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Investigating the impact of remittance outflows and oil price on economic growth in Gulf Cooperation Council countries

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ABSTRACT

Most existing studies have focused on examining the impact of labor remittance outflows on economic growth in the receiving countries, with limited attention given to the sending countries. This study utilizes the nonlinear augmented mean group method to explore the possible asymmetric impact of remittance outflows on economic growth in Gulf Cooperation Council (GCC) countries for the period of 2000–2019. The results indicate that non-oil real GDP exhibits an adverse and magnified response to an increase in remittance outflows, relative to a decrease. Furthermore, this negative impact is amplified when accounting for oil price changes. These findings have significant implications for labor markets and nationalization policies in the GCC countries.

1. Introduction

The significant impact of labor remittances on real economic growth and development has garnered attention from economists and policy-makers. This attention stems from the fact that immigrant remittances constitute a significant inflow/outflow of financial resources for both receiving and sending countries, respectively (Chami et al., 2005; Khan et al., 2019; Salik, 2020). In general, these financial resources contribute the economic development in many emerging and developing countries (Barajas et al., 2009; Khan et al., 2019; Jongwanich, J., & Kohpaiboon, 2019; Zardoub and El Abed, 2019).

Immigrant remittances can improve economic development by enhancing food security, increasing spending on education, reducing child labor, and alleviating poverty making them a crucial source of income in many countries (World Bank, 2020). However, several empirical studies have yielded mixed results regarding the impact of immigrant remittances on economic growth is uncertain in receiving countries (Meyer and Shera, 2017; Khan et al., 2019; Barkat et al., 2023). In contrast, immigrant remittance outflows (RO) adversely affect economic growth in sending countries (Alkhathlan, 2013). These remittance outflows from sending countries reduce the monetary aggregate, discourage aggregate demand, and adversely affect economic growth. As a result, reductions in the monetary aggregate lead to declines in investment and consumption levels due to interest rate increases (Naufal and Termos, 2010). The impact of immigrant remittances may also have negative implications for the current account balance and, consequently, economic growth by increasing the demand for foreign currency and depreciating the real exchange rate (Hassan and Shakur, 2017; Khan et al., 2019).

While numerous empirical studies have examined the impact of immigrant remittances on economic growth in receiving countries, few studies have focused on the impact of immigrant remittances in sending countries. In this regard, Gulf Cooperation Council (GCC) countries are among the top immigrant remittance sending countries in the world. Fig. 1 illustrates the trends of these outflow remittances across two different periods: 2000–2010 and 2011–2020. For instance, in Saudi Arabia, the average outflow remittances reached 34 billion US dollar in 2011–2020 period, compared to 18 billion US dollars during the 2000–2010 period.

Since the discovery of oil and gas resources, GCC countries have utilized oil revenues to promote economic growth and invest in various sectors. As a result, some GCC countries have accumulated prosperity and rank among the highest GDP (PPP) per capita (Hashimoto et al., 2004; Alsamara et al., 2020). Despite this, the GCC region faces a shortage of labor forces needed for carrying out its development projects, leading to a heavy reliance on foreign workers for many years.

In recent years, the number of foreign labor forces in the GCC region have significantly increased, accompanied by a monetary phenomenon related to such international labor movements. Despite the need for this international labor movement, GCC countries have implemented several

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localization procedures concerning their labor and employment dimensions. In addition, the remittance outflow from this labor movement could have a substantial impact on aggregate demand and economic growth. Thus, GCC countries provide excellent context to examine the influence of immigrant remittance outflow on real GDP and its growth. This investigation raises three critical questions: Firstly, the question of whether remittance outflows stimulate or hinder economic growth needs to be addressed. Secondly, it is important to investigate whether real GDP exhibits a nonlinear response to changes in remittance outflows. Finally, the manner in which non-hydrocarbon real GDP reacts to fluctuations in remittance outflows must be examined.

