

Central Bank of Bahrain



مصرف البحرين المركزي



# The Short-and Long-Run Effects of International Workers Remittances on Financial Sector Development and Growth: Evidence from a Regional Financial Centre



# Outline

**I- Introduction**

**II- Labor Market structure and remittances in Bahrain**

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# INTRODUCTION

- ❖ Modern literature on development economics developed by Friedberg & Hunt, 1995; Longhi et al., (2005), Goldin et al (2011), Kerr & Kerr, (2011); Nathan, 2014; Hatton, 2014 shows the important role of international migration in economic growth.
- ❖ Overall, empirical studies do not find evidence of large negative effects of immigration (Jordaan, 2018).
- ❖ Nowadays, there is large consensus among economists that, for destination countries, immigration is a catalyst for economic growth at an aggregate level and, produces net economic benefits (Goldin et al 2011).
- ❖ Migrants provide a source of dynamism globally, and are overrepresented in innovation and patents, arts and sciences awards, start-ups and successful companies (McAuliffe 2020).
- ❖ According to the OECD (2014), migrants contribute significantly to labor-market flexibility, notably in Europe, and migration boosts the working-age population, contribute to human capital development of receiving countries and, it also contribute to technological progress.

Although immigration has multiple advantages in host countries, it can also present some macroeconomic challenges for them. **REMITTANCE OUTFLOWS** is an issue that governments have been trying to solve.

According to the World Bank, migrants are sending earnings back to their families in developing countries at levels above **US\$ 626 billion in 2022**, achieving a 5% growth despite headwinds, and a figure **8 times its 2000 value** (World Bank, 2022).

In Advanced economies, applying fees, commissions and taxes failed to limit the large outflows of money despite generating additional revenues to their economies.

However, for the case of tax-free countries such as **Bahrain**, no commissions or fees are imposed to the high volume of money outflows.

The questions that governments have been trying to answer are:

- 1) What are the real impacts of remittances on the economy?
- 2) Are remittance outflows threatening the banking sector?
- 3) Shall the government stop receiving international foreign workers to limit remittance outflows?



