# THE CROWDING-OUT EFFECT IN A SMALL DEVELOPING ECONOMY: A LESSON FROM COVID-19

**Ahmad Tarawneh[1], Muhanned Obeidat[2], Mohammad Khataibeh[3], Ghassan Omet[4]**
[1] University of Jordan, Department of Finance, Amman, Jordan.
ah.altarawneh@ju.edu.jo , ORCID:0000-0002-5833-1887
[2] University of Jordan, Department of Finance, Amman, Jordan.
mu.obeidat@ju.edu.jo , ORCID:0000-0002-8988-1291
[3] University of Jordan, Department of Finance, Amman, Jordan.
khataybeh@ju.edu.jo , ORCID:0000-0003-3599-903X
[4] University of Jordan, Department of Finance, Amman, Jordan.
gomet@ju.edu.jo , ORCID:0000-0002-8988-1387

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## ABSTRACT

**Purpose-** COVID-19 has dealt a severe blow to public finance, and caused public debt to Gross Domestic Product (GDP) to pass the 100 percent mark. Given this, the objective of this paper is to examine the impact of bank lending to the government on bank credit to the private sector (crowding-out effect) in Jordan.

**Methodology-** This paper uses bank-level data during the period 2011-2020. Based on the collected data from the financial statements of all 13 conventional Jordanian banks, the Seemingly-Unrelated Regression (SUR) is applied to examine the determinants of their credit growth. The used independent variables are bank deposit growth, credit to the government, bank size, bank capital, bank income diversification, real economic growth, and inflation rate.

**Findings-** The 2020 financial statements show that the profits of Jordanian banks (return on assets) have decreased from 1.43 percent in 2019 to 0.74 percent in 2020. This decrease was mainly due to the increase in loan loss provisions. As far as the econometric results are concerned, it is informative to note that the impact of banks' lending to the government, in the form of government securities, is negative and significant, and in all estimated econometric versions.

**Conclusions-** While much of the determinants of bank performance are applicable to the Jordanian scene, it is encouraging to note that Jordanian banks have managed to finish the 2020 financial year well. However, it is argued that the government should use COVID-19 as a "trigger" point for change in the status of its poor public finance.

**Keywords:** Jordan, banks, profitability, net interest margin; bank size; seemingly-unrelated regression.
JEL Codes: G20, G21, G24.

## 1. INTRODUCTION

The impact of COVID-19 on the Jordanian economy is not over. The implications, however, have become clear. In 2020, the economy witnessed a decrease in real Gross Domestic Product (GDP) by 1.6 percent, and an increase in unemployment from 19.0 percent (4th Quarter 2019) to 24.7 percent (4th Quarter 2020). During these difficult times, the virus has forced the government to implement some fiscal (and monetary) policy measures. Regardless of what these measures are, the already existing weak status of public finance has become even weaker. For example, public debt (general government) to GDP ratio has increased from 95.2 percent in 2019 to 106.5 percent by the end of the 2020. In 2020, interest payments on public debt only, accounted for 15.6 percent of total public spending (excluding interest payments).

Within the context of the weak, and deteriorating public finances, it is known that debt (private and public), over time, plays an important role in facilitating investments and real economic growth and development. However, one can also argue that the rising public debt can crowd-out the private sector from the debt market. High and rising public debt can impede economic growth through various channels, including the crowding-out of private investment (Woo and Kumar, 2015 and Ostry et al., 2015).

The objective of this paper is to examine the performance of licensed banks in Jordan in terms of their credit growth. In more specific terms, using bank-level data, and the period 2011-2020, this paper examines the impact of public borrowing on bank credit to the private sector. If the impact is negative, the government should use COVID-19, and the resultant increase in public debt, as a "trigger point" for positive change, and remedy the poor status of its public finances. Otherwise, in future years, public debt will prove to be a source of economic instability, and an impediment to the growth performance of the economy.

The rest of the paper is structured as follows. In section 2, we briefly review the literature that examines the determinants of back credit. In section 3, we provide some information about public finance in Jordan and bank credit. In section 4, we outline the data and the used methodology, and present and discuss the results. Section 5 summarizes and concludes the paper.

## 2. BANK CREDIT: A LITERATURE REVIEW

For so long, the macroeconomic impact of public debt has been an issue that attracts the attention of financial economists. Indeed, public debt can impact (negatively) economies through various channels. These channels are summarized in a recently published by the European Central Bank working paper, and written by Burriel et al. (2020).

