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Remittances and competitiveness: a case study on Armenia and Georgia

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Remittances play an important role in the economies of remittance-reliant Armenia and Georgia as they alleviate poverty and provide foreign currency. In addition to such positive contributions, remittances can produce harmful effects on the economies that receive them. The author investigates the Dutch disease effect of remittances in these small economies by measuring the impact of remittances on real exchange rates and exports by applying a vector autoregressive model. The study covers the period 2000 Q1–2019 Q4 and analyses the relationship between the remittances, real effective exchange rate, exports, and gross domestic product. The results indicate that remittances produce appreciating effects on real exchange rates in both countries but a week negative effect on exports only in Armenia.

KEYWORDS: remittances, exchange rate, vector autoregression

In addition to increasing the movement of goods, services, and capital across borders, economic globalisation has intensified labour migration, thus contributing to an exponential growth in workers' remittances. Developing countries are the primary source of labour migrants and the primary destination of remittances because of their scarcity of job opportunities and persistent poverty. Remittances are the second-largest source of foreign currency after foreign direct investment, and their volume is significantly higher than that of foreign aid for these countries (*Ratha* [2005]). Remittances improve the balance of payments, reduce pressure on domestic currencies, prevent currency crises (*Barajas et al.* [2009]), alleviate poverty and inequality (*Adams–Page* [2005]), and provide alternative channels for financing investments in small businesses (*Giuliano–Ruiz-Arranz* [2009]). Although remittances can benefit developing countries by contributing to macroeconomic stability and poverty allevia-

tion, they may have also adverse effects on their economies. Huge inflows of foreign capital can increase the real exchange rate (RER) of the domestic currency. Strengthening domestic currency via an influx of foreign currency is detrimental to the competitiveness of the export sector. This is known as the *Dutch disease effect* (*Corden* [1984]).

Armenia and Georgia are small Caucasian economies that heavily rely on remittances. On average, the remittance-to-gross-domestic-product (GDP) ratio is greater than 10% in both countries. Such large and steady capital inflows cannot occur without producing considerable effects on these countries' economies, which necessitates their investigation. This study analyses the effects of remittances on the RERs and exports of Armenia and Georgia.

The next section summarises the literature on the Dutch disease effect of remittances. Section 2 introduces the data and methodology used. Section 3 explains the primary findings and study results. The final section concludes the paper.

1. Literature review

RER characterises the relative price of non-tradable goods compared to tradable goods. It is mathematically formulated as $RER = P_{n.t} / P_t$ where $P_{n.t}$ and P_t are the prices of non-tradable and tradable goods, respectively. According to this formula, an increase in RER indicates appreciation, and a fall indicates depreciation. The Salter–Swan–Corden–Dornbusch paradigm is the theoretical basis for analysing the impact of capital inflows on RER. Remittance inflows increase the income of remittance receivers. Rising income spurs a demand for tradable and non-tradable goods. The price of tradable goods is determined internationally; increased demand in a single country does not affect it, at least assuming that the country is small. By contrast, the supply of non-tradable goods is constrained in the short term. Therefore, increased demand raises their prices and appreciates RER.

There is no consensus among scholars on the effect of remittances on the international competitiveness of the countries that receive them. *Lartey*, *Federico*, and *Acosta* [2012] employed panel data for 109 developing countries and concluded that an increase in remittances would lead to an appreciation in RER. To analyse the effect of remittances on the RERs of countries that receive high levels of remittances, *Hassan* and *Holmes* [2013] used panel cointegration, panel error correction, and quantile regression methods. Their findings indicate that remittances have an appreciating effect on RERs. By deploying the general method of moments (GMM),

