,6	1 022,00	1 044,50	1 028,60	1 087,80	1 041,50	1 039,90	1 093,90
Kuwait	786,3	731,2	961,9	1 030,20	1 088,50	1 046,20	1 101,10	823,3
<b>Other countries</b>	<b>3 780,40</b>	<b>4 078,30</b>	<b>3 967,30</b>	<b>3 915,70</b>	<b>3 894,60</b>	<b>4 077,20</b>	<b>4 033,90</b>	<b>3 220,20</b>
<b>Total MRA Remittances</b>	<b>57 864,60</b>	<b>57 409,70</b>	<b>60 156,50</b>	<b>62 552,80</b>	<b>65 898,30</b>	<b>64 937,00</b>	<b>65 015,70</b>	<b>68 140,20</b>

*Source: Office des changes*

The impact of remittances on macroeconomic balances of a country like Morocco is far from negligible. It contributes not only to GDP and, in particular, to absorbing partially the trade deficit but also to creating a virtuous dynamic within the country. In addition to the economic impact, the social impact is significant (Ismaili Idrissi, 2020). According to the survey conducted by the Foundation Hassan II for Moroccans residing abroad in 2008 on the use of remittances from Moroccans migrants, 71% of remittances are used to cover household current expenditure (consumption, schooling, medical care, etc.) (Fondation Hassan II pour les MRE, 2008). Remittance flows are not necessarily stable during the year, but traditionally tend to peak in the months of July and August, the holiday season for Moroccans living abroad. Remittances also tend to peak during such feasts as Eid and other religious festivals... (Sorensen, 2004) (figure n°4 below).

**Figure 4: Monthly Remittances from Moroccans living abroad (in billions of MAD) during the period 2013-2022**



Source: Office des changes

This outcome has been confirmed by the latest study launched in 2019 and established by the World Bank (WB), the Greenback Initiative in Morocco concerned the characteristics of international remittances to Moroccan families as well as domestic transfers. This study was conducted on a panel of 146 people across four regions in Morocco, including Casablanca-Settat, Beni Mellal-Khenifra, Sous-Massa and Oriental. One of the main outputs of this study: half of recipients of international transfers (all regions combined) receives monthly payments regular, i.e., every two months or more:

- Monthly transfers most often concern women whose husbands reside abroad or elderly parents who are cared for by their children.
- Occasional transfers are made either on recurring occasions (religious holidays, back to school, summer holidays...) or in unforeseen circumstances such as medical expenses. These transfers were counted between 1 and 5 annual transfers (World bank & Bank Al Maghrib, 2021).

## 2. Literature review and hypothesis formulation

### 2.1. Theoretical literature on the impact of remittances on consumption

The literature on migrant remittances is relatively extensive. Various theoretical models have been developed to explain the motivations behind remittances and many empirical studies have attempted to test their validity. (Lucas and Stark, 1985) were the first to develop formal models to analyze remittances at the microeconomic level. Using data from Botswana households, the

authors showed several factors that can explain remittances sent by a migrant to his or her family back home, and the different impact of these remittances. Since Lucas and Stark's work, theoretical research on remittances has evolved around the influence of altruism towards the family back home and the self-interest of the immigrants themselves.

The concept of altruism as the most intuitive explanation for migrant remittances appears first in the work of (Becker, 1974), the author demonstrates that the different relationships between individuals, including those relating to altruism, can be integrated into economic theory. Since then, this hypothesis considers that the utility of an altruistic individual integrates as an argument not only his personal consumption, but also the well-being of the individuals with whom he is concerned. The latter can be members of the generations that precede or follow it. In the case of international remittances, altruism therefore refers to the concern that emigrants have for the well-being of their families remaining in the country of origin (OECD, 2005).

Remittances for altruistic reasons are usually directed to low-income households. These remittances are used to provide for their needs and improve their quality of life. According to (Lucas and Stark, 1985; Stark, 1991), these remittances become a component of income redistribution and a stimulus for increased domestic demand since these resources are preferentially used for the consumption of basic necessities. For example, (Shahbaz and Aamir, 2009) find that in Pakistan altruism is the main motive for remittances that stems from the economic situation of the migrant's family, a factor that the authors argue is key to improving remittance flows in the future.

