

CORRUPTION AND BANKS' NON-PERFORMING LOANS: Empirical Evidence from Mena Countries

Amer Mohamad

Department of Banking and Finance, Eastern Mediterranean University, Famagusta, Northern
Cyprus via Mersin 10, Turkey
Email: Amer.mo89@gmail.com

Hatice Jenkins

Department of Economics, Eastern Mediterranean University, Famagusta, Northern Cyprus via
Mersin 10, Turkey
E-mail: hatice.jenkins@gmail.com

Development Discussion Paper: 2020-25

ABSTRACT

Corruption has long been a serious problem in most countries in the Middle East and North Africa (MENA). This research aims to investigate the impact of country-wide corruption on banks' credit risk across 16 countries in this region over the period 2011–2019. Applying the interactive fixed effects estimation technique on a model consisting of both macro and bank-specific variables and utilizing data from 197 banks, the results show a positive significant association between corruption and banks non-performing loans (NPL). Corruption was found to have a positive relation with credit risk even in banks with high risk aversion.

Keywords: MENA, non-performing, loans, transparency, International, corruption, banks

JEL Classification: G21, O53, C23

Published as: Amer Mohamad & Hatice Jenkins (2020): Corruption and banks' nonperforming loans: empirical evidence from MENA countries, Macroeconomics and Finance in Emerging Market Economies, DOI: 10.1080/17520843.2020.1842478



Corruption and banks' non-performing loans: empirical evidence from MENA countries

Amer Mohamad and Hatice Jenkins

Department of Banking and Finance, Eastern Mediterranean University, Gazimagusa, Cyprus

ABSTRACT

Corruption has long been a serious problem in most countries in the Middle East and North Africa (MENA). This research aims to investigate the impact of country-wide corruption on banks' credit risk across 16 countries in this region over the period 2011–2019. Applying the interactive fixed effects estimation technique on a model consisting of both macro and bank-specific variables and utilizing data from 197 banks, the results show a positive significant association between corruption and banks non-performing loans (NPL). Corruption was found to have a positive relation with credit risk even in banks with high risk aversion.

ARTICLE HISTORY

Received 11 April 2020
Accepted 22 October 2020

KEYWORDS

MENA; non-performing loans; transparency International; corruption; banks

JEL CLASSIFICATION

G21; O53; C23

Introduction

Corruption is a complex social phenomenon that has severe impacts on economic and societal development. This phenomenon has been a major focus of political, sociological, and historical research for many years (Dimant and Tosato 2017). Recently, the increasing availability of data made it possible also to investigate the effect of corruption on economic and financial indicators. For instance, empirical studies showed that corruption has an influence on economic growth (Aidt 2009; Lisciandra and Millemaci 2017), foreign direct investment (Mathur and Singh 2013), governments' spending on education and health (Mauro 1998), public debt (Cooray, Dzhumahev, and Schneider 2017), and inflation (Al-Marhubi 2000).

Recently, the effects of corruption have captured the attention of researchers who investigate the issues on banks' lending behaviour, credit risk, and banks profitability. It is commonly known that countries engulfed with corruption offer more opportunities to distort the credit assessment processes and therefore, may channel banks' loans to ineligible applicants. It is likely that many of these applicants either will lack the capacity to pay back their loans or lack the willingness to do so as in the case of business elites empowered by their political connections. These borrowers benefit from the fragility of the overall law-enforcement system and the lack of accountability and transparency that is supported by country-wide corruption. Therefore, country-wide corruption can have a serious impact on the accumulation of banks' non-performing loans (NPLs), which hampers the banks' ability to provide qualified companies with the essential credit to invest and create jobs.

This research contributes to the empirical literature showing that in MENA countries banks' credit risk is significantly affected by the level of economy-wide corruption existing in these countries. Applying the interactive fixed effect estimation technique to a sample of 197 banks from 16 MENA countries, our results show that the level of corruption, measured by the Transparency International Corruption Perception Index (CPI), is positively and significantly associated with banks' NPLs in the MENA region. The results also show a positive relation between banks' NPLs and a variable representing the interaction between corruption and banks risk aversion. These findings remained unchanged when the CPI index was replaced with a new measure of corruption as a robustness check. This implies that in MENA countries banks will benefit from adopting extra preventive internal measures to alienate the effect of the economy-wide corruption on their credit approval and collections process. Furthermore, in these countries, bank regulatory and supervisory agencies can apply higher provisions for bad loans and have frequent bank inspections to reduce the interference and bad intentions of politically connected groups that result in high NPLs in the banking sector. In addition, governments in MENA countries are always required to undertake institutional reforms and anti-corruption measures to improve their economic and political stability.

Background and literature review

Corruption is a distortion that can harm both public and private organizations, businesses, and financial institutions. Financial institutions, especially banks are particularly vulnerable to corruptive practices as they are dealing with cash. For example, corruptive activities can be easily disguised under loan disbursement as part of a regular banking activity. Such cash transactions eventually turn into non-performing loans and hence increase the credit risk of banks. Therefore, understanding the relationship between corruption and banks' credit risk is highly important for regulators and policy makers especially in countries where there is a widespread corruption.

