Estimating the Cyclicality of Remittance Flows to Jamaica from the USA

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Motivation

- Remittances transfers have invariably served as a major source of Jamaica's foreign currency inflows during the past decade.

- The USA has been the most significant host country for Jamaica's migrant workers resulting in that country being the key source market for remittance flows to the domestic economy.

- While most of the literature is based on determining whether remittance flows are influenced by altruism versus the income effect, this paper looks at how changes in the host country economic conditions (USA) affect remittance flows to the home country (Jamaica).

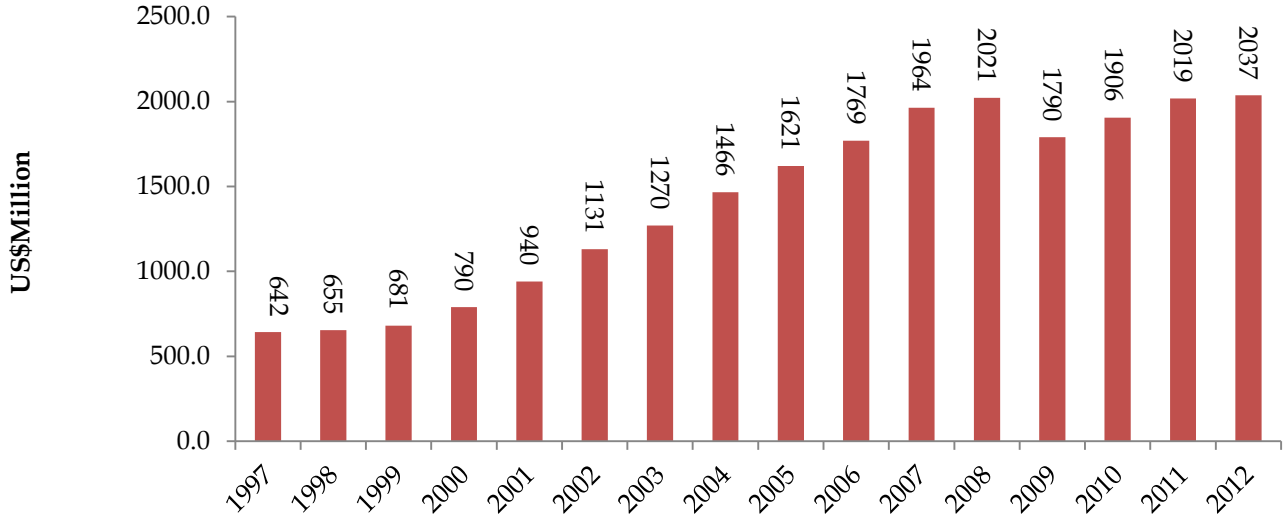
- In this regard, this study seeks to estimate the impact of changes in major US economic indicators on remittance flows to Jamaica.

Outline

- Stylized Facts
- Literature Review
- Estimation Methodology
- Results
- Concluding Remarks

