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Septembre 2009

40 p.

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WHY MIGRANTS' REMITTANCES REDUCE INCOME INEQUALITY IN SOME COUNTRIES AND NOT IN OTHERS?[‡]

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This version, September 2009

Abstract

According to the literature, the effect of remittances on income inequality in origin countries of migrants is not clear, whatever empirical approach is used. Aiming at clearing up this ambiguity, some authors took into account the historical, social or economic context of the home countries considered. The underlying idea of most of these studies is actually that the impact of remittances on income inequality depends on whom migrates, i.e. on the location migrants occupy in income distribution in their home country. However, to our knowledge, no macroeconomic study examining the remittances effect on inequality, consider the composition of migratory flows. To reveal at the macroeconomic level the position of migrants in income distribution at origin, we introduce in our equation of inequality non-linearities in the level of development of the recipient countries, in the costs of migration and in the level of brain drain. Using a panel sample of 80 developing countries over the period 1970-2000, and even by factoring in the endogeneity of remittances, this paper provides evidence of some characteristics of countries of origin in which there is an inequality-decreasing effect of remittances on income inequality. It turns out that countries belonging to the Mediterranean Basin have the characteristics revealed.

Key words : Migrants' remittances, income, migration costs, brain drain, income inequality, instrumental variables, Mediterranean basin

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1 Introduction

For many developing countries, international migrants' remittances (financial flows arising from the cross-border movement of nationals of a country) have emerged as a significant source of external financing over the past two decades. During the last decade the remittances growth exceeded that of private capital flows and of foreign public aid. According to the last World bank estimations, since 2002 migrants' remittances to developing countries would have more than doubled and would reach 251 billion dollars US in 2007 (figure that might be much higher given the unknown extent of unrecorded flows passing through informal channels). This magnitude added to their relative stability over time and to their potential macroeconomic effects generate a growing interest from the international community for these special capital flows. Even if research on remittances impacts in recipient countries is expanding, only few studies consider the role played by these flows on income distribution in the communities of origin.

Furthermore, these studies examining the potential effect of migrants' remittances on income distribution in recipient countries lead to conflicting findings. While some papers indicate an inequality-inceasing effect of remittances in countries of origin, others reach an inverse conclusion. This contradiction is due to the fact that the effect of remittances on inequality depends on whom emigrates and so, on whom sends money back. We can imagine that if migrants come mainly from the poorest fringes of the population in their country of origin, remittances will benefit essentially to the poor, what will allow to reduce income inequality in the recipient countries. On the contrary, if migration costs are such as only the richest people can go away, it is logical to think that in this case remittances will reach only the richest households of home countries and thus increase income inequality.

The aim of this paper is to provide an empirical evidence that the relationship between international remittances and income inequality depends on whom migrates by introducing non-linearities in our income inequality equations. Whereas some authors (Jones, 1998 Stark et al., 1986, Koechlin and Leon, 2006) argued that the effect of remittances on inequality varies with the stage of migration history, we show that this effect depends on migration costs, on the level of development and on the level of brain drain in home countries.

By estimating successively our equations with Ordinary Least Squares (OLS) and with instrumental variables, our findings suggest that :

- the more the mean income of the recipient country is high, the more remittances reduce income inequality,
- international remittances become more unequilizing as the costs of emigration increase,
- the more the braindrain is important, the more remittances raise income inequality,
- the Mediterranean Basin is a region where remittances reduce significantly inter-households inequality.

The rest of the paper is structured as follows. First, we briefly summarize the literature examining the impact of remittances on income distribution which leads to conflicting findings. Then, we present different papers trying to explain this ambiguity, what leads us to consider the location of migrants in the income distribution. Section 2 describes our theoretical model based on the Gonzales-König and Wodon's (2005) one. Section 3 consists in presenting the results of our econometrical regressions which allow us to reveal some characteristics of recipient countries for which remittances may reduce inequality. In section 4 we finally use our findings to examine the Mediterranean Basin case.

2 Remittances effect on income inequality : overview of the literature

2.1 The ambiguous effect of remittances on the distribution of income

Existing findings on the impact of remittances on income inequality are conflicting, whatever approach is used (remittances considered as exogeneous or regarded as a substitute for the domestic income the household would have earned if the emigrant had stayed home).

The simpliest way to investigate the remittances effect on inter-households income distribution consists in considering these flows as an exogenous source of income that simply adds to the households' current income. It consists often in breaking down the Gini coefficient according to the influence that every source of income has respectively upon this coefficient (Lerman and Yitzhaki 1985). This methodology allows to estimate the marginal effect of remittances on the Gini coefficient by considering that all other sources of income remain constant. By this way, several authors highlight the inequality-decreasing effect

of remittances on income distribution in recipient countries (Ahlburg, 1991, 1995, 1996 ; Brown and Connell, 1993). However, according to the first studies on the remittances-inequality relationship in the Pacific islands, it would seem that these flows have had in the first time an adverse effect on household income distribution, as much as only the richest households took part in emigration (Shankman 1976, Connell 1981).

However, as much as emigration often represents very high costs, it is possible to imagine that in some cases, the poorest families cannot afford to defray the cost of emigration and therefore do not benefit from overseas income transfers. It is in that way that Lipton (1980), Stahl (1982) and Stark, Taylor and Yitzhaki (1986) explain why migrants' remittances can constitute "inequality accelerators" in migrants-source areas. Based on a similar method of decomposition, some country-case studies confirm empirically this theroy (Leones and Feldman's, 1998 ; Rivera, 2005 ; Wouterse, 2008[1]).Yang and Martinez (2006), as for them, found no significant effect of international remittances on income distribution in Philippines.

By drawing inspiration from the New Economics of Labor Migration (NELM), other economists considered the direct effect of migrants' remittances, but also the indirect one. It is possible to imagine that remittances have an effect on households income which receive them (by a postive way through the relaxation of income constraints[2] or by a negative way through the phenomenon of moral hazard[3]).

Taylor's study (1992) on Mexico, is part of the first ones to take into account the indirect effects of remittances on the distribution of income. By introducing the possible indirect effects of remittances and long term effects, he finds that the remittances amount in 1982 leads to a decline of the Gini coefficient in 1988 of 0,01 percent. Using the same database, Taylor and Wyatt (1996) improved this framework by unloosing the constraint according to which indirect effects are the same for all households. They assume that remittances have weaker indirect effects on the richest households which do not face liquidity constraints and which are able to insure themselves against shocks of production without relying on remittances. They find that when indirect effects are taken into account, the inequality-decreasing effect of remittances becomes higher given that indirect effect of remittances on income may be more important for households located in low steps of the income

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[1]Rivera (2005) and Wouterse (2008) confirm however this theory just in the case of international remittances whereas internal one are found to have an inverse effect (because costs of internal migrations being less important, the poorest households are more likely to participate to this kind of migration).

[2]See Stark and Lucas (1985).

[3]See Chami, Fullenkamp and Jahjah (2005).

distribution.