Politically connected firms and business elites in the countries engulfed with corruption, as in our sample, have enough power to benefit from bank loans regardless of their credit records. More incentives to exploit banks loans provision emanate from the high level of impunity offered to these firms and individuals by the corrupt judicial system. This form of corruption may be accelerated around political events when loans could offer easy finances to these individuals to satisfy voters and fund their mega projects and campaigns. Another prevailing form of corruption is the bribes to banks officials to facilitate the credit applications through distorted assessment methods. This form of corruption is also motivated by the weak law enforcement agencies and the ineffective judicial system in these countries. No doubt the persistently high level of corruption in the MENA region offers a good environment for such activities.

The politico-economic systems in the MENA region are highly state-centred. The state bureaucracy and the public sector are superior to the civil society, and the corporate sector is largely dominated by politically connected economic elites (Beck 2013; Sayan 2009). Many reports highlight that corruption is among the biggest constraints faced by private companies and foreign investors in the MENA countries. A survey of the business environment in this region conducted jointly by the European Bank for Reconstruction and Development (EBRD), the World Bank, and the European Investment Bank (EIB),

showed that corruption is the second biggest concern faced by firms operating in North African countries such as Egypt (Zgheib 2015). Other reports underline that politically connected economic elites have exerted a major influence over banks' activities in the whole MENA region (Haddad 2017; Sayan 2009).

It is also important to note that the widespread corruption in the region was one of the major causes of the latest wave of protests engulfing many MENA countries (Ansani and Daniele 2012). Importantly, the current research will examine the effect of corruption on credit risk following the eruption of the so-called Arab Spring in 2011. It is argued that many institutional reforms and anti-corruption programmes were put in place in most of the MENA countries either to improve the economic and political stability of each country or as a counter-revolutionary strategy to prevent the spill-over of unrest.

However, years after the onset of the Arab Spring, corruption seems to be on the increase. According to the Transparency International CPI, the corruption scores for most MENA countries have continued to worsen. The CPI scores in recent years showed that 90% of MENA countries score below 50 out of 100, indicating that 90% of MENA countries have a serious corruption problem. Although some MENA countries usually score around or slightly higher than the global average, their legacy of corruption is still prominent (Beck 2013). Apart from the Arab countries in the MENA region, Israel was found to be among the most corrupt states in the developed world, according to the CPI.

Despite the multiple channels in which economy-wide corruption can affect banks credit risk, the previous research on the relationship between corruption and bank credit was dominated by studies investigating whether corruption has helped or hindered banks' credit expansion to the private sector. Recently, a few studies have started to directly investigate the nexus between corruption and banks' NPLs.

A review of the prevailing studies on corruption-credit growth relation reveals that the nature of this relationship is not straightforward. For the proponents of the negative association between corruption and bank lending behaviour, corruption hinders banks' willingness to lend as it entails poor legal systems that fail to protect banks' rights in the event of loan defaults. This view stems from the law and finance theory pioneered by La Porta et al. (1997) and the concept of risk aversion in banks' operations.

According to the law and finance theory, good practices in bank supervision and the existence of strong legal authorities reduce the risk associated with loan provisions of banks. Such an environment increases banks' capacity to recover funds in the event of debtors' default. In this context, judicial corruption would hinder banks' willingness to lend. In the literature, many studies have highlighted the role of law enforcement and bank supervisory institutions in the credit behaviour of banks. La Porta et al. (1997) used a sample of 49 countries to investigate the determinants of external finance. They found that countries with poor legal systems and low-quality laws have narrower capital markets and limited bank credit. Similarly, Djankov, McLiesh, and Shleifer (2007) investigated the determinants of private credit in a large cross-country sample. Their results indicated that information-sharing institutions and strong legal systems have a positive effect on private credit to gross domestic product (GDP). Finally, Qian and Strahan (2007) studied the effect of legal institutions on the design of banks' loan contracts. They found that in addition to their positive effect on bank credit, strong legal institutions motivate banks to provide loans with long maturities and at low interest rates.

Other studies found that corruption can negatively affect the demand for bank credit when corrupt bank officials are perceived as financial obstacles by prospective borrowers. Batra, Kaufmann, and Stone (2004) investigated this perception using the World Business Environment Survey (WBES), conducted by the World Bank. In line with the preceding point, the study found that 20–30% of firms from countries outside the OECD perceived bank managers as financial obstacles. A similar study was conducted by Beck et al. (2006) on a sample of over 10,000 firms. The study concluded that almost half of these firms perceived corrupt bank officials to be a financial obstacle.

The negative effect of corruption on foreign banks' credit was also captured by Detragiache, Tressel, and Gupta (2008), who investigated the effect of foreign banks' penetration in the credit markets of poor countries. Using corruption as a control variable, the authors found that corruption is negatively associated with foreign banks' credit. In other words, the higher the level of corruption, the less credit was given by foreign banks. Another study, by Weill (2011), used regional measures of corruption and bank-level data to investigate the effect of corruption on bank lending in Russia. The author found that corruption is one of the factors that hamper bank lending, particularly loans to households and firms.

