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DOES CORRUPTION MATTER FOR CORPORATE PAYOUTS IN THE COVID ERA? EVIDENCE FROM MUSLIM COUNTRIES

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ABSTRACT

This article investigates how corruption and the COVID-19 pandemic affect corporate payout decisions. The sample contains 13,865 firm-years over the period 2012-2020 and 1,950 firms from 18 Muslim countries. Results show that neither corruption nor the pandemic influence dividends and repurchases. However, corruption when interacted with the pandemic negatively and significantly influences dividends. In other words, firms in highly corrupt Muslim countries had higher dividends during the pandemic–the picture changes in the COVID era. This research is the first study assessing the impact of COVID-19 on corporate payouts in Muslim countries by employing a robust bias-corrected and unbiased estimator (fractional dependent variable–DPF).

Keywords: COVID-19 pandemic; Dividends; Fractional dependent variable; Repurchases.
JEL Classifications: G01; G35.

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I. INTRODUCTION

Modigliani and Miller (1958) specify that firm level factors are only elements of corporate decision policy. However, the literature argues that exogenous shocks and macro specific factors also shape corporate decisions (La Porta *et al.*, 2000; Mitton, 2004; Öztekin and Flannery, 2012; Byrne and O'Connor, 2017; Renneboog and Szilagyi, 2020; An *et al.*, 2022; Tekin and Polat, 2023). Corruption has been a perennial problem since human existence. Corruption at the firm and country level causes agency problems in the public and private sectors (Guedhami *et al.*, 2017). Specifically, bribery may be a separate problem for firms in countries where corruption is high. Therefore, company owners, shareholders in other words try to keep managers under control by incurring more monitoring costs considering the decrease in their own dividends. In sum, corruption seems to be a crucial factor in determining the payout policy (An *et al.*, 2022).

Regarding the Muslim world, the term "*corruption*" is so-called "*fasad*" mentioned 50 times in the Qur'an, and Allah warns people of what will be the end of the corrupters (e.g., The Glorious Qur'an, 2018, 2:27, 7:103, 10:81, 27:14, 29:30). Therefore, Muslim owners and/or managers should give much more importance to this term. Since *corruption* is seen as one of the essential troubles among Muslim people, market frictions and country-level factors may also affect corporate decisions (Byrne and O'Connor, 2017; Renneboog and Szilagyi, 2020; Viglioni *et al.*, 2022; Tekin and Polat, 2023), this study investigates how corruption affects the corporate payout policies of firms in Muslim countries during the COVID-19 pandemic.

When corruption is high in a market, managers may prefer investments instead of payouts by serving their interests and expropriating shareholders' rights. Since Muslim countries are highly corrupted according to the country level annual corruption values (e.g., Control of Corruption of World Bank, Corruption Perception Index of Transparency International), firms in these countries may intend to pay lower dividends and buy back lower repurchases. More recently, Dong *et al.* (2022) confirm this argument. They find that corrupted Chinese listed firms expropriate their shareholders with lower payouts. The *outcome model* of *agency costs* confirms this result. Thus, firms in good governance or lower corrupted environments provide higher payouts to investors. However, aligning with the *substitute model* of *agency costs*, Hossain *et al.* (2021) show that highly corrupted firms in the United States (US), which is a developed country, have higher payouts. Namely, the *substitute model* conjectures that firms in poorly governed or highly corrupted countries pay higher dividends and/or buy back higher repurchases. When all results ae taken together, we hypothesize that the control and/or perception of corruption is negatively associated with dividends and/or repurchases in Muslim countries.

Regarding the empirical approach, since both dividends and repurchases are censored dependent variables, we employ a fractional dependent variable (DPF) that is an extended doubly censored Tobit estimator. Employing 13,865 firm-years and 1,950 firms from the period 2012 to 2020, we assess the joint impact of

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pandemic and corruption on corporate payouts in the Muslim world.[1] Utilizing the DPF estimator, we find that neither corruption (*COR*) nor COVID (*COV*) affect corporate payouts. However, *COV x COR* negatively and significantly impacts dividends(*DIV*). In other words, firms in highly corrupted Muslim countries have higher *DIV* during the pandemic. The picture changes in the COVID phase. Particularly, firms in higher corrupt countries receive higher *DIV* during the pandemic, which is in line with the *substitute model*. Though, the effect of *COV x COR* on repurchases (*REP*) is insignificant. In other words, *COR* does not affect *REP* in the pandemic age. Considering the changes in corporate payouts, *COV x COR* does not affect changes on dividend increase(*DINC*) and dividend decrease (*DDEC*). Nevertheless, *COV x COR* is positively and negatively associated with repurchase decrease(*RDEC*) and repurchase increase(*RINC*), respectively. Specifically, the outcome and substitute effect of *COR* on *RINC* and *RDEC* loses their significance during the COVID pandemic.

The contributions of this study are manifold. First, the literature reports mixed results on the association between corruption and payouts. For example, Hossain *et al.* (2021) find that corruption negatively affects payouts in a developed country; this is in contrast to Dong *et al.* (2022) who study a developed country. However, we extend the findings of Dong *et al.* (2022) by comparing 18 developing countries and including the pandemic period. Next, the literature shows either dividend or repurchase policy differs in COVID terms (Ali, 2021; Krieger *et al.*, 2021; Pirgaip, 2021). However, assessing corporate payouts may help better understand the payout puzzle in recession time. In addition, while the term "corruption" should be necessary for the Muslim world, this is the first study that assesses the effect of corruption on corporate payouts with the existence of an exogenous shock. Finally, although the DPF is a robust and bias-corrected estimator for censored dependent variables, the literature on corporate payout ignores this estimator (Guedhami *et al.*, 2017; Iyer and Rao, 2017; Tekin, 2020; Renneboog and Szilagyi, 2020; Ali, 2021; Krieger *et al.*, 2021; Pirgaip, 2021; Tekin and Polat, 2021a). Therefore, this research makes an essential contribution to the corporate payouts literature by providing solid results through a robust estimator.

This study has many implications. First, managers should determine their corporate payout policies by trading off the benefits and costs of dividends and repurchases by considering the existence of corruption and exogenous shocks. Next, investors should count the corruption level and recessions and which payouts are favored in countries while deciding where and which companies to invest in. Last, as corporate payouts are influenced severely during the financial crisis, policymakers should decide on corporate payout policies based on the recession's severity in Muslim countries.