First, high public debt levels make economies particularly vulnerable to macroeconomic shocks. When governments maintain high debt levels, they cannot, for example, adopt counter-cyclical fiscal policy which is known for enhancing macroeconomic stability. In other words, high debt can exacerbate macroeconomic volatility, and restrain economic recovery and growth.

Second, high public debt levels can adversely impact economic growth through various channels including sovereign spreads, sovereign yields, future (higher) taxation, capacity to finance future public investments, and increased uncertainty in general. In addition, high public debt can crowd-out the private sector from the debt market, and hence, reduce private sector investments.

Within the context of the socio-economic implications of COVID-19, it is interesting to note that Burriel et al. (2020) state that "once the crisis is over and the recovery firmly sets in, keeping public debt at high levels over the medium term is a source of vulnerability in itself". Indeed, based on three dynamic stochastic general equilibrium (DSGE) models, their euro area simulation results indicate that countries with high debt can face, among others, a crowding-out of private debt in both the short-run and long-run.

The literature which examines the impact of public debt on private sector debt can be grouped under two main types. The first group examines the issue using individual countries' data and time series analysis such as vector auto-regression (VAR), structural vector auto-regressions (SVAR), autoregressive distributed lag (ARDL) co-integration, and vector error correction modelling (VECM). The second group of papers examine the crowding-out effect using bank-level data and panel data analysis. In addition, these papers use either single-country bank data or cross-country bank data.

Some of the recently published papers which use time series analysis include Akpansung (2018), Lidiema (2018), Manda (2019), Lee and Goh, (2019), and Mwakalila (2020). For example, Mwakalila (2020) examine the impact of public spending and public borrowing on credit to the Tanzanian private sector. Using quarterly data (2014-2018), the autoregressive distributed lag (ARDL) results confirm the negative impact of public debt on bank credit to the private sector.

As far as the papers that use panel data analysis are concerned, this literature regresses credit growth on a group of explanatory variables that include deposit growth, public debt, equity capital, bank size, bank income diversification, economic growth, and inflation rate. Again, some of the more recent papers are Ben Moussa and Chedia (2016), Ivanovic (2016), Awdeh (2017), Miyajima (2020), Nguyen and Dang (2020), and others.

Using a panel of 18 banks (2000-2013), Ben Moussa and Chedia (2016) examine the determinants of bank credit growth in Tunisia. Their results indicate that most of the known determinants of bank credit are not applicable to the Tunisian case. Similarly, Ivanovic (2016) uses a panel of 11 banks in Montenegro (quarterly data / 2004-2014). The results indicate that bank deposits and bank soundness increase bank credit growth. In addition, Awdeh (2017) looked at Lebanese banks (34 banks over the period 2000-2015), and the results indicate that deposit growth, GDP growth, inflation, and money supply, increase bank credit to the private sector. Public borrowing, on the other hand, negatively impacts bank credit. Bustamante et al. (2019), use quarterly data (2005-2017) to examine the determinants of the credit growth of 12 banks. The results indicate that well-capitalized, liquid, low-risk, and more profitable banks tend to lend more.

Miyajima (2020) uses a panel of 10 Saudi banks (2000-2015). The results reveal that deposits and equity capital increase bank credit. The results of this paper reveal some interesting conclusions. For example, it is stated that while lending by Islamic banks is more responsive to economic growth, less bank lending to finance the budget deficit increases credit to the private

sector. Finally, Nguyen and Dang (2020) looked at Vietnamese banks (2007-2019) in terms of their credit growth. Their dynamic panel regression results indicate that well-capitalized banks, high asset quality, and liquidity increase credit growth.

## 3. THE DATA, METHODOLOGY AND RESULTS

The banking sector in Jordan is composed of 13 conventional and 3 Islamic banks. As one might expect, the financial statements of the Islamic banks are different from the conventional banks. This is why, the analysis in this paper includes the 13 banks only, and the time period 2011-2020.

To examine the determinants of credit growth, the following model is estimated.

$$Credit_{i,t} = \beta_1 Deposit_{i,t} + \beta_2 Bonds_{i,t} + \beta_3 Equity_{i,t} + \beta_4 Size_{i,t} + \beta_5 Diversification_{i,t} + \beta_6 GDP_t + \beta_7 Inflation_t + \varepsilon_{i,t} \qquad (1)$$

where, I refers to banks (1, ..., 13), and t is the time period of 2011-2020.