Recent theories on the relationship between remittances and consumption have also focused on the idea of the existence of a more or less implicit and informal contract between the migrant and his family. (Poirine, 1997) finds that after having financed education, remittances generally feed daily consumption. The only implicit loan repayment contract does not justify the existence of fund transfers. Indeed, in some cases, the migrant does not have to repay a loan but continues to send funds. It is the existence of another implicit contract that makes it possible to justify the continuity of remittances; this is the implicit insurance and coinsurance contract.

## **2.2. Empirical literature**

Many authors have looked at the impact of remittances, and most show that remittances increase the final consumption of migrants' families in the country of origin. Remittance inflows can reduce poverty by increasing consumption and this importantly helps recipients of remittances to improve their living conditions (Ghosh, 2006; Sorensen and Pedersen, 2002).

However, (Bouklia, 2010) shows that remittances are mostly used in final consumption, they increase national income while (Mouhoud, 2013) has perceived remittances as an additional income that increases household income, which has implications for poverty reduction and increased consumption. Moreover, looking to the relationship between consumption and remittance, (Adams and Page, 2005) found that remittances have a significant and positive impact on consumption. Similarly, (Faini, 2007) also found a positive relationship between remittances and saving, consumption and lifestyle of people. (Gupta, Pattillo and Wagh, 2007) analyzed the impact of remittances across Africa using a panel of data from 76 developing countries including 24 African countries; the results of their empirical work confirm that remittances reduce poverty by improving the income of recipient households, increasing their consumption.

(Mohamed, 2021) in his study tried to examine how remittances affect household expenditure and reduce poverty in Somalia using propensity score matching method. This study's calculated result showed that the per capita consumption of remittance recipients was higher than non-recipient households, and household poverty levels decreased significantly due to remittance. Hence, the authors propose the following hypotheses:



- H1:** Remittances have a significant and positive impact on the income of recipient households;  
**H2:** Remittances have a significant and positive impact on household consumption;  
**H3:** Remittances decrease the household poverty levels.

### 3. Research methodology

#### 3.1. Data collection

Based upon a review of theoretical and empirical literature, this paper uses an econometric model to assess the impact of remittances on household consumption in Morocco. The National Survey on Household Consumption and Expenditure (ENCDM) of 2013-2014 carried out by the High Commissioner for Planning was used as the main source.

According to the results of the National Survey on Household Consumption and Expenditure (ENCDM) of 2013-2014 carried out by the High Commissioner for Planning (HCP), 1707 households received remittances out of the 15970 households surveyed which represents 10,68%.

#### 3.2. The model

In this research, the idea is to consider remittances as a treatment and to assess the probability of its impact on consumption and consequently on poverty. It is suggested that consumption expenditures and poverty may be influenced by households that receive remittances versus households that do not receive them.

The main issue with this type of analysis is that the assignment of subjects to treatment and control groups is not random, therefore the estimation of the average treatment effect is generally biased due to the existence of confounding factors. For this reason, matching between the treatment and control groups becomes difficult when there is an N-dimensional vector of characteristics.

One way to address this problem is to use the propensity score matching method which summarizes the treatment characteristics of each subject into a single index variable.

Propensity score matching (PSM) initiated by Rosenbaum and Rubin in 1983 is a quasi-experimental method in which the researcher uses statistical techniques to construct an artificial control group by matching each treated unit with a non-treated unit of similar characteristics. Using these matches, the researcher can estimate the impact of an intervention. In this paper, the propensity score matching method consists of associating each household that received remittances from an MRA with a household that did not receive remittances but that has similar demographic, socio-economic and geographical characteristics. This second sample serves as a comparison group.

Matching is based on the estimation of propensity scores, using a Probit model (default). The variable to be explained is binary:  $D_i = 1$  if the household receives remittances and  $D_i = 0$  otherwise (control group household). Given that  $Y_i$  represents the variables of interest, the measurement of the average effect of receiving remittances on the treatment group (recipient households) is as follows:

$$\Delta_{ATT} = E(Y_{i1} | D_i = 1) - E(Y_{i0} | D_i = 0)$$

To understand this effect using the matching method, two hypotheses must be respected: The Conditional Independence Assumption (CIA) and Common Support (Caliendo and Kopeinig, 2008).

The first hypothesis implies that the selection is based only on the observed characteristics  $X$ . While the second ensures that for each treated household, there is a control household identified

using the same observed variables, for which it shows strong similarities or proximity, as measured by propensity scores (but these variables are not introduced for the impact measure). Thus, the propensity score is estimated on variables that influence the chance of receiving remittances. In our case, we have chosen the following variables: the gender and age of the head of the household, the marital status, the level of education, the profession, the place of residence, and the region of residence.