Vardanyan [2019] showed that a large inflow of remittances was associated with more homogenous exports in the receiving country. Exports of some goods, however, suffer from the appreciation of the RER caused by remittances. *Lopez*, *Bussolo*, and *Luis* [2007] concluded that remittances could appreciate RERs in Latin American countries. Investigating the Dutch disease effect of remittances in South Asian countries, *Uddin* and *Murshid* [2017] found that remittances contributed to RER appreciation and shrinkage of the share of the tradable sector. *Basnet*, *Donou-Adonsou*, and *Upadhyaya* [2019] conducted a panel cointegration test and verified the appreciating effect of remittances on RERs in South Asia. According to *Roy* and *Dixon* [2016], remittances produce an appreciating effect in Bangladesh, India, Pakistan, and Sri Lanka and openness to trade can alleviate this effect. Based on a Bayesian analysis, *Makhlouf* and *Mughal* [2013] claim that remittances produce a Dutch disease effect in Pakistan. *Urama*, *Edeh*, and *Urama* [2019] applied autoregressive distributed lag/bound testing methodology to study this topic and explored that remittances to Nigeria appreciated the RER and undermined the export sector's competitiveness. By employing a fully modified ordinary least squares (FMOLS) method, *Martins* [2013] found that remittances produced a small appreciating effect in Ethiopia. Using a vector autoregression (VAR) model, *Ito* [2017] report that remittances to Moldova slightly appreciate the country's domestic currency and cause a decline in its exports. *Eromenko* [2016] concluded that in Kyrgyzstan and Tajikistan remittances produced symptoms of the Dutch disease, including deindustrialisation.

In terms of the labour market, remittances negatively affect the competitiveness of economies that receive them. The income effect that remittances produce enables recipients to increase their leisure, which causes a decline in labour supply (*Chami et al.* [2008]). According to *Acosta*, *Lartey*, and *Mandelman* [2007], the increased demand for leisure that remittances produce in El Salvador reduces labour supply, thus resulting in an increase in production costs. *Bayangos* and *Jansen* [2011] found that an increase in migration and remittances to the Philippines caused a decline in the labour force and a rise in real wages over labour productivity, which undermined export competitiveness. *Okello*, *Brownbridge*, and *Canagarajah* [2021] examined the effect of remittances on unit labour costs in 29 transition economies. They state that real wage growth in countries that receive high levels of remittances is significantly higher than growth in labour productivity, which can impair the labour-intensive tradable sector. Compared to the non-tradable sector, the tradable sector is characterised by higher wages and labour productivity. Remittances tend to reduce employment in the tradable sector, while spurring growth in the non-tradable sector. This tendency can reduce unemployment but may lead to a decline in overall productivity growth (*Chami et al.* [2018]).

Performing instrumental variable estimation, *Rajan* and *Subramanian* [2005] claimed that remittances did not appreciate exchange rates in developing countries.

Using the generalized methods of moments technique, *Ito* [2019a] investigated 18 developing countries with remittance-to-GDP ratios > 5% and concluded that remittances depreciated the RER. *Ozcan* [2011] employed Pedroni's panel cointegration and FMOLS to measure the effect of remittances on the RERs of 10 developing countries. The author did not get proof of the Dutch disease. *Ojapinwa* and *Nwokoma* [2018] did not find any evidence that remittances would lead to appreciating RERs or a Dutch disease effect in Sub-Saharan Africa. *Barrett* [2014] showed that remittances depreciated the RER in Jamaica.

Various factors can alleviate the Dutch disease effect that remittances produce in countries that receive them. *Urama*, *Edeh*, and *Urama* [2019] concluded that openness to trade could alleviate the appreciating effect of remittances in Nigeria. *Barajas et al*. [2010] and *Polat* and *Rodriguez-Anders* [2019] proposed that openness to trade and free movement of capital could weaken the appreciating effect of remittances on the RERs of developing countries. Openness to trade and capital movement can reduce the pressure of remittance-sourced foreign capital on the prices of non-tradable goods and unit labour cost by channelling part of this capital towards imports and lucrative investment abroad. *Lartey*, *Federico*, and *Acosta* [2012] and *Uddin* and *Murshid* [2017] reached the same conclusion that the Dutch disease effect of remittances was stronger under a fixed exchange regime. *Acosta*, *Lartey*, and *Mandelman* [2009] investigated the Dutch disease effect of remittances in 109 developing economies and concluded that a developed financial system could alleviate this effect by channelling capital towards investment. *Daway-Ducanes* [2019] found that remittances could spur manufacturing growth in countries with more developed financial systems. According to the author, remittances promote investment in human and physical capital as well as financial development in the Middle East, North Africa, and South Asia. If remittances are channelled towards investment, they can increase productivity and ease supply constraints in the non-tradable sector. As a result, the inflationary effect of remittances on the non-tradable sector can be neutralised, and the appreciation of the RER can be mitigated (*Brahim–Nefzi–Sambo* [2017], *Hien et al.* [2020]).