The rest of the paper is organised as follows: Section II reviews the related literature and mentions the research gap. Section III and Section IV draw the empirical strategy and data, respectively. Section V presents and assesses the empirical findings. Section VI concludes.

[1] The sample starts from 2012 to eliminate the possible impact of the global financial crisis and Eurozone debt crisis on Muslim countries.

II. RELATED LITERATURE

A. Payouts and Recessions

Different scenarios may arise with an external shock, as the corporate payment policy also depends on other financial linkages such as debt or investment. Bliss *et al.* (2015) make three estimates about dividend distribution and share repurchases to respond to the GFC. First, firms cut corporate payments due to the increased external financing costs. Using the substitution model of corporate payments, the decrease in share repurchases is more significant than dividend distributions. Second, firms increase corporate payments and reduce cash assets due to reduced demand for stocks. Hence, higher agency costs negatively affect growth opportunities. Finally, firms reduce corporate payouts due to the sharp increase in uncertainty by holding more cash for further investment. Bliss *et al.* (2015) show that during the 2007-2009 GFC, the number of non-distributing (share repurchases) increased by 19% (37%). The decrease in corporate payments is replaced by cash holding or increased investment. Additionally, Floyd *et al.* (2015) state that the dividend distribution maintains its importance and that share buyback is also a growing trend for companies in the US. Also, Floyd *et al.* (2015) show that firms increased their corporate payments before and after the GFC.

Empirical research on corporate payouts mainly focuses on analysing US companies (Abreu and Gulamhussen, 2013; Hauser, 2013; Bliss *et al.*, 2015; Floyd *et al.*, 2015; Iyer and Rao, 2017; Hilliard *et al.*, 2019), while other studies examine companies in other countries (Al-Malkawi *et al.*, 2014; Attig *et al.*, 2016). The literature shows a definite inverse relationship between dividend distribution and the GFC, not only for US companies but also worldwide. For example, 462 US banks cut dividends during the Global Financial Crisis (GFC) (Abreu and Gulamhussen, 2013). Hauser (2013) also states that the probability of US companies distributing dividends decreased during the GFC. Also, Al-Malkawi *et al.* (2014) examine the dividend policy of Oman companies in the context of the GFC. They state that Oman companies reduce their profit share distribution efficiency during the exogenous shock. Comparing family and non-family firms in East Asia, Attig *et al.* (2016) reveal a significant negative relationship between family businesses and dividend distribution. In other words, East Asian family businesses cut their dividend distribution more during the GFC. In the COVID-19 context, Ali (2021) assesses dividend payments of firms in 12 developed countries during the COVID-19 and shows that firms favor maintaining or increasing cash disgorging in the time of crisis. Krieger *et al.* (2021) evaluate dividend cuts and omissions in the US in the COVID-19 era. They find that the US firms cut or omit dividend payouts more than did during the GFC.

Share repurchases, as another type of payout, are also examined by the literature (e.g., Dittmar, 2000). Bliss *et al.* (2015), Floyd *et al.* (2015), Iyer and Rao (2017), and Hilliard *et al.* (2019) investigate the role of the GFC on both dividend payouts and share buybacks of US companies. They note that US firms reduce dividend payments or share repurchases during the GFC. Since share repurchases are more flexible than dividend payouts, US firms abruptly reduce their share repurchases during the crisis, unlike dividend payouts (Bliss *et al.*, 2015; Floyd *et al.*, 2015; Iyer and Rao, 2017). Hilliard *et al.* (2019) show that the dividend payouts (share repurchases) decrease from 62.7% (5.9%) in 2007 to 57.2% (2%) in 2009. They

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show that US firms are lowering total payouts and quickly making more changes in repurchase payouts. Considering the pandemic, Pirgaip (2021) explores the impact of COVID-19 on share buybacks in the Turkish stock market and shows that firms increase their share repurchases during the pandemic.

B. Research Gap and Research Question

Previous research sufficiently examines the impact of financial crises on dividends and repurchases (Abreu and Gulamhussen, 2013; Hauser, 2013; Bliss *et al.*, 2015; Floyd *et al.*, 2015; Iyer and Rao, 2017; Hilliard *et al.*, 2019; Tekin, 2020; Tekin and Polat, 2021). More recently, Tekin (2020) assesses the impact of firm size on dividend payouts for firms in 18 European countries in the context of both financial crises that are the GFC and the Eurozone Debt Crisis (EDC). He shows that the relationship between firm size and dividends varies by the financial crisis. Also, Tekin and Polat (2021) confirm that the association between market differences and dividends differs by the GFC and the EDC.

However, there has been little empirical evidence (Ali, 2021; Krieger *et al.*, 2021; Pirgaip, 2021) investigating dividend payouts and share repurchases during the pandemic. Interestingly, the effect of COVID-19 and corruption on both dividends and repurchases of firms in Muslim countries has not been studied. Consequently, this study assesses how corruption affects corporate payout policies in the COVID-19 era for firms in 18 Muslim countries.

III. EMPIRICAL STRATEGY

A. Censored Dynamic Panel Estimator

As a critical point in panel data, the endogeneity issue should be resolved in estimations. Therefore, previous research (Öztekin and Flannery, 2012; Flannery and Hankins, 2013; Dang *et al.*, 2015) employs either system Generalized Method of Moments (GMM) as an instrumental variable or Least Square Dummy Variable Correction (LSDVC) as a bias-corrected estimator. Previous research mentions that both estimators–GMM and LSDVC are less biased and favorable to overcome or minimize the endogeneity concern. Specifically, Elsas and Florysiak (2015) develop a bias-corrected estimator, called a fractional dependent variable–DPF estimator, that may be preferable for censored dependent variables. Dang *et al.* (2015) specify that when the dependent variable is censored at 0 or 1, like dividends and repurchases, the DPF estimator gives robust results. Therefore, we use a censored dynamic panel method by utilizing the DPF estimator.[2] Also, we employ both Logit and Probit models to capture the increase and decrease in corporate payouts.

