THE IMPACT OF REMITTANCES ON EDUCATION IN JORDAN, SYRIA AND LEBANON

ERF AND FEMISE WORKSHOP
MIGRATION IN THE ARAB REGION: DETERMINANTS AND CONSEQUENCES
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Research Question

What is the impact of migrant remittances on education attendance and education attainment of youth (aged 15-24) in the Mashreq countries (Jordan, Syria and Lebanon)?

Originalities of the Research

- Research investigating the effects of remittances is still less developed than the one focusing on their determinants (Chami et al, 2003) especially from a household perspective.

- The paper is an additional empirical evidence on the usage and implications of remittances among competing theories:
  - No consensus in the literature on the usage of remittances (consumption vs. investment)
  - No consensus in the literature on the sign of the effect of remittances on human capital

- Most empirical work has been conducted on countries in Latin America or South Asia. This work, to the authors' knowledge is the first on Mashreq countries (evidence based research is lacking in MENA).

Some Related Literature

- Positive Effect:

Mansuri (2005) for Pakistan.

Calero et al (2006) for Ecuador.

- Negative Effects:

Lopez-Cordova (2005), and Mckenzie and Rapoport (2006) for Mexico.

Our paper is linked to:

Mansour, Chaaban and Litchfield, *IMR* (2011).

Overview of Remittances in MENA and Mashreq

- Remittances inflows in MENA (2010):
  - US$35.4 billion (10.9 percent of total Remittances)
  - Up from US$13.1 billion in 2000.

- Remittances Inflows in Mashreq Countries (2010):
  - Lebanon: US$8.2 billion (20.9 percent of GDP)
  - Jordan: US$3.8 billion (13.8 percent of GDP)
  - Syria: US$2.4 billion (4.1 percent of GDP)

Source: World Bank Migration Factbook 2011.

Channels of Impact of Remittances on Education

Direct Effect:

- Remittances alleviate household liquidity constraints

Indirect Effects: (through Migration mainly)

- Change in household composition and loss of income source
- Information, Preferences and Uncertainty

Data Sources

- Jordan Household Expenditure and Income Survey 2006.
- Syria Household Expenditure Survey 2003-2004.
- Lebanon Living Conditions Survey 2004.
- Population of Interest:

  Youth defined as individuals aged [15-24].

Empirical Methodology (1)

- **The Education Attendance Model (Probit Model):**

$$\Pr(Ed_{ij} = 1/H_j, X_i, Pa_i, C_{ij,} R_{ij}, A_j) = \phi(\alpha_0 + \alpha_1 H_j + \alpha_2 X_i + \alpha_3 Pa_i + \alpha_4 C_{ij} + \alpha_5 R_{ij} + \alpha_6 A_j + \mu_{ij})$$

Where: $Ed_{ij} = 1$ if $Ed_{ij}^* \geq 0$, and $Ed_{ij} = 0$ otherwise.

- Edij captures education attendance: binary variable for whether individual i from household j is currently enrolled in school/university.

- **Control Vectors:**

- *Household demographics:* Size, Number of Children, Number of Adults.
- *Individual's characteristics :* Marital Status (individuals aged 18-24).
- *Parents education:* Education Attainment of both Mother and Father.
- *Regional controls:* Geographical areas for each country.
- *Wealth:* Dwelling size & Asset ownership (Mobile phone, Computer, Car, Land), private.

Empirical Methodology (2)

- **The Education Attainment Model (Censored Ordered Probit):**
- *Features:* Examining Final Level of Schooling
  Ordered Outcome Model
  Right-Hand Censorship
- *Reduced linear form:* $S_i = \beta_0 + \beta_1 R_{ij} + \beta V_{ij} + \varepsilon_i$
- *Probability function for education outcome:*

$$\text{Prob.}(S=0) = \Phi(\mu_0 - \beta X)$$

$$\text{Prob.}(S=1) = \Phi(\mu_1 - \beta X) - \Phi(\mu_0 - \beta X)$$

$$\text{Prob.}(S=2) = \Phi(\mu_2 - \beta X) - \Phi(\mu_1 - \beta X)$$

$$\text{Prob.}(S=U) = 1 - \Phi(\mu_{U-1} - \beta X)$$

- Likelihood function for uncensored sub-sample:

$$L_u = \Phi(\mu_s - \beta X_{ij}) \quad \text{for } S = 0$$

$$L_u = \Phi(\mu_s - \beta X_{ij}) - \Phi(\mu_{s-1} - \beta X_{ij}) \quad \text{for } S = 1 \text{ to } (U-1)$$

$$L_u = 1 - \Phi(\mu_{s-1} - \beta X_{ij}) \quad \text{for } S = U$$

- Likelihood function for censored sub-sample: $L_c = 1 - \Phi(\mu_{s-1} - \beta X_{ij})$
- Final Likelihood function: $L = \prod L_u \prod L_c$

Empirical Methodology (3)

- **The Endogeneity Issue:**
  - Remittances my not constitute and exogenous shock as decision on migration, remittances and schooling are made simultaneously.
  - Instrumental Variables are used to address endogeneity.