The software used to analyze these data is a complete software (STATA) for statistical and econometric analysis developed by Stata Corporation.

### 3.3. Description of variables

Table 2 provide socio-demographic, socio-economic and geographical characteristics of households that received remittances from the MRA and households that did not receive remittances from the MRA. These characteristics are related to gender, age, marital status, educational level, professional status, area residence of the head households and region with some of the main observations which can be summarized as follows:

*Table 2: Characteristics of variables of households*

<b>Variables</b>	<b>Did not receive remittances</b>	<b>Receive remittances</b>
<b>Gender</b>		
Female	16,96 %	28,30 %
Male	83,04 %	71,70 %
<b>Age Group</b>		
Under 34 years old	10,42 %	7,26 %
34-44 years old	20,91 %	14,24 %
45-54 years old	26,38 %	24,55 %
55-64 years old	23,83 %	26,30 %
Over 65 years old	18,46 %	27,65 %
<b>Marital status</b>		
Single	3,46 %	4,45 %
Married	81,57 %	73,29 %
Divorced	3,10 %	4,28 %
Widowed	11,86 %	17,98 %
<b>Educational level</b>		
Without education level	52,83 %	46,57 %
Primary	32,18 %	33,98 %
Secondary	8,92 %	11,95 %
Higher	6,07 %	7,50 %
<b>Professional status</b>		
Employer	2,53 %	2,28 %
Self-employed	34,16 %	24,84 %
Employee	38,55 %	29,17 %
Apprentice, Family helper	0,32 %	0,29 %
Unemployed	24,44 %	43,41 %
<b>Area of residence</b>		
Urban	63,82 %	74,87 %
Rural	36,18 %	25,13 %
<b>Region</b>		
Tanger-Tetouan-Al Hoceima	10,56 %	10,78 %
Oriental	6,84 %	15,93 %
Fès-Meknès	12,40 %	12,42 %
Rabat-Salé-Kénitra	13,44 %	14,18 %
Beni Mellal-Khénifra	8,48 %	9,55 %

Casablanca-Settat	19,34 %	19,51 %
Marrakech-Safi	11,67 %	5,27 %
Daraa-Tafilalet	3,98 %	3,51 %
Sous-Massa	7,41 %	6,68 %
Southern regions (two regions)	5,90 %	2,17 %

*Source: Results obtained from data from the National Household Consumption and Expenditure Survey 2013/14- High Commission for Planning*

- Households headed by men who received remittances represent 71,7% (1224 men) against only 28,3% for those headed by women (483 women),
- Age plays an important role in the frequency of remittances as the receipt of remittances increases progressively with the age of the heads of households. Thus, if remittances received are around 7,3% for those who are under 34 years of age, it increases respectively around 26% and 28% for those who below to 55–64 and over 65 age groups. In contrast, 26,38% among the heads of households who did not receive remittances is ranged between 45 and 54 years,
- Remittances seem to be indifferent according to the marital status between the two groups as the share of households having received remittances is respectively 73% for married persons and 18% by widowed households while the rate is low among single and divorced persons with respectively 5% and 4%. The trend is also similar for heads of households who did not receive remittances,
- 47% of the households that received remittances have no educational level and 34% have only primary level of education, 43,41% are unemployed and 25% are living in rural areas while 75% are living in urban areas.
- Finally, the trend for the area of residence and region is quite similar between the two groups except for the regions of Oriental and Marrakech-Safi.

## 4. Empirical results

### 4.1 Impact of MRA's remittances on consumption

A good understanding of the impact of remittances requires a comparative analysis of the consumption expenditure and the level of poverty of two samples of the population: the first covers households that receive remittances and the second of those that do not. This option overcomes the methodological problem inherent in the fact that it is not possible to observe the consumption expenditure levels and the poverty status in which the receiving households would have been if they had not benefited at all from the remittances. The "counterfactual" analysis thus permitted is common in impact-assessment methods.

Based on this approach, the matching method was used to obtain the comparison group, by identifying non-beneficiary households whose certain characteristics are similar to those of the beneficiaries. The observed variables selected for the estimation of the propensity scores are as follows: the gender and age of the head of the household, the marital status, the level of education, the professional status, the area and the region of residence (Appendix 1).