2. Data and methodology

In my models, quarterly data for the period between 2000 Q1 and 2019 Q4 are used. The following variables are employed: real effective exchange rate (*reer*), remittances per capita (*rmt*), exports per capita (*expt*), and GDP per capita (*gdp*). The real effective exchange rate was adjusted to the consumer price index (2000 = 100).

Separate indicators for the prices of tradable and non-tradable goods are not available. Therefore, *reer*[1] is approximated by adjusting the nominal exchange rate to the price differences between the main trading partners. Remittances are calculated as the sum of personal transfers via money transfer systems and compensation of employees working abroad. The remittance rate per capita is calculated by dividing remittances by the population in the official population census.

By applying the VAR model to Moldova and the vector error correction model to Georgia, *Ito* [2017], [2019b] used the ratio variables of remittances and exports as a share of GDP to investigate the Dutch disease effect in those countries. The ratio variables were inadequate for capturing the effect of the shock in one variable on the other variables in the impulse response functions (IRFs). As these variables are expressed as a ratio of two variables, it is impossible to know whether a shock is caused by the numerator or denominator of a ratio variable. Here, per capita variables are more appropriate in the VAR model. The GDP data are from the database of the United Nations Economic Commission for Europe, while the remaining data are from the National Bank of Armenia and Georgia.

2.1. Methodology

I apply the VAR model to both countries separately. The following equation explains the model:

$$\mathbf{V}_t = \mathbf{c} + \sum_{i=1}^{k} \mathbf{\Psi}_i \mathbf{V}_{t-1} + \boldsymbol{\varepsilon}_\mathbf{t}$$

where $\mathbf{V}_t$ represents the vector ($n \times 1$) of endogenous variables, while $\mathbf{c}$ stands for the vector ($n \times 1$) of constant terms. $\mathbf{\Psi}$ denotes the matrices of the coefficients, k is the number of the lags, and $\boldsymbol{\varepsilon}_t$ describes the ($n \times 1$) vector of error terms distributed with zero mean.

[1] $reer = \sum_{i=1}^{n} \left(\frac{CPI_{domestic}}{CPI_{i,\ partners} * ner_i} \right)^{w_i}$ where $CPI_{domestic}$ is the domestic consumer price index for Armenia and Georgia; ner_i is the nominal exchange rate of trading partner i, and $CPI_{i,\ partners}$ is the consumer price index for trading partners of Armenia and Georgia; w_i is the relative weight of the i^{th} trading partner in general trade; and i is the number of trading partners $I = 1, 2, ..., n$.

3. Results and discussion

Before estimating the models, the stationarity of the data was tested using an augmented Dickey–Fuller (ADF) test. The results for Armenia show that the variables are non-stationary at level, except for *reer*, with a trend and intercept of 5%. (See Table 1 *a*).) The null hypothesis of non-stationarity was rejected at the 1% significance level by first differencing the data. Therefore, the order of integration is one (I). Table 1 *b*) shows that the series are non-stationary at level and stationary at the first difference in the case of Georgia. According to the Akaike information criterion, the optimal lag length is five for the Armenian model and four for the Georgian model.

