Alkhataybeh, Ahmad; AlSmadi, Safaa Adnan; Al-Tarawneh, Alaaeddin; Khataybeh, Mohammad A.; Shakhatreh, Mohammad Ziad

Article

Ownership structure and corporate cash holdings in Jordan: The role of government ownership

Journal of Applied Economics

Provided in Cooperation with:
University of CEMA, Buenos Aires

Suggested Citation: Alkhataybeh, Ahmad; AlSmadi, Safaa Adnan; Al-Tarawneh, Alaaeddin; Khataybeh, Mohammad A.; Shakhatreh, Mohammad Ziad (2023) : Ownership structure and corporate cash holdings in Jordan: The role of government ownership, Journal of Applied Economics, ISSN 1667-6726, Taylor & Francis, Abingdon, Vol. 26, Iss. 1, pp. 1-22, https://doi.org/10.1080/15140326.2023.2279444

This Version is available at:
https://hdl.handle.net/10419/314241

Journal of Applied Economics

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/recs20

Ownership structure and corporate cash holdings in Jordan: the role of government ownership

Ahmad Alkhataybeh, Safaa Adnan AlSmadi, Alaaeddin Al-Tarawneh, Mohammad A. Khataybeh & Mohammad Ziad Shakhatreh

To cite this article: Ahmad Alkhataybeh, Safaa Adnan AlSmadi, Alaaeddin Al-Tarawneh, Mohammad A. Khataybeh & Mohammad Ziad Shakhatreh (2023) Ownership structure and corporate cash holdings in Jordan: the role of government ownership, Journal of Applied Economics, 26:1, 2279444, DOI: 10.1080/15140326.2023.2279444

To link to this article: https://doi.org/10.1080/15140326.2023.2279444

Published online: 14 Nov 2023.

JOURNAL OF APPLIED ECONOMICS
2023, VOL. 26, NO. 1, 2279444
https://doi.org/10.1080/15140326.2023.2279444

Routledge
Taylor & Francis Group

FIRMS AND INNOVATION

Ownership structure and corporate cash holdings in Jordan: the role of government ownership

Ahmad Alkhataybeh[a], Safaa Adnan AlSmadi[a], Alaaeddin Al-Tarawneh[b], Mohammad A. Khataybeh[b] and Mohammad Ziad Shakhatreh[a]

[a]Faculty of Business, Yarmouk University, Irbid, Jordan; [b]School of Business, The University of Jordan, Amman, Jordan

ABSTRACT

Using a dataset of 107 listed firms in Jordan from 2009 to 2018, we employed the generalized method of moments (GMM) to examine the effect of ownership structure on the level of corporate cash holdings. We found that higher government ownership is associated with higher cash holdings. On the other hand, different forms of ownership, namely block holding and individual and foreign ownership, were found to be insignificant. We further examined why firms in Jordan hold cash, concluding that when the level of government ownership rises, firms do not employ cash reserves for investments nor for dividend payments, which in light of governmental political purposes could be a clear indicator of agency problems.

ARTICLE HISTORY
Received 6 July 2022
Accepted 1 November 2023

KEYWORDS
Ownership structure; corporate cash holdings; government ownership; GMM estimation

1. Introduction

Firms of different types and across different industries need to raise funds at certain points in time. Regardless of the type of firm or the industry in which it operates, it can raise funds internally or externally. External sources tend to be more expensive for several reasons, such as the transaction costs, information asymmetry, financial distress risk and tax asymmetries involved (Fazzari et al., 1988). Such problems would not be an issue in an ideal world in which there are no uncertainty, transactions incurred no costs, information are freely available, and there were no constraints (Curtiss, 2012). In such a frictionless world, firms would not need to invest in short-term accounts, since funds would be available at any time and access to the financial market would be free.

However, when it comes to obtaining external finance, frictions do exist, and firms need to manage these in certain ways. Scherr (1989) suggests that one way to deal with such issues is to finance and invest in working capital accounts. According to Scherr, in times of uncertainty and unpredictable cash flow, firms with inadequate financial reserves will face significant costs. Therefore, to deal with such uncertainties

CONTACT Ahmad Alkhataybeh aalkhataybeh@yu.edu.jo Faculty of Business, Yarmouk University, Irbid 21163, Jordan

and the associated costs, firms can employ different techniques including working capital investments; for example, they can keep cash at levels that cover their estimated needs.

Holding cash lessens the need for external financing and the accompanying transaction costs and also gives firms the advantage of exploiting investment opportunities when available (Keynes, 1937). However, holding cash is not without costs. Holding a non-earning asset such as cash causes firms to lose other investments (i.e., opportunity costs) (Wright, 1978), and the associated investment tax benefits and lowers the return on assets. In addition, cash is likely to be misused by management due to its vulnerability (Myers & Rajan, 1998), it is common for management to extract private benefits using cash because of agency conflicts, as suggested by the free cash flow theory (Jensen, 1986). Based on Jensen's argument, if more resources are under management control, these are likely to grant them power and help them elude the monitoring of the market associated with external financing. In the existence of agency costs, managers tend to hold more cash to exploit firm's resources to serve their own interests (Tran, 2019). In the same vein, Donaldson (1984) concludes that one managerial incentive is to increase cash and cash equivalents so that they can be used at their discretion.

In the absence of an effective monitoring system over management, cash, as Harford (1999) argues, might be spent on value-decreasing projects. Therefore, a monitoring mechanism to control managers' policy toward cash is needed; as theorized by Jensen (1986) and Stulz (1990), owners are expected to attempt to control managers' access to cash in order to curb any exploitation of the firm and to ensure they will not invest excess cash in low-return projects. In a similar vein, Azinfar and Shiraseb (2016) argue that different types of shareholder affect the levels of cash holdings through their management monitoring role.