Table X: Instrumental Variables Selection and Endogeneity Test

Education Attendance and Atteainment Models			IVs used	Relevance	Validity	Wald Test of Exogeneity
Jordan	**[15-17]**	**Males**	Rate of Bank Deposit Ownership, Rate of Livestock Ownership by governorate, Age of the Father in Household, Number of Household Individuals above 50	yes	yes	Failed to Reject
		Female	Rate of Livestock Ownership by governorate, Age of the Father, Number of Household Individuals above 50	yes	yes	Failed to Reject
	[18-24]	**Males**	Rate of Jordanians Outside the Country, Rate of Bank Deposit Ownership, Rate of Livestock Ownership by governorate, Number of Females in the Household	yes	yes	Failed to Reject
		Female	Rate of Jordanians Outside the Country, Rate of Bank Deposit Ownership by governorate, Age of the Household Head	yes	yes	Failed to Reject
Syria	**[15-17]**	**Males**	Share of empty houses due to migration of household by mohafaza, Number of Females in the Household	yes	yes	Reject
		Female	Average length in months of dwelling vacancy by mohafaza	yes	yes	Reject
	[18-24]	**Males**	Share of empty houses due to migration of household by mohafaza, Number of Females in the Household	yes	yes	Reject
		Female	Average length in months of dwelling vacancy by mohafaza	yes	yes	Reject

Results Summary – Remittances Receipt

- Remittances Receipt increases the probability of attending school/University in:
  - Jordan for Males [18-24].
  - Syria for Males and Females [15-17] and [18-24].
  - Lebanon for Females [18-24].

- Individuals from Remittance Receiving households attain higher levels of education than their non-receivers counterparts in:
  - Jordan for Males and Females [18-24].
  - Syria for Males and Females [15-17] and [18-24].
  - Lebanon for Females [18-24].

- General Observation: Magnitude on Female Education is less in magnitude and statistical significance.

Results Summary – Other Variables

- Parents Education Attainment influences positively both education outcomes across age groups and gender in the 3 countries – Magnitude of the Mother Education coefficient is higher in the majority of the cases.

- Marital Status severely reduces the probability of attending school/university and attaining higher levels of education compared to non-married.

Attendance Model - Jordan

Table 1: Determinants of education attendance in Jordan

Age	[15-17]			[18-24]		
Education Attendance	Pooled	Male	Female	Pooled	Male	Female
Remittance Receipt	0.100	0.068	0.137	0.168 ***	0.286 ***	0.005
Household Size	-0.049 **	-0.059 **	-0.050 *	0.021 **	-0.019	0.060 ***
Number of Child	-0.003	0.063	-0.068	-0.052 *	0.021	-0.132 ***
Number of Adults	0.057 **	0.063 **	0.066 *	-0.080 ***	-0.047 ***	-0.123 ***
Marital Status	na	na	na	-1.903 ***	-2.195 ***	-1.955 ***
Mother Education	0.030 ***	0.023 **	0.040 ***	0.031 ***	0.039 ***	0.021 ***
Father Education	0.025 ***	0.022 ***	0.031 ***	0.019 ***	0.021 ***	0.018 ***
Dwelling Area	0.002 **	0.001	0.003 ***	0.001 **	0.001 ***	0.000
Ownership of Car	0.104 *	0.093	0.124	0.106 ***	0.079 *	0.143 ***
Ownership of Computer	0.529 ***	0.553 ***	0.496 ***	0.472 ***	0.503 ***	0.432 ***
Ownership of Land	0.071	0.135	-0.028	0.082 **	0.052	0.100 **
Amman	-0.262 ***	-0.401 ***	-0.084	-0.118 **	-0.071	-0.161 **
North	-0.014	-0.111	0.110	0.079	0.063	0.150 **
South	0.205 *	0.121	0.344 **	-0.009	0.033	-0.028
Constant	0.674 ***	0.812 ***	0.492 **	-0.659 ***	-0.820 ***	-0.363 ***
Number of Observations	4701	2376	2325	9867	5342	4525
Pseudo R2	0.105	0.094	0.137	0.152	0.130	0.205
Wald Chi-Square	240	137	135	1317	718	739
Significance Level (Prob Value)	0.000	0.000	0.000	0.000	0.000	0.000
Log Pseudo-Likelihood	-1422	-830	-568	-5520	-3010	-2412
Chow Test F-statistic	47			194		
Significance Level (Prob Value)	0.000			0.000		