Finally, some researchers have examined the distributional effect of migrants' remittances by using a counterfactual approach. Instead of considering migrants' remittances as an exogenous source of income, they look upon them rather as a potential substitute for domestic earnings. The focus of this approach is on determining whether inequality level are lower in the current scenario with migration and remittances, than in a scenario with no-migration. Oberai and Singh (1980) are the first ones who have used this approach to analyze the impact of remittances on inequality. They show that remittances sent by migrants living in towns to the rest of their family stayed in the campaign, tend to raise income inequality within the rural region of Punjab in India, whereas by employing a similar approach, Knowles and Anker (1981) find only a very weak effect of this type of remittances on the total distribution of income in Kenya. Adams (1991) and Rodriguez (1998) show that international remittances tend to raise income inequality too, respectively in the case of Egypt and of the Phillipines. On the contrary, using the same approach, Ratha (2005) and Lokshin et al. (2007) find an inequality-decreasing effect of remittances.

Furthermore, for a same country, the different approach used seem to lead to contradictory results : when Brown and Jimenez (2007) suppose for example that remitttances are an exogenous source of income, they find that they lower income inequality in Tonga and Fiji, whereas they seem to have no significant effect or to raise income inequality when the authors adopt a counterfactual analysis (the same result is obtained by Barham and Boucher, 1998). Different results are also obtained for a same country according to the kind of remittances considered : Adams, Cuecuecha and Page (2008) obtain a different effect of remittances on poverty and inequality in Ghana (according to they are internal or international remittances ; international remittances would be more efficient to lower the poverty headcount, the poverty depth and the severity of poverty than internal remittances, but they find that international remittances incrase more income inequality in Ghana than internal remittances). This finding might be explained by the fact that households receiving internal remittances and those receiving international remittances are not located in the same place in the income distribution.

Next to all these country-case studies, we find just few macro-economic studies. We can cite for example the paper of Acosta et al. (2007) examining the case of 10 countries of Latin America and Caribbean region. They find that remittances allow to reduce significantly, albeit slightly, income inequality in the recipient countries[4]. Using a panel of 64 developing

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[4]They do also in this study a micro-econometric analysis, from which they obtain conflicting results. By

countries over the period 1988-1998, Chauvet and Mesple-Somps (2006) show that on average international remittances have a light income equalizing effect at origin.

In sum, empirical findings are not straighforward. They do not allow to know undoubtedly whether remittances reduce or increase income inequality within recipient countries. Results vary with the empirical approach used (remittances considered as exogeneous or as a substitute for home income), with the type of remittances considered (internal or international) and with the country examined. Consequently, there has been some efforts to explain the contradictory findings concerning the impact of migrants' remittances on inequality in the recipient countries.

2.2 The remittances-inequality relationship is not monotonic

2.2.1 The role played by the historical background of the recipient countries

Few papers explain conflicting findings concerning the effect of remittances on inequality by historical specificities of recipient countries, more precisely by their migratory history. They consider this relationship as a dynamic process. When migration to a new destination starts taking place, information about the host country and its employment opportunities are still limited, what leads to high costs of emigrating. Consequently, only well-off households send some of their members abroad and enjoy remittances, what causes an increase of inequality within the home country.[5]. But over time, after the settlement of migrant networks in the foreign country, migration costs decline and access to the migration process become more diffused across sending-area households[6] (what is called "network effects")[7]. By making migration affordable for households in the lowest levels of income distribution, the initially inequality-increasing effect of remittances can be reversed.

By comparing the rural income distribution in two Mexican villages, Stark, Taylor and Yitzhaki (1988) find for example that in the Mexican village that has recently begun

using a counterfactual methodology, they show that remittances reduce income inequality in Paraguay, in El Salvador and in Guatemala because in these countries recipient households are predominantly located in low fringes of the income distribution, whereas in the 6 other sending countries, remittances seem to increase inequality because it is richest people who benefit from this source of income.

[5]See Portes and Rumbaut (1990) and Lipton (1980)

[6]See Massey, Goldring and Durand, 1994

[7]Jones (1998) distinguishes even a third stage named *the later adopter stage* corresponding to the time that the accumulation of migrants' remittances is so important that new inequalities appear between households with migrants and households without migrants.

to send migrants abroad, international remittances had an unequalizing effect on income distribution. On the contrary, remittances from international migrants had an inequality-decreasing effect on the village that had a long history of participating in migration to the United States[8]. By expanding the investigation to a large number of Mexican communities, McKenzie and Rapoport (2004) find that remittances are all the more equalizing that communities face high past emigration rates.

Koechlin and Leon (2006) generalize this result by using a cross section of 78 countries and by introducing in the inequality equation the remittances variable (positive sign) and its square (negative sign). Their findings provide evidence of the existence of an inverted U-shaped relationship between international remittances and income inequality

2.2.2 The role played by the socio-economical context of the sending-area

Mc Kenzie and Rapoport (2004) argue that *a priori*, the effect of remittances on income inequality cannot be determined because it depends upon the initial distribution level of income in the recipient countries[9].

Gonzales-König and Wodon (2005), as for them, show that the effect of remittances on the Gini coefficient depends on the average income of the regions of origin. Koechlin and Leon (2006) add that the development of the financial sector and of the education level of the population can help home countries to reach the inequality-decreasing section of the curve faster.

2.2.3 The necessary consideration of whom migrates

In fact, the underlying idea of most of these studies is that the effect of migrants' remittances on income inequality depends firstly on whom is migrating and remitting, in other words, on which step of the population they come from. Not having macroeconomic data on who is migrating, we focus on how remittances impact varies with : the income level at origin, the costs of migration migrants have to face up and the qualification of the migrants.

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[8]They find similar results in the case of remittances from internal migrants

[9] They show that remittances can intensify income inequality if their initial level is high, on the contrary, remittances can favour income smoothing when the initial inequality level is weaker.

We argue that the location of migrants in income distribution can mainly be revealed by the capacities and the incentives individuals have to migrate, that are approximated by these conditional variables.

3   The theoretical model

Our theoretical model is based on the Gonzalez-König and Wodon's (2005) one. They consider a two-period model with a household having two sources of income : the wage from one of the children and the wage from one adult. They suppose that only the child can migrate.

The family is considered as a single economic agent. Its utility depends on today's consumption, c_0, on the present value of parents consumption in period 2, c_p, and on c_s which is the consumption of the child who have migrated or not. The family's utility can thus be written :

$$U\left(c_O, c_p, c_s\right) = u\left(c_0\right) + \beta\left[V\left(c_p\right) + W\left(c_s\right)\right] \tag{1}$$

Where β represents the discounting factor and u, V and W are continuously increasing concave functions.

During the first period, parents work and earn a wage w. If the son works too, he receives the same wage. If the child migrates, he receives no wage in the first period and their parents have to pay for migration costs c (c is supposed to be the same for all households). So total migration cost is composed by the direct migration costs c and by the income loss w following the departure of the child in the first period. In the second period, if the child has migrated, he earns a wage w_m in the destination region, which is supposed to be the same for all migrants. Gonzalez-König and Wodon assume also that the market incompletude induces that households have no access to borrowing for paying for migration costs in the first period.