Stylized Facts

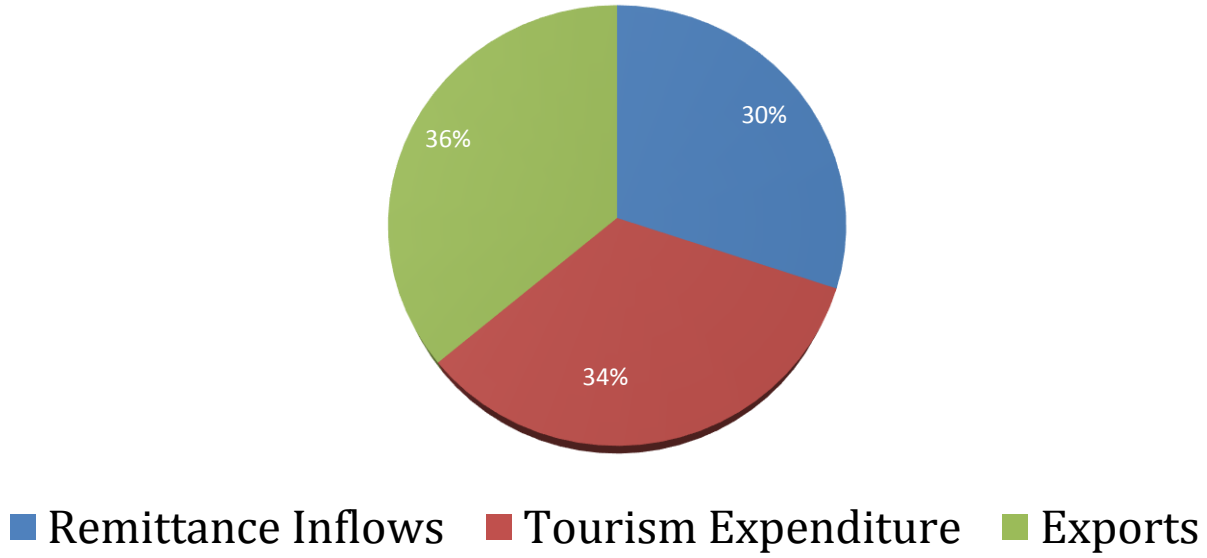
Figure 1: Remittance Inflows to Jamaica



- Over the period 1997 to 2012, remittances to Jamaica have more than tripled, totaling approximately US$2.0 billion in 2012.

Stylized Facts

Figure 2: Percentage share of Jamaica's Main Foreign Exchange Earners: 1997-2012



- Remittance inflows to Jamaica accounted for approximately 30.0% of total foreign currency (FX) earnings, following earnings from goods exports and tourism-related services, which have, on average, accounted for 36.0% and 34.0%, respectively, for the 1997-2012 period.

Stylized Facts

Figure 3: Average Weekly Earnings in the US Education and Health Services Sector vs. Private Inflows to Jamaica (% change)

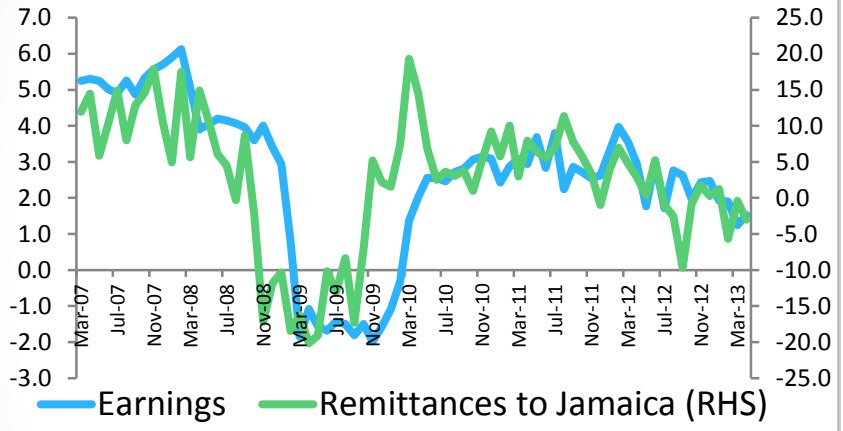
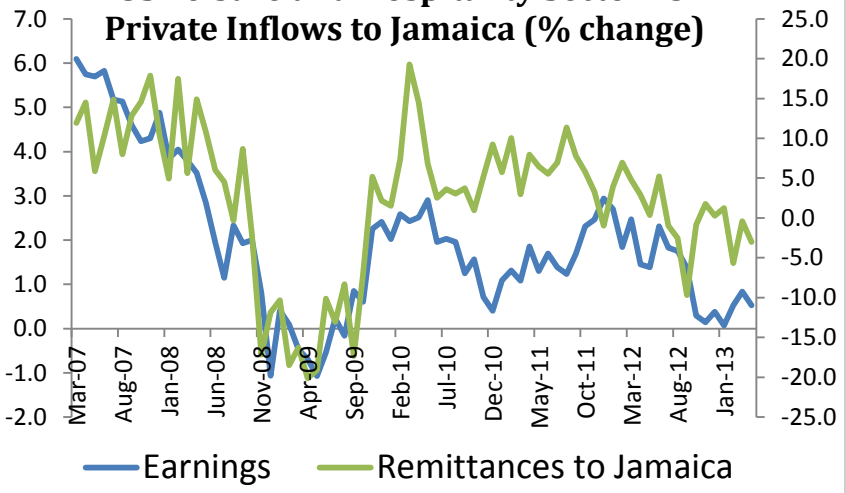