## **Labor Market structure and remittances: The case of Bahrain**

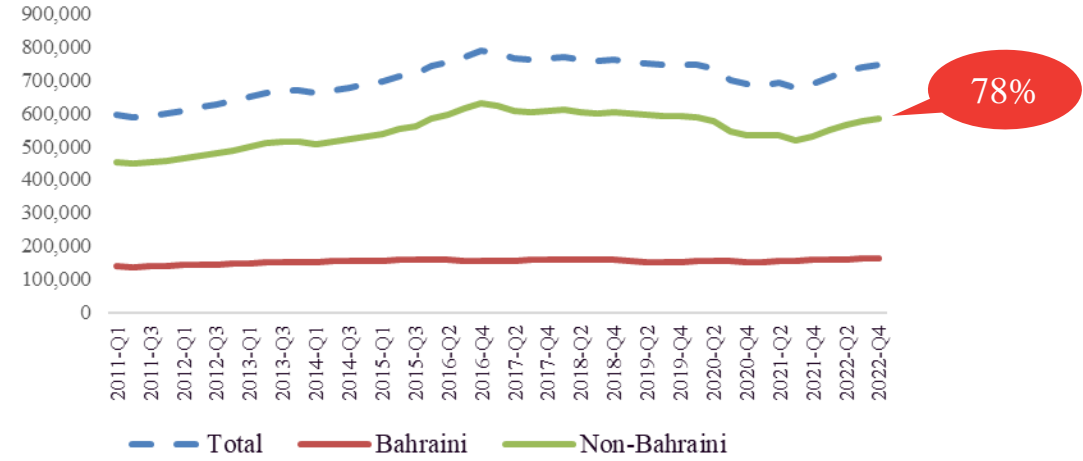


## *Forewords, Back to early 2000...*

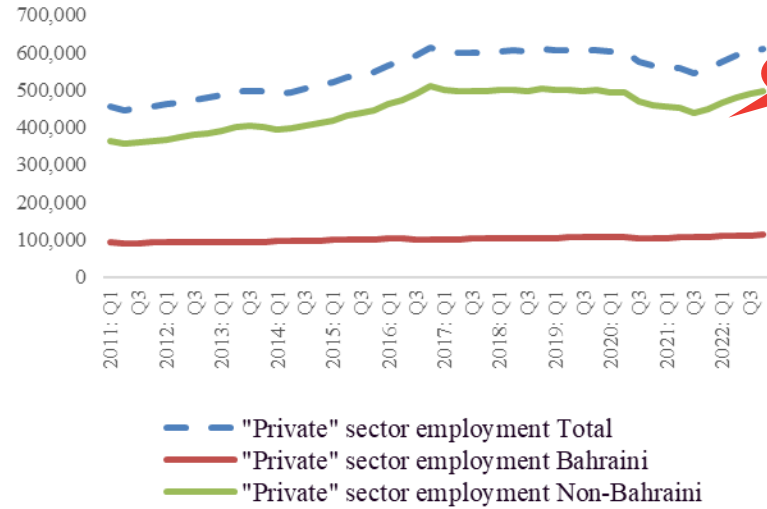
- Over the last two decades, the government of Bahrain has launched several structural reforms to accelerate economic growth and diversify its economy. It has also implemented intensive structural projects to improve the infrastructure and strengthen the regulatory system.
- Inward FDI has increased in 2022 to reach **USD 1,006 million** from around **USD 364 million** in 2000..
- The government expenditure increased by **250%** from **2000 to 2020**, and the number of foreign enterprises increased considerably, and the number of megaprojects such as building new cities, malls, roads and residential areas multiplied.
- Bahrain **relied on imports of foreign labor to achieve development goals and reduce overheating pressures.**
- Bahrain population hosts **0.75 million** of international migrant workers that represents **55%** of the total population. These foreign workers are an important driver for Bahrain economy as they represent **78% of the total workforce** (LMRA, 2022).