Significance Level ***0.01, **0.05, *0.1

Attendance Model - Syria

Table 2: Determinants of education attendance in Syria (IV-Probit)

Age	[15-17]			[18-24]		
Education Attendance	Pooled	Male	Female	Pooled	Male	Female
Remittance Receipt	0.265 ***	0.184 **	0.034 ***	0.582 ***	0.705 ***	0.221 *
Household Size	0.003	0.017	-0.007	0.007	0.021 **	-0.016 *
Number of Child	-0.128 ***	-0.098 ***	-0.170 ***	-0.102 ***	-0.084 ***	-0.120 ***
Number of Adults	-0.0004	-0.008	0.027 *	-0.022 ***	-0.051 ***	-0.004
Marital Status	na	na	na	-1.678 ***	-1.287 ***	-1.912 ***
Mother Education	0.171 ***	0.137 ***	0.192 ***	0.179 ***	0.161 ***	0.212 ***
Father Education	0.198 ***	0.233 ***	0.212 ***	0.180 ***	0.193 ***	0.127 ***
Number of Rooms in Dwelling	0.070 ***	0.063 ***	0.019 ***	0.071 ***	0.050 **	0.121 ***
Ownership of Mobile	0.067 *	0.098 *	0.024	0.033	0.032	0.121 **
Private School	0.535 ***	0.286 ***	0.835 ***	0.456 ***	0.474 ***	0.435 ***
South	-0.453 ***	-0.431 ***	-0.483 ***	-0.383 ***	-0.444 ***	-0.258 ***
Northeast	-0.561 ***	-0.350 ***	-0.699 ***	-0.367 ***	-0.235 ***	-0.561 ***
Middle	-0.413 ***	-0.351 ***	-0.427 ***	-0.324 ***	-0.301 ***	-0.359 ***
Constant	-0.605 ***	-0.775 ***	-0.549 ***	-1.516 ***	-1.492 ***	-1.387 ***
Number of Observations	14034	7177	6857	25593	13273	12320
Pseudo R2	0.123	0.108	0.159	0.189	0.128	0.276
Wald Chi-Square	1818	871	1117	3108	1360	1799
Significance Level (Prob Value)	0.000	0.000	0.000	0.000	0.000	0.000
Log Pseudo-Likelihood	-8510	-1482	-3997	-10879	-2836	-1505
Chow Test F-statistic	6062			13077		
Significance Level (Prob Value)	0.000			0.000		

Significance Level ***0.01, **0.05, *0.1

Attendance Model - Lebanon

Table 3: Determinants of education attendance in Lebanon

Age	[15-17]			[18-24]		
Education Attendance	Pooled	Male	Female	Pooled	Male	Female
Remittance Receipt Proxy	0.321	0.308	0.366	0.177 **	0.092	0.256 **
Household Size	-0.124 **	-0.121 *	-0.154 **	0.058 **	0.043	0.081 **
Number of Child	0.047 **	0.194	-0.081	-0.204 **	0.001	-0.405 *
Number of Adults	0.159 **	0.173 *	0.170 *	-0.068 *	-0.062	-0.133 **
Number of Adult Males	-0.100	-0.090	-0.140	-0.083 **	-0.023	-0.055
Marital Status	na	na	na	-1.764 ***	-1.947 ***	-1.661 ***
Mother Education	0.218 ***	0.274 ***	0.160 **	0.186 ***	0.273 ***	0.112 ***
Father Education	0.166 ***	0.207 ***	0.151 **	0.092 ***	0.090 ***	0.085 ***
Dwelling Area	0.004 ***	0.004 ***	0.005 *	0.000	0.001	-0.001
Ownership of Cellphone	-0.340 **	-0.516 ***	-0.106	-0.116 *	-0.072	-0.156 *
Ownership of Computer	0.348 ***	0.502 ***	0.160	0.216 ***	0.275 ***	0.150 *
Ownership of Car	0.246	0.178	0.260	0.229 **	0.240 *	0.184
Constant	-0.258	-0.534	-0.052	-0.960 ***	-1.427 ***	-0.477 *
Number of Observations	1164	612	552	2743	1425	1318
Pseudo R2	0.1756	0.225	0.166	0.1386	0.138	0.171
Wald Chi-Square	145.16	100	67	359.53	211.36	232.84
Significance Level (Prob Value)	0.000	0.000	0.000	0.000	0.000	0.000
Log Pseudo-Likelihood	-347.656	-191.17	-143.788	-1635.25	-850.506	-756.033
Chow Test F-statistic	25			57		
Significance Level (Prob Value)	0.000			0.000		