Figure 4: Average Weekly Earnings in the US Leisure and Hospitality Sector vs. Private Inflows to Jamaica (% change)



- There was a relatively strong positive co-movement between Jamaica's remittances and earnings in the Education & Health Services sector and Leisure & Hospitality sector, respectively, in the USA over the review period.

Literature Review

- Roache & Gradzka (2007) asserted that remittance transfers to the Latin American region (LATAM) are insensitive to fluctuations in key US macroeconomic indicators.

- Magnusson (2009) suggested that changes in US sectors of remitting importance for Hispanic immigrants have a pro-cyclical relationship with remittance transfer decisions.

Literature Review

- Silva and Huang (2005) posited that the economic situation of the host country dominates remittance decisions.

- Ricketts (2011) indicated that remittances are counter-cyclical to movements in Jamaica's GDP.

Data

- The paper employs quarterly data over the period 1997 Q3 to 2013 Q1.

Variable	Description
r	Remittances sent to Jamaica
lnusgdp	US real GDP
lnehsa	Employment in the health care and social assistance sector in the USA
lnelh	Employment in the leisure and hospitality sector in the USA
lnlf	The US civilian labour force
lnhs	US housing starts
lnrs	US retail sales
lndjia	Dow Jones Industrial Average
lnismm	ISM manufacturing index

Estimation Methodology

- Pesaran & Shin (2001) developed the autoregressive distributed lag (ARDL) bounds testing approach in order to test the existence of a cointegrating relationship irrespective of whether the series are stationary or integrated of order one.

- 3 Step Procedure
  - **Step 1**
    - Bounds Testing
      - Tests the presence of a cointegrating relationship based on Unrestricted Error Correction Model (UECM).

Bounds Test

- *UECM*

$$\Delta Logr_t = \alpha + \sum_{i=0}^{m} \beta_i \, \Delta x_{t-s} + \sum_{i=0}^{n} \gamma_i \Delta z_{t-s} + \sum_{1=i}^{k} \emptyset_i \Delta r_{t-s} + \theta_1 x_{t-s} + \theta_2 z_{t-s} + \theta_3 r_{it-s} + \varepsilon_t$$

- where r_t represents the quarterly percentage change in remittance flows to Jamaica in period *t*, α denotes a constant, x_{t-s} is a vector of US economic indicators in period *t-s* while z_{t-s} is a control variable and ε_t represents the error term. The variables are expressed In logs.
- The first part of the equation as denoted by β_i, γ_i and $\emptyset_i$ are the short-run dynamics of the model while θ_1, θ_2 and θ_3 represent the long-run relationship.

Bounds Test

- The bounds test methodology implies investigating the null hypothesis of no cointegration through a joint significance test of the lagged variables based on the Wald or F-statistics:

- Bounds test
  - $H_{0:} \quad \theta_1 logx_{t-1} + \theta_2 logz_{t-1} + \theta_3 logr_{t-1} = 0$
  - $H_{1:}: \quad \theta_1 \neq \theta_2 \neq \theta_3 \neq 0$

Bounds Test Results

Wald Test Results

	Critical Bounds		
	F-Statistic	**Lower**	**Upper**
Group regressors (Model A)	7.32	2.22	3.89
Group regressors (Model B)	5.22	2.22	3.89

Model A includes Jamaica's real GDP as a control variable while Model B does not. Critical values are based on significance at the 5% level.