B. Theoretical Framework

La Porta *et al.* (2000) develop two agency cost models: outcome and substitute. The outcome model of agency costs proposes a positive relationship between

[2] See Dang *et al.* (2015) and Elsas and Florysiak (2015) for a detailed discussion on the fractional dependent variable–DPF estimator.

dividends and corporate/country governance. Namely, firms with good investor protection or a more robust institutional environment disgorge more cash to shareholders as an outcome of the institution. On the other hand, firms with poor investor protection or in a weaker institutional environment pay more dividends to shareholders as a substitute for governance. Previous research dominantly finds a positive association between dividends and corporate governance (La Porta *et al.*, 2000; Mitton, 2004; Jiraporn *et al.*, 2011; An *et al.*, 2022) and shows an inverse association with the existence of a financial crisis. For example, Sawicki (2009) demonstrates a negative association between firms in Southeast Asia before the 1997-1998 Asian crisis and vice versa after the crisis. Interestingly, An *et al.* (2022) mention that dividends are negatively and positively related to country level and firm level governance, respectively.

C. Empirical Models

Fama and French (2001) specify that firm size–SIZE, profitability–PROF, and the market-to-book ratio–MBR as the baseline of dividend payouts–DIV. Moreover, Dittmar (2000) identifies that SIZE, MBR, cash holdings–CASH, cash flow–CFA, and leverage–LEV determining factors of repurchases. Therefore, we include the variables mentioned above in empirical models by following the previous research. We also add corruption–COR, COVID dummy–COV and their interaction–COR x COV to understand how the role of corruption on payout policies differ during the pandemic. Moreover, as DPF estimator is a dynamic panel Tobit estimator, empirical models consist of lagged dependent variables. Tobit models for two types of payouts are as follows:

$$DIV_{ij,t} = \beta_1 DIV_{ij,t-1} + \beta_2 COR_{j,t} + \beta_3 COR_{j,t} x COV_t + \beta_4 COV_t + \beta_5 SIZE_{i,t} + \beta_6 PROF_{i,t} + \beta_7 MBR_{i,t} + v_i + \varepsilon_{ij,t} \quad (1)$$

where, DIV*ij,t* is dividends for firm *i* and country *j* at time *t*; DIV*ij,t-1* is dividends for firm *i* and country *j* at time *t-1*; *CORj,t* represents *control of corruption–COR1* and *corruption perception index–COR2* for country *j* at time *t*; *CORj,t x COVt* represents the interaction term of *COR* and *COV*; *COVt* is COVID dummy at time *t*; *SIZEi,t* is firm size for firm *i* at time *t*; *PROFi,t* is profitability for firm *i* at time *t*; *MBRi,t* is the market-to-book ratio for firm *i* at time *t*; v*ij* is controlling the random effect for unobservable factors that influence dividends and ε*ij,t* is the error term.

$$REP_{ij,t} = \beta_1 REP_{ij,t-1} + \beta_2 COR_{j,t} + \beta_3 COR_{j,t} x COV_t + \beta_4 COV_t + \beta_5 SIZE_{i,t} + \beta_6 MBR_{i,t} + \beta_7 CASH_{i,t} + \beta_8 CFA_{i,t} + \beta_9 LEV_{i,t} + v_{ij} + \varepsilon_{ij,t} \quad (2)$$

where, *REPij,t* is repurchases for firm *i* and country *j* at time *t*; *REPij,t-1* is repurchases for firm *i* and country *j* at time *t-1*; *CORj,t* represents control of corruption–*COR1* and corruption perception index–*COR2* for country *j* at time *t*; *CORj,t x COVt* represents the interaction term of *COR* and *COV*; *COVt* is COVID

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dummy at time *t*; *SIZEi,t* is firm size for firm *i* at time *t*; *MBRi,t* is the market-to-book ratio for firm *i* at time *t*; *CASHi,t* is cash holdings for firm *i* at time *t*; *CFAi,t* is cash flow for firm *i* at time *t*; *LEVi,t* is leverage for firm *i* at time *t*; v*ij* is controlling the random effect for unobservable factors that affect repurchases and ε*ij,t* is the error term. To investigate both increase and decrease on dividends and repurchases, we also utilize Logit and Probit models as the binary choice (Tekin and Polat, 2021).

$$DINC_{ij,t} = \beta_1 COR_{j,t} + \beta_2 COR_{j,t} xCOV_t + \beta_3 COV_t + \beta_4 SIZE_{i,t} + \beta_5 PROF_{i,t} + \beta_6 MBR_{i,t} + v_i + \varepsilon_{ij,t} \quad (3)$$

where, *DINCij,t* is an increase in dividends for firm *i* and country *j* at time *t*; v*ij* is controlling the random effect for unobservable factors that influence dividend increases.

$$DDEC_{ij,t} = \beta_1 COR_{j,t} + \beta_2 COR_{j,t} xCOV_t + \beta_3 COV_t + \beta_4 SIZE_{i,t} + \beta_5 PROF_{i,t} + \beta_6 MBR_{i,t} + v_i + \varepsilon_{ij,t} \quad (4)$$

where, *DDECij,t* is a decrease in dividends for firm *i* and country *j* at time *t*; v*ij* is controlling the random effect for unobservable factors that influence dividend decreases.

$$RINC_{ij,t} = \beta_1 COR_{j,t} + \beta_2 COR_{j,t} xCOV_t + \beta_3 COV_t + \beta_4 SIZE_{i,t} + \beta_5 MBR_{i,t} + \beta_6 CASH_{i,t} + \beta_7 CFA_{i,t} + \beta_8 LEV_{i,t} + v_{ij} + \varepsilon_{ij,t} \quad (5)$$

where, *RINCij,t* is an increase in repurchases for firm *i* and country *j* at time *t*; v*ij* is controlling the random effect for unobservable factors that affect repurchase increases.

$$RDEC_{ij,t} = \beta_1 COR_{j,t} + \beta_2 COR_{j,t} xCOV_t + \beta_3 COV_t + \beta_4 SIZE_{i,t} + \beta_5 MBR_{i,t} + \beta_6 CASH_{i,t} + \beta_7 CFA_{i,t} + \beta_8 LEV_{i,t} + v_{ij} + \varepsilon_{ij,t} \quad (6)$$

where, *RDECij,t* is a decrease in repurchases for firm *i* and country *j* at time *t*; v*ij* is controlling the random effect for unobservable factors that affect repurchase decreases.