The estimation of the parameters of the explanatory variables for remittances revealed an  $R^2$  coefficient of determination of 0.0660. Despite its low value, this is still quite satisfactory for an estimation based on individual data. Then, reading the **Wald chi2** (716.18) and its probability (**Prob> khi2=0.000**), we can say that the coefficients are significantly different from zero, so the model is well specified.

#### 4.2. Impact of remittances on total consumption expenditure and poverty by area of residence

The table 3 below presents the main results of the impact of remittances on consumption expenditure per capital and consequently on poverty of Moroccan households. This impact measures the average impact of the treatment group, i.e., the difference between the indicators (consumption expenditure, poverty rate) of the beneficiaries of the remittances and those of non-beneficiaries with the same characteristics.

The effective impact of remittances from Moroccans living abroad on the standard of living is 4026 DH per person per year. In other words, remittances from Moroccan nationals have enabled the beneficiaries to improve their standard of living by nearly one-fifth 20% (This is the ratio of the average effect to the per capita consumption expenditures of the control group (Appendix 2).

In other words, the econometric results show that MRA remittances have a positive impact on household consumption.

These results confirm those found by (Bouklia, 2010), in his study of Algeria, according to which remittances received by Algerian households have a positive impact on household consumption, with the majority of remittances used in final consumption.

Depending on the area of residence, the average effect of remittances from MRA on annual consumption per year is greater in urban areas (4942 MAD) than in rural areas (3492 MAD). This is due to the cost of living is comparatively high in urban areas therefore spending household might be more.

*Table 3: Impact of remittances on consumption and poverty by area of residence*

Area of residence	Average effect of MRA's remittances	
	Total annual consumption expenditure per capita	Poverty rate
<b>Urban</b>	4942 MAD	-1,2 %
<b>Rural</b>	3492 MAD	-5,9 %
<b>Total</b>	4026 MAD	-2,2 %

*Source: Results obtained from data from the National Household Consumption and Expenditure Survey 2013/14- High Commission for Planning.*

The rise in the living standards of people who received remittances from the MRA remittances has also contributed to the reduction of their level of poverty. The exact impact of remittances from MRA on the level of poverty 2.2 percentage points. Remittances have a positive influence on household poverty, in other words, remittances reduce poverty. This is consistent with the results obtained by (Gupta, Patillo and Wagh, 2008) in their study in Africa, and (Mohamed ,2021) in his study in Somalia. According to them, remittances reduce poverty by improving the income of recipient households.

#### 4.3. Impact of remittances on consumption expenditures per capita, poverty by region of residence

At the regional level, the effect on the consumption expenditure per capita is higher in the regions of "Rabat-Salé-Kénitra", "Southern regions" and "Casablanca-Settat". However, the analysis has shown that the impact on poverty reduction in these regions is low (between 0 and 2.2 percentage points). These regions have the lowest poverty rate that varies between 2 and 3.8% (HCP, 2014).

On the other hand, in the poorest regions of Morocco "Fès-Meknès" and the "Oriental" with respective poverty rate of 5.2% and 5.3% according to the National Survey on Household Consumption and Expenditure (ENCDM), remittances have alleviated poverty, poverty rates fell by 4.8 and 4.2 percentage points respectively.

However, a trend seems to be emerging, the effect on consumption expenditures per capita is smaller in the poorest regions, but the effect on poverty and inequality is higher. This is the case for the "Daraa-Tafilalet" region, where the average level of consumption expenditure does not change due to remittances but the poverty rate is reduced by 1.7 percentage points. This region is the poorest in Morocco, its poverty rate is estimated at 14.6% based on HCP census in 2014. This means that the flow of remittances of the MRA in this region do not seem to be used in consumption expenditures but rather it is channeled to investment or savings.

**Table 4: Impact of remittances on consumption and poverty by area of residence**

Region of residence	Average effect of MRA's remittances	
	Total annual consumption expenditure per capita	Poverty rate
<b>Tanger-Tetouan-Al Hoceima</b>	3865	-3,2
<b>Oriental</b>	1233	-4,2
<b>Fès-Meknès</b>	4211	-4,8
<b>Rabat-Salé-Kénitra</b>	9908	-2,2
<b>Beni Mellal-Khénifra</b>	2406	-1,6
<b>Casablanca-Settat</b>	5121	-0,4
<b>Marrakech-Safi</b>	1189	0
<b>Daraa-Tafilalet</b>	0	-1,7
<b>Sous-Massa</b>	3299	-2,2
<b>Southern regions (two regions)</b>	7123	0

*Source: Results obtained from data from the National Household Consumption and Expenditure Survey 2013/14- High Commission for Planning*

## 5. Conclusion

Remittances from MRA play an important role in the economic and social development of Morocco. They have been increasing in recent years which have contributed significantly in improving the population's consumption and reducing consequently poverty and vulnerability levels.