To simplify, the price of the current and future consumption is normalized to one. If the child decides to migrate in the first period, he will remit during the following period a part α of its wage to the rest of its family (they suppose that remittances are mainly guided by altruism). But when $w_m \leq w$, the child cannot migrate and there will be no remittances.

The constraints of the optimization problem are then :

$$c_0 = 2w - \zeta (w + c)$$

$$c_p = w + \zeta (\alpha w_m)$$

$$c_s = w + \zeta ((1 - \alpha) w_m - w)$$

With $\zeta = 1$ if the child migrates and 0 otherwise.

Gonzales-König and Wodon write then migration gains for the household as follows :

$$G(w) = u(w - c) - u(2w) + \beta [V(w + \alpha w_m) - V(w) \qquad (2)$$

$+ W((1 - \alpha) w_m) - W(w)]$

The household will participate to migration only when migration gains are positive ($G \geq 0$).

$u(w - c) - u(2w)$ is the differential of the household utility in the first period depending on whether the child migrates or does not. $V(w_O + \alpha w_m) - V(w)$ represents the gain of utility following the child migration for those who stay in the region of origin in the second period and $W((1 - \alpha) w_m) - W(w)$ is the migration gain of the child in the second period.

The adaptation of the Gonzales-König and Wodon's model to our macroeconomic approach

The effect of remittances on income inequality depends on whom migrates. So, we aim at using some variables able to reveal indirectly the location of migrants in the income distribution, that is to say the socio-economic origin of households for which $G(w) \geq 0$. According to the equation (3) we observe that the participation of households to migration depends on the level of wage at origin, which represents at the same time the financial ability and the financial gain of migration (through the differential of wage between countries of origin and of destination), and on the total migration costs.

Households will take part in migration only if the migration costs they face in the first period $(c + w)$, is inferior or equal to the wage gap between the sending country and the

destination one, $\beta\left(w_m - w\right)$. Nevertheless we can suppose that the very poor households, for which w is inferior or equal to the cost of emigration $(w \leq c)$, cannot migrate. As the same time, if the household is located at the top of the income distribution, its wage is almost similar to the one in the destination country $(w \simeq w_m)$ and it will not be interessant to migrate, even if it can defray the migration cost.

However the theoretical model of Gonzalez-König and Wodon does not completely correspond to the macroeconomic approach we want to have in this study. Their model focuses on a specific country where income is not equaly distributed among people.

Since we want to adopt a cross-section and macroeconomic appoach, we have to take into account two main elements which are not considered in the model of Gonzales-König and Wodon : migration costs varying with countries and the difference in the level of development of home countries.

    – Migration costs and possibility to migrate

In a cross-section study, we have to assume that migration cost householdshave to face up, differs between countries. To take this difference in costs into account, we use passport cost in the sending country as well as the distance between the source country and the main destination of its international migrants. We name c_a (c_b) the migration costs faced by people living in a developing country which applicates high (low) costs of passport (with $c_a > c_b$). The implication of variation in migration costs between countries gives some theoretical predictions which are resumed in Table 1.

[Tab. 1 about here.]

We observe that whatever migration costs may be, the richer households can take part in the migratory process (cases 3 and 4). Concerning poor households, we can rightfully imagine that if migration costs are low, they can participate to emigration too. However, case 1 is ambiguous. We have to consider the level of development of the home country to know without any doubts, whether they can migrate or not (what we will see later). Among these four cases, only the one corresponding to the emigration of poor people (case 2) can lead surely to a decreasing of inequality in the home country.

– Household income and emigration

We argue first that the poorer of a rich country (*country 2*), will be better-off than the poorer of a less rich country (*country 1*). Consequently, it is possible that poor people of *country 2* can defray costs of emigration whereas poor people of *country 1* can not.

We name w_1 the mean wage of the relatively poor country and w_2 the mean wage of the relatively rich country, with $w_1 \leq w_2$. Poor people of the poorer country earn a wage $\underline{\underline{w_1}}$ and rich people receive a wage $\underline{w_1}$, with $\underline{\underline{w_1}} < \underline{w_1}$. Similarly, poor people of the richer country earn a wage $\overline{w_2}$ and rich people receive a wage $\overline{\overline{w_2}}$, with $\overline{w_2} < \overline{\overline{w_2}}$.

We assume here that the choice of the household to take part in migration depends only on the financial profits it can gain from it. The implications of these improvements in our theoretical model are resumed in Table 2.

[Table 2 about here.]

Rich people from the richest countries have no financial incentives to migrate (because $\overline{\overline{w_2}} \simeq w_m$) and do no migrate. On the contrary, rich people from the poorest countries have a so bigger financial interest to participate to migration (because $\underline{w_1} < w_m$) and migrate. Likewise, whatever is the development level of the sending countries, poor people gain a financial interest to migrate ($\underline{\underline{w_1}} < w_m$ et $\overline{w_2} < w_m$). But we also have to consider the financial capacity to migrate if we want to clear up doubts on what happens in case 5. In this case, poor households can migrate only if migration costs are not too high. However, we can think that remittances surely reduce income inequality in case 6.

To clear up the ambiguity characterizing cases 1 and 5, it is essential to consider at once migration costs and level of development.

– Who migrates ?

If we want to know where migrants are located in the income distribution, we have to combine both conditions necessary to migrate (the financial capacity and the financial interest). We suppose that people migrate only if their wage at origin is lower than the average wage ($w < w_m$) and if the wage earned by their family in the country of origin is high enough to make migration affordable ($w > c$).

We suppose that for rich households from relatively richer developing countries, migration does not represent a significant financial interest, because the gap between the wage they earn in their home country and the one they can expect after migration, is too weak to compensate the psychologic costs of migration. So, migration does not constitute an optimal strategy for this kind of households.

On the contrary, we expect that rich households living in relatively poorer countries are incited to migrate because on one hand, their income is high enough to pay for migration costs and because, on the other hand, the wage gap between the two countriesoffers them a significant expected financial gain ($\overline{w_1} < w_m$ and $\overline{w_1} > c$).

Whatever costs of migration may be, poor people from relatively rich developing countries would take part in migration because the wage gap is sufficiently high to incite them to migrate, and because even they are issued from the poorer fringes of the population, given that they live in a relative rich developing country they would be able to defray migration costs ($\overline{w_2} < w_m$ and $\overline{w_2} > c$). In this cases, we can then expect that remittances have a smoothing effect on inequality in the home country.

Concerning households belonging in low levels of the income distribution in the poorest countries, even if it would be financially interesting for them to migrate, we assume that if migration costs are high they can not leave their home country ($\underline{\underline{w_1}} < w_m$ but $\underline{\underline{w_1}} < c_a$). But if they are living in a closer country (with lower costs of migration), we suppose that their income, even if it is not very high, allow them to overcome migration costs and to migrate ($\underline{\underline{w_1}} < w_m$ and $\underline{\underline{w_1}} > c_b$)[10].

By summarizing results in Table 3, we observe that only cases 3', 5' and 7' correspond to an inequality reduction by remittances. On the contrary, in cases 2' and 4' remittances may increase income inequality within home countries.