IV. DATA

We use two corruption measures at the country level to get robust results. As mentioned in the empirical models, *COR* represents (i) Control of Corruption–*COR1* of World Bank and (ii) Corruption Perception Index–*COR2* of Transparency

International. First, we utilize COR1, which captures perceptions of the extent to which elites and private interests exercise public power for private gain, including petty and grand forms of corruption and "capture" of the state (Kaufman *et al.*, 2009). The literature increases its attention to COR1 over time (Seifert and Gonenc, 2016; An *et al.*, 2022). Next, we employ COR2, which captures bureaucratic and political corruption in the public sector, including the strength and efficiency of anti-corruption efforts, embezzlement of public funds, kickbacks in public procurement, and bribery of public officials (Transparency International). Previous research also uses COR2 (Narayan and Bui, 2021; Viglioni *et al.*, 2021; Seo and Han, 2022). Both corruption measures range from 0 to 100, mentioning the higher score is the higher perception and control of corruption. Since both COR1 and COR2 vary across country and year, they are suitable for this research to understand how corruption influences corporate payouts in the pandemic time.

We obtain the data from Worldscope in the Thomson Reuters Eikon database that is sensible to acquire either accounting or market data (Ali, 2021). Following the steps in the construction of the sample, first, we select non-financial firms excluding firms in the financial sector (banks, insurance firms, real estate firms, and financial services) and the utility sector (electricity, gas, water, and multi-utility firms), which have different accounting structures (Tekin and Polat, 2021). Then, we drop all firms with any missing observations for any variable in the model during the sample period. After, we choose firms for the period 2012-2020. These requirements leave 13,865 firm-years representing 1,950 sample firms across 18 Muslim countries.[3] We introduce descriptive statistics, correlations, and the variance inflation factor for the periods: entire (2012-2020), pre-COVID (2012-2019), and COVID (2020) in Table A.1.[4]

Figure A.1 and Figure A.2 also show the corruption and payout measures trend across the sampled countries, respectively. First, corruption measures are qualitatively similar. For example, United Arab Emirates has the highest control-COR1 and perception-COR2 of corruption, and vice versa for Iraq, as demonstrated in Figure A.1. Next, firms in Kuwait and Morocco have the highest REP and DIV with 0.335% and 5.023%, respectively. Still, those in Iraq and Bosnia have the lowest REP and DIV with 0.000% and 0.877%.

A. Variable Definitions

We investigate corporate payout decisions of firms that is why dividends-*DIV* and repurchases-*REP* are the primary dependent variables (De Cesari and Ozkan, 2015). We also use dividend increase-*DINC,* repurchase increase-*RINC,* dividend decrease-*DDEC,* repurchase decrease-*RDEC* as additional dependent variables (Tekin and Polat, 2021). Regarding main explanatory variables, *COV* that is the binary variable to capture the change in corporate payouts during the recession period. *COR* represents two corruption measures, which are Control of Corruption-

[3] Country names in the sample are as follows: Bahrain, Bangladesh, Bosnia, Egypt, Indonesia, Iraq, Jordan, Kazakhstan, Kuwait, Malaysia, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Tunisia, Turkiye, and United Arab Emirates.

[4] Since all VIF values smaller than five, there is no multicollinearity issue across explanatory variables for the whole sample subsamples (Tekin *et al.*, 2021).

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COR1 and Corruption Perception Index-*COR2. COV x COR* is the interaction term of *COV* and *COR* measures.

Due to the nature of dynamic panel models, empirical models include lagged dependent variables as explanatory variables. Other control explanatory variables are *SIZE, PROF, and MBR for DIV* (Fama and French, 2001), and *SIZE, MBR CASH, CFA,* and *LEV* for *REP* (Dittmar, 2000). Variable definitions are presented in Table 1.

Table 1.
Variable Definitions

This table provides detail data description of all variables considered in this study.

Variables	Symbols	Definitions
Dependent		
Dividends	*DIV*	Cash dividends (WC04551) / Total assets (WC02999)
Repurchases	*REP*	Purchase of common stocks (WC04751) / Total assets (WC02999)
Dividend increase	*DINC*	Dummy variable equals 1 if cash dividends in year *t* are higher than cash dividends in year *t − 1*, and 0 otherwise.
Dividend decrease	*DDEC*	Dummy variable equals 1 if cash dividends in year *t* are lower than cash dividends in year *t − 1*, and 0 otherwise.
Repurchase increase	*RINC*	Dummy variable equals 1 if purchase of common stocks in year *t* are higher than purchase of common stocks in year *t − 1*, and 0 otherwise.
Repurchase decrease	*RDEC*	Dummy variable equals 1 if purchase of common stocks in year *t* are lower than purchase of common stocks in year *t − 1*, and 0 otherwise.
Explanatory		
Control of corruption	*COR1*	COR1 captures perceptions of the extent to which elites and private interests exercise public power for private gain, including both petty and grand forms of corruption, as well as "capture" of the state (World Bank).
Corruption perception index	*COR2*	COR2 captures bureaucratic and political corruption in the public sector including the strength and efficiency of anti-corruption efforts, embezzlement of public funds, kickbacks in public procurement, and bribery of public officials (Transparency International).
COVID-19	*COV*	Dummy variable equals 1 for the year 2020, otherwise 0
Firm size	*SIZE*	The log of total assets (WC02999)
Market-to-book	*MBR*	[Total assets (WC02999) − Book value of equity (WC03501) + Market value of equity (WC08001)] / Total assets (WC02999)
Profitability	*PROF*	Earnings before interest and tax (WC18191) / Total assets (WC02999)
Cash flow	*CFA*	[Earnings before interest and tax (WC18191) + Depreciations (WC0) − Cash and short-term investments (WC02001)] / Total assets (WC02999)
Cash holdings	*CASH*	Cash and short-term investments (WC02001) / Total assets (WC02999)
Leverage	*LEV*	Total debt (WC03255) / Total assets (WC02999)

Sources: Transparency International, World Bank & Worldscope.

V. EMPIRICAL FINDINGS

A. Univariate Analysis

To understand the overall picture of the corporate payouts, Figure 1 represents trends in dividends and repurchases across the country's corruption level by dividing the sample above- (higher corruption) and below-median (lower corruption) of *COR1* and *COR2*. First, payout trends are similar according to both corruption measures. Hence, payout policies do not depend on the measurement of corruption. Next, firms in lower corrupt countries have lower dividends at the beginning of the entire period, whereas this picture reverses later. Then, while firms in higher corrupt countries have lower repurchases, they tend to increase them over time.

