ON THE RELATIONSHIP BETWEEN ASSET INEQUALITY AND INTERNATIONAL REMITTANCE

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ABSTRACT

This study empirically examines whether initial asset distribution affects the amount of international remittance in home country. Using cross-country evidence, it is found that a country's initial asset inequality is negatively and significantly associated with the amount of remittance without the model specifications. The plausible explanation is that migration is mainly motivated by the level of information about prospective opportunities in foreign countries, and hence migration involves costs and risks of failure. This implies that the worse of initial asset inequality with the majority of the poor results in a negative association between asset inequality and international remittance. Since the poor people cannot bear the costs and/or risks of migration.

Keywords: Asset Inequality, Land Gini Index, Remittance, Migration

INTRODUCTION

Does initial asset inequality affect the amount of international remittance in home country? This is a crucial issue for many developing countries, because the impact of initial asset inequality on the outcome of remittance is related with the structure of labor migration. Workers movements and remittances play an important role in the economic development of developing countries. Nevertheless, the impacts of initial asset distribution on international remittance have been less focused in the existing literature.

The existing literature has mainly examined on the impact of migrant remittance on economic development and/or income distribution of the labor-sending country. For example, Cattaneo (2005) and Ratha (2005) demonstrated that remittance is a major mechanism for economic development. On the other hands, a series of studies have shown that international remittance generally increases income inequality in home country (e.g., Agunias, 2006; Anyanwu, 2011; Capistrano and Maria, 2010). In addition, Portes (2009) showed that the impact of remittances on income distribution is non-monotone across countries, and Koechlin and Leon (2007) provided an inverted U-shaped relationship between international remittances and income inequality.

The main motivation of this paper is to examine the potential influence of initial asset inequality, measured by the land gini index around the year 1960 and 1990, on the amount of international remittance from 1970 to 2015, which is the causal relationship contrary to the previous studies. Using 77 cross-country data, the empirical results suggest that countries with lower asset inequalities tend to have a greater amount of remittances due to the possibility of high-level of migration. The plausible explanation is that the decision of migration is driven by the level of information about prospective opportunities in foreign countries. That is, migration requires costs and risks, and hence the majority of poor people cannot tolerate the costs and risks of migration, resulting in a negative association between asset inequality and international remittance.

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The remainder of this paper is organized as follows. Section II provides a literature review and theoretical background for the relationship between asset distribution and international remittance. Section III provides the data description, empirical equations, and empirical methods. Section IV presents a series of empirical results. Section V concludes the paper.

THEORETICAL BACKGROUND

A number of previous studies considered the inequalities of land-ownership or the size of landholdings as the indicators of wealth distribution and found that asset inequality is negatively associated with migration and remittance.[i] The negative association is based on the assumption that the more wealthy household the easier the migration. Moreover, the extent of migration is determined by the level of information about prospective opportunities in foreign countries (e.g., Massey and Espinosa, 1997; Todaro, 1980). Potential migrants lack the information about crossing the border and contacts that facilitate to findout employment and housing in foreign countries. In that case, migration becomes not only costly but also risky, and the likelihood of failure, either in crossing the border or in securing employment is also high (e.g., Durand and Massey, 1992). Hence, wealthier households are more capable of financing and hence, are more likely to be migrants.

From the above viewpoint, it is possible to assume that asset distribution can affect migration and remittance, and asset inequality may have a negative impact on migration and remittance, at least in the early stage of economic development. As asset inequality deteriorates, the more people become poorer, and they cannot tolerate the costs and/or risks of migration. Hence, initial asset inequality can have a negative impact on international remittances. .

On the other hand, the literature of the New Economics of Labor Migration (NELM) believed that migration is mainly determined by the relative (or absolute) poverty (Stark, 1984; Stark and Taylor, 1989; 1991). NELM approach suggested that migration decisions are motivated by the relative deprivation of land ownership (or higher asset inequality) in home country instead of income differentials between origin and destination countries. Relatively poor individuals in countries with high asset inequality compare the landholdings of their households to those of others and feel themselves relatively underprivileged. Hence, the decision of migration is driven by the need for capital (remittance) to purchase land and improve their position in the distribution. Following the NELM approach, landownership would have a negative effect on migration decision. The less land a household owns, the more need for migration and thereby earn capital (remittance) to purchase the land. If the NELM approach is true, asset inequality may have a positive impact on migration.