[TAB. 3 about here.]

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[10]All these propositions are illustated by the diagramme in the appendix 1

4 Econometric analysis of the non-monotonic relation between remittances and income inequality

4.1 Estimation strategy

In this section we employ quantitative evidence to test the hypotheses formulated before. We expect that remittances have non-linear effects on income inequality depending on the location of migrants in the income distribution which can be revealed by the level of development of recipient countries, migration costs, and by the migrants' skills.

To provide evidence of our hypotheses, we use successively different interactive terms (remittances×conditional variable) in our regression analysis. The basic equation is always completed by introducing a set of control variables which are often used in inequality equations at the macroeconomic level (Deininger and Squire, 1997; Calderon and Chong, 2000, 2006, Koechlin and Leon, 2006 and some others[11]). Firstly, as did Kuznets (1955), we control for a possible quadratic relation between the level of economic development and income inequality. We take also into account the financial development of the home country, the inflation level, the level of the public consumption, commercial and financial openess, demographic effects proxied by dependency ratio and finally an institutional variable represented by the level of democracy.

Our time-series cross-sectional model takes so the following form:

$$Gini_{it} = \alpha + X\prime_{it}\beta + \gamma Z_{it} + \delta_1 wrh_{it} + \delta_2 (wrh_{it} \times Z_{it}) + \mu_i + \eta_{it} \tag{3}$$

Where X is the matrix of control variables, Z is the matrix of conditional variables (the development level, the migration costs and the brain drain level). wrh is the logarithm of remittances per capita, μ_i is a country fixed effect and η_{it}, the error term.

Two coefficients will draw mainly our attention:δ_1 and δ_2, which give some information on the marginal impact of remittances on income inequality conditional to some countries characteristics Z.

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[11]See also Ahluwalia (1976); Li, Squire, and Zhou (1998); Papanek and Kyn (1986); Sudhir and Kanbur (1993); Milanovic (1996); and Kuznets (1955).

– If Z is the *level of economic development* : δ_2 is expected to be significantly negative, what would confirm the hypothesis according to which remittances reduce more income inequality in rich countries.

– If Z is *migration costs* : δ_1, measuring the impact of remittances in countries where migration costs are equal to zero, is expected to have a negative sign, and δ_2 would have to be positive and stastically significant.

– If Z is the *level of brain drain* : δ_2 is expected to be statistically significant and positive, whereas δ_1 , which represents the sensibility of income inequality to migrants' remittances in countries with a brain drain level equal to zero , would have to be negative.

4.2   The sample

Our sample varies with regressions from 248 observations (with 52 countries) to 324 observations (80 countries), according to the disponibility of control variables. It contains only developing countries over 1970-2000.

4.3   The variables

The dependent variable

The dependent variable is the Gini coefficient which measures theintensity of inequality within countries. Data used are drawn from Branko Milanovic (2005) database. This database merges three different databases : the one of Deininger and Squire, the one of the United Nations (WIDER) and the World Income Distribution database (WID). Thecombination of these three database allow us to have at our disposal of much more observations[12]. In order to consider differences concerning the calculation methodology from one database to another or from one year to another, we introduce in all our estimations three dummies capturing whether the gini coefficient has been calculated from consumption or income, whether variables used are measured in real or nominal terms and whether

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[12]In fact, it is the combination of two databases, WIDER and WID since the original series in the Deninger and Squire dataset are incorporated into the UN dataset.

the basic unit of analysis is the person or the household.

The control variables

The interest variable

Our main interest variable is remittances. Data are drawn from the World Bank database (World Development Indicators). This variable include three categories : "unrequited transfers" which refer to money sent by migrants to family and friends to the home country, "migrant transfers" which are equal to the net worth of the migrants (considered here as individual's change of residence for at least one year) and finally "compensation of employees" which represent funds sent back by temporary workers who work abroad for less than a year. This database provides informations for a lot of countries and over a long period. We use in our estimation the ratio of remittances receive by the home country on its total population[13].

The conditional variables

The level of development is measured by the logarithm of GDP per capita (World Development Indicators). Migration costs are measured by the costs to obtain a passeport in percentage of GDP per capita (McKenzie 2007) and by the distance (in log term) between a country i and the main destination country j of its international migrants. They are time-constant variables, thus we cannot introduce these two variables in additive manner in our econometric models when we already control for country fixed effects.

The importance of the brain drain for each country is defined as the ratio of higly skilled emigrants who are at least 25 years old to natives (sum of residents or emigrants) having the same level of skills and the same age[14]. Data on emigration concern six of the most destination countries of the OCDE area (Australia, Canada, United-States, Great-Britain, France and Germany). They are available since 1975 on a five-year interval basis (the World

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[13]Empirical findings obtained by using remittances per capita or the ratio of remittances to GDP are quite similar. So, we present only results of estimations using remittances per capita.

[14]To have more details about this database, see "Tendance de long terme des migrations internationales. Analyse à partir des 6 principaux pays receveurs", by Cécily Defoort.

Bank [15]). Definitions, sources and descriptive statistics of the other control variables are presented in Table 4.

[Tᴀʙ. 4 about here.]

4.4 Econometric method

We start our estimates by using ordinary least squares (OLS) with country specific effects. This methodology controls for heterogeneity between countries and thus for the structural variables which are stable over time for each country and for others time-constant variables which have been omitted. But given the potential endogeneity of migrants' remittances, we then also estimate our models by an instrumental variables strategy (IV).

4.4.1 The endogeneity of migrants' remittances

Several authors who analyzed the effect of remittances on income inequality raised the issue of the endogeneity of remittances (Koechlin and Leon, 2006 and Chauvet and Somps, 2008). In the case of remittances, several sources of endogeneity may be highlighted. On one hand, there may be a measurement error, because remittances statistics at the international level do not capture the volume of these flows that passes through informal channels. On the other hand, there may be an omitted-variable bias as exogenous shocks affecting developing countries (as price shocks, climatic shocks) which will be both correlated with the internal distribution of income but also with the volume of remittances. Finally, endogeneity may arise because of the existence of a double causality in the relationship between remittances and income inequality.

Two key features govern the selection of an instrument for remittances: it must be correlated with remittances, and its effect on the Gini must operate only through its effect on remittances or through the effect on other variables we already control for.

Lots of instrumental variables for remittances have been proposed, like GDP per capita or growth rate of host countries for example, but GDP per capita in host countries may be linked to that of developing countries through the argument of income convergence across nations. To counter these criticisms, two other variables have then been suggested: the distance between the country of origin and the main destination of migrants, and a variable

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[15]http ://go.worldbank.org/9PRMDT0N70

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measuring the share of immigrant population in every developing country. Although, these two variables are correlated with remittances, they suffer from a lack of temporal variability. Another instrumental variable was also used in the literature: financial costs associated with remittances. But while interesting, this variable suffers from a lack of availability in time.