- Both models indicated a cointegrating relationship between remittances to Jamaica and US economic indicators.

ARDL Model (Cont'd.)

- **Step 2**
  - Estimation of short-run equation
    - ECM term was negative and significant

Estimation Results

ARDL Error Correction Model: With Jamaica's GDP as a control variable (Model A)

Variable	Coefficient
$ECMJA_{(t-1)}$	-0.523620***
$DLNREM_{(t-1)}$	-0.281198
$DLNREM_{(t-2)}$	-0.114451
$DLNREM_{(t-3)}$	-0.072624
$DLNUSGDP(_{t-1})$	-0.518897
$DLNJAGDP\_SA_{(t-3)}$	-2.114873***
$DLNRS_{(t-1)}$	0.852148*
$DLNEHSA_{(t-1)}$	8.388954*
$DLNEHSA_{(t-2)}$	10.58705**
$DLNELH_{(t-1)}$	1.303569
$DLNHS_{(t-1)}$	0.063636
$DLNISMM_{(t-1)}$	0.142625
$DLNISMM_{(t-2)}$	0.096400

ARDL Error Correction Model: Without Jamaica's GDP as a control variable (Model B)

Variable	Coefficient
$ECM_{(t-1)}$	-0.328512***
$DLNREM_{(t-1)}$	-0.329646**
$DLNREM_{(t-2)}$	-0.291266**
$DLNREM_{(t-3)}$	-0.259740**
$DLNUSGDP(_{t-2})$	1.755769
$DLNEHSA_{(t-1)}$	8.171115*
$DLNEHSA_{(t-2)}$	9.577518**
$DLNHS(_{t-1})$	0.054347
$DLNRS_{(t-1)}$	0.906523
$DLNRS_{(t-2)}$	-0.307621
$DLNDJIA_{(t-2)}$	0.047393
$DLNISMM_{(t-1)}$	0.062369
$DLNISMM_{(t-2)}$	0.061003
$DLNLF_{(t-1)}$	-5.565786**
$DLNELH_{(t-1)}$	2.076094

*** Denotes rejection of the null hypothesis at the 1 % level and ** denotes rejection at the 5 % level and * denotes rejection at the 10 % level.

Long-Run Model

- **Step 3**
  - Estimation of long-run equation

Estimation Results

Long Run Equation with Jamaica GDP as a control variable (Model A)

Variable	Coefficient
LNUSGDP	2.487464**
LNISMM	-0.103614
LNRS	0.154760
LNLF	2.197996
LNEHSA	2.195863***
LNELH	-3.934006***
LNHS	0.108628**
LNDJIA	-0.039384

Long Run Equation without Jamaica GDP as a control variable (Model B)

Variable	Coefficient
LNUSGDP	1.976009
LNISMM	0.042579
LNRS	-0.212830
LNLF	7.301986***
LNEHSA	1.587321**
LNELH	-2.263004
LNHS	0.181420***
LNDJIA	-0.068511

*** Denotes rejection of the null hypothesis at the 1 % level and ** denotes rejection at the 5 % level and * denotes rejection at the 10 % level.

Concluding Remarks

- Using an ARDL model, the results of this paper indicated a moderate correction in the disequilibria between remittances and US economic indicators one quarter subsequent to a shock with half of the deviation being corrected within a quarter.

- The findings further revealed a relatively pro-cyclical linkage, albeit weak, as it relates to US economic developments and remittances in the long-term.

- US real GDP was also shown to possess a long-run relationship with remittances to Jamaica once the model was controlled for the impact of domestic GDP on remittances.

Concluding Remarks (Cont'd.)

- In light of the relative importance of remittances as a major source of foreign currency for the Jamaican economy, a holistic understanding of factors underpinning such flows is integral to policy formulation.

Thank you!