Significance Level ***0.01, **0.05, *0.1

Attainment Model - Jordan

Table 4: Determinants of education attainment in Jordan

Age	[15-17]			[18-24]		
Education Attendance	Pooled	Male	Female	Pooled	Male	Female
Remittance Receipt	0.085	0.066	0.098	0.266 ***	0.331 ***	0.140 *
Household Size	-0.060 ***	-0.063 **	-0.072 **	-0.055 ***	-0.062 ***	-0.058 ***
Number of Child	-0.035	0.026	-0.088	-0.075 ***	-0.038	-0.104 ***
Number of Adults	0.067 ***	0.071 **	0.077 **	0.037 ***	0.024	0.061 ***
Marital Status	na	na	na	-0.696 ***	-0.807 ***	-0.925 ***
Mother Education	0.033 ***	0.025 **	0.045 ***	0.049 ***	0.034 ***	0.068 ***
Father Education	0.030 ***	0.027 ***	0.037 ***	0.028 ***	0.032 ***	0.024 ***
Dwelling Area	0.002 ***	0.002	0.004 ***	0.003 ***	0.003 ***	0.003 ***
Ownership of Car	0.063	0.037	0.122	0.125 ***	0.126 ***	0.151 ***
Ownership of Computer	0.631 ***	0.673 ***	0.577 ***	0.587 ***	0.658 ***	0.503 ***
Ownership of Land	0.132 *	0.233 **	-0.004	0.198 ***	0.212 ***	0.176 ***
Amman	-0.244 ***	-0.352 ***	-0.090	-0.119 ***	-0.140 **	-0.092
North	-0.015	-0.058	0.048	0.088 **	0.079	0.144 **
South	0.084	0.045	0.157	-0.085	-0.014	-0.128
Threshold						
μ1	-1.956 ***	-2.075 ***	-1.814 ***	-1.769 ***	-2.002 ***	-1.649 ***
μ2	-1.504 ***	-1.623 ***	-1.348 ***	-1.152 ***	-1.268 ***	-1.129 ***
μ3	-1.079 ***	-1.158 ***	-0.970 ***	-0.814 ***	-0.891 ***	-0.833 ***
μ4	-0.808 ***	-0.886 ***	-0.692 ***	-0.069	-0.065	-0.173 *
μ5	-0.409 ***	-0.481 **	-0.285	0.683 ***	0.749 ***	0.549 ***
μ6	0.873 ***	0.710 ***	1.178 ***	1.101 ***	1.159 ***	1.018 ***
μ7	na	na	na	1.503 ***	1.438 ***	1.570 ***
Number of Observations	4701	2376	2325	9867	5342	4525
Wald Chi-Square	276	155	170	2111	1133	1330
Significance Level (Prob Valu	0.000	0.000	0.000	0.000	0.000	0.000
Log Pseudo-Likelihood	-1877	-1119	-733	-12664	-6994	-5415
Chow Test F-statistic	49			509		
Significance Level (Prob Valu	0.000			0.000		

Significance Level ***0.01, **0.05, *0.1

Attainment Model - Syria

Table 5: Determinants of education attainment in Syria (IV Censored Ordered Probit)