In addition, remittance can be also considered to overcome the absence of capital in rural communities of developing countries. Lindstrom (1996) and Lindstrom and Lauster (2001) pointed out the impact of community-level opportunities for investment in the process of migration as an example in Mexico. These studies found that the opportunity for productive investment in household-level land increased the likelihood of migration from Mexico to the United States. Moreover, increasing the productivity of land depends on the investment ability of a household in many regions. Investment in modern inputs and high-yielding varieties of crops requires capital that is often inaccessible in rural areas of many developing countries. Following the NELM perspective, the concentration of landholdings may have a positive impact on migration.

Although the existing literature showed an ambiguous impact of asset inequality on migration and remittance, it is possible to find an implication that initial asset distribution is a plausible

[i] Refer to Massey and Espinosa (1997), Todaro (1980), and Winters et al. (2001).

determinant of the magnitude of migration and thereby the amount of remittance. In addition, prior works on this issue has mainly used micro data of a certain region or community level migration experience.[ii] This study uses a comprehensive cross-section dataset of developed and developing countries. Specifically, the main empirical analysis of this paper is to trace out whether initial land inequality has any (either positive or negative) effects on the amount of remittance over the period 1970-2015.

DATA AND EMPIRICAL EQUATION

There are 77 developed and developing countries from all regions in the sample, based on the availability of the data, such as remittance (denoted throughout as REM). Data on land distribution in the form of land gini index (denoted throughout as LGI) is used to represent the initial level of asset inequality, as it is available for a large number of countries compared to the other income generating assets, such as bonds and equity. The World Bank provided the data on LGI compiled by Deininger and Squire (1998) based on the land rental market uses. The selection of LGI data around the year 1960 and 1990 is intended to reflect the initial level of inequality.

Table 1 provides summary statistics for LGI and the amount of REM for various years. It should be noted that data on LGI around the year 1990 is available for a relatively small number of 26 countries. The amount of REM, measured in the logarithm form of 6 years (1970, 1980, 1990, 2000, 2010, and 2015) is used as the dependent variable. World Bank provides the data,[iii] but unfortunately data are not available for all 77 countries.

The main empirical task is to identify the impact of LGI around the year 1960 and 1990 on the amount of REM over the period 1970-2015 (specifically, 1970, 1980, 1990, 2000, 2010, and 2015). The baseline regression takes the following form:

$$REM_{it} = c + \alpha_1 LGI_i + \sum_{j=2}^{4} \alpha_j X_{ijt} + \varepsilon_{it}. \quad (1)$$

Here, the subscript i and t represents countries and years; c is a constant; α_1 is the estimated coefficient of LGI and α_j (j=2, 3, 4) denotes the other estimated coefficients of corresponding explanatory variables; X is a set of explanatory variables excluding LGI; and ε is an error term. Our particular interest is the sign and statistical significance of the estimated coefficient of α_1, which shows the impact of LGI on REM.

In addition to LGI, real GDP per capita, exchange rate, and human capital index are used as the other explanatory variables which may influence the amount of REM. Real GDP per capita (denoted throughout as PGDP) is used to represent the stage of an economy. Moreover, exchange rate (denoted throughout as EXR) is considered to reflect the international financial consequences of immigration as the mobility of capital generally responds to differential rates of return especially for developing countries.[iv] Both data are drawn from the World Bank for the same years as the dependent variable. Data on human capital index (denoted throughout as HCI) based on years of schooling and returns to education from Penn World Table (PWT9)[v] are also used as another explanatory variable to improve the robustness of our estimation results.

[ii] See Bang et al. (2016) for the summary of this issue.

[iii] These may be downloaded from http://data.worldbank.org.

[iv] EXR was used as a determinant of migration in the existing literature (e.g., Higgins et al., 2004; Stalker, 2000).