Regarding the pandemic age, all firms sharply drop their dividend payments, but firms in higher corrupt countries tend to raise their share repurchases. As a theoretical output of this case, firms use buybacks as the signalling device during the COVID in higher corrupt Muslim countries.

Figure 1.
Means of Corporate Payouts by Lower- and Higher-Corruption

This figure presents the means of dividends-*DIV* and repurchases-*REP* across Control of Corruption-*COR1* measure of World Bank in Panel A and Corruption Perception Index-*COR2* measure of Transparency International in Panel B. Both measures of *COR* vary across country and year. Higher corruption means lower *COR1* and *COR2*.

Panel A. COR1

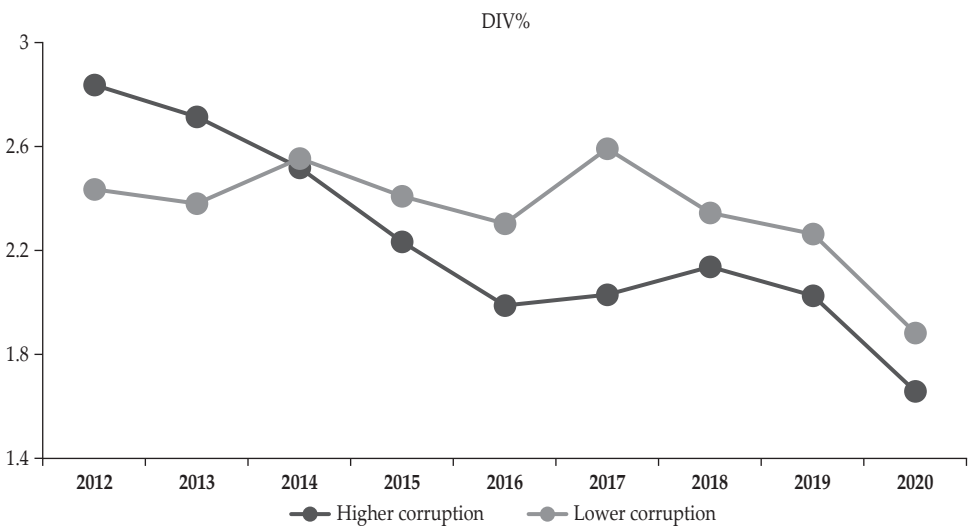
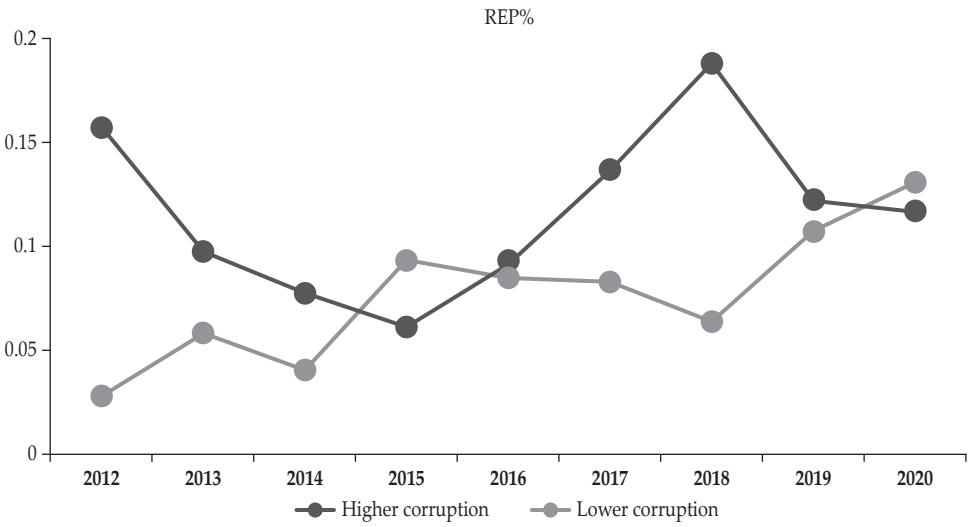


Figure 1.
Means of Corporate Payouts by Lower- and Higher-Corruption (Continued)



Panel B. COR2

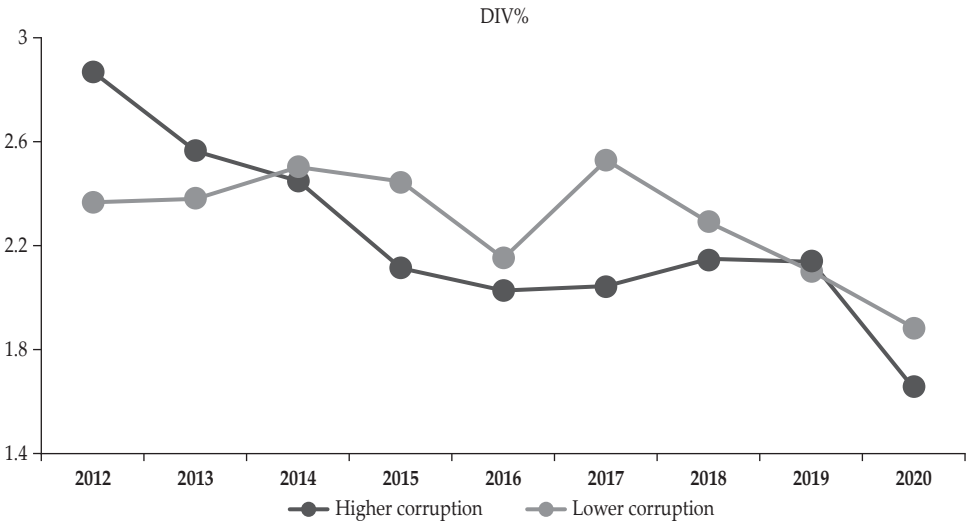
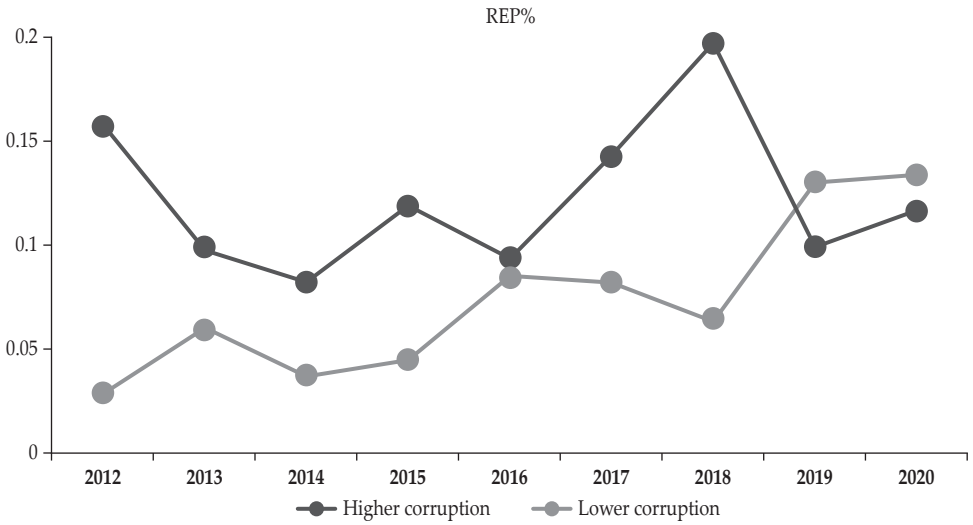