To avoid all these pitfalls, Chami et al (2008) propose a new instrumental variable capturing general trends in remittances throughout the world: remittances receive by all recipient countries except the country considered. Admittedly, this instrument does not eliminate all endogeneity, but it represents a significant improvement over internal, lag-driven instruments and over previous attempts at obtaining an external instrument. By excluding the amount of remittances received by the country considered, the variable is free of a direct causal link with other domestic macroeconomic variables. We calculated this variable for each country, as the ratio of remittances received by all other countries to the sum of their population.

In this article, remittances for each countries are instrumented by the value of remittances of the previous period and by the instrument proposed by Chami et al. (2008). We also use the income gap between the sending country i and the main destination country j. Data on this variable are taken from Spatafora (2005). Following Milanovic (2005), we also instrument almost all of our other explanatory variables (trade openness, FDI as a percentage of GDP, government consumption as a percentage of GDP) by their lagged value. Finally, interactives variables were instrumented by the product of excluded instruments of remittances and each variable Z. We use the estimator derived from the generalized method of moments (GMM) which is more efficient than the traditional 2SLS method.

Two tests are needed to validate our instrumental variables strategy. First, the Hansen test of over-identification to assess the validity of our instrumental variables, ie, the lack of correlation between these variables and the error term of the structural equation. Then, the strength of selected instruments is apprehended by two statistics: partial-F and Shea's R^2 derived from the first stage estimations.

We could also use the dynamic panel *System-GMM* estimator to estimate these models. How interesting it may be, this strategy would cause us to loose a significant number of observations in estimates. Consequently we choose not to control for the dynamic properties of our dependent variable.

4.5   Estimations results

For each of our theoretical hypotheses, two regressions have been conducted: one by using the method of ordinary least squares with country fixed effects and the other by resorting to the generalized method of moments (GMM) again with country fixed effects. We comment only the results obtained from an IV-GMM approach.

Interesting results have been obtained concerning the coefficients of control variables. In most cases, the Kuznet's curve is validated. Trade openness, financial openness (measured as the ratio of FDI on GDP) and government consumption are factors exacerbating significantly income inequality in developing countries, while a greater democratization tends to have an inequality-decreasing effect, what is consistent with our expectations. For the other control variables, no statistically significant relationship is detected.

4.5.1   Remittances, income level and inequality

The findings appear in Table 5 in Appendix (columns 1 and 2).

[Table 5 about here.]

We find a significant and negative impact of remittances in interaction with the level of income per capita, but when the variable enters the equation in an additive manner, the coefficient is positive and significant as we expected. The coefficient of the interaction term in the regression with instrumentation is higher in absolute value than the one estimated by ordinary least squares (in the first case the coefficient is -2 whereas in the latter case, the coefficient is -0.7). The turning point for income per capita beyond which there is an inequality-decreasing impact of remittances is evaluated at 1763 $USD. Then, we expect that remittances will reduce significantly income inequality in countries like Botswana or Tunisia given this model.

So, remittances tend to be favorable to a reduction of income inequality in countries that have a relatively high level of development. Indeed, as we suggested in our hypotheses, the poor in these countries can cope with the costs of migration, while the upper classes have no great interest to migrate. It follows that it is mostly the poor in relatively wealthy developing countries who migrate and repatriate funds, what is likely to reduce income inequality in these countries.

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4.5.2 Remittances, brain drain and income inequality

Results are also reported in Table 5 (columns 3 and 4). We crossed the logarithm of remittances per capita to the rate of initial brain drain of each country (the value of the serie in 1975). In line with our expectations, the coefficient of the interaction term is statistically significant and positive, while the coefficient of remittances is negative and corresponds to the sensitivity of the Gini to remittances in countries with low-skilled migrants. Brain drain helps to reveal the social origin of migrants of a country: if people who migrate are highly skilled workers, it is likely that the majority of these individuals belongs to the wealthier fringes of the population and that remittances will increase income inequality at home.

The turning point for the level of brain drain below which there is an inequality-decreasing impact of remittances is evaluated at 27%. Then, we expect that remittances will reduce significantly income inequality in countries like Mali or Senegal.

4.5.3 Remittances, passport costs and income inequality

The results of both estimates (columns 5 and 6 in Table 5) support our theoretical hypothesis according to which remittances increase inequality in countries where migration costs are relatively more important. The Gini sensitivity to remittances is greater (in absolute value) when we control for the endogeneity of regressors. We also note that the coefficient of remittances is significantly negative.

The turning point for the level of passport cost in percentage of GDP per capita below which there is an inequality-decreasing impact of remittances is evaluated at 2,6%. Then, we expect that remittances will reduce significantly income inequality in countries like Ghana and Morocco.

4.5.4 Remittances, remoteness and income inequality

When we look at the results of models including the variable distance, we obtains a significant and non-linear impact of remittances only when we exclude democracy in the models (columns 7 and 8, Table 5). The fragility of our results may come from our measure of distance. Indeed, the distance between a country of origin and the main destination of its international migrants presents the major drawback to be constant over time. This

reflects the assumption that the main country of destination of migrants for one given developing country is the same throughout the period. However, the stylized facts highlight the existence of new migration corridors. Neverthless, our results suggest that remittances tend to increase income inequality in remote countries because of high transport costs.

4.5.5   Remittances, migration costs and income inequality : The role of income

From an econometric estimation, we try to assess to what extent the effects of migration costs can be mitigated by the level of income. The following model is constructed:

$$Gini_{it} = \alpha + X\prime_{it}\beta + \delta wrh_{it} + \gamma_1 Z_{1it} + \gamma_2(Z_{1it} \times wrh_{it}) + \gamma_3(Z_{1it} \times Z_{2i}) \qquad (4)$$

$$+\gamma_4(wrh_{it} \times Z_{2i}) + \gamma_5(wrh_{it} \times Z_{1it} \times Z_{2i}) + \mu_i + \eta_{it}$$

where Z_{1it} represents the logarithm of GDP per capita of each country and each year, while Z_{2i} measures the importance of passport costs in a country[16]. IV-GMM results are presented in Table 6.

[Table 6 about here.]

Consistent with our hypothesis, we obtained the result that the level of development mitigates the impact of migration cost in the sensitivity of income inequality with respect to remittances. We obtained a significantly negative coefficient of the double product and migration costs induce a positive impact of remittances on income inequality (the coefficient of the product of remittances with passport cost is statistically positive and is equal to 2,77).

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[16]Given the fragility of the results obtained with the variable *distance* as a proxy of migration cost, we have prefered the passport costs to measure costs.

5 The specificity of the Mediterranean Basin

Following our results, we can identify an archetype of a developing country in which remittances are favorable to the poorest segments of the population. We will now test the hypothesis that Mediterranean countries fulfill most of these conditions and that remittances reduce income inequality within the population in this region of the world.

To test this hypothesis, we will adopt a three-step approach. As a first step, we calculate, based on the previous regressions, the sensitivity of remittances in each country of the Basin and compare on a graph these values to the average of other countries in the rest of the sample[17]. In a second step, we rely on statistical tests based on mean differenceon the conditional variables between mediterranean countries and other developing countries. We try to answer several questions : (i) Are the mediterranean countries relatively more developed ? (ii) Are passports costs relatively lower in these countries ? (iii) Are Meditarrean countries relatively closer to the main locations of their international migrants ? (iv) Is brain drain relatively lower in this region ? In a third step, we estimate a model explaining income inequality in which remittances are in interaction with a dummy variable that takes the value 1 if the country in question belongs to the Mediterranean Basin and 0 otherwise.