Table 1

ADF test results
a) for Armenia

Variable	ADF test statistics (with intercept)		ADF test statistics (with trend and intercept)		Order of integration
	Level	First difference	Level	First difference	
reer	–0.97	–7.77***	–3.68**	–7.73***	*I*(1)
rmt	–1.82	–4.21***	–1.14	–4.46***	*I*(1)
gdp	–2.59	–3.99***	–1.18	–4.00**	*I*(1)
expt	1.18	–3.30**	–0.47	–3.66**	*I*(1)

b) for Georgia

Variable	ADF test statistics (with intercept)		ADF test statistics (with trend and intercept)		Order of integration
	Level	First difference	Level	First difference	
reer	–1.98	–6.87***	–1.58	–6.90***	*I*(1)
rmt	–2.34	–4.55***	–0.34	–4.61***	*I*(1)
gdp	–2.11	–4.69***	–1.46	–4.55***	*I*(1)
expt	–0.92	–4.79***	1.56	–4.32***	*I*(1)

Note. *** and ** indicate rejection of the null hypothesis at the 1% and 5% significance levels, respectively. Here and in Figures 1 and 2, *reer*: real effective exchange rate; *rmt*: remittances per capita; *expt*: exports per capita; *gdp*: GDP per capita.

I conducted a Lagrange multiplier (LM) test for residual autocorrelation to check the appropriateness of the models. Table 2 shows that, for both Armenia and Georgia, there is no serial correlation in the VAR models because all *p*-values are greater than 5%.

Table 2

LM test results
a) for Armenia

Lag	LM statistics	*p*-value
1	22.80	0.12
2	10.32	0.85
3	13.61	0.63
4	24.52	0.08
5	19.18	0.26