For proponents of the positive effect of corruption on bank lending behaviour, corruption allows an acceleration of the banking procedures and eases the access to bank credit. This occurs through bribes to bank officials and political influence over banks. Bribes paid by borrowers to obtain loans motivate bank officials to lend regardless of the financial capacity of the borrowers, and thereby 'grease the wheels' of the banking sector. In this vein, Lízal and Kocenda (2001) found that some loans in the Czech Republic were channelled to bad or nonexistent investments owing to bribes. Similarly, Levin and Satarov (2000) underlined the role of bribes in facilitating bank credit in Russia, and emphasized the role of the state in this facilitation.

With regard to the political form of corruption that prevails in less developed countries, politics exercises an influence on government-owned or politically connected banks to facilitate loans to specific firms. Dinç (2005) investigated this influence using bank-level data in a sample of 43 countries for the period 1994–2000. The results indicated that, in contrast to private banks, state-owned banks expanded their credit near election years, by about 11% higher than their total loan portfolio. Carvalho (2014) used firm-level data for a large sample of Brazilian firms and found that the employment decisions of these firms were significantly shaped by the state-owned banks. The author concluded that firms expanded employment in politically attractive areas and around the time of elections in order to have access to funds in the state-owned banks.

Finally, it is argued that corruption may positively affect bank lending through credit rationing, which occurs as a result of the information asymmetry between lenders and debtors, and the mechanism of adverse selection. Credit rationing denotes loan applications with a rate higher than the normal rate charged by banks. Debtors' openness to pay this rate can be seen as a bribe to bank officials in exchange for loans. This process of credit rationing is usually influenced by banks' risk aversion, which suggests that banks are less motivated to accept uncollateralized loan applications to avoid the risk of granting unsecured loans (Ahmad 2013). From this perspective, incentives to bribe bank officials would increase if banks were more risk averse. Furthermore, credit rationing is highly likely to attract risky and bad borrowers who have an incentive to pay high

interest rates to obtain loans. Malik and Saha (2016) used a sample of 146 countries over the period 1984–2009 to investigate the association between corruption and growth. They concluded that corruption in some countries significantly enhances growth through bank credit.

The existing literature on the relationship between corruption and NPLs is limited to a small number of empirical studies. For instance, Khwaja and Mian (2005) investigated loans to politically connected firms in the Pakistani banking sector. They used loan-level data in a sample of 90,000 firms for the period 1996–2002 and found that the amount of lending to politically connected firms in Pakistan was 50% higher than lending to other firms. In addition, they found a positive association between corruption and NPL ratios of banks that were subject to political influence. The NPL ratio of these banks was found to be 50% higher for the loans given to the politically connected firms than for the other firms. Similarly, Goel and Hasan (2011) investigated the effect of economy-wide corruption and other institutional controls on bad loans using annual country-level data across a large sample of 100 countries for 2007. The findings indicated that corruption and bad loans are positively associated. Furthermore, the study found that the loan defaults were lower in countries with higher lending rates and higher economic growth rates, and in countries that belonged to the eurozone. Park (2012) subsequently investigated the effect of corruption on both the soundness of the banking sector and economic growth, using macroeconomic data from a large cross-country sample for the period 2002–2004. His empirical outcomes suggested that corruption level is positively associated with NPLs and negatively associated with economic growth. In Park's study, some evidence suggested that the negative effect of corruption on economic growth can be attributed to the role of corruption in allocating funds to unreasonable investments. In other words, corruption has been found to be responsible for the allocation of funds to bad projects instead of good ones, which decreases the quality of private investments and thereby decreases economic growth.

In Pakistan, the effects of corruption and information sharing on banks' NPLs were investigated by Ahmad (2013). This research found that corruption and information sharing in Pakistan had no significant effect on NPLs. However, the author argued that his research findings might have been affected by the nature of the data used, and that fighting corruption in Pakistan remains crucial in reducing the level of NPLs. In another study, Agarwal et al. (2015) used a sample of credit card data from China in order to test the relationship between political connections and credit card delinquencies. Their results suggested that state employees, known as bureaucrats, received 13% higher credit lines than non-bureaucrats, despite having the same income levels and demographic characteristics. This was observed mainly in the most corrupt areas of China. In addition, bureaucrats were found to have higher levels of debt forgiven by banks, as their credit card accounts were subject to higher rates of delinquency and reinstatement.

According to the preceding literature we can argue that corruption is likely to aggravate the problem of loan default for banks in countries where there is widespread corruption. Given the high corruption status of countries in the MENA region, we also expect to see a similar relationship between corruption and banks' NPLs in most MENA countries.

Data and methodology

This research uses a model consisting of both macroeconomic and bank-specific annual data to identify the effect of corruption on banks' credit risk across 16 MENA countries. These countries are UAE, Kuwait, Bahrain, Saudi Arabia, Qatar, Oman, Yemen, Egypt, Jordan, Syria, Lebanon, Iraq, Tunisia, Mauritania, Algeria, and Israel. Our research period is 2011–2019, which corresponds to the period following the global financial crisis, during which there was a relatively stable financial environment. The sample constitutes a representative panel of the MENA region. The macroeconomic data is obtained from the World Bank Indicators, Data Stream, and United Nations Conference on Trade and Development. Bank-specific data is obtained from the Orbis BankFocus databases.