If our hypothesis is validated, then we should obtain a significantly negative coefficient of the interactive variable, which identifies the differential impact of remittances between Mediterranean countries and the other developing countries.

5.1 Comparison of the semi-elasticity of income inequality with respect to remittances

For each country in the Mediterranean Basin, we calculate the derivative of Gini relative to remittances when the conditional variables Z are valued at their average level in each country. On the basis of the base econometric model, it refers to :

$$\frac{\delta Gini_i}{\delta wrh_i} = \hat{\delta_1} + \hat{\delta_2} \times \overline{Z_i}$$

This value is compared to that taken in the sample of other developing countries that are not part of the Basin. We calculate a value common to all these countries to facilitate

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[17]To perform this analysis we relied on the results of models estimated with instrumentation.

the comparison in the chart. This value is given by :

$$\frac{\delta Gini}{\delta wrh} = \hat{\delta_1} + \hat{\delta_2} \times \overline{\overline{Z}}$$

where $\overline{\overline{Z}}$ represents the average level of Z in the sample of other developing countries outside the Mediterranean Basin.

Case 1 : Z = level of development

We construct a scatter plot (Figure 1 in Appendix) in which the x-axis reports the values of the logarithm of GDP per capita and the y-axis, the derivatives calculated for each country of the Mediterranean Basin and for all other developing countries outside the Basin.

[FIG. 1 about here.]

For most countries of the Basin, the derivative of Gini with respect to remittances is negative, in some country like Israel, the impact is greatest in absolute terms. In contrast, the sensitivity of the Gini with respect to remittances is strictly positive in other developing countries. These results corroborate our hypothesis that remittances reduce income inequality in the Mediterranean Basin because this region is relatively richer (more developed), and because those who are migrating abroad in this region are the poor.

Case 2 : Z = Passport costs

In the x-axis, we have now, the passport costs in percentage of GDP per capita and in the y-axis the derivatives calculated.

[FIG. 2 about here.]

As before, we observe that the majority of mediterranean countries (except Bosnia, Turkey and to a lesser extent Lebanon) have a negative sensitivity of income inequality with respect to remittances (Figure 2 in Appendix). Israel once again appears as the country where, given the level of passports cost, remittances have a strong negative effect on the

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inequality index. This result confirms our hypothesis that Mediterranean countries are located in region of the world where remittances can reduce inequality if we take into account migration costs approximated by the cost of obtaining a passport. Finally, the sensitivity of the Gini coefficient with respect to remittances in other developing countries is positive.

Case 3: Z = Importance of brain drain

The last graphical analysis takes into account the intensity of brain drain in the calculation of the derivative (Figure 3 in Appendix).

[FIG. 3 about here.]

Once again, it appears that most countries of the Mediterranean Basin is located in the (zone of reference) area where the derivative is negative, while the rest of the developing countries is located in the region where the derivative is positive. However, we are in the presence of outliers. They include Israel, Egypt and Lebanon, where the composition of the workforce abroad is not diverse enough to ensure a negative effect of remittances on income inequality. The country of the Basin which presents the most significant impact over the period is Algeria.

It is clear from the above analysis that the Mediterranean region should benefit more from the positive effects of remittances in reducing inequality. Although we have highlighted some few outliers, the fact remains that the majority of these countries is generally located in the area where inequality is reduced through remittances received by households. From statistical tests based on mean difference between the two sub-samples (the sample of the mediterranean countries and the sample of other developing countries), we will ensure that the findings of previous graphical analysis statistically hold.

5.2 Statistical tests based on mean differences between the two sub-samples

We successively test the null hypothesis that the difference of average values of the conditional variables Z between the two sub-samples is statistically equal to zero against

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two alternative hypotheses : (i) the difference is significantly positive or (ii) negative. Test results are presented in Table 7.

[Tab. 7 about here.]

We find that the mediterranean countries compared to other developing countries: (*i*) are more developed, (*ii*) have low migration costs and (*iii*) export to the developed countries a more diverse workforce in terms of qualifications. These results are consistent with the previous graphical analysis. The Mediterranean basin is one of the regions of the developing world where remittances increase income of the lowest deciles of the income distribution. It is now necessary to test this intuition with a simple econometric model.

5.3 The specificity of the Mediterranean Basin revealed by an econometric model

To test the hypothesis that remittances significantly reduce income inequality in the mediterranean basin, we rely on the following specification:

$$Gini_{it} = \alpha + X\prime_{it}\beta + \phi_1 wrh_{it} + \phi_2(wrh_{it} \times Med_i) + \mu_i + \eta_{it} \tag{5}$$

where X is the matrix of control variables, Med a dummy variable that takes the value 1 if the country belongs to the Mediterranean basin and 0 otherwise. Our hypothesis will be validated if the coefficient ϕ_2 associated with the remittances variable in interaction with the dummy Med is significantly negative when the coefficient ϕ_1 is positive. Under this formulation, the differential impact of migrants' remittances on income inequality between the Mediterranean basin and the rest of the developing countries is given by ϕ_2. The impact of remittances on inequality in other developing countries outside the mediterranean basin is measured by the coefficient ϕ_1. Finally, $(\phi_1 + \phi_2)$ identifies the impact of migrants' remittances on income inequality in the Mediterranean basin. The results of estimations are presented in Table 8.

[Table 8 about here.]

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In line with our expectations, we find a negative differential impact of migrants' remittances on income inequality between the mediterranean countries and other developing countries. This result corroborates our hypothesis that the Meditarrean countries greatly benefit from remittances for reducing income inequality.

6   Concluding Remarks

This article has examined the relationship between migrants' remittances and income inequality in the developing world. We have argued that the ambiguous impact of remittances on income inequality comes from the existence of non-linearities in the level of development, in the costs of migration and in the skill levels of international migrants. Indeed, these non-linearities enabled us to reveal the socio-economic status of the migrants from these countries, the main determinant of the sign of the impact of remittances on the distribution of income. If it is individuals from the wealthy steps of the population (often better educated) who migrate the most, then the funds returned by the latter will maintain the already existing inequalities. Conversely, if the poor are migrating in majority (perhaps because migration costs are low), then remittances will reduce income inequality in the origin countries.

Based on a sample of 80 developing countries observed over the period 1970-2000, our econometric estimates validated all our theoretical assumptions. Remittances usually reduce inequality in countries: (i) relatively more developed, (ii) where passport costs and the remoteness are relatively low and (iii), where international migrants are on average relatively less skilled. Furthermore, the level of income tend to reduce the impact of migration cost on the sensitivity of income inequality with respect to remittances. These findings hold even after factoring in endogeneity of remittances.

From these results, we were able to identify three main characteristics of a country in which remittances reduce income inequality (high average income, low migration cost and low brain drain). It was found that Mediterranean countries for the most part, have these criteria. The negative impact of remittances on the Gini of income in this region has been confirmed empirically.