Fig. 2 shows that labor remittance outflows are substantial in GCC countries. Over the past two decades, remittance outflows from immigrants have significantly increased.

Given the vast number of studies that emphasize the relationship between real economic growth and labor remittance flows in receiving countries, this study emphasizes the relationship between economic growth and remittance flows from the perspective of sending countries, specifically GCC countries. More precisely, this study examines whether labor remittance outflows could have a positive or negative impact on real economic growth in the GCC region during the period 2000–2019. To achieve this, an advanced econometric method, namely the nonlinear augmented mean group (AMG) is employed to analyze the response of real GDP and non-oil real GDP to labor remittance outflows in GCC countries. Moreover, the interaction between oil price changes and remittance outflows is investigated, and its impact on real GDP in GCC countries is evaluated.

The remainder of this paper is organized as follows: the literature review in Section 2, data and methodology in Section 3, empirical results in Section 4, and conclusions in Section 5.

2. Literature review

2.1. The effects of remittances in the receiving countries

The potential impact of remittance flows on macroeconomic indicators has been extensively deliberated in the current literature, especially in receiving countries. Although the empirical results mainly indicate positive effects, there is no clear consensus on the magnitude of the remittance flow impact in receiving countries (Cooray, 2012; Badwan and Atta, 2020; Abduvaliev and Bustillo, 2020). For instance, Tahir et al. (2015) conducted a time-series analysis that indicated the crucial role of foreign remittances in the growth of Pakistan's economy. Similarly, an empirical study conducted by Fayissa and Nsiah (2010) on 36 African countries indicated that remittances positively contribute to economic growth by boosting investment channels. Cooray (2012) employed a neoclassical production function that incorporates migrant remittances in the panel data of South Asian economies. That study found a significant positive impact on growth, which is transmitted through household expenditure decisions on education and financial literacy. With respect to magnitude, the empirical evidence provided by Pradhan et al. (2008) on developing economies acknowledges a positive impact but states that it has an insignificant effect on economic growth. This insignificant impact can be explained by the fact that official data on remittances may not accurately capture the full extent of remittances, which may also include transfers through informal channels.

Empirical studies by Catrinescu et al. (2009) and Sobiech (2019) suggest that remittances might have positive impacts in the short run, but the long-run effects on economic growth are dependent on the institutional qualities of the receiving countries, the robustness of the financial sector, and policies conducive to profitable investment opportunities. Despite fostering economic growth and improving living standards, worker remittances can also have negative consequences for the receiving countries. Guha (2013) and Hien et al. (2020) demonstrated this by applying Dutch disease theory to empirical research. Their studies conclude that excess capital influx can lead to an appreciation of a country's real effective exchange rate and encourage excessive consumption, which hampers the growth of the external sector and undermines export competitiveness. Similarly, Imai et al. (2014) observe that the volatility of remittances leads to output shocks in the long run, even though they directly contribute to poverty alleviation.

2.2. The effects of remittances in the sending countries

Few studies have investigated the relationship between remittance outflows and economic growth in remitting countries. The relatively small size of these outflows as a percentage of real GDP might explain why recent literature has focused little on their role in economic growth. However, in the last two decades, some economies, such as GCC countries, have witnessed a surge in these remittance outflows, where labor markets depend largely on expatriates (Kaabi, 2016). Remittance outflows in GCC countries represent a substantial share of their real GDP, where these outflows are highly affected by economic features, such as being oil-dependent countries.