The purpose of this paper is to assess the impact of remittances on the consumption expenditures and consequently on poverty by using the propensity score matching method based on the National Survey on Household Consumption and Expenditure (ENCDM) of 2013-2014 carried out by the High Commissioner for Planning (HCP). The research finds out that the spending of households that have benefited from the remittances of MRA have improved significantly, with an increase of around 20%. The impact on standards of consumption expenditure is more important in urban areas than in rural areas. In terms of poverty, remittances from MRA have an effective impact of 2.2% on poverty in terms of percentage points among households receiving benefiting from the remittances. The impact is more evident in rural areas than in urban areas.

In general, the findings suggest that remittances can be used as a tool to fight poverty in Morocco considering the fact that remittances had effect on poverty. Therefore, this study can be used as an input to formulate policies associated with migrant remittances as they play a crucial role in reducing poverty in the country.

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## APPENDIX

### Appendix 1: Propensity score estimation results for propensity score for matching

**Probit regression**

Number of obs = 15970  
 LR chi2(27) = 716.18  
 Prob > chi2 = 0.0000  
 Log likelihood = -5071.0544  
 Pseudo R2 = 0.0660

Receive remittances	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
<b>Gender</b>						
<i>Female</i>	.3099716	.064794	4.78	0.000	.1829778	.4369655
<i>Male</i>	.3703041	.0619876	5.97	0.000	.2488107	.4917975
<b>Age Group</b>						
<i>Under 34 years old</i>	-.4142238	.0657151	-6.30	0.000	-.5430232	-.2854245
<i>34-44 years old</i>	-.3700753	.0539078	-6.86	0.000	-.4757326	-.264418
<i>45-54 years old</i>	-.2061487	.0477909	-4.31	0.000	-.2998172	-.1124803
<i>55-64 years old</i>	-.1689981	.0429809	-3.93	0.000	-.2532391	-.0847572
<i>Over 65 years old</i>	.0139476	.0062167	2.24	0.025	.0017632	.026132
<b>Marital status</b>						
<i>Single</i>	.2576922	.0878594	2.93	0.003	.0854909	.4298934
<i>Married</i>	.219741	.0658859	3.34	0.001	.090607	.3488751
<i>Divorced</i>	.0837326	.0818439	1.02	0.306	-.0766784	.2441437
<i>Widowed</i>	.2909807	.08852	3.29	0.001	.4644767	.1174848
<b>Educational level</b>						
<i>Without school level</i>	-.2808092	.0506621	-5.54	0.000	-.380105	-.1815134
<i>Primary</i>	-.0784261	.0517378	-1.52	0.130	-.1798303	.0229782
<i>Secondary</i>	.0776354	.0595397	1.30	0.192	-.0390604	.1943311
<i>Higher</i>	.0507054	.0670724	0.76	0.450	-.0807541	.182165

<b>Professional status</b>						
<i>Employer</i>	-.2814795	.053422	-5.27	0.000	-.3861847	-.1767744
<i>Self-employed</i>	.0484241	.0867137	0.56	0.577	-.1215316	.2183798
<i>Employee</i>	.1917463	.0680353	2.82	0.005	.0583996	.325093
<i>Apprentice, Family helper</i>	-.0868331	.0607318	-1.43	0.153	-.2058652	.032199
<i>Unemployed</i>	.1142542	.090962	1.26	0.209	-.0640281	.2925364
<b>Area of residence</b>						
<i>Urban</i>	.1143135	.0335013	3.41	0.001	.0486521	.1799748
<i>Rural</i>	.0223757	.0591073	0.38	0.705	-.0934725	.1382239
<b>Region</b>						
<i>Tanger-Tetouan-Al Hoceima</i>	.4828307	.0877587	5.50	0.000	.3108268	.6548347
<i>Oriental</i>	.8937714	.0872933	10.24	0.000	.7226797	1.064863
<i>Fès-Meknès</i>	.4773656	.0863255	5.53	0.000	.3081708	.6465605
<i>Rabat-Salé-Kénitra</i>	.445458	.0854192	5.21	0.000	.2780394	.6128766
<i>Beni Mellal-Khénifra</i>	.5393773	.0895456	6.02	0.000	.3638712	.7148833
<i>Casablanca-Settat</i>	.4167187	.0831904	5.01	0.000	.2536685	.5797689
<i>Marrakech-Safi</i>	.1218057	.0929331	1.31	0.190	-.0603399	.3039513
<i>Daraa-Tafilalet</i>	.4526584	.1048937	4.32	0.000	.2470706	.6582462
<i>Sous-Massa</i>	.4403264	.0929132	4.74	0.000	.2582198	.6224331
<i>Southern regions (two regions)</i>	.4406412	.0927958	4.75	0.000	.2587648	.6225176
<b>Constant</b>	-2.369399	.2109317	-11.23	0.000	-2.782817	-1.95598