Figure 1.
Means of Corporate Payouts by Lower- and Higher-Corruption (Continued)



Sources: Transparency International, World Bank & Worldscope.

We also examine the tests of means of *DIV* in Panel A and *REP* in Panel B of Table 2 by the whole sample, higher- and lower-corruption countries for the periods pre-COVID (2012-2019) and COVID (2020). While all firms significantly drop their *DIV* from pre- to during-COVID with 0.58%, a slight increase in *REP* with 0.03% is insignificant. The whole picture does not differ for DIV changes when we divide the sample across the corruption level, but it does for REP. Specifically, firms in higher corrupt countries respond to the pandemic by using their REP for investors as a signalling device. Overall, the mean tests in Table 2 prove the trend in Figure 1.

Table 2.
Mean Differences of Dividends and Repurchases Before and During COVID

This table presents the tests of means of dividends-*DIV* and repurchases-*REP* in Panel A and Panel B, respectively between pre-COVID (2012-2019) and COVID (2020) periods. *COR* measures are Control of Corruption-*COR1* and Corruption Perception Index-*COR2*. The values in the parentheses indicate the t-stats. ***, **, * indicate significance level at 1%, 5% and 10% respectively.

	Panel A. DIV			**Panel B. REP**		
	Pre-COVID	**COVID**	***t*-stats**	**Pre-COVID**	**COVID**	***t*-stats**
	(1)	(2)	(3) = (2 – 1)	(4)	(5)	(6) = (5 – 4)
Whole sample	2.34%	1.76%	[-4.47***]	0.09%	0.12%	[1.05]
COR1						
Higher corruption	2.28%	1.66%	[-3.39***]	0.07%	0.13%	[1.72*]
Lower corruption	2.41%	1.88%	[-2.82***]	0.12%	0.12%	[-0.01]
Higher vs. Lower	[-1.35]	[-1.02]		[2.11**]	[0.29]	
COR2						
Higher corruption	2.26%	1.65%	[-3.36***]	0.07%	0.13%	[1.97**]
Lower corruption	2.34%	1.88%	[-2.46**]	0.12%	0.12%	[-0.15]
Higher vs. Lower	[-0.83]	[-1.05]		[2.54**]	[0.35]	

Source: Transparency International, World Bank & Worldscope.

B. Multivariate Analysis

Regarding regression results, Table 3 shows how corruption affects corporate payouts and how its role differs during the COVID-19 employing DPF estimator. Moreover, Table 4 indicates how corruption and COVID-19 impact both increases and decreases in corporate payouts by utilizing Logit and Probit regressions.

In Table 3, regarding the robustness issues, we use two corruption measures: Control of Corruption-*COR1* and Corruption Perception Index-*COR2* by representing *COR*. First, neither *COR* nor *COV* drives corporate payouts by reporting insignificant coefficients in all models. The picture changes during the pandemic time. Significantly, firms in higher corrupt countries pay higher *DIV* during the COVID (with the coefficient of *COV x COR* −0.000 at 1%), which aligns with the *substitute model* of agency costs. However, the impact of the interaction of *COV x COR* on *REP* is insignificant. Namely, *COR* measures do not affect *REP* during the pandemic era.

Regarding control explanatory variables, *SIZE* negatively impacts *DIV* by −0.003 at 1%, but *PROF* and *MBR* positively influence *DIV* by 0.193 and 0.005 at 1%, respectively. In other words, smaller firms and firms with higher profitability and growth opportunities pay more dividends. On the other side, *SIZE* has a negative and weakly significant (the coefficient of SIZE is −0.000 at 10%) effect on REP. Neither *MBR* nor *LEV* has no impact; *CASH* and *CFA* positively affect *REP*. Specifically, firms with higher cash holdings and cash flow have more repurchases.

Table 3.
Corruption, COVID and Corporate Payouts – Tobit Estimations

This table examines the joint impact of corruption-*COR* and COVID-*COV* on dividends-*DIV* and repurchases-*REP* by Tobit model. *COR* measures are Control of Corruption-*COR1* and Corruption Perception Index-*COR2*. All variables are defined in Table 1. Standard deviations presented by parentheses (). ***, **, * indicate significance level at 1%, 5% and 10% respectively.

Variables	Dependent Variable: DIV		Dependent Variable: REP	
	COR1 **(1)**	***COR2*** **(2)**	***COR1*** **(3)**	***COR2*** **(4)**
L.DIV	0.219***	0.220***		
	(0.012)	(0.012)		
L.REP			0.063***	0.062***
			(0.010)	(0.010)
COV x COR	−0.000***	−0.000***	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)
COR	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
COV	0.006	0.011	0.000	0.002
	(0.004)	(0.007)	(0.001)	(0.001)
Controls				
SIZE	−0.003**	−0.003**	−0.000	−0.000*
	(0.001)	(0.001)	(0.000)	(0.000)
PROF	0.193***	0.193***		
	(0.007)	(0.007)		
MBR	0.005***	0.005***	0.000	0.000
	(0.001)	(0.001)	(0.000)	(0.000)

Table 3.
Corruption, COVID and Corporate Payouts – Tobit Estimations (Continued)

Variables	Dependent Variable: DIV		Dependent Variable: REP	
	COR1 (1)	*COR2* (2)	*COR1* (3)	*COR2* (4)
CASH			0.005***	0.005***
			(0.001)	(0.001)
CFA			0.004***	0.006***
			(0.001)	(0.001)
LEV			0.001	0.000
			(0.001)	(0.001)
rho	0.340	0.340	0.008	0.008
Firms	1,950	1,950	2,093	2,093
Observations	13,865	13,865	13,777	13,777

Furthermore, for brevity, we report only the main explanatory variables in Table 4. First, empirical results for both Logit and Probit estimations are qualitatively similar. Therefore, the changes in corporate payouts do not depend on the estimation method. *COV* influences *DINC* and *RDEC* negatively and *RINC* and *DDEC* positively. During the COVID, firms in Muslim countries have lower (higher) dividend increases (decreases) and repurchase decreases (increases).