Few economists have examined the impact of remittance outflows in GCC countries. For instance, Kaabi (2016) inspects this relationship

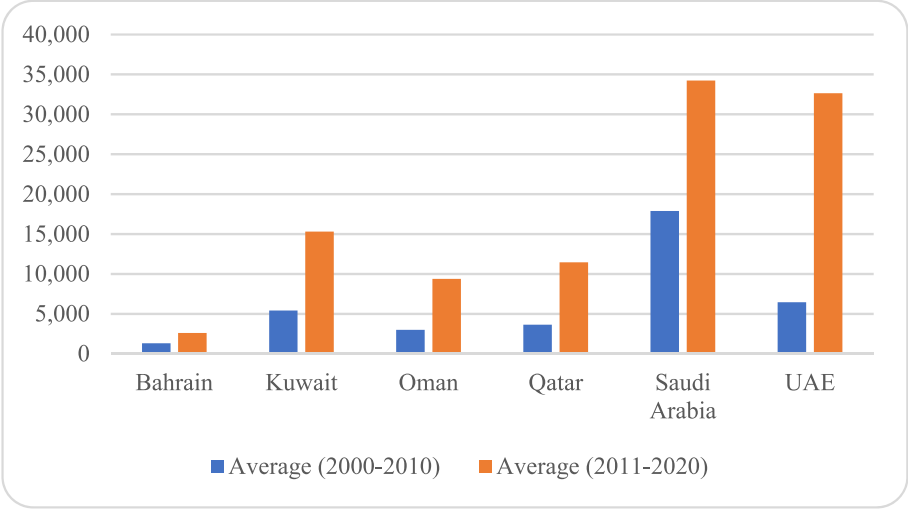

Fig. 1. Outflow remittances —Average 2010–2020 (US$ million).
Source: World Bank Database (2020)

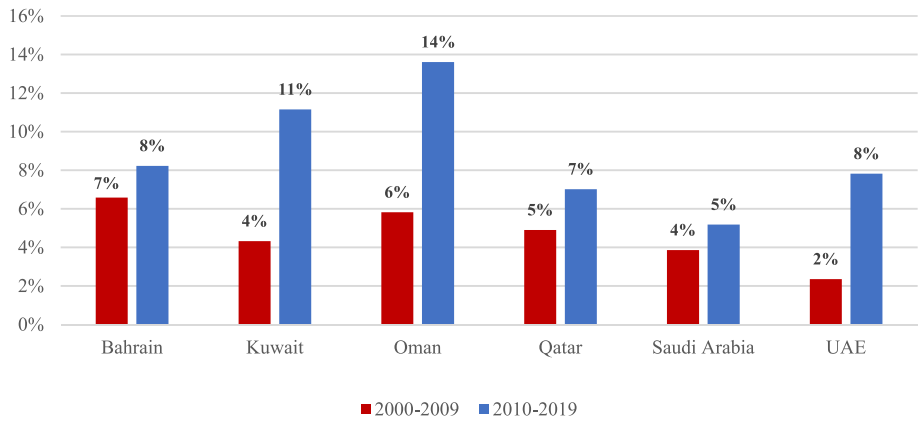

Fig. 2. Immigrant Remittances Outflow as a percentage of GDP.
Source: World Bank Database (2020)

using standard panel estimation for GCC countries over the period 2003–2014. His empirical results show that remittance outflows adversely affect the real GDP only in Saudi Arabia. Similarly, Termos et al. (2013) emphasize the effect of remittances on real GDP in GCC countries, particularly in countries such as Qatar, which has the largest number of emigrant residents in the GCC region. Termos et al. (2013) do not provide any evidence of a link between labor remittance outflows and real GDP. However, these empirical studies employ a standard econometric approach that does not consider the issue of cross-sectional dependence (CSD) and heterogeneity in panel data estimations. Moreover, they did not investigate the nonlinear specification that could exist in the investigated relationship.

Some studies have focused only on a specific country. For instance, Hathroubi and Aloui (2016) employ wavelet analysis to examine the dynamic relationship between remittances and economic growth in the Saudi economy during the period 1980–2013. The findings indicate that labor remittance outflows positively affect real GDP growth only in the short term. This can be explained by the fact that foreign workers immediately send their incomes to their destination countries. Correspondingly, Alkhathlan (2013) examined the remittance-economic growth linkage for Saudi Arabia using the ARDL model. His empirical results indicate that remittance outflows negatively impact economic growth in the long and short run.