The association between managers' incentives to hold and use cash and monitoring mechanisms and the associated agency problems have been examined by Jensen (1986), who concluded that the amount of cash in a firm affects the manager–shareholder relationship. Studies on agency problems and the role of associated monitoring mechanisms in relation to the level of cash holdings have continued to appear in the literature (e.g., Cambrea et al., 2021; Couzoff et al., 2022; Harford et al., 2008; Opler et al., 1999). However, research has obtained inconsistent results; for example (Couzoff et al., 2022), concluded that effective monitoring over management increases the level of cash holdings, while Cambrea et al. (2021) concluded that board independence negatively affects cash holdings. Other research has suggested that the absence of strong governance mechanisms is likely to lead to excessive cash spending (Ammann et al., 2010; Harford et al., 2008).

A strand of research on the effect of governance on cash holdings has focused on the role of the board (e.g., Chen et al., 2020; Gul et al., 2020; Jiang et al., 2023; Seifert & Gonenc, 2016) However, little research has focused on the role of ownership structure (e.g., Alghadi et al., 2021; Chen et al., 2018; Harford et al., 2008), with very limited focus on developing countries (Akhtar et al., 2018). Alghadi et al. (2021) found that family owners have strong commitment to monitoring management and protecting other shareholders, while Moin et al. (2020) demonstrated that family, foreign, state and institutional ownership negatively affects dividends, and might lead to expropriation of other shareholders' wealth. Harford et al. (2008) found that a higher level of insider ownership was associated with higher cash holdings, and that excess cash will be paid as dividends, indicating commitment to long-term payouts.

In Jordan, there have been several studies on the role of governance mechanisms in relation to cash levels. Some researchers have examined cash holding determinants, such as disclosure quality (Alsmadi et al., 2022); institutional, foreign and manager ownership (Afifa et al., 2021); and ownership concentration (Tayem et al., 2019). However, Afifa et al. (2021) found no association between cash holdings and ownership structure, while Tayem et al. (2019) demonstrated that the relationship changes at different levels of cash holdings. Therefore, the effect of ownership structure on the levels of cash holdings remains unclear.

There are several possible reasons for why ownership structure matters. First, Jordan has a dispersed ownership structure and high institutional ownership, which provides a platform for examining the effect of different ownership structures on the level of cash. Moreover, Saleh et al. (2023) report that institutional ownership in MENA can affect management decisions and protect other stockholders' interests. Second, Government ownership is a common occurrence in firms in the Middle East (Al-Janadi et al., 2016), and governments are expected to exercise their power by intervening in management's ways of doing business (Boycko et al., 1996) in order to fulfill political objectives (Cuervo-Cazurra et al., 2014), and to influence managers' attitudes. Moreover, government owners are different from other kinds of owners, in the sense that profit maximization is not the only objective of their shareholding (Udin et al., 2017); they have other objectives related to national social and political concerns, which may interfere with the objective shared by other owners of increasing profit. Nevertheless, studies on the influence of ownership on corporate cash holdings remains limited.

The role of government as a mean of monitoring can be viewed from two perspectives. On the one hand, the government can be a vital player in monitoring management effectively (Al-Janadi et al., 2016), which can increase the chances of better firm performance and lower default risk, hence lower cost of capital and lower cash holdings. On the other hand, government owners may not actively supervise daily operations (Jiang & Kim, 2020) and may lack management skills (Gan et al., 2017) and the incentive to monitor management. Moreover, managers might be evaluated on whether they have achieved political objectives. Therefore, managers are expected to have the discretion to achieve personal interests (Boubakri & Cosset, 1998). Subsequently, higher cash holdings are expected as a result of higher agency costs (Chen et al., 2018; Harford, 1999).

Studying the issue in the Jordanian context is of a great importance for various reasons. First, it is important for market players to understand how ownership structures affect the level of cash held by firms listed on the Amman Stock Exchange (ASE). By the end of December 2022, the market capitalization of the ASE had reached around 18 billion JD (Jordanian Dinar), with foreign investors owning 48.1% of the listed shares (CEIC, 2023). The ASE provides diversified investment choices for different kinds of investors, and the results provided by the current study give information on agency problems and monitoring effectiveness in Jordanian firms, equipping them with the relevant factors when making their investment choices. Consequently, the importance of the current research stems from the significance of the market being analyzed.

Second, for more than two decades the Jordanian government has been selling its shares to the private sector, through this privatization process (Mansur et al., 2019), the government is attempting to enhance the efficiency of the ASE and to help alleviate the issues generally associated with government ownership, such as interference with the

management of firms. Despite these efforts, the Jordanian government still owns more than 9% of the firms listed on the ASE (U.S. Department of State, 2020). Furthermore, plans exist to privatize more firms (Office of King Hussein 1, n.d.). Accordingly, the current privatization process in Jordan provides motivation to examine how different ownership structures affect cash holdings and agency problems, an examination that would enhance informational efficiency for investors and the government with regard to the privatization process. Moreover, previous research on the influence of governance mechanisms on cash holdings is far from definitive, and the lack of research on ownership structure and cash holdings provides further motivation for this research.

This study investigates the impact of ownership structure on cash holdings in Jordan by testing a sample of 107 listed firms on the ASE over the period 2009–2018. We first examine the impact of different ownership structures on cash holdings. Further, we extend our research to examine whether firms with higher government ownership spend higher cash holdings in higher dividend payouts or higher investments. We discover that government ownership is significantly and positively associated with level of cash holdings while other owners have no effect on cash holdings. We also discover that the government ownership-cash holdings relationship in Jordan is consistent with the agency theory and, which is consistent with the findings of previous research (e.g., Chen et al., 2018; Yu et al., 2022) that government ownership increases agency problems

Our work contributes to the literature in three ways. First, by understanding the relationship between ownership structure and cash holdings in Jordan, the research offers various implications for the consideration of market participants. Second, it extends the literature on the association between government ownership and cash holdings, a relationship that has not been adequately researched in either developed or developing countries (Chen et al., 2018), despite the fact that government intervention has dramatically increased (Megginson, 2017). Third, we extend our research by analysing why firms in Jordan accumulate higher levels of cash if the government holds shares in them. Finally, we employ the results of the study to determine which theoretical explanation applies to firms' orientation towards cash holdings, finding that agency theory explains management practices in the Jordanian market.

The study is structured as follows. Section 2 presents the literature review and the hypotheses development. In section 3, the data and methodology are presented, while section 5 presents the results and discussion. Section 6 concludes the research.