[v] These may be downloaded from http://data-planet.libguides.com/PennWorldTables. See Feenstra et al. (2015) for the explanations of PWT9.

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Table 1. Summary statistics for LGI and the amount of Remittance

	Mean	Median	Max	Min	Std. Dev.	Obs.
LGI 1960	65.97	68.38	93.55	35.35	15.70	73
LGI 1990	64.77	60.99	92.84	36.60	16.63	26
Log (REM 1970)	17.53	17.03	21.06	13.52	2.01	33
Log (REM 1980)	18.72	18.80	22.11	11.46	2.22	50
Log (REM1990)	18.96	19.14	22.35	10.21	2.53	60
Log (REM 2000)	19.72	20.08	23.28	14.04	2.06	70
Log (REM2010)	20.72	21.11	24.70	15.27	2.02	74
Log (REM 2015)	20.92	21.05	24.96	15.72	1.97	74

Note: LGI denotes the Land Gini Index around the year 1960 and 1990 and REM refers to the amount of remittance measured in the year1970, 1980, 1990, 2000, 2010, and 2015.

The regression uses panel analysis with pooled least squares (denoted throughout as pooled LS) to increase the number of observations and random effect model to accommodate the each country's characteristics. In particular, the random effect model uses an error term for controlling the time series and cross-section characteristics, and equation (1) can be transformed into the following equation (2). It should be noted that the fixed effect model, another typical method for panel data analysis, could not be applied in this paper, since LGI is a constant over time.[vi]

$$REM_{it} = c + \alpha_1 LGI_i + \sum_{j=2}^{4} \alpha_j X_{ijt} + \eta_{it},$$

$$\eta_{it} = \gamma_i + \varepsilon_{it}. \qquad (2)$$

In equation (2), $\gamma_i$is an error term that represents country i's characteristics and does not change over time. The remaining expressions are the same as in equation (1).

The regression proceeds in a panel analysis, using the method of seemingly unrelated regression estimation to accommodate the correlations among error terms. In other words, it is natural to assume that a shock affecting REM for the year 1970 may spill over and affect REM for other years. Therefore, the regression takes the multiple equations system with contemporaneously correlated error terms, as follows:[vii]

$$REM_{it} = \alpha_1 (LGI \times DY70)_i + \alpha_2 (LGI \times DY80)_i + \alpha_3 (LGI \times DY90)_i + \alpha_4 (LGI \times DY00)_i + \alpha_5 (LGI \times DY10)_i + \alpha_6 (LGI \times DY15)_i + \sum_{j=1}^{3} \beta_j X_{ijt} + \varepsilon_{it}. \qquad (3)$$

Here, DY70 (DY80, DY90, DY00, DY10, and DY15) represents a time dummy for the year 1970 (1980, 1990, 2000, 2010, and 2015); α_k $(k = 1, \cdots, 6)$ and β_j (j=1, 2, 3) are the estimated coefficients of the corresponding explanatory variables. The remaining expressions are the same as in equation (1).

EMPIRICAL RESULTS

Tables 2 and 3 contain the results using the methods of pooled LS (eq. (1)) and random effect model (eq. (2)). Table 2 shows the results using land gini index (LGI) around the year 1960 and the amount of remittance (REM) for 6 years. Meanwhile, Table 3 is the results of a relatively small number of sample, since LGI around the year 1990 and REM for 4 years are used.

[vi] Schmidt and Sickles (1984) suggested that the GLS (generalized least squares) estimates using the random effect model are more efficient than within estimates using the fixed effect model for the quasi-asymptotic approach (N fixed $T \to \infty$ or T fixed $N \to \infty$).

[vii] Although the multiplication between constant terms and time dummies are considered in regressions, we skip those to simplify the representation of multiple equations system.