Note: S.E. does not take into account that the propensity score is estimated.

<b>Variable</b>	<b>Sample</b>	<b>Treated</b>	<b>Controls</b>	<b>Difference</b>	<b>S.E.</b>	<b>T-stat</b>
<b>Annual consumption expenditure per household</b>	Unmatched	95482.6777	72624.8149	22857.8628	1586.08668	14.41
	ATT	95399.6151	81351.3284	14048.2868	2565.33132	5.48
<b>Annual consumption expenditure per person</b>	Unmatched	26281.5674	18232.0789	8049.4885	519.731528	15.49
	ATT	26037.3556	21119.7349	4917.62066	875.629267	5.62
<b>Poverty</b>	Unmatched	.008201523	.034004066	-.025802543	.004451492	-5.80
	ATT	.008363202	.022700119	-.014336918	.004268211	-3.36

#### Appendix 2: Impact of remittances on total consumption by area of residence

<b>Area of residence</b>	<b>Did not receive remittances</b>	<b>Receive remittances</b>	<b>Total</b>
<b>Urban</b>	20450.764	25393.114	22790.698
<b>Rural</b>	10228.196	13720.917	12089.472
<b>Total</b>	17887.695	21914.281	19859.637

Source: Results obtained from data from the National Household Consumption and Expenditure Survey 2013/14 - High Commission for Planning.



**Appendix 3: Impact of remittances on poverty by area of residence**

Area of residence	Did not receive remittances	Receive remittances	Total
Urban	0.01531008	0.00355209	0.00974331
Rural	0.10351566	0.04448075	0.07205587
<b>Total</b>	<b>0.03742556</b>	<b>0.03742556</b>	<b>0.02681069</b>

*Source: Results obtained from data from the National Household Consumption and Expenditure Survey 2013/14 - High Commission for Planning.*

**Appendix 4: Impact of remittances on total consumption by region of residence**

Region of residence	Did not receive remittances	Receive remittances	Total
Tanger-Tetouan-Al Hoceima	18133.422	21997.74	19938.504
Oriental	17162.576	18395.875	17806.531
Fès-Meknès	15344.229	19466.112	17312.363
Rabat-Salé-Kénitra	21228.796	31136.988	26032.922
Beni Mellal-Khénifra	12303.281	14763.385	13532.876
Casablanca-Settat	21008.282	26128.593	23392.295
Marrakech-Safi	16989.474	18177.546	17597.362
Daraa-Tafilalet	14409.598	14156.027	14277.925
Sous-Massa	16601.08	19899.61	18258.854
Southern regions (two regions)	17207.175	24330.372	21225.162

*Source: Results obtained from data from the National Household Consumption and Expenditure Survey 2013/14 - High Commission for Planning.*

**Appendix 5: Impact of remittances on poverty by region of residence**

Region of residence	Did not receive remittances	Receive remittances	Total
Tanger-Tetouan-Al Hoceima	0.0316476	0	0.01686452
Oriental	0.04655154	0.00494912	0.02482924
Fès-Meknès	0.06097008	0.0125554	0.03785283
Rabat-Salé-Kénitra	0.03120455	0.00931713	0.02059213
Beni Mellal-Khénifra	0.06475544	0.04837805	0.05656979
Casablanca-Settat	0.00583121	0.00209039	0.00408949
Marrakech-Safi	0	0	0
Daraa-Tafilalet	0.1365778	0.11943879	0.12767794
Sous-Massa	0.04019774	0.01803965	0.02906153
Southern regions (two regions)	0	0	0

*Source: Results obtained from data from the National Household Consumption and Expenditure Survey 2013/14 - High Commission for Planning.*