2. Literature review and hypotheses development

Holding cash can help firms exploit investments when they become available and avoid opportunity costs. It also lowers the transaction costs associated with external funds. Several theories have attempted to explain the costs and motives of holding cash. First, the financing friction hypothesis (i.e., pecking order and trade-off theories). Trade-off theory assumes that with higher cost of capital, the optimal cash level will be higher; that is, the benefits of holding higher levels of cash increase (Opler et al., 1999). In a similar vein, pecking order theory assumes that with higher capital costs and more expensive external financing means, firms are more likely to rely on internal funding sources and

hold higher levels of cash (Myers & Majluf, 1984). It was found that firms tend to hold more cash when raising external capital is more difficult (Opler et al., 1999), and when cash flow uncertainty is higher (Duchin, 2010).

Second, the liquidity preference theory of Keynes (Keynes, 1937) provides three explanations for the holding of cash. First, the transactions motive; to avoid the trouble of obtaining funds to meet short-term obligations, firms hold more cash in order to preserve their liquidity and to provide for day-to-day transactions. Second, the speculative motive, whereby firms retain cash to benefit from better opportunities in the future, giving them adequate cash when interest rates fall, in anticipation that rates will increase again, thus allowing them to make a profit. In other words, they speculate on interest rate fluctuations. Third, the precautionary demand motive, whereby firms retain cash as a precaution for unexpected expenses or for when investment opportunities become available.

Third, agency theory; because of agency conflicts, this theory expects that management will hold more cash for personal interests at the expense of shareholders (Jensen & Meckling, 1976), since cash can be easily converted into private advantages. First, it is expected that management may hold higher levels of cash to elude market discipline (Jensen, 1986), as excess cash provides a buffer for them to undertake projects when finance is unavailable especially if those projects are value decreasing. Second, management may accumulate cash to pay for perks or even tunnel the firm's cash to themselves Harford et al. (2008).

In other words, higher cash holdings, that is, higher availability of internal capital, allows managers to make investments, acquisitions or compensations that favour themselves at the cost of other shareholders. In the absence of an effective monitoring scheme, self-interested managers are less likely to deploy cash in the best interests of shareholders. According to free cash flow theory, Jensen (1986) expects that in order to lower agency conflicts, owners will opt to restrict managers' access to free cash flow. Therefore, it is of great importance to determine which ownership structure will have an impact on management's decisions on the level of cash holdings.

2.1. Hypotheses development

2.1.1. Government ownership

Government ownership can affect firms' attitude towards cash in two ways. On the one hand, it can ensure that they obtain the cash they need and reduce their financial difficulties. In the same vein, the theory of the soft budget constraints (Kornai, 1979) predicts that if the government holds shares in a company, it is expected to support it by facilitating its access to credit, relaxing taxes. Or by intervening to save the firm in case of financial distress (Borisova et al., 2015; Faccio et al., 2006). In such a case, firms will have fewer motives to hold cash, and as discussed by the Keynesian, pecking order and trade-off theories, they are expected to lower levels of cash.

Yet, the government can empower management and increase agency problems, as proposed by agency theory. Agency costs are expected to be higher since the government might (Chong-En et al., 2004) motivate managers to pursue political and social interests, other than those of stockholders. (Agencycosts are also expected to increase since monitoring is expected to be less effective; according to Vickers and Yarrow (1988),

when government representatives and politicians are on the board, other owners will be less engaged in the monitoring mechanism. Empirically, it was found that as government ownership increases, agency problems also increase, while the effectiveness of monitoring decreases (Boycko et al., 1996; Chen et al., 2018; Rashid Khan et al., 2020; Shleifer & Vishny, 1994).

Empirical studies on the relationship between government ownership and cash holdings has provided mixed results. It has been found that firms with government ownership keep higher cash holdings to achieve political purposes (Abramov et al., 2017). In addition, Chen et al. (2018) and Kusnadi et al. (2015) found that government ownership was positively related to the level of cash holdings. However, in the case of China, Megginson et al. (2014) reported that government ownership was negatively associated with such holdings. Based on the theoretical and empirical discussion above, the following non-directional hypothesis is proposed:

H1: Government ownership is significantly associated with the level of cash held by firms in Jordan.

2.1.2. Foreign ownership

On the one hand, foreign owners are expected to be less informed than domestic investors (Covrig et al., 2006; Tsang et al., 2019), which increases agency problems. In such a case, according to agency theory, as discussed above, cash holdings are expected to be higher. On the other hand, foreign ownership is expected to align the interests of managers and shareholders and reduce agency problems (Hingorani et al., 1997), since such ownership is more efficient (Ferreira & Matos, 2008), and more independent and skilled Lel (2019). According to agency theory, better monitoring assumes lower cash holdings. Moreover, if foreign investors' investment purpose is to earn as high as possible returns, they might be interested in the efficiency of assets which is the lowest in case of idle cash holdings, hence cash levels are expected to be lower.

Empirically, previous research has reported a positive association between foreign ownership and cash holdings (Gupta & Bedi, 2020; Vo, 2018), although Loncan (2018) reported a negative one. Considering that the findings are mixed and limited, the effect of foreign ownership on the level of cash holdings needs further investigation. Therefore, the proposed hypothesis based on the previous discussion is as follows:

H2: Foreign ownership is significantly associated with the level of cash held by Jordanian firms.

2.1.3. Institutional ownership

The costs of monitoring activities are borne by shareholders, who in turn benefit from such monitoring solely in proportion to their holdings (Grossman & Hart, 1980). Accordingly, individual shareholders are likely to have fewer incentives to monitor managers compared to large ones, who have more benefits and incentives for such monitoring. Moreover, institutional owners are more powerful and have greater influence. Therefore, it is expected that institutional shareholders will undertake effective monitoring to reduce agency costs (Sakawa & Watanabel, 2020; Shleifer & Vishny, 1986). On the other hand, there is the fear that institutional shareholders may not share their

control benefits with other shareholders, thus creating further agency problems. In such a case, institutional owners are expected to align with management and exert their influence in order to extract private benefits. Empirically, Al-Najjar and Clark (2017), Harford et al. (2008) and Nguyen and Rahman (2020) reported a positive association, while Mersni and Can (2022) found a negative one. Given the previous discussion on the role of institutional ownership in relation to the level of cash holdings, the following a non-directional hypothesis is proposed:

H3: Institutional ownership is significantly associated with the level of cash held by Jordanian firms.