Age	[15-17]			[18-24]		
Education Attendance	Pooled	Male	Female	Pooled	Male	Female
Remittance Receipt	0.372 ***	0.529 ***	0.128 ***	0.330 ***	0.653 ***	0.115 **
Household Size	-0.024 ***	-0.010	-0.034 ***	-0.057 ***	-0.031 ***	-0.088 ***
Number of Child	-0.107 ***	-0.101 ***	-0.125 ***	-0.069 ***	-0.065 **	-0.055 ***
Number of Adults	0.036 ***	0.027 **	0.034 **	0.089 ***	0.031 ***	0.129 ***
Marital Status	na	na	na	-0.656 ***	-0.554 ***	-0.783 ***
Mother Education	0.162 ***	0.142 ***	0.262 ***	0.222 ***	0.148 ***	0.360 ***
Father Education	0.186 ***	0.201 ***	0.173 ***	0.227 ***	0.260 ***	0.135 ***
Number of Rooms in Dwelling	0.040 ***	0.028 **	0.108 ***	0.044 ***	0.048 ***	0.096 ***
Ownership of Mobile	0.048	0.001	0.056	0.038 **	0.001	0.091 **
Members in Private School	0.112 **	0.067 ***	0.740 **	0.305 ***	0.486 ***	0.215 ***
South	-0.306 ***	-0.293 ***	-0.410 ***	-0.308 ***	-0.353 ***	-0.185 ***
North East	-0.518 ***	-0.296 ***	-0.952 ***	-0.648 ***	-0.476 ***	-0.824 ***
Middle	-0.275 ***	-0.197 ***	-0.535 ***	-0.321 ***	-0.297 ***	-0.382 ***
Threshold						
μ1	-1.472 ***	-1.487 ***	-1.562 ***	-1.209 ***	-1.405 ***	-1.300 ***
μ2	-1.164 ***	-1.105 ***	-1.280 ***	-0.913 ***	-1.045 ***	-1.019 ***
μ3	0.941 ***	1.122 ***	0.581 ***	1.036 ***	1.030 ***	0.883 ***
μ4	3.061 ***	3.186 ***	1.935 ***	1.647 ***	1.446 ***	1.528 ***
μ5	na	na **	na	3.711 ***	2.966 ***	3.880 ***
Number of Observations	14035	7178	6857	25594	13273	12321
Wald Chi-Square	2309	1020	1176	7919	2317	4858
Significance Level (Prob Value)	0.000	0.000	0.000	0.000	0.000	0.000
Log Pseudo-Likelihood	-12186	-1119	-4938	-28524	-13471	-13415
Chow Test F-statistic	12257			3278		
Significance Level (Prob Value)	0.000			0.000		

Significance Level ***0.01, **0.05, *0.1

Attainment Model - Lebanon

Table 6: Determinants of education attainment in Lebanon

Age	[15-17]			[18-24]		
Education Attendance	Pooled	Male	Female	Pooled	Male	Female
Remittance Receipt Proxy	0.269	0.290	0.299	0.202 **	0.059	0.453 ***
Household Size	-0.136 ***	-0.100	-0.197 ***	-0.052 **	-0.033	-0.087 **
Number of Child	0.077	0.216 *	-0.071	-0.109	0.015	-0.190 *
Number of Adults	0.174 **	0.171	0.212 **	0.107 **	0.020	0.062 ***
Number of Adult Males	-0.119	-0.105	-0.199	-0.207	-0.052	-0.107
Marital Status	na	na	na	-0.864 ***	-0.940 ***	-1.009 ***
Mother Education	0.264 ***	0.324 ***	0.222 ***	0.281 ***	0.302 ***	0.275 ***
Father Education	0.159 ***	0.193 ***	0.143 ***	0.133 ***	0.125 ***	0.123 ***
Dwelling Area	0.004 ***	0.005 ***	0.004 ***	0.002 ***	0.002 ***	0.002 **
Ownership of Cellphone	-0.353 ***	-0.494 ***	-0.096	-0.024	0.025	-0.080
Ownership of Computer	0.283 ***	0.371 **	0.118	0.244 ***	0.300 ***	0.171 *
Ownership of Car	0.246	0.104	0.343	0.197 **	0.210 **	0.130
Threshold						
μ1	-1.308 ***	-1.318 ***	-1.531 ***	-1.514 ***	-1.150 ***	-2.188 ***
μ2	-1.138 ***	-0.969 **	-0.602	-1.241 ***	-0.930 ***	-1.811 ***
μ3	-0.152	0.130	-0.219	-0.008	0.348	-0.604 **
μ4	0.202	0.497	0.499	0.647 ***	1.005 ***	0.079
μ5	0.901 **	1.276 **		1.249 ***	1.611 ***	0.701 **
Number of Observations	1161	611	550	2650	1420	1230
Wald Chi-Square	163	166	78	530	329	328
Significance Level (Prob V	0.000	0.000	0.000	0.000	0.000	0.000
Log Pseudo-Likelihood	-453	-261	-173	-2564	-1482	-1049
Chow Test F-statistic	40			65		
Significance Level (Prob V	0.000			0.000		

Significance Level ***0.01, **0.05, *0.1

Thank You