The dependent and independent variables are measured as follows:
Credit = Percentage annual change in bank credit.
Deposits = Percentage annual change in bank deposits.
Bonds = Bank investment in government securities (bongs and treasury bills) divided by total bank credit.
Equity = Equity capital to total assets.
Size = The natural logarithm of total assets.
Diversification = Net commission income divided by interest income plus interest expense.
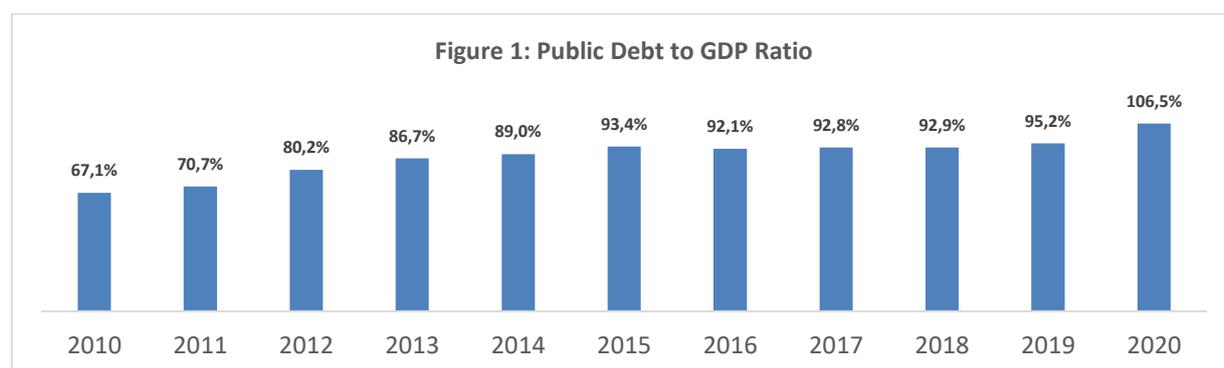GDP = Real GDP growth rate.
Inflation = Inflation rate.

To estimate model 1, one can apply panel data analysis in its either fixed-effect form or random-effect form. However, the data involves 13 banks and 10 years. In other words, the results suffer from serial correlation in the estimated residuals. Indeed, this is the case based on the Durbin-Watson test. This is why, we estimate model 1 using the Period Seemingly-Unrelated Regression / pooled EGLS. This technique solves the period serial correlation, as well as the and period heteroskedasticity between the residual terms.

Below, we outline a number of observations about public finance and the banking sector in Jordan.

1.  Public finance in Jordan is weak. The budget is consistently in deficit, with or without the received grants, mainly from the United States of America. In 2020, and as a result of COVID-19, local public revenues decreased, and total spending increased. In other words, the budget deficit to GDP ratio has widened and public debt increased from 95.2 percent of GDP in 2019 to 106.5 percent in 2020 (Figure 1).

**Table 1: Public Finance in Jordan**

| Year | Local Revenues (JD Billion) | Grants (JD Billion) | Public Spending (JD Billion) | Budget Deficit / GDP (Excluding Grants) | Budget Deficit / GDP (Including Grants) |
|------|------|------|------|------|------|
| 2010 | 4.261 | 0.402 | 5.708 | -7.7% | -5.6% |
| 2011 | 4.199 | 1.215 | 6.797 | -12.7% | -6.8% |
| 2012 | 4.727 | 0.327 | 6.878 | -9.8% | -8.3% |
| 2013 | 5.120 | 0.639 | 7.077 | -8.2% | -5.5% |
| 2014 | 6.031 | 1.237 | 7.851 | -7.2% | -2.3% |
| 2015 | 5.911 | 0.886 | 7.723 | -6.8% | -3.5% |
| 2016 | 6.234 | 0.836 | 7.948 | -6.1% | -3.1% |
| 2017 | 6.717 | 0.708 | 8.173 | -5.0% | -2.5% |
| 2018 | 6.945 | 0.895 | 8.567 | -5.3% | -2.4% |
| 2019 | 6.966 | 0.788 | 8.813 | -5.8% | -3.3% |
| 2020 | 6.238 | 0.791 | 9.211 | -9.6% | -7.0% |

**Figure 1: Public Debt to GDP Ratio**



| 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|------|------|------|------|------|------|------|------|------|------|------|
| 67,1% | 70,7% | 80,2% | 86,7% | 89,0% | 93,4% | 92,1% | 92,8% | 92,9% | 95,2% | 106,5% |

2. On average, local public debt and foreign public debt have maintained their respective ratios to each other constant. Local public debt constitutes around 57 percent of total public debt (Figure 2B).