2.1.4. Individual ownership

A higher level of individual ownership is expected to increase both agency costs and information asymmetry (Jensen & Meckling, 1976). Moreover, shareholders who make investments in the form of shares usually buy a small number with a small proportion of their wealth; if they have a sufficiently diversified portfolio, they may have a nonchalant attitude towards the monitoring of management. Even more, individual investors might not have the ability to influence the management (Alsmadi, 2017). In such a situation, the existence of individual investors may negatively affect the effectiveness of monitoring, hence according to the agency theory, managers might hold higher levels of cash. Empirical research on the role of individual ownership in relation to the level of cash holdings is lacking; however, based on the previous discussion, the following hypothesis is proposed:

H4: Individual ownership is significantly associated with the level of cash held by Jordanian firms.

3. Data and methodology

3.1. Data

To examine the link between ownership structure and corporate cash holdings, a dataset was constructed of all active and inactive firms listed on the ASE under the service and industrial sectors. The unbalanced dataset was gathered from the official website of the ASE and manually collected from annual reports, while the macroeconomic factors were retrieved from the official website of the World Bank covering the period 2009 to 2018.[1] It is crucial to recognize that due to restrictions on data availability, and in order to prevent a structure break in the data due to the consequences of the COVID-19 pandemic, the study period excludes the years following 2018. Table 1 presents the operational measurements of the variables employed in the analysis, while Table 2 presents a statistical summary and correlation matrix. The average value of cash holdings (***CH)*** is 16.1%, which is similar to the average cash holdings of 16.8% held by firms in 25 countries of the Organisation for Economic Co-operation and Development (OECD) and China in

[1]In order to prevent a structure break in the data due to the consequences of the COVID-19 pandemic, the study period excludes the years following 2018.

Table 1. Variable operational measurements.

Variable	Measurement	References
Cash holdings (***CH***)	Cash plus cash equivalent of firm *i* at time *t* by total assets at time *t-1*.	Martínez-Sola et al. (2018); Anton and Nucu (2019)
Sales growth (***SalesGr***)	Change in net sales of firm *i* at time *t* by the value of net sales at time *t-1*.	Martínez-Sola et al. (2018); Alkhataybeh (2021)
Debt issues (***Dbt***)	Annual change in long-term debt of firm *i* at time *t* by total assets at time *t-1*.	Wang et al. (2014); Dittmar and Duchin (2010)
Cash flow (***CFlow***)	Gross internally-generated funds of firm *i* at time *t* by total assets at time *t-1*.	Sher (2014); Khataybeh and McMillan (2021)
Block holders (***Block***)	Percentage of equity owned by non-management with an ownership of more than 5% of firm *i* at time *t*.	Sun et al. (2021)
Individuals ***(Ind)***	Percentage of equity owned by individuals in firm *i* at time *t*.	Afza and Mirza (2010);
Government ***(Gov)***	Percentage of equity owned by the government in firm *i* at time *t*.	Thi et al. (2021); Tran (2021)
Foreign ***(Foreign)***	Percentage of equity owned by foreign investors in firm *i* at time *t*.	Thi et al. (2021); Alghadi et al. (2021)
Capital expenditure (***CapExp***)	Annual change in net fixed assets of firm *i* at time *t* by total assets at time *t-1*.	Dittmar and Duchin (2010); Khataybeh and McMillan (2021)
Inflation GDP deflator ***(InfGDP)***	Inflation, GDP deflator (annual %)	Anton (2021)
Interest rate spread ***(Intspread)***	Interest rate spread (lending rate minus deposit rate, %)	Anton (2021)

2018 (De Vito and Gomez, De Vito & Gómez, 2020). However, the level of cash holdings is considered high compared to other developing countries, for instance Al-Najjar (2013) found that between 2002 and 2008 the average ***CH*** for Brazil, Russia, India and China varied between 2.2% and 4.8%. Similarly, the average CH in Indian S&P CNX 500 companies from 2007 to 2012 was 14% (Maheshwari & Rao, 2017). When compared to developed countries, this value is still high; for instance, it was 9.9% for a sample of UK listed firms over the period 1995–1999, as reported by Ozkan and Ozkan (2004), and 10.19% for Spanish firms during the period 1998–2012 (Martínez-Sola et al., 2018).

Sales growth (SalesGr) is −9.8%, meaning that enterprises saw sales fall by around 10% on average. Debt issues (***Dbt***) were 12.3%, indicating that Jordanian businesses increased their debt level by around 12% on average. The average operating cash flow (***CFlow***) is 6.1%, although some firms reported negative operational cash flows. The key predictor, government ownership (***Gov***), has an average value of 7.2%. This is deemed low in comparison to other developing countries, such as Vietnam and China, whose levels were 24.35% and 25%, respectively (Chen et al., 2018; Nguyen & Wong, 2021). However, the value is still relatively high if compared to firms in Kuwait, a Middle Eastern country in which the government only owns 4% of companies (Al-Saidi, 2020). As shown in Table 2, the averages for other types of ownership, namely block-holders (***Block***), individuals (***Ind***), and foreigners (***Foreign***) are 63.7%, 48% and 19.2%, respectively. Finally, Capital expenditures (***CapExp)*** is on average 20.6%, indicating that firms raise their ***CapExp*** by on average 20%. Neither the pairwise correlation matrix nor the variance inflation factor (VIF) (presented in Tables 2 and 3) show evidence of multicollinearity among the predictors, confirming the non-multicollinearity requirement (Alkhataybeh, 2021). In addition, a Fisher-type test was applied for the unit-root test, as presented in Table 4, which confirmed the stationarity of the variables at level, concluding that the variables used in this model were co-integrated (Choi, 2001).

Table 2. Descriptive statistics and matrix of pairwise correlations.