Other empirical studies investigate only the casual link between remittance outflows and other macroeconomics variables (see for instance Taghavi (2012) and Khan et al. (2019)). Taghavi (2012) investigates the link between remittance outflows and other macroeconomic indicators using vector autoregressive (VAR). His empirical results support significant causality between outflows and other macroeconomic variables. Moreover, these empirical results imply that oil price changes have a significant impact on. Similarly, Khan et al. (2019) studied the interrelation between labor outward remittance and per capita economic growth in GCC countries using the panel Granger causality test. Their empirical results indicate that real GDP has a positive impact on remittance outflow.

Naufal and Termos (2009) indicated that an increase in oil prices leads to higher oil revenue. This oil revenue helps countries implement expansionary fiscal policies to boost aggregate demand and economic growth. Moreover, this expansionary business cycle increases foreign workers' earnings. Naufal and Termos (2009) pointed out that an increase in remittance outflow has an adverse impact on fiscal, monetary, and exchange rate policies in GCC countries. Similarly, De et al. (2019) indicate that non-oil GDP plays a crucial role in determining the level of remittances in GCC countries. Furthermore, De et al. (2019) and Naufal and Termos (2009) emphasize that remittance outflows are inelastic to oil price changes. In the same vein, Akçay (2019) and Akçay (2021) find that oil price has an asymmetric impact on remittances outflows for the case of Oman and Saudi Arabia respectively, where positive oil price shocks increase remittances and promote economic growth.

3. Data and empirical methodology

This study aims to investigate the impact of immigrant remittance outflows on economic growth in GCC countries. To conduct this empirical investigation, we use a dataset containing data on immigrant remittance outflows and additional economic variables from 2000 to-2019. More precisely, immigrant remittance outflows (RO) were measured by foreign worker outflow remittances in GCC countries. Real gross domestic product (RGDP) and non-oil real gross domestic product (NRGDP) (2010 = 100) were used to measure economic growth. In addition, we use other explanatory variables, such as labor force (L), capital stock (K), government spending (GS), oil price (OP), financial development (FD), and trade openness (OPEN). These selected variables were collected from the International Financial Statistics (IFS) of the IMF and the World Bank database.

To examine the linkage between outward remittance and real GDP and non-oil real GDP, we employ the fundamental Cobb-Douglas production function. This function explains real GDP mainly by the labor force, capital stock, and the level of technology (Barro, 1996). Thus, the basic real-GDP model can be written as follows:

$$Y = A\ .L^{\alpha}.\ K^{\beta} \tag{1}$$

The linear transformation of the basic Cobb-Douglas production function for the GCC panel is as follows:

$$Ln.\ Y_{i,t} = c + \alpha\ Ln.L_{i,t} + \beta\ Ln.K_{i,t} \tag{2}$$

where Y is the real GDP, A is the technological level, L is the labor force, K is capital stock, c is the *Ln* of 'A' from equation (1) assuming that the technological level constant over the investigated period. α and β are the elasticities of real GDP to labor and capital changes, respectively.

The improved form of this model includes additional variables that may drive economic growth, such as financial development, trade openness, and government expenditure (see for instance, Barro (2003), Chen and Feng (2000), and Jong-A-Pin (2009)). Given the specific features of GCC economies as oil-producing countries and among the top outflow-sending countries around the world, we suppose that oil prices and outflow remittances are expected to play an important role in economic growth in this group of countries. Therefore, the following equation denotes the augmented real GDP growth model:

$$ln.Y_{i,t} = c + \alpha Ln.L_{i,t} + \beta\ Ln.K_{i,t} + \gamma\ Ln.X_{i,t} \tag{3}$$

where X is a vector of other possible explanatory variables, where (γ) is the elasticity of real GDP to the vector of control variables changes. L

and K are supposed to positively influence real GDP, whereas the remaining selected variables, such as government expenditure (GS), financial development (FD), trade openness (OPEN), oil price (OP), and immigrant outflow remittances (RO), are ambiguous.