**Figure 2A: Public Debt (JD Billion)**



**Figure 2B: Components of Public Debt**
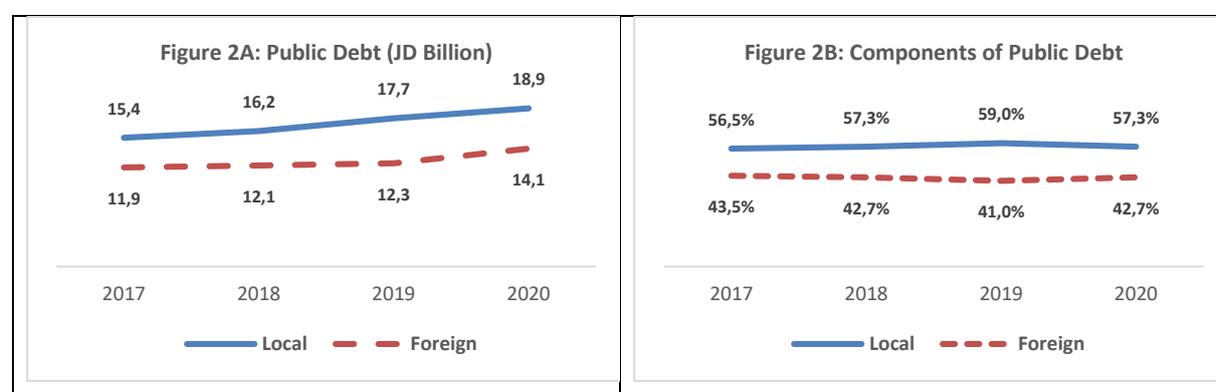


3. Based on the World Bank's database, the largest (smallest) banking sector, in terms of credit to the private sector to GDP ratio, is in Hong Kong (Afghanistan). In Jordan domestic credit by banks to GDP ratio is equal to 76.0 percent. This ratio is below the overall mean (81.3), and equal to the median (76.1 percent). Among Arab banking sectors, in Lebanon, Kuwait, and Qatar only, credit to GDP ratio is higher than in Jordan.

**Table 2: Domestic Credit to Private Sector by Banks (% of GDP)**

| Country | Ratio | Country | Ratio | Country | Ratio |
|---------|-------|---------|-------|---------|-------|
| Afghanistan | 3.4% | Morocco | 62.9% | Lebanon | 101.9% |
| Iraq | 8.9% | Turkey | 63.6% | France | 102.2% |
| Sudan | 9.5% | Tunisia | 66.9% | Spain | 102.3% |
| Tanzania | 12.5% | Oman | 73.5% | Japan | 107.6% |
| Pakistan | 17.9% | UAE | 75.8% | Singapore | 120.4% |
| Romania | 25.6% | Jordan | 76.0% | Sweden | 131.9% |
| Egypt | 26.0% | Italy | 76.3% | UK | 133.7% |
| Ireland | 40.8% | Germany | 78.3% | South Korea | 143.1% |
| India | 49.7% | Chile | 82.0% | Cyprus | 147.7% |
| USA | 52.1% | Qatar | 87.0% | China | 159.4% |
| Saudi Arabia | 54.0% | Finland | 93.9% | Denmark | 160.9% |
| Georgia | 59.6% | Kuwait | 94.0% | Hong Kong | 226.3% |
| **Mean** | | | **81.3%** | | |
| **Median** | | | **76.1%** | | |

4. It is clear that the involvement of the 13 listed Jordanian conventional banks in financing public spending has been increasing. These banks have increased their portfolio of government securities (treasury bills and bonds) from JD 9.3 billion in 2011 (Figure 3) to JD 11.9 billion in 2020 (about $17 billion). It is interesting to note that the Jordanian capital market (Amman Securities Exchange / ASE) has no secondary market for the treasury bills and bonds that the government issues. These securities are bought by licensed banks and the Jordan Social Security Corporation only. Once bought, they are held until maturity.