Variable	MEAN	S.D.	Obs	CH	SalesGr	Dbt	CFlow	Block	Ind	Gov	Foreign	CapExp	InfGDP	Intspread
CH	0.161	0.378	1062	1.000										
SalesGr	−.098	0.62	980	0.029	1.000									
Dbt	0.123	0.254	843	0.251***	0.077**	1.000								
CFlow	0.061	0.497	1075	0.322***	−0.032	0.080**	1.000							
Block	0.638	0.234	1086	0.006	0.013	0.069**	−0.018	1.000						
Ind	0.480	0.299	1086	0.006	−0.059*	−0.104***	−0.002	−0.433**	1.000					
Gov	0.072	0.140	1086	0.116***	0.029	0.142***	0.056*	0.055*	−0.358***	1.000				
Foreign	0.192	0.245	1086	0.004	−0.004	−0.037	0.004	0.152***	−0.300***	−0.060**	1.000			
CapExp	0.206	0.413	939	0.260***	0.076**	0.344***	0.238***	−0.006	−0.061*	0.017	−0.005	1.000		
InfGDP	0.040	0.022	1086	−0.013	0.038	−0.022	−0.015	−0.015	0.008	−0.0098	−0.041	−0.049	1.000	
Intspread	0.048	0.004	1086	0.013***	−0.061*	−0.141***	−0.013	0.011	0.003	−0.016	−0.018	−0.076**	0.313***	1.000

***, ** and * represent significance levels of 1%, 5% and 10%, respectively.
The financial variables are trimmed at 1%.

Table 3. VIF test results.

Variable	VIF	Tolerance (1/VIF)
SalesGr	1.09	0.91
Dbt	1.25	0.80
CFlow	1.05	0.94
Block	1.26	0.79
Ind	1.59	0.62
Gov	1.20	0.83
Foreign	1.16	0.86
CapExp	1.23	0.81
InfGDP	1.02	0.98
Intspread	1.02	0.97
Mean VIF		1.18

Table 4. Fisher-type unit-root test results.

Variable	Inverse chi-squared (P)	Inverse normal (Z)	Inverse logit (L*)	Modified inv. chi-squared (Pm)
SalesGr	1282.45***	−25.77***	−32.62***	46.17***
Dbt	275.94***	−3.33***	−3.79*	3.10***
CFlow	1175.23***	−21.66***	−27.66***	39.42***
Block	775.37***	−3.04***	−10.72***	22.08***
Ind	1212.20***	−10.08***	−23.65***	41.02***
Gov	798.37***	−7.06***	−13.19***	23.08***
Foreign	732.67***	−4.38***	−11.47***	20.23***
CapExp	520.62***	−9.08***	−10.46***	12.95***

***, ** and * represent significance levels of 1%, 5% and 10%, respectively.
The Fisher-type unit-root test results are based on Phillips-Perron tests.

4. Methodology

Based on previous research (Alkhataybeh, 2021; Flannery & Hankins, 2013; Roodman, 2009), it has been deemed that the generalized method of moments (GMM) is the best econometric estimator for estimating dynamic models. It is most suitable for analyzing panel data which includes a large number of firms over a short-time period (large N and small T). In addition, it deals with unobserved time-invariant effects and unobserved heterogeneity, and addresses predictor endogeneity by assuming that genuine instruments are present in the dataset by relying on the lags of the instrumented variables. As a result, to investigate how ownership structure impacts the corporate level of cash holdings, the research analysis is based on the following regression model:

$$CH_{i,t} = \beta_1 CH_{i,t-1} + \beta_2 SalesGr_{i,t} + \beta_3 Dbt_{i,t} + \beta_4 CFlow_{i,t} + \beta_5 Block_{i,t} + \beta_6 Ind_{i,t} + \beta_7 Gov_{i,t} + \beta_8 Foreign_{i,t} + \beta_9 CapExp_{i,t} + \beta_{10} InfGDP_{i,t} + \beta_{11} Intspread_{i,t} + Ind_{dum} + \varepsilon_{i,t}$$

According to accelerator theory,[2] ***SalesGr*** was included in the model as a control for investment demand and corporate growth. ***Dbt*** and ***CFlow*** are used as controls for trade-

[2]The basic tenet of accelerator theory is that any increase in a firm's output or sales necessitates a corresponding rise in investment to bring its stock of capital up to the necessary level. The accelerator model makes the logical assumption that any increase in a company's sales level indicates that it is likely to make more profits and use more of its current capital in the future; as a result, if firms anticipate that the sales stream will continue, this will encourage them to spend more money on capital, and thus hold more cash. A multiplier effect would result from the increased capital stock as more sales and profits would follow, and vice versa.

off and pecking order theory, respectively, while ***CapExp*** is employed to account for corporate capital expenditure. ***Intspread*** is used as an indicator of financial intermediation efficiency.[3] This proxy is calculated as "the difference between the deposit rate (provided by commercial banks on three-month deposits) and the lending rate (charged by banks on loans to the private sector)" (World Bank, 2022). Several studies have used this variable as a measure of the efficiency of financial intermediation at the country level (Agapova & Vishwasrao, 2020; Almajali & Almubidin, 2022; Anton, 2021; Feyen & Zuccardi, 2020). In addition, the model takes into account the year-fixed effect (***InfGDP***) to control for the macroeconomic effect and industry-fixed effects ($\boldsymbol{Ind_{dum}}$). However, it was not possible to include equity issues and R&D expenditure in the list of predictors due to the lack of information in relation to the firms studied.

Traditional ordinary least squares regressions provide inconsistent estimates due the endogeneity of the model predictors and their dynamic structure. This inconsistency is explained by the relationship between the lagged predicted variable and the unobserved heterogeneity fixed effects, in addition to the endogenous nature of the predictors (Flannery & Hankins, 2013). Accordingly, Arellano and Bond (1991) developed the differenced-GMM estimator and used the first difference to overcome this problem; nevertheless, this method does not fully eliminate the relationship between the disturbances and the lagged predicted variable. It is critical to choose instruments that are not correlated with the disturbances, but instead with the predictors in order to solve the endogeneity problem. However, the difference-GMM estimates are not totally trustworthy with the existence with regard to weak instruments because the estimations tend to be downward biased[4] (Alkhataybeh, 2021; Blundell & Bond, 1998).