b) for Georgia

Lag	LM statistics	*p*-value
1	21.16	0.58
2	17.52	0.52
3	19.67	0.28
4	20.62	0.19

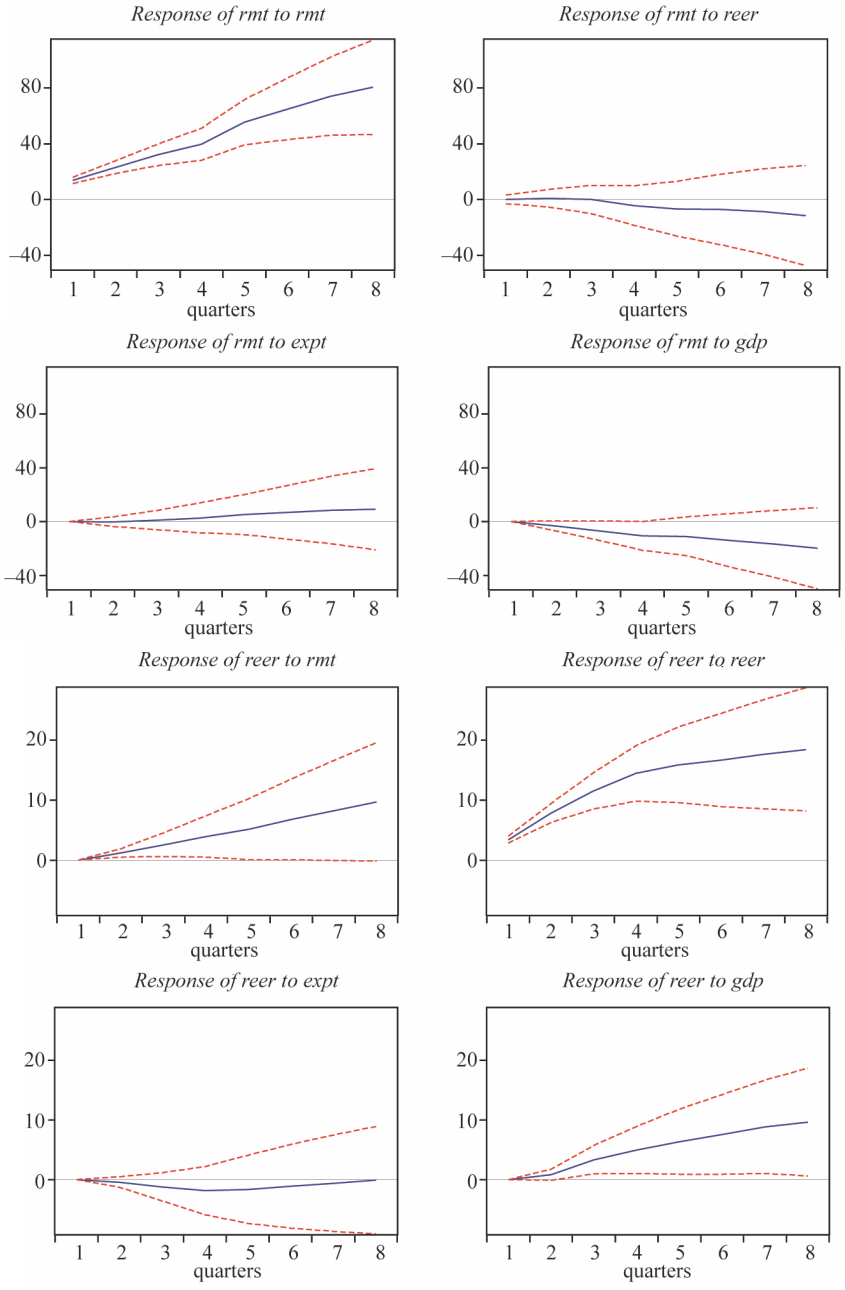
3.1. IRFs

IRFs explain the short-run dynamics of the models by estimating the effect of one standard deviation shock in one variable on the current and future values of all the variables. The Cholesky decomposition is sensitive to the ordering of the variables. Therefore, the sequence of variables was ordered as follows: *rmt, reer, expt, gdp.*

Armenia

Figure 1 presents the results of the IRFs accumulated over eight quarters in the context of Armenia. The dotted line shows the standard error band, which indicates the significance of impulses. The response of the *reer* to a remittance shock is positive, as expected. This positive response indicates that remittances have an appreciating effect on *reer* in Armenia. The response of exports to a *reer* shock is negligible but negative. This aligns with the notion that currency appreciation impedes export performance. Remittance shock has a small negative impact on exports, which can occur through the appreciating effect of remittances on *reer*. The response of the *reer* to a shock in GDP per capita is positive, which is in accordance with the Balassa–Samuelson effect. Due to this fact, the country's demand for non-tradable goods increases as its income rises, which appreciates the country's RER. Remittances respond negatively to *reer* shocks. The cost of remitting increases as *reer* appreciates. Therefore, emigrant workers remit less money as the RER appreciates.