**Figure 3: Banks' Investment in Government Securities (JD Billion)**
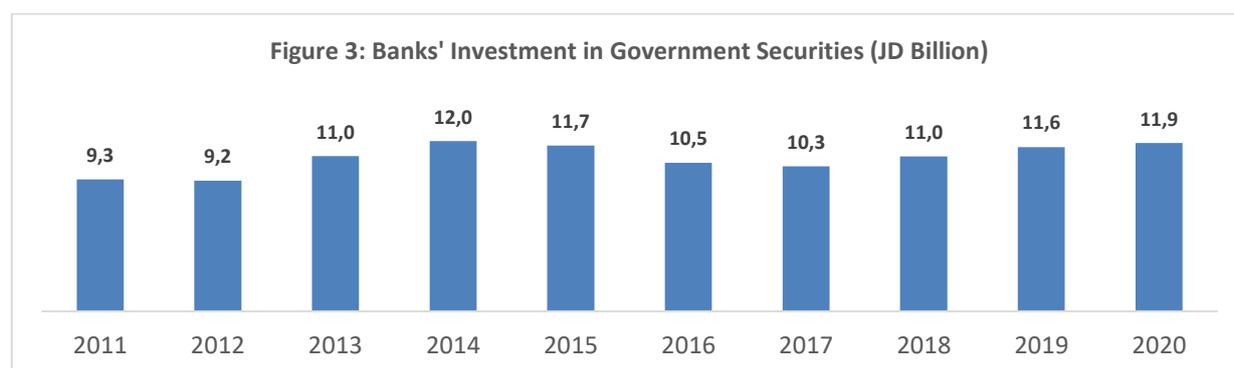


5.   Since the 2011 financial year, the percentage change in the banks' credit to the private sector has fluctuated between 1.1 percent and 15.8 percent (Figure 4). It is worth noting that 2020 witnessed an increase of 4.9 percent, and this is higher than the 2019 increase (1.1 percent).

**Figure 4: Percentage Change in Credit Facilities**
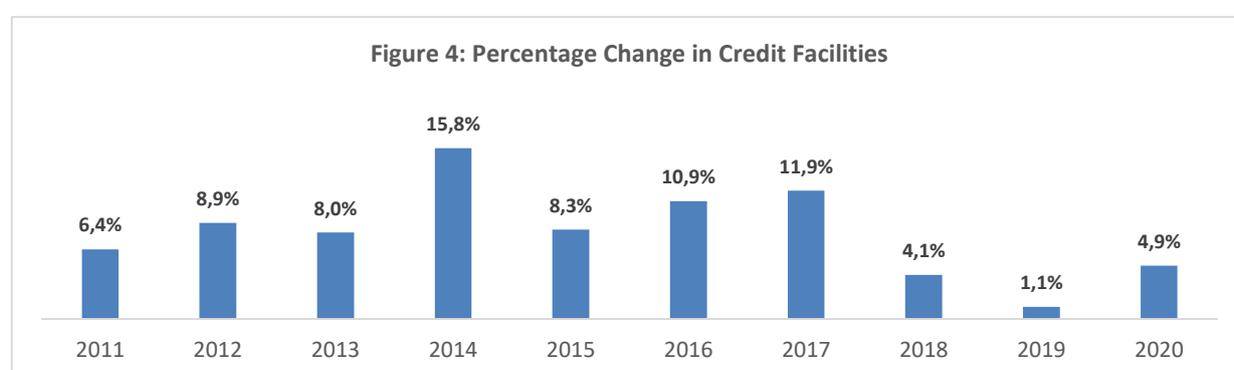


Below, we present some descriptive statistics about the dependent and independent variables, and present and discuss the empirical estimation results of model 1.

1.   During the period 2011-2020, the annual credit to the private sector and bank deposits increased by 8.0 percent and 6.6 percent respectively. On average, the mean annual ratio of banks' investment in government securities to total credit facilities to the private sector (Bonds) is equal to 23.1 percent. Interestingly, the maximum value of this ratio is equal to 36.6 percent. In other words, in a given year, one bank's lending to the government 36.6 percent of its lending to the private sector. The income diversification of our sample of bank reveal some significant differences. Again the minimum and maximum ratios of net commission income to interest income minus interest expense are equal to 18.8 percent and 76.8 percent respectively.