From the taxonomy constructed in this article, one can logically assumes that with

regard to regions like sub-Saharan Africa (less developed, high migration costs and characterized by high exodus of skilled labor), remittances could exacerbate income disparities between segments of the population. Microeconometric studies, however, would be interesting to further explore the relationship between remittances and the income distribution in developing countries.

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FIG. 1 – Marginal impact of remittances with respect to GDP per capita
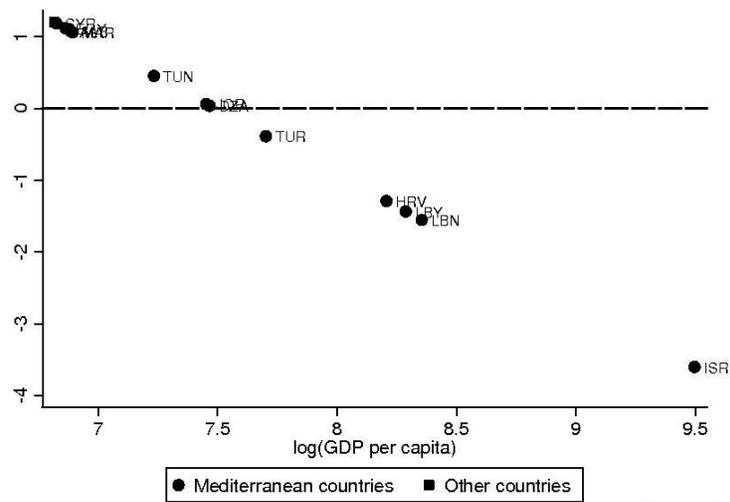
FIG. 2 – Marginal impact of remittances with respect to passport cost
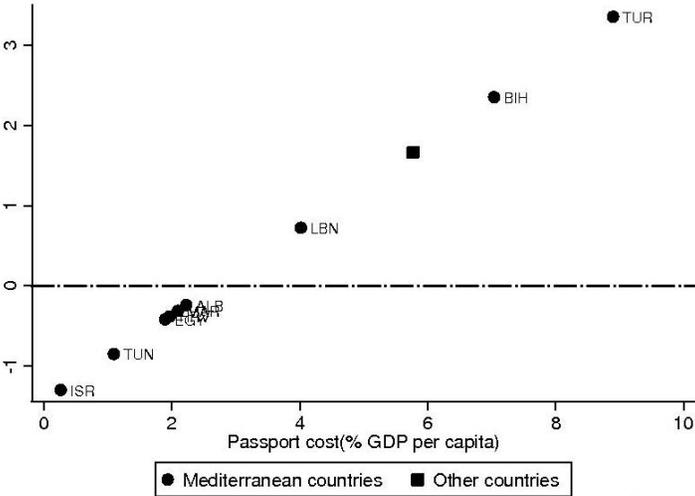
FIG. 3 – Marginal impact of remittances with respect to brain drain
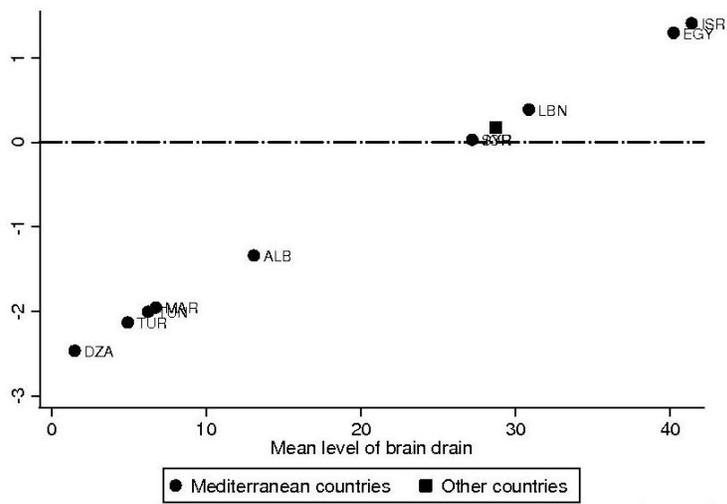
TAB. 1 – **Migration costs and financial capacity to migrate**

		COUNTRY	
		High costs	**Low costs**
		a	**b**
	Poor	? (1)	*Migration* (2)
HOUSEHOLD			
	Rich	Migration (3)	Migration (4)

Note : Writings in italics indicate that in these cases, migration and remittances can lead to a reduction in income inequality.

Tab. 2 – **Level of development and financial interest to migrate**

		COUNTRY	
		Poor	**Rich**
		1	**2**
	Poor	? (5)	*Migration (6)*
HOUSEHOLD			
	Rich	Migration (7)	No migration (8)

Note: A familiy is called "rich" or "poor" according to the relative location it occupies in the distribution of income at origin. It is not a measure of the absolute poverty but a measure of the relative poverty. Thus, some households living in richer developing countries are called "poor" even though they may live over the poverty threshold defined by the World Bank.

Table 3: **Level of development, migration costs and migration**

		COUNTRY			
		High migration costs		**Low migration costs**	
		a		b	
		Poor	**Rich**	**Poor**	**Rich**
		1.a	**2.a**	**1.b**	**2.b**
	Rich	Migration (2')	No migration (6')	Migration (4')	No migration (8')
HOUSEHOLD					
	Poor	No migration (1')	*Migration (5')*	*Migration (3')*	*Migration (7')*

Table 4: Descriptive statistics

Variables	Data Sources	Observations	Mean	Standard dev.	Minimum	Maximum
Gini	*Gini all* database	576	39.89019	11.48169	17.8	66.25
	by Branko Milanovic					
Remittances per capita (log)		1930	2.069188	1.977283	-3.755226	6.551673
GDP per capita (log)		3078	6.891317	1.192762	4.532693	9.818113
Government consumption (%GDP)		2992	15.1961	6.80017	0	64.39249
Inflation	World Development	2704	58.31789	442.1906	-17.64042	11749.64
FDI %GDP	Indicators	2852	2.019289	8.383426	-28.62425	348.1892
M2 %GDP		2895	60.13202	567.7536	.8687639	18798.83
Age dependency ratio		3720	43.62971	5.827445	28.19713	53.7682
Trade openness		3028	67.7908	37.63363	5.314175	280.361
Passport cost %GDP per capita	McKenzie (2007)	2697	5.514023	10.31864	0	60.15
Distance (log)	Authors	3627	7.619468	.7918658	5.520634	8.9986
brain drain	Cécily Defoort	654	36.50693	15.93155	0	81.12417
Med	Authors	3937	.1023622	.3031625	0	1
Democracy	Polity 2	2511	3.26364	3.868942	0	10

Table 5: Conditional impact of remittances on income inequality in developing countries, 1970-2000