COR1 is positively associated with *DINC* and *RINC* but does not influence *DDEC* and *RDEC*. On the other hand, *COR2* is positively (negatively) related to *DINC*, *RINC*, and *DDEC* (*RDEC*). Consequently, the variation in corporate payouts depends on the corruption measure.

Considering the joint impact of *COR* and *COV*, *COV x COR* does not affect changes in *DINC* and *DDEC*. Nevertheless, *COV x COR* is positively and negatively associated with *RDEC* and *RINC*, respectively. Explicitly, the outcome and substitute effect of *COR* on *RINC* and *RDEC* lose their significance during the COVID.

Table 4.
Corruption, COVID and Corporate Payouts – Logit and Probit Estimations

This table examines the impact of corruption-*COR* and its interaction with COVID-*COV* on dividends-*DIV* and repurchases-*REP* by Logit and Probit models. Dependent variables are dividend increase-*DINC*, repurchase increase-*RINC*, dividend decrease-*DDEC*, and repurchase decrease-*RDEC*. *COR* measures are Control of Corruption-*COR1* and Corruption Perception Index-*COR2*. All variables are defined in Table 1. Standard errors are presented by parentheses (). ***, **, * indicate significance level at 1%, 5% and 10% respectively.

***COR* Measure**	***COR1***				***COR2***			
	DINC	*RINC*	*DDEC*	*RDEC*	*DINC*	*RINC*	*DDEC*	*RDEC*
LOGIT Estimation	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
COV x COR	0.005	-0.023***	-0.003	0.021***	0.011	-0.035***	-0.008	0.036***
	(0.004)	(0.006)	(0.003)	(0.006)	(0.007)	(0.011)	(0.006)	(0.011)
COR	0.006***	0.028***	0.002	0.000	0.011***	0.035***	0.008**	-0.009**
	(0.002)	(0.004)	(0.002)	(0.002)	(0.003)	(0.007)	(0.003)	(0.004)
COV	-0.539***	1.516***	0.384**	-1.666***	-0.791***	1.847***	0.553**	-2.222 ***
	(0.193)	(0.321)	(0.165)	(0.336)	(0.301)	(0.500)	(0.263)	(0.488)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
rho	0.140	0.354	0.215	0.159	0.139	0.362	0.214	0.163
Firms	2,131	2,139	2,131	2,139	2,131	2,139	2,131	2,139
Observations	15,534	15,792	15,534	15,792	15,534	15,792	15,534	15,792
PROBIT Estimation	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**	**(16)**
COV x COR	0.003	-0.011***	-0.002	0.010***	0.007	-0.017***	-0.005	0.019***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.004)	(0.006)	(0.004)	(0.005)
COR	0.003***	0.014***	0.001	-0.000	0.006***	0.017***	0.005**	-0.005**
	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.003)	(0.002)	(0.002)
COV	-0.332***	0.731***	0.222**	-0.848***	-0.490***	0.902***	0.320**	-1.148***
	(0.110)	(0.164)	(0.100)	(0.163)	(0.173)	(0.260)	(0.159)	(0.246)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
rho	0.168	0.330	0.248	0.153	0.167	0.336	0.247	0.157
Firms	2,131	2,139	2,131	2,139	2,131	2,139	2,131	2,139
Observations	15,534	15,792	15,534	15,792	15,534	15,792	15,534	15,792

VI. CONCLUDING REMARKS

Considering the COVID-19, we investigate the impact of corruption and pandemic on the corporate payout policies of 1,950 firms in 18 Muslim countries over 2012-2020. The findings indicate that *COR* and *COV* do not impact *DIV* and *REP*. However, *COV x COR* negatively and significantly influences *DIV*. Namely, firms in highly corrupted Muslim countries have higher *DIV* during the pandemic. The picture changes in the COVID era. Particularly, firms in higher corrupt countries have higher *DIV*, which aligns with the substitute model of agency costs, but *COR* does not affect *REP* in the pandemic age.

This study contributes to the literature in many ways. First, while the literature reports mixed results for the relationship between corruption and payouts by excluding the pandemic, we extend the literature by cross-country analysis, including the COVID age. Second, previous research reveals dividends or repurchases vary during the COVID but investigating both corporate payouts may help to realize better the payout puzzle in the collapse time. Third, as the term "corruption" should be crucial for the Muslim world, this is the first study that evaluates the role of corruption on corporate payouts in the presence of market turmoil. Last, though the DPF is a vigorous and bias-corrected estimator for censored dependent variables, previous research ignores this estimator, so we make an essential contribution to the literature by offering reliable results with a robust estimator.

This research has several implications. First, managers should determine their corporate payout policies by trading off the benefits and costs of dividends and repurchases by considering recessions. Second, investors should consider the corruption level of countries and exogenous shocks and which type of payouts are preferred in countries while deciding where and which firms to invest in. Finally, since financial crises impact payout policies, policymakers should decide on corporate payout policies based on the recession's severity.

Table A.1
Descriptive Statistics, Correlations, and the Variance Inflation Factor

This table reports descriptive statistics, correlations, and the variance inflation factor (VIF) of dividends-*DIV*, repurchases-*REP*, country- and firm-specific factors across the whole sample (2012-2020), pre-COVID (2012-2019) and the COVID (2020). ***, **, * indicate significance level at 1%, 5% and 10% respectively.