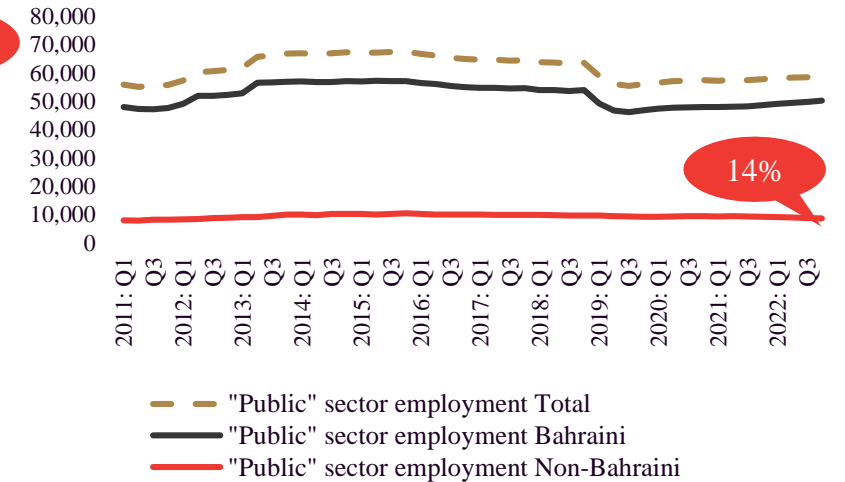
**Figure 1: Total Employment**



**Figure 2: Employment (Private Sector)**



**Figure 3: Employment (Public Sector)**

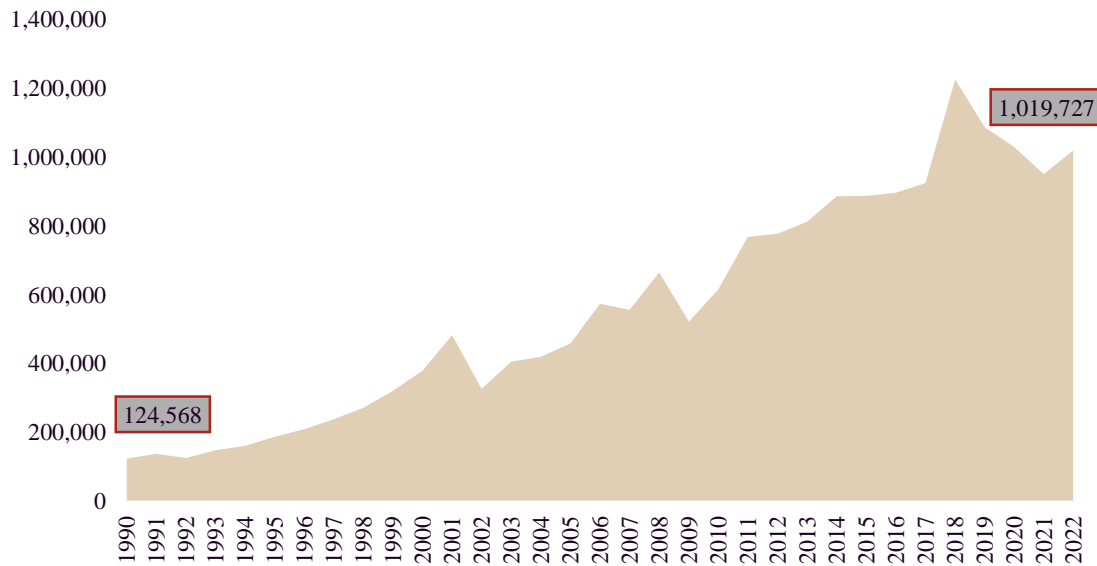


Source: LMRA

**➔ Bahrain economic growth would be hindered without international migrant workers**

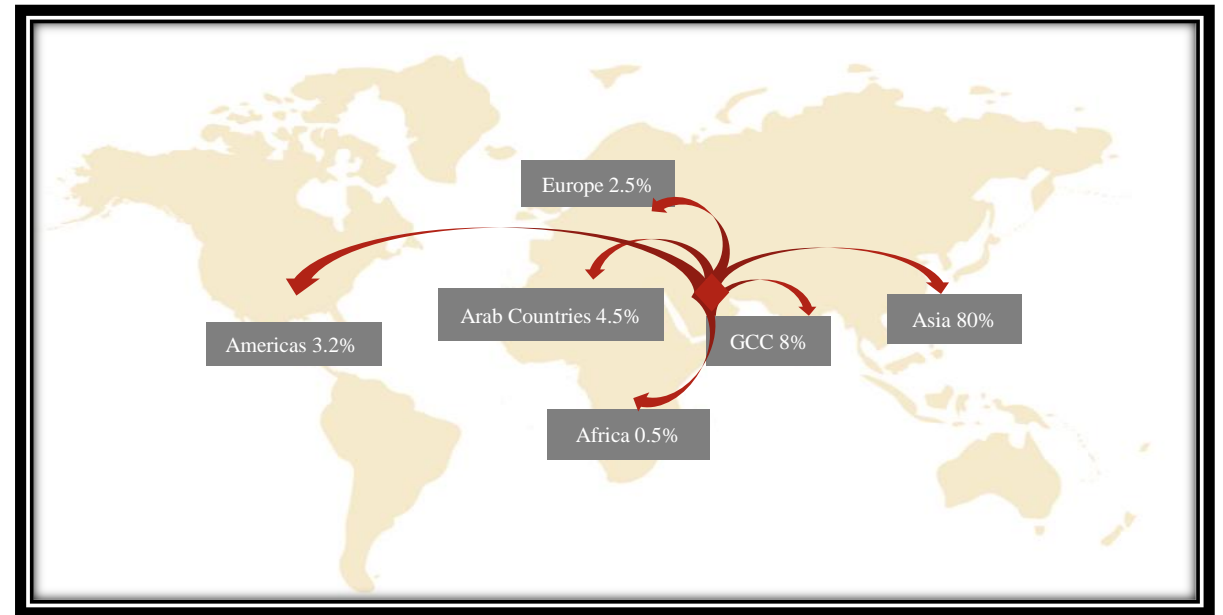
Given the high number of international migrant workers in Bahrain, personal remittances paid for Bahrain increased from **124.5 million Bahraini dinar in 1990 to 1.019 Billion Bahraini Dinar in 2022** growing at an average annual rate of 8.66%.