Cointegration tests that examine the long-run relationship described by Equation (3) using panel data estimation methods usually raise several econometric issues. Heterogeneity and cross-sectional dependency are among the issues that should be tackled in this empirical analysis. Many of the current empirical studies ignore heterogeneity across countries and assume that cross-sections are dependent. These two assumptions lead to invalid results when we run a cointegration test that does not consider such issues.

To this end, before estimating the impact of outward remittances and additional economic variables on the level of real GDP and non-oil real GDP in GCC countries, we first check the existence of CSD across countries. Then, the second-generation unit root test will be applied if the CSD test is confirmed. Assuming the absence of CSD, as in the standard unit root test, is an invalid assumption. Therefore, this empirical analysis employs the second-generation panel unit root test established by Pesaran (2007).

In addition, we employ Westerlund's (2007) panel cointegration tests that consider the CSD among the selected countries and inspect the long-run relationship between the selected variables. Finally, we employ the most suitable estimation technique (augmented mean group (AMG)) (Eberhardt and Bond, 2009) that considers both heterogeneity and CSD. Traditional panel estimation methods such as DOLS and GMM are not suitable in the presence of heterogeneity and cross-sectional dependency and may lead to spurious results (Alsamara et al., 2018; Barkat and Alsamara, 2019). However, the AMG method allows for variation in the slope coefficients and error variance across countries, and deals with CDS (Eberhardt and Bond, 2009). Furthermore, the AMG method accounts for unobservable common factors.

4. Empirical results

4.1. Cross-sectional dependence tests

As mentioned earlier, to investigate the long-run relationship described in Equation (3), we first check for the existence of the CSD among the countries. Failing to account for CSD can lead to misleading results. Thus, we use the CSD test developed by Pesaran (2007) to inspect whether cross-sections are significantly correlated. Table 1 shows the empirical results of the CSD test. The alternative hypothesis of the CSD, represented by the presence of cross-sectional dependency, is valid at the 1% significance level for the GCC panel data. This result is expected because of the common social and economic features that GCC countries have characterized.

These results clearly indicate the motivation behind applying the second-generation unit root test, which accounts for the presence of CSD. Therefore, we employed a unit root test with cross-sectional dependency (second-generation unit root test), as shown in Table 2. The empirical results of this test indicate that all the variables are stationary in the first difference.

Table 1
Cross-sectional dependence (CSD) test.

Variables	Full sample	
	CSD test	p-value
Ln. RGDP	56.43	0.000
Ln. NRGDP	46.08	0.000
Ln. L	15.06	0.001
Ln. K	18.03	0.001
Ln.GS	44.12	0.000
Ln. FD	33.72	0.001
Ln. OPEN	66.45	0.000
Ln. RO	16.76	0.001
Ln. OP	32.82	0.000

Table 2
panel Unit root test with CSD.

Full sample	Level		Difference	
	(t-bar)	p-value	(t-bar)	p-value
Ln. RGDP	−1.81	0. 71	−2.83	0.011
Ln. NRGDP	−1.79	0.34	−2.38	0.020
Ln. L	−1.63	0.80	−2.47	0.000
Ln. K	−1.81	0.40	−2.69	0.001
Ln.GS	−1.61	0.59	−3.21	0.020
Ln. FD	−1.37	0.65	−2.67	0.000
Ln. OPEN	−1.92	0.51	−2.67	0.000
Ln. RO	−1.78	0.72	−3.67	0.010
Ln. OP	−1.45	0.68	−2.88	0.011

The presence of significant cross-sectional correlation proposes the possibility of a long-run relationship among the variables. Therefore, we use Westerlund's (2007) cointegration test in the next step. Unlike the standard cointegration test, such as Pedroni (2004), the Westerlund cointegration test accounts for the issue of cross-sectional dependence. The Westerlund cointegration test consists of four cointegration tests. The first two tests (**Gt and Ga**) inspect the existence of cointegration for to each individual country. The second two tests (**Pt and Pa**) inspect the cointegration of the complete panel.