	Mean	Median	SD	Min	Max	Correlations		VIF Values	
						DIV	*REP*	*DIV*	*REP*
Panel A (2012-2020)									
DIV	0.022	0	0.057	0	0.966				
REP	0.001	0	0.012	0	0.569				
COR1	48.437	52	16.988	5	87	–*	+***	1.23	1.24
SIZE	14.627	13.692	3.845	4.204	26.763	+**	–	1.23	1.29
PROF	0.057	0.056	0.14	-0.956	1	+***		1.06	
MBR	1.594	1.089	1.839	0.366	20.072	+***	+**	1.04	1.07
CASH	0.125	0.075	0.144	0	1		+***		1.19
CFA	0.075	0.069	0.145	-1	0.998		+***		1.19
LEV	0.229	0.190	0.213	0	1		–***		1.30

Table A.1
Descriptive Statistics, Correlations, and the Variance Inflation Factor (Continued)

	Mean	Median	SD	Min	Max	Correlations		VIF Values	
						DIV	*REP*	*DIV*	*REP*
Panel B (2012-2019)									
DIV	0.023	0.000	0.057	0	0.966				
REP	0.000	0	0.012	0	0.569				
COR1	48.654	52	17.017	5	87	–*	+***	1.23	1.25
SIZE	14.579	13.652	3.834	4.204	26.763	+***	–	1.23	1.30
PROF	0.061	0.059	0.137	-0.956	1	+***		1.08	
MBR	1.56	1.081	1.755	0.366	20.072	+***	+**	1.06	1.09
CASH	0.123	0.074	0.142	0	1		+***		1.19
CFA	0.078	0.071	0.143	-1	0.998		+***		1.22
LEV	0.227	0.188	0.211	0	1		–***		1.29
Panel C (2020)									
DIV	0.017	0	0.050	0	0.966				
REP	0.001	0	0.011	0	0.222				
COR1	46.851	44	16.692	9	83	–	+	1.20	1.22
SIZE	14.978	14.077	3.908	4.204	26.522	+	+**	1.21	1.25
PROF	0.030	0.039	0.152	-0.956	1	+***		1.02	
MBR	1.840	1.171	2.331	0.366	20.072	+***	+	1.01	1.05
CASH	0.137	0.081	0.159	0	1		+***		1.22
CFA	0.051	0.053	0.153	-1	0.998		+**		1.14
LEV	0.242	0.2	0.224	0	1		–*		1.30

Source: Transparency International, World Bank & Worldscope.

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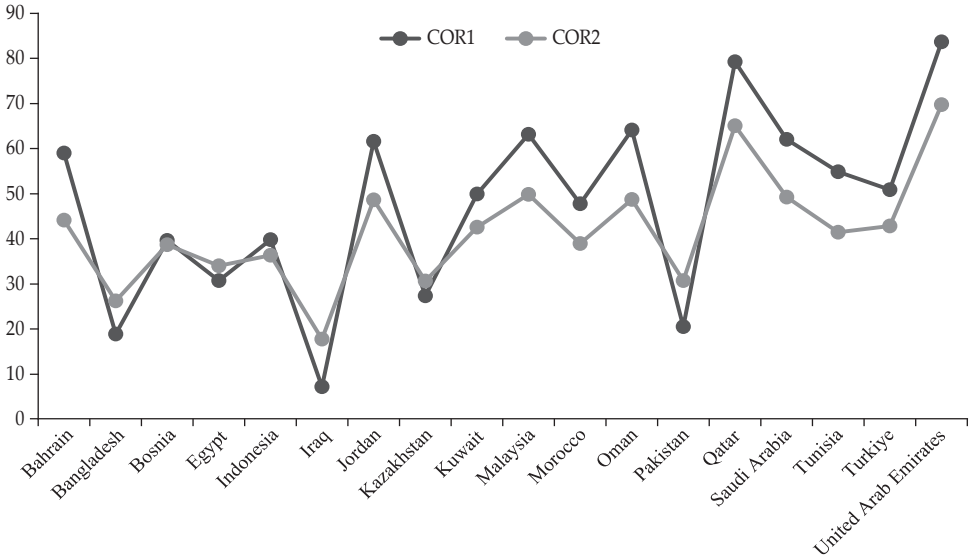
Appendix

Figure A.1.
Means of Corruption Measures Across Country

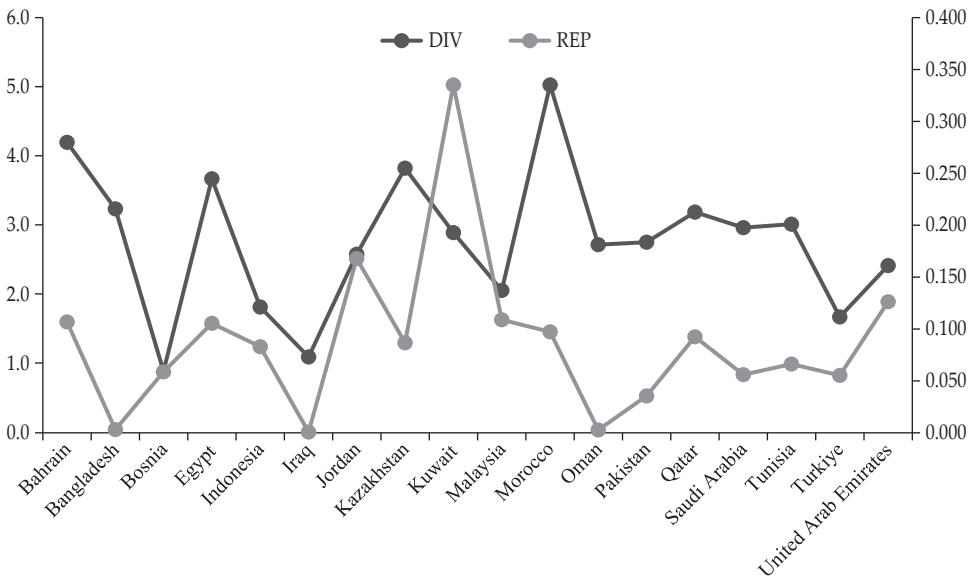
This figure presents the means of Control of Corruption-COR1 and Corruption Perception Index-COR2 across country.



Sources: Transparency International & World Bank.

Figure A.2.
Means of Payout Measures Across Country

This figure presents the means of dividends–DIV (left axis) and repurchases–REP (right axis) across country.



Sources: Worldscope.