The dependent variable in this study is credit risk, represented by the ratio of non-performing loans to gross loans (NPL). The main independent variable of interest is corruption. We use the corruption perception index CPI, an index compiled by Transparency International and widely used in earlier research (Cooray, Dzhumahev, and Schneider 2017; Goel and Hasan 2011; Weill 2011), as the main measure of corruption. In its original form, the CPI was presented on a scale from 0 to 100, where a higher score refers to a lower level of corruption. To simplify the interpretation of our results, we convert and reverse the index to be on a scale from 0 to 10, where a higher score refers a higher level of corruption. Drawing on the earlier literature, we expect a positive significant relationship between the level of corruption in a country and the level of banks' credit risk.

Table 1 shows the averages of corruption scores across the 16 MENA countries included in our study. As shown, UAE and Qatar register the best corruption index (i.e. lowest level of corruption) with average scores of 3.07 and 3.37, respectively. The table also shows that only three countries (UAE, Qatar, and Israel) of the 16 in our study have average scores of less than 5. At the other end of the scale, Iraq and Yemen have the highest level of corruption according to their CPI scores (8.25 and 8.24 respectively). Obviously, the highest corruption scores were reported in conflict-ridden countries such as Yemen, Iraq, and Syria. This can be largely attributed to the complex relationship between corruption and political instability.

Table 1. Averages of corruption scores.

No.	Country	CPI average, ranging from 0 to 10
1	UAE	3.07
2	Kuwait	5.7
3	Bahrain	5.47
4	Saudi	5.2
5	Qatar	3.37
6	Oman	5.27
7	Yemen	8.24
8	Egypt	6.64
9	Jordan	5.18
10	Syria	8.22
11	Lebanon	7.22
12	Iraq	8.25
13	Tunisia	5.92
14	Mauritania	7.15
15	Algeria	6.57
16	Israel	3.92

Source: Calculated by authors. Data obtained from Transparency International, CPI 2011 to 2019.

Besides corruption, our model includes also control variables. Among the various factors that have been proven to have significant relations with banks' credit risk in the literature are lending interest rate, unemployment rate, economic growth rate, bank ownership structure, and bank profitability. After accounting for the availability of data to get a large set of observations and following initial correlation tests to avoid multicollinearity issues, we included three bank-specific variables and one macroeconomic indicator in our model, along with a variable representing the interaction between corruption and risk aversion. While the risk aversion variable (calculated as the ratio of total deposits to total credit) was initially included in the model, it was later dropped to refine and improve the model statistically. The following section discusses the choice of variables in our model and their estimated signs for their association with banks' credit risk.

The bank-specific variables included in our model are as follows: 1) Bank profitability, represented by the ratio of return on average assets (ROAA): Earlier studies show that banks with high profits are less pressured to participate in risky lending behaviour and, therefore, they usually follow strict loan assessment methods (Godlewski 2005). In this light, the sign for the relationship between ROAA and NPL is expected to be negative. 2) Bank size (SIZE) measured as the logarithm of total deposits: The effect of this variable on credit risk is not straightforward. According to the moral hazard hypothesis, assistance given by the state to large banks during crisis periods might motivate banks to take excessive risk and adopt lenient methods when assessing potential borrowers (Stern and Feldman 2004). In this respect, bank size and credit risk are expected to be positively associated. In another strand in the literature, scholars have suggested that large banks have adequate resources to monitor their borrowers and mitigate their exposure to credit risk, which points to a negative association between bank size and credit risk (Fernández de Lis, Martínez Pagés, and Saurina 2000). Hence, bank size is highly likely to have a significant relationship with banks' credit risk, but the expected sign of this relation remains ambiguous. 3) Bank inefficiency measured by the cost to income ratio (CTI): The estimated effect of this ratio on banks' credit risk is also not straightforward. The bad management hypothesis suggests that banks with poor operational cost management are also poor at managing their credit portfolio, whereas the skimping hypothesis suggests that low costs in banks are associated with higher credit risks, assuming that fewer resources are devoted to loan assessment and monitoring of loans (Abid, Ouertani, & Ghorbel, 2014). This indicates that the expected sign of bank inefficiency's relation to banks' credit risk is also ambiguous.

In addition to the bank-specific variables, our control variables include one macroeconomic variable: Economic growth, represented by the growth rate of real GDP to exclude the impact of inflation. It is estimated that the growth in an economy improves borrowers' capacity to repay, whereas the slowdown of an economy negatively impacts borrowers' financial capacity through its negative influence on corporate earnings, unemployment, wage growth, and prices of assets (Klein 2013; Salas and Saurina 2002). Therefore, GDP growth rate is estimated to be negatively related to banks' credit risk. Our model initially included the inflation rate variable given that high inflation can affect borrowers' capacity to repay either negatively through its impact on borrowers' real

income or positively through its impact on the real value of the amount borrowed (Klein 2013). However, the inflation variable was dropped following the preliminary tests intended to improve the model statistically. Our final model can be presented as follow:

$$NPL = C + CPI + ROAA + CTI + SIZE + RA * CPI + GDP$$

As the model's three-dimensional panel data (Countries, Banks, Time) implies to control both country and banks level heterogeneity, we use the interactive fixed effect method of Bai (2009) to estimate our model. As Bai (2009) stated, the interactive fixed effect allows us to detect cross-sectional dependence among countries and it allows for cross-sectional dependence in both regressors and residuals. The interactive fixed effect model can also address endogeneity. As Pesaran (2006) illustrated, the interactive fixed effect model allows the common effects to have 'differential impacts on individual countries, while, at the same time, allowing them to exhibit an arbitrary degree of correlation among themselves and with the individual-specific regressors'.