Figure 1. Accumulated IRFs for Armenia



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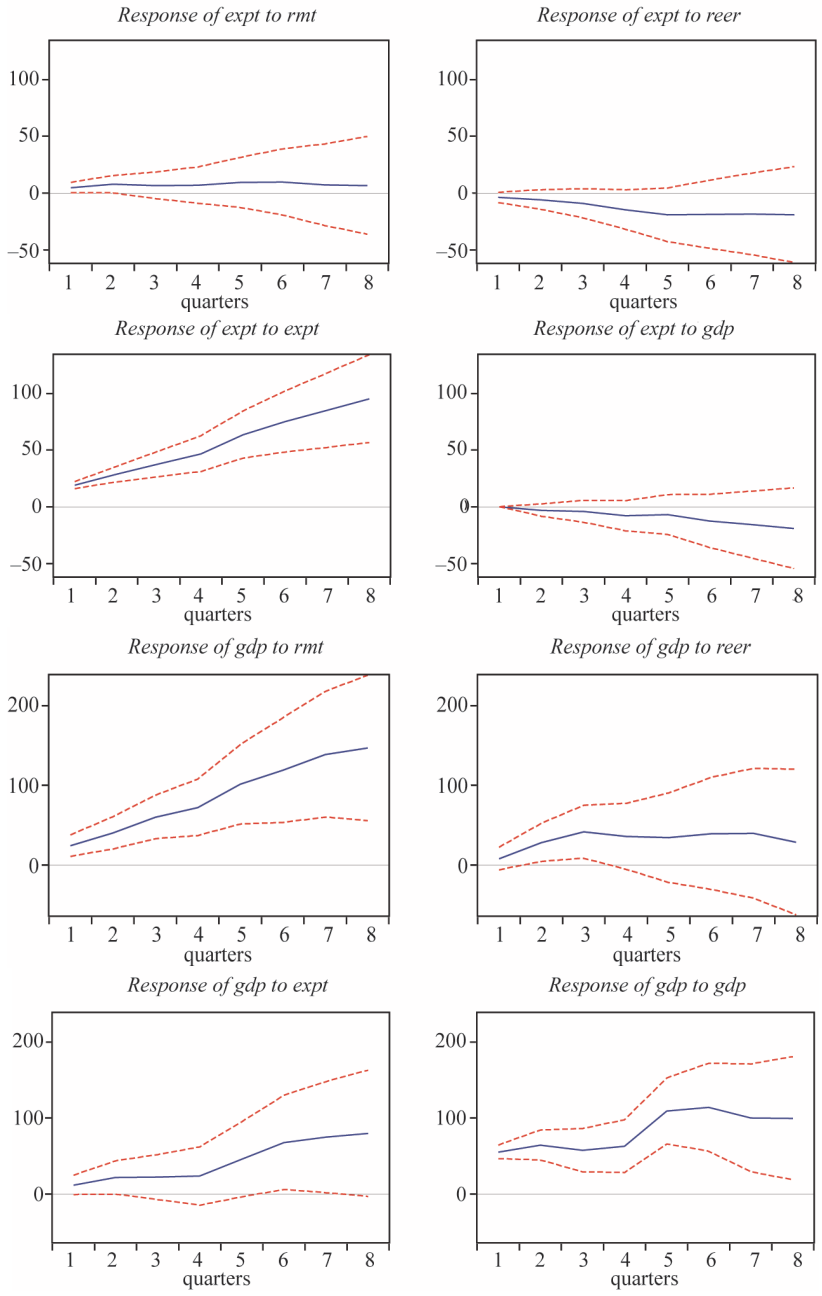
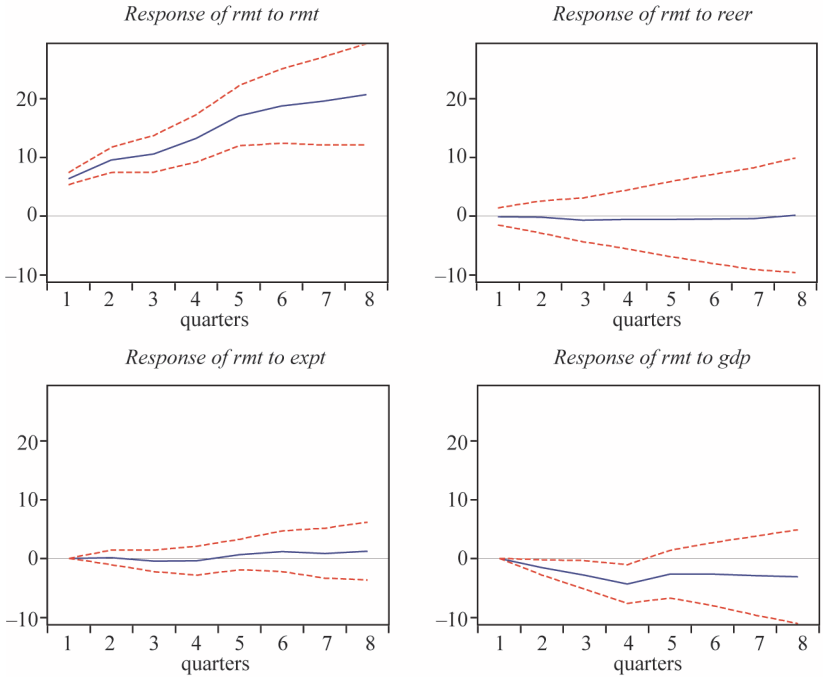


Note. Here and in Figure 2, the dotted lines indicate standard error.