**Figure 4. Workers' Remittances (million BD)**



Source : CBB

**Figure 5. The geographical distribution of workers remittances**





## IV- EMPIRICAL EVIDENCE

- ✓ In the empirical section, a data span is used from 1990-2022 to perform a vector error correction model and co-integration technique to detect causality between selected variables used, that are:
  - **Economic growth** which is proxied by GDP per capita in US\$,
  - **Foreign worker (FW)** measures the total number of the non-local workers who participating in the economic activities in Bahrain,
  - **Financial development (FD)** which is measured by the total credit to the private sector as a percentage of GDP,
  - **Foreign direct investment inflows to GDP ratio (FDI)**, and
  - **Remittance outflows (REM)** that are the total remittances sent by foreign workers to their home countries in US\$ billion.
  
- ➔ A major advantage of VECM is that it can also be used to verify causality among the variables in case of cointegrated series.
  
- ➔ The VECM helps distinguish between short-run dynamic among the variable (or short-run causality), and each variable's gradual correction from the long-run equilibrium through a series of partial short-run adjustments (or long-run causality). Therefore, a vector Error Correction model can offer a greater appreciating of the nature of non-stationarity among different variables' time series. Further, it can also increase longer term forecasting over an unconstrained model

The multivariable vector error correction model is now expressed as follows:

$$\Delta LFD_t = \alpha_1 + \sum_{i=1}^p \beta_{1i} \Delta LFD_{t-i} + \sum_{i=1}^q \beta_{1i} \Delta LFDI_{t-i} + \sum_{i=1}^r \beta_{2i} \Delta LGDP_{t-i} + \sum_{i=1}^s \beta_{2i} \Delta LFW_{t-i} + \sum_{i=1}^t \beta_{2i} \Delta LREM_{t-i} + \lambda_{11} ect_{t-1} + \mu_{1t} \quad (1)$$

$$\Delta LFDI_t = \alpha_2 + \sum_{i=1}^p \beta_{2i} \Delta LFDI_{t-i} + \sum_{i=1}^q \beta_{2i} \Delta LGDP_{t-i} + \sum_{i=1}^r \beta_{2i} \Delta LFW_{t-i} + \sum_{i=1}^s \beta_{2i} \Delta LREM_{t-i} + \sum_{i=1}^t \beta_{2i} \Delta LFD_{t-i} + \lambda_2 ect_{t-1} + \mu_{2t} \quad (2)$$

$$\Delta LGDP_t = \alpha_3 + \sum_{i=1}^p \beta_{3i} \Delta LGDP_{t-i} + \sum_{i=1}^q \beta_{3i} \Delta LFDI_{t-i} + \sum_{i=1}^r \beta_{3i} \Delta LFW_{t-i} + \sum_{i=1}^s \beta_{3i} \Delta LREM_{t-i} + \sum_{i=1}^t \beta_{3i} \Delta LFD_{t-i} + \lambda_3 ect_{t-1} + \mu_{3t} \quad (3)$$

$$\Delta LFW_t = \alpha_4 + \sum_{i=1}^p \beta_{4i} \Delta LFW_{t-i} + \sum_{i=1}^q \beta_{4i} \Delta LGDP_{t-i} + \sum_{i=1}^r \beta_{4i} \Delta LFDI_{t-i} + \sum_{i=1}^s \beta_{4i} \Delta LREM_{t-i} + \sum_{i=1}^t \beta_{4i} \Delta LFD_{t-i} + \lambda_4 ect_{t-1} + \mu_{4t} \quad (4)$$

$$\Delta LREM_t = \alpha_5 + \sum_{i=1}^p \beta_{5i} \Delta LREM_{t-i} + \sum_{i=1}^q \beta_{5i} \Delta LGDP_{t-i} + \sum_{i=1}^r \beta_{5i} \Delta LFW_{t-i} + \sum_{i=1}^s \beta_{5i} \Delta LFDI_{t-i} + \sum_{i=1}^t \beta_{5i} \Delta LFD_{t-i} + \lambda_5 ect_{t-1} + \mu_{5t} \quad (5)$$

Where ECT is expressed as follows:  $Ect = LFD_{t-1} - \alpha_1 - \beta_{11} LGDP_{t-1} - \beta_{12} LFDI_{t-1} - \beta_{13} LFW_{t-1} - \beta_{14} LRO - \mu_{1t}$

Where  $t=1...T$ , denotes the time period and  $\mu$  is the uncorrelated residual terms.