To account for the significant role of the hydrocarbon economy in GCC countries, this empirical study estimated two different models. In Model 1, we represent real GDP (RGDP) as a dependent variable, whereas in Model 2, we consider non-oil real GDP (NRGDP) as a dependent variable.

As reported in Table 3, when we consider Model 2, the empirical results of **the Gt** and **Ga** cointegration tests reveal the existence of a long-run relationship between non-oil real GDP (NRGDP) and the other explanatory variables (L, K, FD, OPEN, RO, and OP)[1] for each individual country in the GCC region during the period–2000-2019. Furthermore, the outcomes of the **Pt** and **Pa** cointegration tests validate the existence of a long-run relationship between NRGDP and the additional variables for the complete sample. In contrast, when we consider Model 1, only the Gt and Pt tests confirm the existence of a long relationship between RGDP and other explanatory variables.

After examining the existence of cointegration, it is beneficial to evaluate the long-run elasticities of the explanatory variables (L, K, FD, OPEN, RO, and OP) of real and non-oil real GDP. Consequently, we employ an advanced panel estimation method such as the augmented mean group (AMG) developed by Eberhardt and Bond (2009). As previously mentioned, this estimation technique overcomes the difficulties and shortcomings of standard panel estimation methods by considering heterogeneity and cross-sectional dependency (CSD) issues.

The AMG long-run estimation results for Models 1 and 2 are presented in Table 4. The empirical results of Model 1 show that some long-run coefficients are statistically insignificant. However, the empirical

Table 3
Westerlund cointegration test.

Cointegration tests	Model 1 (RGDP)		Model 2 (NRGDP)	
	t-test	p-value	*t*-test	p-value
Gt	−2.98***	0.000	−3.65***	0.003
Ga	−4.89	0.42	−6.84**	0.05
Pt	−12.62*	0.003	−15.82***	0.001
Pa	−5.18	0.38	−11.67**	0.03

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

[1] Including government spending (GS) variable does not support the existence of cointegration.

Table 4
Long-run panel estimation results.

Variables	Full Sample (2000–2019)	
	Model 1 (RGDP)	Model 2 (NRGDP)
Ln. L	0.38	0.86***
Ln. K	074**	0.91***
Ln. FD	0.19**	0.62**
Ln. OPEN	0.09	0.45**
Ln. RO	−0.02	- 0.12**
Ln. OP	1.02***	0.38**

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

results of Model 2 reveal that the long-run coefficients (elasticities) are positive and statistically significant, except for the remittance outflows (RO), which have negative signs. The estimation results of Model 2 indicate that the long-run elasticities of NRGDP with respect to L, K, FD, OPEN, RO, and OP are 0.86, 0.91, 0.62, 0.45, −0.12, and 0.68, respectively.

In particular, the empirical results of Model 2 indicate that if remittance outflows (RO) increase by 1 percent, NRGDP decreases by 0.12 percent. In this model, the remittance outflow variable had the smallest impact on NRGDP, followed by OP, OPEN, FD, L, and K. These empirical results regarding remittance outflows are consistent with the findings of Naufal and Termos (2010), Alkhathlan (2013), and Khan et al. (2019).

Hence, remittance outflows in sending countries might cause a fall in monetary aggregate, consumption, and aggregate demand, and adversely affect real GDP.

Given that GCC countries are oil- and gas-dependent, changes in oil prices and, consequently, oil revenue may substantially affect remittance outflows. Moreover, the reaction of NRGDP to these two variables might be nonlinear. Therefore, we re-estimate Model 2 by assuming that positive and negative changes in oil prices (OP^+, OP^-) (Model 3) and remittance outflows (RO^+, RO^-) (Model 4) have different impacts on non-oil real GDP.