Table 2. Estimation results using land gini index around 1960

Dependent variable: log (Remittance) in 1970, 1980, 1990, 2000, 2010, and 2015

	Model (A)		Model (B)		Model (C)		Model (D)	
	Pooled LS	Random Effect	Pooled LS	Random Effect	Pooled LS	Random Effect	Pooled LS	Random Effect
Constant	21.87***	21.74***	18.4***	10.63***	18.54***	10.40***	20.68***	17.20***
	(40.4)	(33.1)	(20.2)	(7.31)	(19.2)	(6.89)	(21.4)	(10.4)
LGI 1960	-0.03***	-0.03***	-0.03***	-0.03**	-0.03***	-0.03**	0.02***	-0.01
	(-4.03)	(-4.84)	(-3.92)	(-2.36)	(-3.94)	(-2.10)	(-2.87)	(-1.04)
log (GDP per capita)			0.38***	1.30***	0.35***	1.27***	-0.50***	-0.63***
			(4.56)	(10.52)	(3.83)	(9.68)	(-3.08)	(-3.20)
Exchange Rate (×100)					0.02***	0.03***	0.01**	0.02***
					(3.46)	(6.08)	(2.15)	(3.80)
Human Capital							2.09***	3.79***
							(6.03)	(12.5)
R^2	0.04	0.06	0.09	0.20	0.11	0.25	0.20	0.50
Observations	344	344	339	339	303	303	275	275

Notes: (i) *t*-statistics are provided in parentheses. (ii) In models using the pooled LS method, *t*-statistics are based on the White's heteroskedasticity-consistent standard errors and covariance. (iii) ***p<0.01, **p<0.05, and *p<0.1

Table 3. Estimation results using land gini index around 1990

Dependent variable: log (Remittance) in 1990, 2000, 2010, and 2015

	Model (A)		Model (B)		Model (C)		Model (D)	
	Pooled LS	Random Effect	Pooled LS	Random Effect	Pooled LS	Random Effect	Pooled LS	Random Effect
Constant	23.31***	23.23***	19.54***	14.82***	20.15***	14.48***	19.86***	16.28***
	(37.0)	(35.5)	(14.5)	(6.92)	(13.4)	(6.52)	(11.8)	(6.55)
LGI 1990	-0.03***	-0.03***	-0.03***	-0.02*	-0.04***	-0.03**	-0.04***	-0.03*
	(-3.91)	(-3.97)	(-3.64)	(-1.62)	(-4.17)	(-1.95)	(-4.13)	(-1.89)
log (GDP per capita)			0.36***	0.80***	0.33**	0.84***	0.43	0.32
			(3.13)	(4.47)	(2.42)	(4.39)	(1.49)	(0.89)
Exchange Rate (×100)					0.01	0.06***	0.01	0.05***
					(1.04)	(3.90)	(1.07)	(3.00)
Human Capital							-0.22	1.14*
							(-0.37)	(1.72)
R^2	0.14	0.14	0.22	0.17	0.26	0.29	0.26	0.32
Observations	96	96	96	96	70	70	70	70

Notes: (i) *t*-statistics are provided in parentheses. (ii) In models using the pooled LS method, *t*-statistics are based on the White's heteroskedasticity-consistent standard errors and covariance. (iii) ***p<0.01, **p<0.05, and *p<0.1

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The regression results indicate that the estimated coefficients of LGI are negative and statistically significant except for that in the random effect in Model (D) of Table 2. In other words, initial asset inequality has negative and significant impacts on the amount of remittance, implying that a country with higher asset inequality results in a lower amount of remittance. For example, an increase in LGI of a country by 1 standard deviation is associated with a decrease in the logarithm of remittance of about 0.47 percentage points per year, presented in Model (A) of Table 2. The results provided in Models (B), (C), and (D) are robust with the inclusion of some other explanatory variables.[viii] The impacts of log (PGDP), EXR, and HCI on REM depend on model specifications.

Estimation results using seemingly unrelated regression estimation method (eq. (3)) is summarized in Table 4. The results are very similar to those on the separate estimations with the amount of remittance around the year 1970, 1980, 1990, 2000, 2010, and 2015. All estimated coefficients (except the year 1970) of LGI are economically and statistically significant in Table 4. The results validate the notion that a country with greater asset inequality may have lower amount of remittance.