To enhance the estimator, the system-GMM estimator was developed by Blundell and Bond (1998), which includes a set of moment conditions for the differenced equation in addition to the equation in level. While employing the system GMM, it is advisable to use one-step or two-step estimation. The former estimator assumes homoscedastic errors, while the latter assumes heteroscedastic ones. According to Flannery and Hankins (2013) and Alkhataybeh (2021), the two-step estimator is asymptotically more efficient, even if its standard error estimates tend to be downwards biased. Therefore, it is recommended to use finite-sample standard error correction. As a result, this paper considers the use of finite sample correction in the estimation of the two-step system-GMM. It should be noted that in this work the lagged difference is the instrument used for the level equation, and the lag level endogenous variables (dated t-2 to t-3) are the instruments used for the difference equation.

[3]Several studies have used this variable to assess the effectiveness of financial intermediation at the national level (Agapova & Vishwasrao, 2020; Anton, 2021; Feyen & Zuccardi, 2020). Furthermore, Agapova and McNulty (2016) suggest that in contrast to net interest margin, the bank lending-deposit spread is a superior measure of the efficiency of financial intermediation between countries; they offer empirical support for this claim in the context of European economies. A low value of this variable suggests low transaction costs, which makes it easier for companies to obtain financing. On the other hand, a high lending-deposit spread (or inefficient financial intermediation) suggests borrowing limitations and high financing costs for corporate borrowers (higher loan rates). Furthermore, higher bank lending-deposit spreads result in reduced deposit rates, forcing companies to use their own financial resources (and hence increase their cash holdings) rather than depositing their savings.

[4]Inconsistent difference-GMM estimates are likely if the lagged dependent variable coefficient is between OLS (upwardly biased) and fixed-effect (downwardly biased) estimates, with a tendency towards the latter.

5. Results and discussion

Table 5 displays the estimation outcomes of the dynamic GMM model of the corporate CH determinants. The lag-dependent variable shows a positive coefficient that is different significantly from zero, demonstrating that lagged cash levels have a positive impact on present cash levels.

SalesGr, a growth opportunity control, is close to zero. Our findings support those of research, that sales growth has no effect on corporate ***CH*** levels (e.g., Aimeeva & Aris, 2023; Martínez-Sola et al., 2018). This contradicts the predictions of the financing friction hypothesis and the precautionary motive of the liquidity preference theory of Keynes. Jordan's financial sector is dominated by banks, and government involvement provides preferential loan access. As a result, in Jordan the foregone investments opportunity costs and growth prospects are less meaningful.

Dbt, in contrast to trade-off theory, is positive and statistically insignificant in explaining the level of corporate *CH*. According to this theory, firms with higher debt levels are more likely to keep more cash on hand to satisfy debt commitments and reduce the risk of bankruptcy (Maheshwari & Rao, 2017). ***CFlow*** is statistically significant and positively associated to the levels of CH; indicating that, when cash flows are higher, firms tend to keep more cash, a result that is in line with pecking order and free cash flow

Table 5. Estimation results of the corporate dynamic cash holding model.

	One-step GMM	Two-step GMM
	CH	*CH*
$CH_{i,t-1}$	0.140*	0.140*
	(0.074)	(0.074)
$SalesGr_{i,t}$	−0.073	−0.073
	(0.081)	(0.081)
$Dbt_{i,t}$	0.008	0.008
	(0.065)	(0.066)
$CFlow_{i,t}$	0.286***	0.286***
	(0.097)	(0.098)
$Block_{i,t}$	0.021	0.022
	(0.173)	(0.175)
$Indiv_{i,t}$	0.173	0.174
	(0.142)	(0.152)
$Gov_{i,t}$	0.650***	0.652***
	(0.203)	(0.200)
$Foreign_{i,t}$	0.122	0.122
	(0.151)	(0.146)
$CapEx_{i,t}$	0.176**	0.177**
	(0.070)	(0.071)
$InfGDP_{i,t}$	0.675	0.675
	(0.543)	(0.549)
$Intspread_{i,t}$	4.507**	4.492*
	(2.272)	(2.199
Industry dummies	Yes	Yes
# of observations	625	625
# of firms	107	107
# of instruments	105	105
AR (1)	−2.82	−2.58
	(*p*= 0.005)	(*p*= 0.010)
AR (2)	0.86	0.91
	(*p*= 0.390)	(*p*= 0.365)
Hansen-test	94.14	94.14
	(*p*= 0.419)	(*p*= 0.419)

***, ** and * represent significance levels of 1%, 5% and 10%, respectively.

theory. This finding is also consistent with the findings of Ozkan and Ozkan (2004), Sher (2014) and Li (2019). Similarly, ***CapEx*** has a positive and statistically significant effect on corporate cash holdings, which is inconsistent with the findings of (Diaw, 2021), however, supporting trade-off theory and the findings of Jinkar (2013) and Jebran et al. (2019). As a result of increasing capital expenditure, firms prefer to store more cash as a precaution, with the expectation of time lags and investment frictions, which is in line with the precaution motive of Keynesian theory. Regarding our main variables, among the three types of ownership, ***Gov*** is the only one found to be significant and to positively affect corporate levels of cash holding, leading to the conclusion that firms with a higher percentage of government-owned shares typically hold more cash. This result is line with the findings of Gao et al. (2013) and Chen et al. (2018) and inconsistent with the findings of (Thi et al., 2021). Other ownership variables, however, were found to be insignificant. Tayem (2017) concludes that ownership (by major shareholder in Jordan) has no influence on the corporate level of cash holdings and Afifa et al. (2021) found that organizational and foreign ownership were insignificantly related to cash holdings. Therefore, it can be concluded that, with the exception of the government for political reasons, ownership structure in Jordan is ineffective as a corporate governance mechanism. This question, however, requires further analysis.