Empirical results

As indicated above, our model was refined to avoid issues of multicollinearity which arises when the association between two independent variables exceeds 80% (Kennedy 2003). As shown in Table 2, correlations among the variables selected for our model is found to be moderate or low. Levin–Lin–Chu (LLC) and PP-chi-squared tests are also carried out for all variables in our model to check for unit root and stationarity. The p-values of both tests are less than 1%, strongly rejecting the null hypothesis and implying that all data are stationary.

Summary statistics for all variables are presented in Table 3 (common sample descriptive statistics). A notable finding is the relatively high standard deviation associated with NPLs and RA*CPI, indicating that these variables show significant variations across banks and countries.

Table 2. Correlations among independent variables.

	NPL	CPI	ROAA	CTI	SIZE	RA*CPI	GDP
NPL	1						
CPI	0.64	1					
ROAA	0.36	0.52	1				
CTI	0.34	0.62	0.21	1			
SIZE	−0.53	0.65	0.50	0.63	1		
RA*CPI	0.67	0.65	0.32	0.40	0.55	1	
GDP	−0.10	0.30	0.14	0.26	0.43	0.06	1

Table 3. Summary statistics.

Variables	Mean	Max.	Min.	Std. dev.
NPLs as % of gross loans	11.06	99.72	0.01	15.75
CPI, ranging from 0 (not corrupt) to 10 (totally corrupt)	5.84	8.70	2.90	1.55
ROAA (Return on average assets)	1.51	34.09	−12.01	2.47
CTI (Cost to income)	48.29	81.71	16.15	9.81
SIZE (Logarithm of total deposits)	15.07	19.16	0.97	1.85
RA*CPI (Interaction between risk aversion and corruption)	13.91	225.67	1.66	19.71
GDP growth	2.12	15.21	−27.99	4.82

Notes: Std. dev., standard deviation; Min., minimum; Max., maximum.

The null hypothesis (H0) and alternative hypothesis (H1) of this research can be presented as follows:

H0: In countries, higher levels of corruption do not lead to higher levels of banks' credit risk, as measured by NPLs.

H1: In countries, higher levels of corruption lead to higher levels of banks' credit risk, as measured by NPLs.

As indicated above, the interactive fixed effect of Bai (2009), which control both country and banks level heterogeneity, was used to test this research's hypothesis. Results of the interactive fixed effect estimation are presented in Table 4. As shown, our results indicate that the null hypothesis can be rejected at the empirical significance level of 1%, and the sign of the association between corruption and banks' credit risk is positive. According to the coefficient value, a one-unit increase in CPI is expected to increase banks' credit risk by 2.15 units, *ceteris paribus*. These results are consistent with our expectations and in line with past studies, including those of Agarwal et al. (2015), Park (2012), Goel and Hasan (2011), and Khwaja and Mian (2005). Although it is difficult to identify the channels through which corruption has worsened banks' NPLs in the MENA region, many forms of corrupt behaviour have been reported in the financial sectors of MENA countries, including Israel. It is likely that many defaulted loans were willingly defaulted by borrowers who might have thought they would not be subject to any penalty owing to their political connections. In this vein, it is important to note that the conflict situation and the instability in some MENA countries have accelerated these forms of corruption. For instance, it was reported that bank clients in Syria, especially politically connected businesspeople, have stopped repaying their debt since the onset of the war in 2011, despite continuing their business activities.¹

Interestingly, our results also showed that the variable representing the interconnection between banks risk aversion and corruption has a positive and statistically significant relations with NPLs. As per the coefficient value, a one-unit increase in RA*CPI increases

Table 4. Interactive fixed effect estimation (CPI as a measure of corruption).

	NPL
CPI (Corruption)	2.158** (0.658)
ROAA	0.209** (0.0795)
CTI	0.0824* (0.0396)
SIZE	-1.215*** (0.350)
RA*CPI	0.403*** (0.0367)
GDP growth	-0.0994* (0.0395)
Intercept	10.66* (3.385)

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

banks' credit risk by approximately 0.4 units. This shows that banks with high risk aversion behaviour may still have higher NPLs if they are operating in highly corrupt environment.

Other results show that banks' profitability as measured by ROAA has a positive and statistically significant association with banks' credit risk at the empirical significance level of 1%. As shown in [Table 4](#), a one-unit increase of ROAA worsens (increases) banks' credit risk by approximately 0.2 of a unit, *ceteris paribus*. These results go against theories linking NPLs with less profitable banks as profitable banks are less pressured to participate in risky lending behaviour. One likely explanation for our results is the tendency of profitable banks in the MENA region to be less risk averse as they have more capacity to absorb shocks.