Georgia

Figure 2 presents the results of the IRFs over eight quarters in Georgia. The standard error is indicated with a dotted line, which measures the significance of impulses. The positive effect of the *reer* on a remittance shock begins in the fifth quarter. As in Armenia, this indicates that remittances may produce appreciation in the RER. In accordance with this theory, the effect of a *reer* shock on *expt* is negative. It might be expected that the response of exports to remittances will be negative because exports are negatively affected by a *reer* shock, and remittance appreciates *reer*. The response of exports to remittance shocks is positive. This can be explained by positing that remittances may provide capital for exporters and producers, especially for small-scale suppliers in export chains. As a typical developing country, Georgia's financial system is not adequate to provide investment capital to small businesses, but remittances can be helpful in this regard, especially in the export sector. The response of *reer* to a GDP shock was slightly positive. Again, this can be explained by the Balassa–Samuelson effect. The response of GDP to the remittance shock was positive. Remittances trigger the demand for non-tradable goods. Therefore, they promote GDP growth in the short term.

Figure 2. Accumulated IRFs for Georgia



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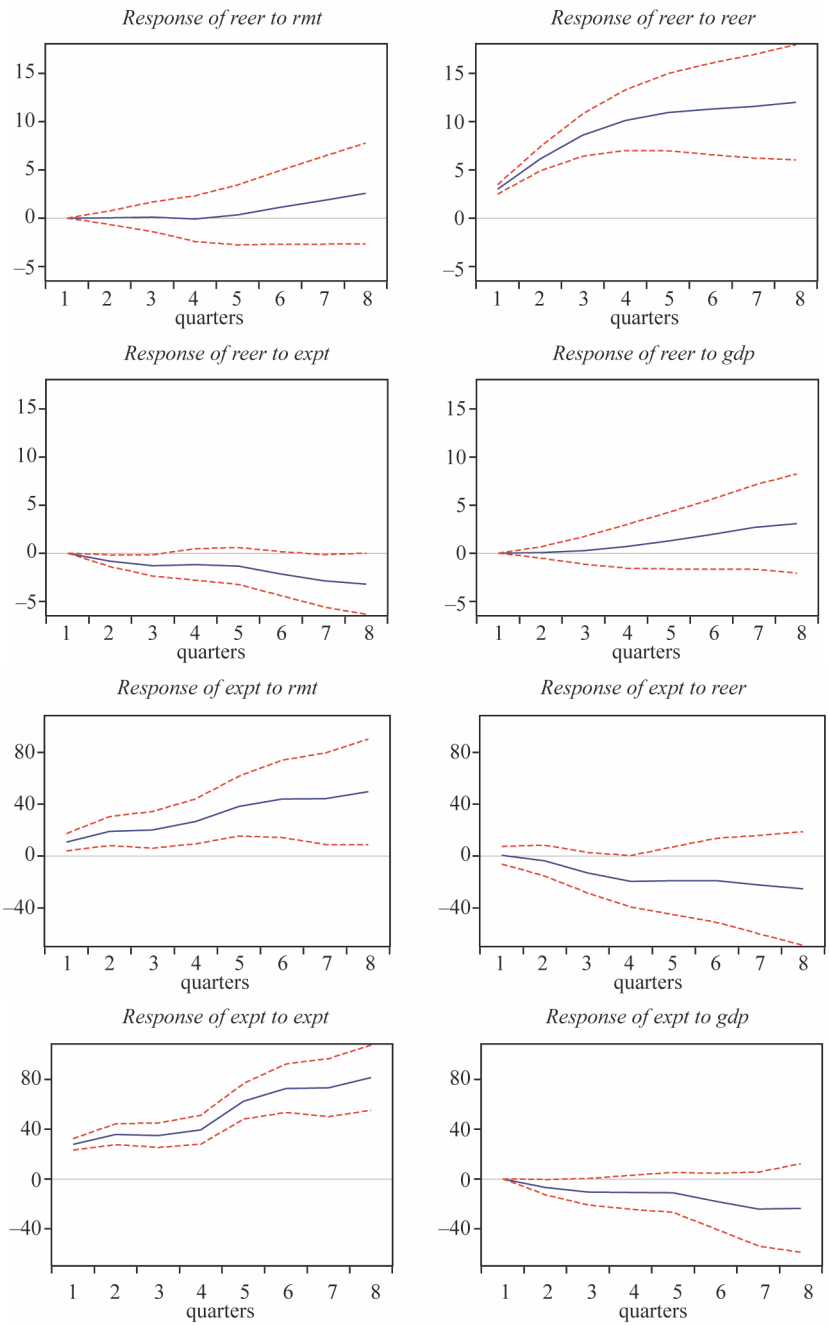