Finally, the bank lending-deposit spread (***Intspread***) has a statistically significant positive impact on corporate levels of *CH*. This variable's low value indicates low transaction costs, which makes it easier for companies to acquire finance. On the other hand, a high lending-deposit spread (or inefficient financial intermediation) suggests borrowing restrictions and high financing costs for corporate borrowing (higher loan rates) (Anarfo et al., 2020; Dalloshi, 2022). Additionally, increased bank lending-deposit spreads result in lower deposit rates, a situation which leads to increased corporate cash holdings to avoid high borrowing costs. This result is consistent with the findings of Anton (2021), Agapova and Vishwasrao (2020) and Feyen and Zuccardi (2020). The one-step and two-step system-GMM estimations are consistent according to the findings of the Arellano–Bond test and Hansen's J-test for autocorrelation and for the instruments used validity, respectively.

Following Gao et al. (2013), we continued to investigate whether firms with government ownership in Jordan use cash for investments or for dividend pay-outs (proxying capital expenditures and dividends, respectively) in order to obtain a more thorough justification for why Jordanian companies with greater government control hold more cash. The findings are presented in Appendix A, Tables A1 and A2.

Our findings show that companies with higher levels of government ownership tend to hold more cash. This can be ascribed to the agency issues caused by government owning shares in the firm, as expected by agency theory. Government investors are further concerned with achieving social and political interests than shareholders' interests which according to Borisova et al. (2012) and Rashid Khan et al. (2020) can be detrimental to their monitoring role. It is also important to take into account the shortcomings in corporate governance and the ethical dilemmas raised by government ownership (Boubakri et al., 2018). Therefore, to lessen their need for external financing means, and the market monitoring and scrutiny that comes with it, managers consider it convenient to maintain more cash.

On the other hand, companies with state-owned shares may use cash to pay dividends, to invest in mergers and acquisitions, and for capital expenditures and research and development. We therefore broadened our research to consider the reasons behind such

companies' increased cash holdings. We considered the impact of government ownership on the connections between cash holdings and investment decisions, as well as between cash holdings and corporate pay-out decisions, in order to better understand why Jordanian firms with greater government ownership hold more cash.

We focused on how ownership by the government and corporate cash holdings interact with investment choices and corporate dividend pay-outs. Capital spending served as a proxy for investment policy, whereas dividends were served as a proxy for pay-out policy. Due to data limitations, we were unable to investigate alternative proxies, such as R&D and acquisitions. As presented in Appendix A1, the coefficient of ***Gov. *CH*** is insignificant; as a result, firms are unlikely to make more capital expenditures as government ownership increases. The coefficient of ***Gov. *CH*** is also non-significant, as shown in Appendix A2, indicating that it is unlikely for firms to spend more cash on dividends as government ownership increases.

According to the findings, when government ownership rises, companies in Jordan do not reserve more capital for investments nor dividend payments. Results on dividends payments are consistent with Chen et al. (2018) and with the predictions of the agency theory, Jensen (1986) argues that, in case of greater excess cash flow, conflict of interests between owners and the management over dividends can be rigorous, therefore managers might keep cash in their hands and not pay it as dividends. However, when it comes to investments, agency theory expects that managers are likely to invest in suboptimal value-decreasing projects, a behaviour known as overinvestment (Jensen, 1986), which is inconsistent with our findings. Therefore, firms in Jordan as government ownership increases, tend to retain cash flows instead of paying it out as dividends or as investments. Such cash hoarding could be tunnelled as excessive salaries and perks; or could be a mean to entrench and protect themselves from market discipline (Opler et al., 2005). Cash, being the most liquid, is considered to be the first and most sensitive asset prone to management exploitation (Myers & Rajan, 1998). Consequently, in light of governmental political purposes, how firms manage cash held could be an obvious indicator of the presence of agency problems. Additionally, the findings indicate that Jordanian managers are more likely to employ the convenience mechanism (Easterbrook, 1984). They appreciate the simplicity of cash and maintain higher levels of it because they believe that more cash on hand keep companies at a distance that is convenient from market scrutiny.

6. Conclusion

This study has investigated the link between ownership structure and the levels of cash held by 107 Jordanian listed companies from 2009 to 2018, using GMM estimation. The findings demonstrate that cash holdings are dynamic, with the lagged level determining the current level of cash. Cash flow and capital expenditures have a strong and positive association with cash holdings, while the inflation rate and ownership structure were found to be ineffective in determining cash holdings, apart from government ownership, which together with interest rate spread was positively associated with the level of cash holdings. Further analysis of the possible reasons for holding cash supports the opinion that the level of cash holdings can be explained by agency theory.

In line with previous research, our findings provide empirical evidence that underpins the significance of agency costs; the fact that firms with higher government ownership retain more cash; and that managers who are supported by the

government have a propensity to keep more cash for their own political or personal benefit. Our findings are also in line with the notion that in countries with poor shareholder protection shareholders cannot pressurize managers into using up excessive cash holdings.

Practical implications of the study are threefold. First, we provide evidence that government ownership is an important driver of cash holdings. Accordingly, ownership structure is one of the aspects that investors recommended to consider before making investment decisions, and in particular, the proportion of the company owned by the government. Moreover, when higher cash positions are expected by investors, based on our results such cash holdings are expected to be used for purposes other than value maximization.

Second, an important implication based on the results concerns the Jordanian government, which is in the midst of a privatization process. It is recommended to address the problems associated with government ownership and develop well-established criteria for assigning their representatives on the boards of their investee firms if it wishes to maintain its investments in Jordanian listed firms. Finally, it is recommended that the government should adopt effective tools to monitor management, by which it ensures that cash is deployed in the best interests of firms' stakeholders.

Moreover, based on the findings, the paper provides two theoretical implications, first, it was found that as government ownership increases higher cash holdings are not paid as dividends nor used for investments, implying that the agency theory can explain the behaviour of firms with respect to the corporate dividend's policy, and fails to explain firms' behaviour with respect to the investment strategy.

Second, since government ownership is associated with higher cash holdings that are not being used for investments and dividends payouts, a theoretical implication is for researchers to address the effect of the government ownership on firms' performance and risk and their impact on investors' appetite towards investing in firms with government ownership.