Regarding the effect of bank inefficiency, as measured by CTI, on banks credit risk, our results show that CTI has a positive and statistically significant association with NPL at the empirical significance level of 5%. However, the magnitude of this association is relatively small. As shown in [Table 4](#), a one-unit increase of CTI increases NPL by 0.08 of a unit, *ceteris paribus*. This can be explained by the bad management hypothesis, which suggests that banks in MENA countries with poor operational cost management (high CTI) also suffer poor management of their credit portfolio (high NPL).

It is notable that the effect of bank size on credit risk is significant at the lowest empirical significance level. As shown in [Table 4](#), SIZE has a negative association with banks' NPLs. The results highlight that a one-unit increase in bank size improves banks' credit risk by approximately 1.2 units, *ceteris paribus*. These results contradict the moral hazard hypothesis and the 'too big to fail' theory, which argue that large banks take excessive risks because governments are willing to rescue bigger banks in order to avoid the financial instability that might be caused by the failure of such banks. On the contrary, it appears that the larger banks in MENA countries follow more conservative credit assessment techniques and tend to use their resources effectively to monitor their borrowers in order to mitigate their exposure to credit risk. Also, the tendency of big banks to offer more loans implies a higher denominator in the NPL ratio, thereby contributes to the relatively lower NPL. Overall, our results indicate that small banks in the MENA region that have poor operational cost management seem to have high levels of credit risk.

Regarding the association between banks' credit risk and economic growth, our results indicate that GDP growth has a negative and statistically significant relationship with banks' NPLs at the empirical significance level of 5%. This goes in tandem with the assumption that the growth in an economy would improves borrowers' capacity to repay and reduces the chances of default. However, the estimated coefficient of GDP growth is extremely small (-0.09), indicating that its impact on banks' credit risk is relatively low.

Robustness check

To solidify our findings, we run the interactive fixed effect estimation on the same model after replacing the CPI with a new measure of corruption. The new measure is the control of corruption index (CRP), which is published by the World Bank and widely used in cross-country studies of corruption (Goel and Nelson 2009). This index measures the perception about corruption based on averages of surveys. In its original form, the CRP is presented on

Table 5. Interactive Fixed Effect Estimation (CRP as a measure of corruption).

	NPL
CRP (Corruption)	6.194** (1.830)
ROAA	0.214** (0.0800)
CTI	0.0812* (0.0325)
SIZE	-5.292** (0.350)
RA*CRP	0.942** (0.0799)
GDP growth	-0.0707** (0.0254)
Intercept	10.05** (2.95)

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$

a scale from -2.5 to +2.5, where a higher score refers to a higher control of corruption, and therefore a lower level of corruption. Again, we amend and reverse the index to be on a scale from 0 to 5, where a higher score refers to a higher level of corruption. The use of CRP as a measure of corruption implies that the new variable representing the interaction between corruption and risk aversion is RA*CRP. The test results of this new estimation are presented in Table 5. The results confirm the positive association between corruption and banks credit risk at the empirical significance level of 1%, but with a coefficient of higher magnitude. As shown, a one-unit increase in CRP increases NPL by 6.1 units, ceteris paribus. Likewise, the variable representing the interaction between corruption and risk aversion was found to have positive association with NPL. The results indicate that a one-unit increase in RA*CRP increases NPL by 0.9 of a unit, ceteris paribus. Results of the other variables were also in line with the first estimation.

Conclusion

As indicated by Transparency International, corruption is a serious endemic problem for most MENA countries. In this region, corruption has been found to be one of the biggest constraints faced by companies and foreign investments. The current study examines whether banks' credit risk is affected by the level of corruption in the MENA countries. Using the interactive fixed effect estimation technique and Transparency International CPI in a model consisting of both macro and bank specific data, our results show that the level of corruption is positively and significantly associated with banks' NPLs in the MENA region. Results also showed that corruption increases banks credit risk even in banks with high risk aversion ratios. The same findings emerged when the World Bank Control of Corruption Index was used as a measure of corruption instead of CPI. When Considering the nature of corrupt activities in MENA countries, our findings underline the fact that some of the bank loans are willingly defaulted by borrowers who might believe they will not be subject to any penalty owing to their personal connections. In this vein, it is important to note that conflict and instability in some MENA countries have accelerated these forms of corruption.

Mitigating the effect of corruption on banks credit risk would require a set of bank-level and economy-wide reforms and regulations. It is highly recommended that the legal and institutional structures in MENA countries to be simultaneously reformed along with the economic and political structures to reduce the opportunities for corruption. Central banks are recommended to alter their regulations to offer banks more hedges against loan defaults in systems plagued with corruption. This is particularly important in countries where law enforcement agencies are constrained with the influence of political and business elites. Finally, banks need to embrace well-monitored credit assessment process to eliminate the allocation of loans to bad projects and ensure that loans are made on the basis of genuine loan repayment ability of the borrowers. Otherwise, the endemic and persistent level of corruption in the MENA region may encourage widespread loan default by bank borrowers. This not only increase the insolvency risk of banks, but it may also contribute to political instability in these countries. It is important to recall that corruption was identified as one of the underlying causes of the latest waves of protests engulfing many MENA countries.