We also add a dummy variable which reflects the global financial crisis date and, it takes the following form:  $DUM = \begin{cases} 0 & \text{for } 1990-2008 \\ \text{and} \\ 1 & \text{for } 2009-2022 \end{cases}$

The dummy is introduced as an exogenous variable, it will appear in the short-run estimation only.

# V- RESULTS

## 1. Unit root tests

**Table 1. Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) Unit root tests**

	ADF		PP		Order of Integration
	Level	1st diff,	Level	1st diff,	
<b>LFD</b>	0.5564	-6.322***	0.366	-6.098***	I(1)
<b>LGDP</b>	0.653	-5.477***	0.551	-6.13313***	I(1)
<b>LFDI</b>	-0.986	-6.566***	-1.446	-5.022***	I(1)
<b>LFW</b>	-1.840	-8.181***	-1.989	-6.813***	I(1)
<b>LREM</b>	-0.895	-7.740***	-2.211	-7.089***	I(1)

Note: \*\*\*, indicate the rejection of null-hypothesis at 1%, significance levels.

**Table-2: Clemente-Montanes-Reyes Structural Break Unit Root Test**

	Innovative Outliers		Additive Outlier	
	Min t*	Optimal Breakpoints	Min t*	Optimal Breakpoints
<b>LFD</b>	-3.880	2009 and 2011	-4.181	1999 and 2009
<b>LGDP</b>	-4.414	2009 and 2012	-5.014	2001 and 2010
<b>LFDI</b>	-3.658	2002 and 2010	-4.890	2001 and 2012
<b>LFW</b>	-4.210	2002 and 2017	-5.012	2002 and 2016
<b>LREM</b>	-3.966	2010 and 2017	-4.969	2009 and 2017
<b>LFD</b>	-3.335	2001 and 2009	-4.446	2009 and 2015

Note: Notes: Min t is the minimum t-statistic calculated. \* denotes 5% level of significance.

The 5% critical value for the IO model is -5.851. Changes in Innovational Outlier model occur progressively over the time, allowing for a break in both the intercept and slope while changes Additive Outlier models occur suddenly allowing for a break in the mean (the crash model).

## 2. Cointegration and Granger causality analysis

### 1. The Long-run estimation

**Table 4. Long-run elasticities**

Dependent Variable: LFD

Regressors	Coefficients	T-Value
LREM	-0.68775	-3.76169 *
LFW	0.90574	5.93694***
LGDP	0.52179	6.00099***
LFDI	0.23849	4.36945**
C	0.79478	

Note: \*\*\*, \*\*and \* indicate the rejection of null-hypothesis at 1%, 5% and 10% significance levels, respectively.

### Results show that:

- Foreign workers (FW) has the most important coefficient (0.90) which reveals its weight in the Bahrain economy. Statistically, a 1% increase in foreign workers enhances the financial sector development by 0.9%.
- the remittance outflows have a negative impact on financial sector development in the long-run. The results point out that an increase of 1% in remittances leads to a 0.68% decrease in financial development proxied by the total credit to the private sector as a percentage of the GDP.
- GDP has a positive and significant impact on financial development showing that when the economy is flourishing and booming, the financial sector follows, and takes advantage of the of economic activity performance.
- FDI to be positively and significantly linked to financial sector development, showing that a country like Bahrain with a well-developed financial sector tends to attract larger amounts of FDI in its financial

## 2. The short-run estimations

**Table 5. ECM results based on Johansen cointegration**

Error Correction:	Coefficient	t-value
$\Delta$ LREM(1)	-0.0045	0.0677**
$\Delta$ LREM(2)	-0.1271	-0.5772**
$\Delta$ LFW(1)	0.3038	0.6644**
$\Delta$ LFW(2)	0.1273	0.0485**
$\Delta$ LGDP(1)	0.2107	0.5160**
$\Delta$ LGDP(2)	0.3414	0.9127**
$\Delta$ LFDI(1)	0.0139	0.3990
$\Delta$ LFDI(2)	0.0058	0.2567
DUM	-0.7455	-4.18121***
C	0.0105	0.1771
ECT	-0.2667	-0.1378**
Diagnostic tests	t-stats	p-value
White Test	0.3326	0.9055
Normality	0.6425	0.7812
Serial Correlation LM Test	0.2202	0.8158
ARCH	0.7535	0.3441
Breusch-Pagan-Godfrey	0.7318	0.7022

Note: \*\*\*, \*\*and \* indicate the rejection of null-hypothesis at 1%, 5% and 10% significance levels, respectively.