In Model (A) of Table 4, the estimated coefficients imply that an increase in the LGI coefficient of a country by 1 standard deviation would lead to a decrease in the amount of remittance of about 0.47 (year 2000 and 2015) -0.78 percentage points (year 1980 and 1990) per year. The overall results are robust to the inclusion of some explanatory variables, presented in Models (B), (C), and (D). The estimated coefficients of log (PGDP) and EXR show positive sign and significant impact on the amount of remittance in model (B) and (C). However, the estimated coefficient of log (PGDP) does not show any significant impacts on the amount of REM when HCI added in the same regression with log (PGDP), which probably results from the high correlation between log (PGDP) and HCI.

Table 4. Estimation results on system equations

Dependent variable: log (Remittance) in1970, 1980, 1990, 2000, 2010, and 2015

	Model (A)	Model (B)	Model (C)	Model (D)
LGI 1960 × DY 70	-0.02 (-1.36)	-0.02 (-1.12)	-0.02 (-0.99)	-0.02 (-1.01)
LGI 1960 × DY 80	-0.05***(-3.60)	-0.05***(-3.74)	-0.04***(-3.15)	-0.04***(-3.15)
LGI 1960 × DY 90	-0.05***(-3.49)	-0.05***(-3.95)	-0.04***(-3.05)	-0.04***(-3.25)
LGI 1960 × DY 00	-0.03***(-3.09)	-0.04***(-3.72)	-0.02**(-2.25)	-0.02*(-1.79)
LGI 1960 × DY 10	-0.04***(-3.50)	-0.04***(-4.32)	-0.03***(-3.03)	-0.02**(-2.77)
LGI 1960 × DY 15	-0.03**(-2.85)	-0.03***(-3.37)	-0.02**(-2.38)	-0.02**(-2.02)
log (GDP per capita)		0.22** (2.18)	0.25**(2.41)	-0.02 (-0.12)
Exchange Rate(×100)			0.01**(2.36)	0.01* (1.96)
Human Capital				0.60 (1.49)
R^2	0.07	0.13	0.15	0.16
Observations	344	339	303	275

[viii] It is worthwhile to note that the results of separate estimations (cross section for each year) confirm the notion that initial asset distribution has negative and statistically significant impacts on the amount of remittance without model specifications.

Notes: (i) Seemingly unrelated regression estimation (SUR) method is used. (ii) *t*-statistics are provided in parentheses. (iii) LGI 1960× DY70 (80, 90, 00, 10, and 15) denote the multiplication between LGI 1960 and time dummy for the year 1970 (1980, 1990, 2000, 2010, and 2015), respectively. (iv) ***p<0.01, **p<0.05, and *p<0.1

One remarkable observation is that the impact of LGI on the amount of REM in the year 1970 is statistically insignificant; suggesting that initial asset inequality may require some time to affect the international remittance. In addition, comparing the impact of LGI on the amount of remittance in the year 1990 and 2010 with the year 2015, it is clear that both the size and the significance of the estimated LGI coefficients are reduced. This suggests that the impact of LGI on the amount of REM has a limited duration. Therefore, a comprehensive study of the dynamic effect of initial asset inequality on the migration and thereby the amount of remittance would be a worthwhile topic for further study.

CONCLUSION

Using cross country evidence, this paper establishes the association between land gini index (as a proxy of asset distribution) and the amount of remittance. The regression results suggest that countries with greater asset inequalities receive fewer remittances than the countries with lower asset inequalities. A plausible explanation of the observed relationship is that the decision of migration is driven by the level of information about prospective opportunities in foreign countries, and hence migration is costly and risky, so poor people cannot accommodate migration, resulting in a negative association between initial asset inequality and international remittance. The results are robust without model specifications and estimation methods.

A fundamental issue remains for future study. In order to find out the impact of initial asset inequality, this study chooses the amount of remittance as the dependent variable instead of international migration due to lack of data. Therefore, a comprehensive study of the dynamic effect of initial asset inequality on the migration rate and thereby the amount of remittance would be a worthwhile topic for further study.

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