The nonlinear panel estimation of Model 3 and Model 4 in Table 5 indicates that the elasticities of NRGDP with respect to labor (L), capital (K), financial development (FD) and trade openness (OPEN) are still positive and statistically significant. Moreover, the nonlinear panel estimation reveals that both oil price (OP) and remittance outflows (RO) have asymmetric impacts on NRGDP in GCC countries. Consequently, the impacts of oil price (OP^+, OP^-) and remittance outflows (RO^+, RO^-) on NRGDP are statistically significant.

More precisely, the reaction NRGDP to an increase in oil prices (OP^+) is positive and smaller than its response to a decrease in oil prices (OP^-). A one percent increase (decrease) in oil prices increases (decreases) NRGDP by 0.28% (0.46%). These results infer that NRGDP responds largely to negative changes in oil prices that cause a sudden fall in oil revenue and fiscal accumulation, and adversely affect the performance of other non-oil sectors.

In contrast, NRGDP responds adversely to an increase in labor remittance outflows (RO^+) with a greater magnitude than to a decrease in labor remittance outflows (RO^-). A one percent increase (decrease) in RO leads to a decrease (increase) in NRGDP by 0.28% (0.15). Thus, an increase in remittance outflows will adversely affect NRGDP in GCC countries through consumption channels and a fall in foreign reserves. This reaction raises the need to involve foreign workers in the consumption and investment activities of these hosting countries. These results are in line with Alsamara (2022) for Qatar economy.

Given the significant influence of outward remittances and oil price on NRGDP and the specific features of GCC countries, we further investigate the interaction impact between these two variables and evaluate the total impact that may affect non-oil real GDP. Table 6 reports the panel estimation results for Model 5, which considers the interaction between oil price changes and remittance outflows. By doing so, as shown in Model 5 in Table 6, we thoroughly examine how oil price changes affect remittance outflows.

Indeed, when we include the interactive term in our regression, the impact of positive changes in remittance outflows (RO^+) increases from −0.28 percent to −0.36 percent. This total negative impact is the sum of the (RO^+) and interactive term coefficients ($OP*RO^+$). Similarly, the impact of negative changes in remittance outflows (RO^-) increases from −0.15 percent to −0.19 percent. This total negative impact is the sum of the (RO^-) coefficient and the interactive term coefficient ($OP*RO^-$).

Overall, the empirical results in Table 6 indicate that when we account for the possible interaction between oil prices and remittance outflows, the total negative impact of positive changes in remittance outflows (RO^+) on NRGDP is greater and still more important than negative changes (RO^-). These empirical findings are consistent with those of Taghavi (2012) and De et al. (2019) for the GCC countries. However, this performance can be explained by the impact of oil price increases on foreign worker remittances. An increase in oil prices increases fiscal revenue and induces economic growth in these oil-exporting countries; however, a substantial portion of the income generated can be transferred to different destinations in the receiving countries.

5. Conclusion

This empirical study examines the long-run impact of labor, capital, financial development, trade openness, remittance outflows, and oil prices on both real GDP and non-hydrocarbon real GDP in GCC countries from 2000 to 2019. To do so, this study applies an advanced econometrics technique, namely the augmented mean group (AMG) method, which accounts for heterogeneity and cross-sectional dependency issues in panel estimations. The empirical results of Westerlund cointegration clearly indicate the existence of a long-run relationship between the selected variables, especially when we use the non-oil real GDP. Moreover, the empirical results of the AMG panel estimation indicate that non-oil real GDP elasticities with respect to labor, capital, financial development, trade openness, and oil price are positive and in line with the existing literature. Remittance outflows have a negative impact on

Table 5
Nonlinear panel estimations results.