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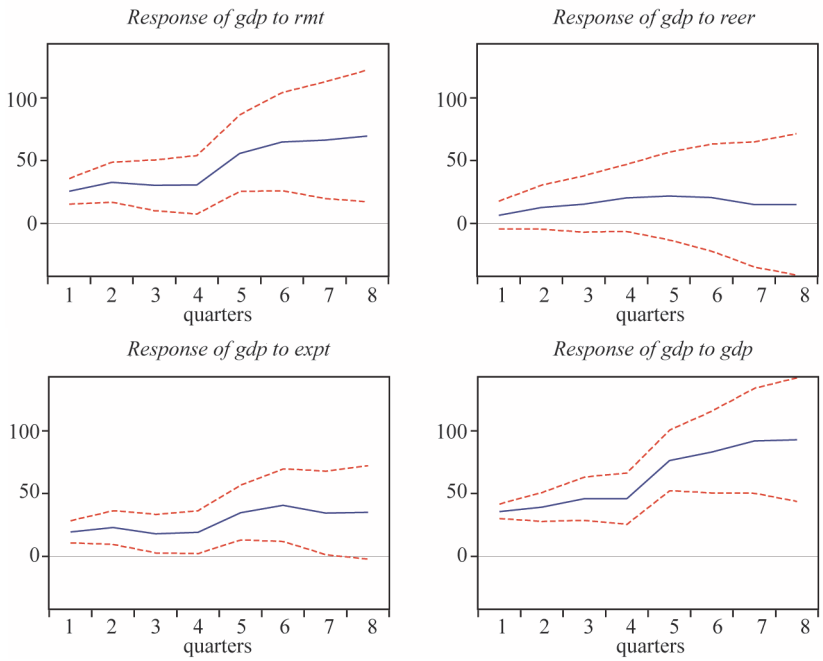

4. Conclusion

In this study, the Dutch disease effect of remittances in Armenia and Georgia was analysed by employing the VAR model. According to the results, remittances appreciate the RERs and RER appreciation has a negative impact on exports in both countries. The effect of remittances on exports is negative in Armenia, but positive in Georgia. This difference can be explained by the channelling of remittances towards producers and suppliers in Georgia's export chains. Armenia should follow this path as well.

The Armenian and Georgian governments should attempt to channel remittances towards productive investments. In this regard, they should encourage the imports of capital goods. This policy could prevent the appreciating effect of remittances on countries' RERs by increasing their demand for foreign currency and capital import can enhance the productive capacity of each country's economy, including that of the export sector.

By revealing the existence of an appreciating effect of remittances on RERs and the consequent negative impact on export performance in Armenia and Georgia, this study contributes to the literature on the relationship between remittances and the Dutch disease. Further studies should focus on the effect of remittances on the manufacturing sector and exports in these countries.

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