- These results seem to be identical to the long-run output, except for FDI which did not have any positive impact on financial sector development in Bahrain.
- As for the dummy variable, the result shows that its coefficient is negatively linked to the dependent variable and it is statistically significant at the level of 1%. This shows that the global financial crisis had negative effects on financial sector development in Bahrain.
- Error correction term is statistically significant and has the expected sign.

### 3. Granger Causality Tests

We conducted three Granger causality tests: short-run causality, long-run causality and the joint short and long run. The results are reported in table 6.

**Table 6. Direction of Granger Causality tests**

VARIABLE	Short run (F-stats)					ECT (t-stat)	Joint short and long run (F-stats)				
	$\Delta$ LFD	$\Delta$ LGDP	$\Delta$ LFDI	$\Delta$ LFW	$\Delta$ LREM		$\Delta$ LFD & ECT	$\Delta$ LGDP & ECT	$\Delta$ LFDI & ECT	$\Delta$ LFW & ECT	$\Delta$ LREM & ECT
$\Delta$ LFD	-	3.0223**	0.255	4.581***	0.135	-2.661**	-	3.148**	0.921	2.212*	2.888
$\Delta$ LGDP	3.081***	-	2.889***	2.661***	0.124	-2.602**	1.588*	-	2.912*	2.689***	0.232
$\Delta$ LFDI	1.616*	3.334***	-	0.352	0.336	- 1.221	0.979	3.669**	-	1.749	0.296
$\Delta$ LFW	2.662***	4.756***	0.235*	-	1.011	- 2.568**	2.975**	4.278***	0.577*	-	0.582
$\Delta$ LREM	0.249	1.041	0.157	4.862***	-	-6.252***	0.265	1.131	0.135	4.158***	-

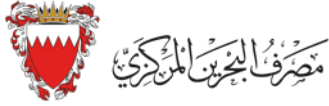
Note: \*\*\*, \*\*and \* indicate the rejection of null-hypothesis at 1%, 5% and 10% significance levels, respectively.

- We can confirm the presence of a **bidirectional relationship** between foreign workers (FW) and Growth (GDP)
- The existence of a **unidirectional relationship** between foreign workers (FW) and remittances (REM). This implies that the more foreign workers are in Bahrain, the more remittances are sending outside the kingdom.

## VI- CONCLUSION

The empirical research reveals interesting conclusions:

1. First, results of the long run estimation show that foreign workers play an important role in the financial development of Bahrain as a regional financial hub. This result also reflects the reality as almost 35% of the workforce in the financial sector in Bahrain are foreign workers, meaning that without their expertise, the financial sector could be disrupted. The results also reveal that the remittance outflows have a negative impact on financial sector development in the long run.
2. Second, results of the short run estimation support the findings of the long run and confirm the negative impact of remittance outflows on financial sector development. Results of the short run estimation also confirm the crucial role of foreign workers in the development of the financial sector as the coefficient of this variable is found to be positively and significantly linked to the dependent variable.
3. Third, the Granger causality results reveal the existence of bidirectional relationship between foreign workers and economic growth and another one existing between financial development and economic growth. These findings show on the one hand the importance of foreign workers in economic growth and, on the other hand, the importance of the financial sector to promote growth.



The empirical results reveal several important conclusions that could be useful for policymakers in Bahrain.

- ✓ First, given the size of the kingdom and its population, the government **cannot drastically reduce the number of workers**, because they are a major driver of economic growth as shown in the model. However, policymakers should find another way to limit the huge outflow of remittances such as the implementation of a nationalization policy in the labor market.
- ✓ Bahrain is an open-ended economy with free capital movements, we believe that imposing taxation on remittances is not applicable as it is against the fundamentals of the kingdom monetary policy. Nevertheless, a cap could be imposed similar to the one done in the Saudi Arabia.
- ✓ Another solution to limit the huge remittance outflows could be done by **retail banks**. In fact, these financial institutions could play an important role to do this by providing, for example **an attractive saving scheme** to these international migrant workers. In this case, foreign workers would find the placement of their money (or at least a part of it), to be very lucrative and they will be motivated to invest.



**Thank You**