Additional results suggest that the credit risk of banks in the MENA region is positively associated with their profitability. It is likely that banks with high profits are inclined to take excessive risk given their ability to absorb shocks. Bank size appears to be negatively related to banks' NPL rates, indicating that large banks probably have better resources in terms of trained personnel and technological infrastructure for loan assessment and monitoring. This could also be partially attributed to the large loan sizes offered by big banks which results in lower NPL ratio.

Other results highlight that bank inefficiency, as measured by the CTI, is positively related to banks' NPL. This indicates that banks in MENA countries that have poor operational cost management also have poor credit portfolio management.

Note

1. See Madad report (تأثيرات الأزمة في الاقتصاد السوري) The Impact of the Syrian Crisis on its Economy) by Damascus Centre for Research and Studies: <https://goo.gl/6mKgjs>.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Geolocation

Middle East and North Africa (MENA). The countries are United Arab Emirates (UAE), Kuwait, Bahrain, Saudi Arabia, Qatar, Oman, Yemen, Egypt, Jordan, Syria, Lebanon, Iraq, Tunisia, Mauritania, Algeria, and Israel.

Notes on contributors

Amer Mohamad is a political and economic risk analyst focusing on the MENA region. Currently, he works as a Senior Researcher for Integrity Global where he focuses on governance and security dynamics in Syria. He holds a B.S. in economics, an M.S. in banking and finance, and an M.A. in conflict resolution and security studies.

Hatice Jenkins is a Professor of Development Finance in the Department of Banking and Finance, at Eastern Mediterranean University (EMU), in North Cyprus, and Senior Fellow, at JDIn't Executive Programs, in the Department of Economics, at Queen's University, in Ontario, Canada.

References

- Abid, L., M.N. Ouertani, and S. Zouari-Ghorbel 2014. Macroeconomic and bank-specific determinants of household's non-performing loans in Tunisia: A dynamic panel data. *Procedia Economics and Finance*, 13, 58–68. doi:10.1016/S2212-5671(14)00430-4
- Agarwal, S., W. Qian, A. Seru, and J. Zhang 2015. *Disguised corruption: Evidence from consumer credit in China*. Working paper presented at the Asia Bureau of Finance and Economics Research. <http://abfer.org/docs/2015/program-1/disguised-corruption-evidence-from-consumer-credit-in-china.pdf> (accessed January 13, 2017).
- Ahmad, F. 2013. Corruption and information sharing as determinants of non-performing loans. *Business Systems Research*, 4(1), 87–98.
- Aidt, T.S. 2009. Corruption, institutions, and economic development. *Oxford Review of Economic Policy*, 25(2), 271–91. doi:10.1093/oxrep/grp012
- Al-Marhubi, F.A. 2000. Corruption and inflation. *Economics Letters*, 66(2), 199–202. doi:10.1016/S0165-1765(99)00230-X
- Ansani, A., and V. Daniele 2012. About a revolution: The economic motivations of the Arab Spring. *International Journal of Development and Conflict*, 2(3), 1250013. doi:10.1142/S2010269012500135
- Bai, J. 2009. Panel data models with interactive fixed effects. *Econometrica*, 77(4), 1229–79.
- Batra, G., D. Kaufmann, and A.H.W. Stone 2004. *The firms speak: What the world business environment survey tells us about constraints on private sector development*. Washington, DC: World Bank.
- Beck, M. 2013. *Corruption in the Middle East. Analysis*. Odense, Denmark: Center for Mellemøststudier, Syddanks Universitet.
- Beck, T., A. Demirgüç-Kunt, L. Laeven, and V. Maksimovic 2006. The determinants of financing obstacles. *Journal of International Money and Finance*, 25(6), 932–52. doi:10.1016/j.jimonfin.2006.07.005
- Carvalho, D.R. 2014. The real effects of government-owned banks: Evidence from an emerging market. *Journal of Finance*, 69(2), 577–609. doi:10.1111/jofi.12130
- Cooray, A., R. Dzhumahev, and F. Schneider 2017. How does corruption affect public debt? An empirical analysis. *World Development*, 90, 115–27. doi:10.1016/j.worlddev.2016.08.020
- Detragiache, E., T. Tressel, and P. Gupta 2008. Foreign banks in poor countries: Theory and evidence. *Journal of Finance*, 63(5), 2123–60. doi:10.1111/j.1540-6261.2008.01392.x
- Dimant, E., and G. Tosato 2017. Causes and effects of corruption: What has past decade's empirical research taught us? A survey. *Journal of Economic Surveys* doi:10.1111/joes.12198
- Dinç, I.S. 2005. Politicians and banks: Political influences on government-owned banks in emerging markets. *Journal of Financial Economics*, 77(2), 453–79. doi:10.1016/j.jfineco.2004.06.011
- Djankov, S., C. McLiesh, and A. Shleifer 2007. Private credit in 129 countries. *Journal of Financial Economics*, 84(2), 299–329. doi:10.1016/j.jfineco.2006.03.004
- Fernández de Lis, S., J. Martinez Pagés, and J. Saurina 2000. *Credit growth, problem loans and credit risk provisioning in Spain*. Working paper No. 0018. BIS Autumn Central Bank Economist's Meeting.
- Godlewski, C.J. 2005. Bank capital and credit risk taking in emerging market economies. *Journal of Banking Regulation*, 6(2), 128–45. doi:10.1057/palgrave.jbr.2340187
- Goel, R.K., and M.A. Nelson 2009. Corruption in MENA countries: An empirical investigation. In S. Sayan (Ed.), *Economic performance in the Middle East and North Africa: Institutions, corruption and reform*. London: Routledge, 13–24.
- Goel, R.K., and I. Hasan 2011. Economy-wide corruption and bad loans in banking: International evidence. *Applied Financial Economics*, 21(7), 455–61. doi:10.1080/09603107.2010.532112
- Haddad, W. 2017. *الاقْتِصَادُ السُّورِيّ مِنْ إِجْرَاءِ الْفَسَادِ إِلَى إِجْرَاءِ الْحَرْبِ* (The Syrian Economy: from corruption lords to warlords). Harmoon Center for Contemporary Studies