**Table 3: Dependent and Independent Variables / 2011-2020: Descriptive Statistics**

|  | Mean | Median | Maximum | Minimum | Std. Deviation |
|---|---|---|---|---|---|
| Credit Growth | 0.080 | 0.056 | 0.850 | -0.194 | 0.126 |
| Deposit Growth | 0.066 | 0.037 | 0.583 | -0.208 | 0.123 |
| Bonds | 0.231 | 0.220 | 0.366 | 0.017 | 0.224 |
| Diversification | 0.200 | 0.188 | 0.768 | 0.008 | 0.082 |
| Equity | 0.071 | 0.071 | 0.209 | 0.022 | 0.032 |
| Size | 21.589 | 21.493 | 24.026 | 19.704 | 0.914 |
| GDP | 0.019 | 0.022 | 0.034 | -0.016 | 0.014 |
| Inflation | 0.024 | 0.033 | 0.049 | -0.011 | 0.022 |

2.   As expected, the impact of deposit growth on credit growth is positive and significant. The coefficients of this independent variable are consistently positive and significant in all of the five estimated versions.
3.   The impact of banks' lending to the government, in the form of government securities, is negative and significant, and in all estimated versions. The values of this coefficient are equal to -0.037, -0.033, -0.039, -0.033, and -0.032.
4.   The impact of capitalization (equity capital to total assets) on bank credit is not significant. From the literature, one can expect either a positive or a negative impact. For example, Berger and Bouwman (2009) argue that shareholders

tend to be reluctant to offer more loans when they invest more equity capital in their banks. The impact of capital on bank lending can be positive because higher capital enhances the capacity of banks to lend more (Coval and Thakor, 2005).

5.  It is surprising that the impact of bank size on credit growth is negative and significant. However, this is probably due to the fact that smaller banks seek growth, and hence tend to lend more.

**Table 2: Determinants of Credit Growth: 2011-2020**

| Variable | Coefficient (1) | Coefficient (2) | Coefficient (3) | Coefficient (4) | Coefficient (5) |
|---|---|---|---|---|---|
| C | 0.047* | 0.073* | 0.065* | 0.426* | 0.425* |
| Deposit Growth | 0.714* | 0.710* | 0.714* | 0.718* | 0.709* |
| Bonds | -0.037* | -0.033* | -0.039* | -0.033* | -0.032* |
| Diversification | | -0.131* | -0.119* | -0.095* | -0.093* |
| Equity | | | 0.109 | -0.291 | -0.201 |
| Size | | | | -0.016* | -0.016* |
| GDP | | | | | 0.454 |
| Inflation | | | | | -0.206 |
| | | | | | |
| Adj. $R^2$ | 0.867 | 0.934 | 0.887 | 0.904 | 0.913 |
| F-statistic | 422.643* | 611.461* | 254.854* | 244.720* | 195.143* |
| D-W Statistic | 1.966 | 1.919 | 1.882 | 1.919 | 1.926 |
| * and ** imply significance at the 99 and 95 percent levels respectively. | | | | | |

6.  As far as the macroeconomic variables are concerned, while one would expect economic growth to result in more demand for credit by businesses and households (Arestis and Demetriades, 1997), this does not seem to be the case in Jordan. Similarly, the impact of inflation on credit is not significant. Similarly, while one would expect banks to reduce credit during inflationary periods (Huybens and Smith, 1999), this is not so in this case.

## 4. SUMMARY AND CONCLUSIONS

The Ministry of Health confirmed the first corona case in Jordan on 2 March 2020. In less than one year, and as result of the lockdown measures, and fall in economic activity, the government has felt the pressure. Indeed, the 2020 budget deficit widened, and public debt has become more than 100 percent of GDP.

Eventually, Jordan (and the world) will be free of COVID-19, and economic activity will return to normal. What is not normal, however, are the consistent budget deficits, reliance on foreign grants, and rising public debt, well before the virus. The virus has only heightened the urgency for reform (public finance).

The government must use COVID-19 as a "trigger point" for change in its fiscal space. It should examine the reasons behind the consistent budget deficits (spending and revenue sides) and adopt measures to lessen this problem. Within this context, the findings of this paper indicate that the impact of public borrowing on bank credit to the private sector is significant and negative. This is another reason why the government should fix its finances.

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