Full Sample (2000–2019)			
Variables	Model 3 (NRGDP)	Variables	Model 4 (NRGDP)
Ln. L	0.76***	Ln. L	0.82***
Ln. K	0.78***	Ln. K	0.88***
Ln. FD	0.48**	Ln. FD	0.59***
Ln. OPEN	0.38***	Ln. OPEN	0.44***
Ln. RO	- 0.22**	Ln. RO^+	- 0.28**
Ln. OP^+	0.28***	Ln. RO^-	−0.15***
Ln. OP^-	0.46***	Ln. OP	0.36***

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 6
Nonlinear panel estimations results with the interaction between remittance outflows and oil price.

Full Sample (2000–2019)	
Variables	Model 5 (NRGDP)
Ln. L	0.78**
Ln. K	0.84**
Ln. FD	0.59***
Ln. OPEN	0.35**
Ln. RO^+	- 0.30**
Ln. RO^-	−0.16**
Ln. OP	0.29***
Ln. ($OP*RO^+$)	−0.06***
Ln. ($OP*RO^-$)	−0.03**

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

non-hydrocarbon sectors in GCC countries.

Given the main features of GCC countries and their oil-dependent economies with a pegged exchange rate regime, we propose that non-hydrocarbon sectors might respond differently to positive and negative changes in oil price and remittance outflows. Therefore, the nonlinear AMG panel estimation reveals that both oil price and remittance outflows have asymmetric impacts on non-hydrocarbon real GDP in the GCC countries. More importantly, non-oil real GDP responds more to negative changes in oil prices and positive changes in remittance outflow.

Therefore, these empirical results emphasize the influence of a sudden fall in oil prices, such as the drop in 2015, and its adverse impact on oil- and gas-related revenue, fiscal accumulation, and performance of the non-oil sectors in GCC countries. Similarly, an increase in foreign workers' remittance outflows would have a larger negative impact on non-oil real GDP than a decrease. Interestingly, the interaction between oil price changes and outward remittances reveals that the total impact of remittances is greater and more important.

The deflationary pressure of such outward remittances outflows in GCC countries may pass through the spending, consumption, and investment channels. Given that GCC countries are oil and gas exporting economies in which they depend largely on expert and unqualified foreign workers to promote and sustain their economic growth, it is highly recommended for policymakers in these countries to consider this unique feature of their labor and commodity markets as well. Further investigation is necessary to understand the structure of the foreign labor force in GGC countries and how any changes in that structure may affect the size of remittance outflows. Additionally, more research is needed to analyze the impact of remittance outflows on macroeconomic variables such as inflation and current account balance in these countries.

Overall, policymakers should implement a more effective nationalization process where more participation is required for both local and foreign workers in economic activity. In particular, skilled foreign workers should be encouraged to be a real part of national developmental strategies and allow them to be involved effectively in economic activity. Such measurements will mitigate the negative impact associated with the foreign currency outflow of foreign workers and encourage them to raise their domestic expenditure and to encourage their domestic investments. Moreover, economic diversification is a crucial tool for alleviating economic vulnerability and sustaining economic growth. Finally, certain policies and measures should be taken to benefit from having such huge financial resources and being a hub to attract the labor force needed to achieve sustained economic growth.

Ethical compliance

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research.

Author statement

As the lead author of this article, I am pleased to present our research findings on the Impact of Remittance Outflows and Oil Price on Economic Growth in Gulf Cooperation Council Countries. Our study aimed to investigate whether remittance outflows have an asymmetric impact on real GDP and non-oil real GDP in GCC countries. Using a nonlinear panel cointegration approach, we found empirical evidence that remittance outflows have a negative impact on economic growth in these countries. Additionally, our research revealed that positive changes in remittance outflows have a greater impact on non-oil real GDP than negative changes. Interestingly, we also observed that the negative impact of remittance outflows on economic growth becomes even larger when we account for oil price changes. We believe that our study contributes to the literature on the relationship between remittance outflows, oil prices, and economic growth in GCC countries and provides valuable insights for policymakers and researchers alike.

Declaration of competing interest

There is no conflict of interest.

Data availability

Data will be made available on request.

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