- Kennedy, P. 2003. *A guide to econometrics*. Massachusetts: MIT Press.
- Khwaja, A.I., and A. Mian 2005. Do lenders favor politically connected firms? Rent provision in an emerging financial market. *Quarterly Journal of Economics*, 120(4), 1371–411. doi:[10.1162/003355305775097524](https://doi.org/10.1162/003355305775097524)
- Klein, N. 2013. Non-performing loans in CESEE: Determinants and macroeconomic performance. Report No. WP/13/72. Washington, DC: International Monetary Fund.
- La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R.W. Vishny 1997. Legal determinants of external finance. *Journal of Finance*, 52(3), 1131–50. doi:[10.1111/j.1540-6261.1997.tb02727.x](https://doi.org/10.1111/j.1540-6261.1997.tb02727.x)
- Levin, M., and G. Satarov 2000. Corruption and institutions in Russia. *European Journal of Political Economy*, 16(1), 113–32. doi:[10.1016/S0176-2680\(99\)00050-6](https://doi.org/10.1016/S0176-2680(99)00050-6)
- Lisciandra, M., and E. Millemaci 2017. The economic effect of corruption in Italy: A regional panel analysis. *Regional Studies*, 51(9), 1387–89. doi:[10.1080/00343404.2016.1184244](https://doi.org/10.1080/00343404.2016.1184244)
- Lizal, L., and E. Kocenda 2001. State of corruption in transition: Case of the Czech Republic. *Emerging Markets Review*, 2(2), 138–60. doi:[10.1016/S1566-0141\(01\)00014-0](https://doi.org/10.1016/S1566-0141(01)00014-0)
- Malik, G., and S. Saha (2016). Corruption and growth: A complex relationship. *International Journal of Development Issues*, 15(2), 113–29. doi:[10.1108/IJDI-01-2016-0001](https://doi.org/10.1108/IJDI-01-2016-0001)
- Mathur, A., and K. Singh 2013. Foreign direct investment, corruption and democracy. *Applied Economics*, 45(8), 991–1002. doi:[10.1080/00036846.2011.613786](https://doi.org/10.1080/00036846.2011.613786)
- Mauro, P. 1998. Corruption and the composition of government expenditure. *Journal of Public Economics*, 69(2), 263–79. doi:[10.1016/S0047-2727\(98\)00025-5](https://doi.org/10.1016/S0047-2727(98)00025-5)
- Park, J. 2012. Corruption, soundness of the banking sector, and economic growth: A cross-country study. *Journal of International Money and Finance*, 31(5), 907–29. doi:[10.1016/j.jimonfin.2011.07.007](https://doi.org/10.1016/j.jimonfin.2011.07.007)
- Pesaran, M.H. 2006. Estimation and inference in large heterogeneous panels with a multifactor error structure. *Econometrica*, 74(4), 967–1012. doi:[10.1111/j.1468-0262.2006.00692.x](https://doi.org/10.1111/j.1468-0262.2006.00692.x)
- Qian, J., and P.E. Strahan (2007). How law and institutions shape financial contracts: The case of bank loans. *Journal of Finance*, 62, 2803–34. doi:[10.1111/j.1540-6261.2007.01293.x](https://doi.org/10.1111/j.1540-6261.2007.01293.x)
- Salas, V., and J. Saurina 2002. Credit risk in two institutional regimes: Spanish commercial and savings banks. *Journal of Financial Services Research*, 22(3), 203–24. doi:[10.1023/A:1019781109676](https://doi.org/10.1023/A:1019781109676)
- Sayan, S. (Ed.). 2009. *Economic performance in the Middle East and North Africa: Institutions, corruption and reform*. London: Routledge.
- Stern, G.H., and R.J. Feldman 2004. *Too big to fail: The hazards of bank bailouts*. Washington, DC: Brookings Institution.
- Weill, L. 2011. How corruption affects bank lending in Russia. *Economic Systems*, 35(2), 230–43.
- Zgheib, N. 2015. *Obstacles to business in Middle East and North Africa: Instability, corruption, informal sector*. <http://ebrd-beeps.com/reports/beeps-v/egypt/> (accessed January 2, 2018).