Dependent variable: Gini	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	1	2	3	4	5	6	7	8
GDP per capita (log)	20.45*	-3.772	30.04**	28.01**	33.47***	33.06***	31.10***	34.53***
	(1.785)	(-0.211)	(2.112)	(2.028)	(3.088)	(2.811)	(2.909)	(2.940)
(GDP per capita(log))²	-1.646**	0.121	-2.338**	-2.152**	-2.485***	-2.426***	-2.340***	-2.652***
	(-2.137)	(0.0979)	(-2.322)	(-2.202)	(-3.468)	(-3.094)	(-2.932)	(-2.948)
Democracy	-0.187	-0.250**	-0.177	-0.203	-0.279**	-0.253**		
	(-1.362)	(-2.057)	(-1.239)	(-1.570)	(-2.078)	(-1.964)		
Inflation	0.000443	0.000855	0.000290	0.000271	0.000679	0.000776	0.0000408	0.000332
	(0.730)	(1.299)	(0.399)	(0.356)	(1.106)	(1.394)	(0.0526)	(0.334)
Financial development (M2%GDP)	-0.000396	-0.0196	0.000915	-0.00691	-0.00556	-0.00893	0.00420	-0.0643
	(-0.0140)	(-0.613)	(0.0326)	(-0.242)	(-0.185)	(-0.254)	(0.135)	(-1.604)
Government consumption %GDP	0.204*	0.333**	0.122	0.106	0.177*	0.213**	0.133	0.128
	(1.949)	(2.301)	(1.035)	(0.920)	(1.881)	(2.305)	(1.106)	(0.949)
Dependency ratio	-0.323	-0.441*	-0.246	-0.352	-0.392	-0.594**	-0.224	-0.294
	(-1.590)	(-1.780)	(-1.244)	(-1.556)	(-1.626)	(-2.159)	(-1.246)	(-1.430)
Trade openness	0.0405*	0.0230	0.0465*	0.0376	0.0145	-0.00988	0.0554**	0.0661**
	(1.775)	(0.829)	(1.970)	(1.603)	(0.687)	(-0.412)	(2.330)	(2.279)
Foreign direct investment %GDP	0.135	0.618*	0.0832	0.0813	0.0965	0.113	0.196**	0.781***
	(1.033)	(1.775)	(0.600)	(0.572)	(0.687)	(0.800)	(1.981)	(2.677)
Remittances per capita (log)	5.464**	14.95***	-1.057	-2.443*	-0.518	-1.454*	-2.809	-20.88*
	(2.058)	(2.725)	(-1.130)	(-1.667)	(-1.157)	(-1.832)	(-0.717)	(-1.714)
(log Remittances per capita)*(log GDP per capita)	-0.697*	-1.998***						
	(-1.970)	(-2.643)						
(log Remittances per capita)*(initial *brain drain*)			0.0500*	0.0921**				
			(1.661)	(2.026)				
(log Remittances per capita)*(Passport cost %)					0.273***	0.553**		
					(2.607)	(2.551)		
(log Remittances per capita)*(log Distance)							0.383	2.610*
							(0.762)	(1.698)
Constant	-13.10		-46.57		-56.03		-57.70	
	(-0.316)		(-0.950)		(-1.475)		(-1.596)	
Observations	310	279	292	266	268	248	341	304
Number of countries	77	61	71	57	60	52	82	65
R²	0.201	0.077	0.189	0.179	0.241	0.201	0.216	0.081
R²-Shea 1	-	0.191	-	0.323	-	0.361	-	0.163
R²-Shea 2	-	0.191	-	0.300	-	0.210	-	0.162
Hansen OID p-value	-	0.171	-	0.917	-	0.735	-	0.930

Note :The variables which are suspected of endogeneity are : remittances, remittances*Z, trade openess, foreign direct investment and government consumption. R²-Shea (1.2) reflect respectively the R² of Shea for the significance of the instruments associated with remittances and remittances*Z. Distance, Brain drain and Passport costs have not been introduced additively in the model because they are time invariant and we already have controlled for countries fixed-effects. In parentheses we have t statistics corrected for heteroscedasticity. * significant at 10%, ** significant at 5% and *** significant at 1%.

TAB. 6 – Remittances, migration cost, income and inequality

Dependent variable: Gini	IV
GDP per capita (log)	7.500
	(0.315)
(log GDP per capita)^2	-0.805
	(-0.537)
Financial development (M2%GDP)	0.00649
	(0.142)
Dependence ratio	-0.759***
	(-2.985)
Democracy	-0.301**
	(-2.096)
Inflation	0.00145**
	(2.028)
Government consumption (%GDP)	0.236*
	(1.888)
Foreign direct investment (%GDP)	0.703*
	(1.883)
Trade openness	-0.00910
	(-0.327)
(Passport cost)*(log GDP per capita)	1.001
	(0.561)
Remittances per capita (log)	4.642
	(0.607)
(log Remittances per capita)*(log GDP per capita)	-0.749
	(-0.750)
(log Remittances per capita)*(Passport cost)	2.770*
	(1.888)
(log Remittances per capita)*(Passport cost)*(log GDP per capita)	-0.389*
	(-1.667)
Observations	261
Number of countries	53
R^2	0.10
R^2-Shea 1	0.291
R^2-Shea 2	0.289
R^2-Shea 3	0.368
R^2-Shea 4	0.363
Hansen OID p-value	0.247

Note: In parentheses we have t statistics corrected for heteroscedasticity. * significant at 10%, ** significant at 5% and *** significant at 1%. All interactive variables including remittances are instrumented by the product of remittances instruments and conditional variables Z. The indices 1 to 4 after the R ^{2}-Shea refer respectively to the significance of the instruments associated with remittances and all other interactive variables including remittances in order of appearance in the table above.

Tab. 7 – Statistical tests based on mean differences on the conditional variables

	Conditional variables (Z)					
	GDP per capita		Passport cost		*Brain drain*	
	Z0=1850	Z1=3007	Z0=5,77	Z1=3,28	Z0=37	Z1=29
Z0-Z1<0	0		0,99		1	
Z0-Z1=0	0		0		0	
Z0-Z1>0	1		0		0	

Note: Index 1 refers to the sample of countries of the mediterranean basin and 0, to that of other developing countries. Values in the table represent the p-values associated with the hypotheses.

Table 8: Impact of migrants' remittances on income inequality in the Mediterranean basin

Dependent variable: GINI: OLS with countries fixed effects	
GDP per capita (log)	32.460***
	(3.06)
(log (GDP per capita))^2	-2.484***
	(3.55)
Trade openess	0.046**
	(2.05)
Age dependency ratio	-0.258
	(1.29)
Foreign direct investment (%GDP)	0.114
	(0.92)
Inflation	0.000
	(0.48)
Government consumption (%GDP)	0.158
	(1.38)
Financial development (M2/GDP)	-0.010
	(0.35)
Democracy	-0.219
	(1.55)
Remittances per capita (log)	0.501
	(1.27)
(log (Remittances per capita))$\times Med$	-4.278***
	(2.72)
Constant	-56.000
	(1.49)
Number of observations	310
Number of countries	77
R^2	0.19

Note: In parentheses, we have t statistics corrected for heteroscedasticity. *significant at 10%, ** significant at 5% et *** significant at 1%.