The research has several limitations. We were unable to analyse the variations in the cash holding levels between different firm categories, such as size and age categories, due to the small sample size. Moreover, due to data unavailability, factors like research and development and acquisitions were not taken into consideration in the extended analysis of why Jordanian companies with greater government control hold more cash. Finally, the results of our research open promising avenues for future research, First, the results indicate that when examining the determinants of cash holdings, macroeconomic factors, together with firm characteristics, should be addressed, for example, balance of payments measures, foreign currency reserves and economic policy uncertainty indicators. Second, future research can extend the analysis of the relationship between cash holdings and government ownership around the COVID-19 outbreak, to investigate the COVID-19 consequences. Finally, decisions of Jordanian firms with government ownership regarding dividends and investments need to be further investigated to understand what drives such decisions and what are the possible uses of higher cash held by such firms.

Disclosure statement

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

Notes on contributors

Ahmad AlKhataybeh is an Associate Professor of Investments & Finance at Yarmouk University. He has a Ph.D. in Finance and an MSc in Investments from the University of Birmingham. He is currently the vice dean of the faculty of business at Yarmouk University. He formerly worked as a senior economic advisor at BDO International and as a consultant for the World Bank.

Safaa Adnan Alsmadi is an associate professor of accounting at Yarmouk University, she holds a Ph.D. in Accounting from the University of Southampton. Safaa's research area includes financial accounting, auditing and corporate governance. Prior to working at Yarmouk University, she used to work at the Central Bank of Jordan.

Alaaeddin Al-Tarawneh is an Associate Professor of Economics at the University of Jordan, he holds a Ph.D. in Financial Economics from the University of Birmingham. He is currently the Director of the internal audit and control unit at the university of Jordan.

Mohammad A. Khataybeh is an Associate Professor of Finance at the University of Jordan, he holds a Ph.D. in Financial Economics from the University of Birmingham. He is currently the Assistant director general and the director of insurance liquidation at Jordan Deposit Insurance Corporation.

Mohammad Ziad Shakatreh is an Associate Professor in Accounting at the Faculty of business at Yarmouk University, He holds a PhD in Accounting from the University of Turin, MSc and MSc in Accounting form Yarmouk University.

ORCID

Ahmad Alkhataybeh http://orcid.org/0000-0001-5073-6380

References

Abramov, A., Radygin, A., Entov, R., & Chernova, M. (2017). State ownership and efficiency characteristics. *Russian Journal of Economics*, *3*(2), 129–157. https://doi.org/10.1016/j.ruje.2017.06.002

Afifa, M. A., Saleh, I., & Haniah, F. (2021). Direct and mediated associations among ownership structure, cash holdings, and firm value: The case of Jordanian insurance firms. *Vision: The Journal of Business Perspective*, *5*(1), 98–112.

Afza, T., & Mirza, H. H. (2010). Ownership structure and cash flows as determinants of corporate dividend policy in Pakistan. *International Business Research*, *3*(3), 210–221. https://doi.org/10.5539/ibr.v3n3p210

Agapova, A., & McNulty, J. E. (2016). Interest rate spreads and banking system efficiency: General considerations with an application to the transition economies of central and Eastern Europe. *International Review of Financial Analysis*, *47*, 154–165. https://doi.org/10.1016/j.irfa.2016.07.004

Agapova, A., & Vishwasrao, S. (2020). Financial sector foreign aid and financial intermediation, International. *International Review of Financial Analysis*, *72*, 101589. https://doi.org/10.1016/j.irfa.2020.101589

Aimeeva, L. A., & Aris, M. A. (2023). Firm size, firm performance, sales growth, and growth opportunity: In cash holding management in real estate and property companies on the Indonesia stock exchange. *The International Journal of Business Management and Technology*, *7*(1), 800–807.

Akhtar, T., Tareq, M. A., Sakti, M. R. P., & Khan, A. A. (2018). Corporate governance and cash holdings: The way forward. *Qualitative Research in Financial Markets*, *10*(2), 152–170. https://doi.org/10.1108/QRFM-04-2017-0034

Alghadi, M. Y., Ibrahim, A. N. R., & Aizyadat, K. A. (2021). Ownership structure and cash holdings: Empirical evidence from Saudi Arabia. *The Journal of Asian Finance, Economics & Business*, *8*(7), 323–331.

Al-Janadi, Y., Rahman, R. A., & Alazzani, A. (2016). Does government ownership affect corporate governance and corporate disclosure? Evidence from Saudi Arabia. *Managerial Auditing Journal*, *31*(8–9), 871–890. https://doi.org/10.1108/MAJ-12-2015-1287

Alkhataybeh, A. (2021). Working capital and R&D smoothing: Evidence from the Tel Aviv stock exchange. *Journal of Applied Economics*, *24*(1), 91–102. https://doi.org/10.1080/15140326.2021.1877599

Almajali, A. A., & Almubidin, R. F. (2022). Estimating the indirect effects of monetary policy on inflation, the output gap and foreign reserves in Jordan using the new Keynesian model. *Jordan Journal of Economic Sciences*, *9*(2), 172–188. https://doi.org/10.35516/jjes.v9i2.225

Al-Najjar, B. (2013). The financial determinants of corporate cash holdings: Evidence from some emerging markets. *International Business Review*, *22*(1), 77–88. https://doi.org/10.1016/j.ibusrev.2012.02.004

Al-Najjar, B., & Clark, E. (2017). Corporate governance and cash holdings in MENA: Evidence from internal and external governance practices. *Research in International Business and Finance*, *39*, 1–12. https://doi.org/10.1016/j.ribaf.2016.07.030

Al-Saidi, M. (2020). Capital structure and corporate governance mechanisms in Kuwait Stock Exchange (KSE). *International Journal of Economics and Finance*, *12*(6), 38–44. https://doi.org/10.5539/ijef.v12n6p38

Alsmadi, S. A. (2017). Corporate governance and Risk disclosures practices in the annual reports of Jordanian banks [Doctoral dissertation], University of Southampton

Alsmadi, S., Alkhataybeh, A., & Shakhatreh, M. Z. (2022). Corporate cash holdings and disclosure violations: An empirical investigation of Jordanian listed companies. *Journal of Islamic Accounting and Business Research*, *13*(3), 568–580. https://doi.org/10.1108/JIABR-07-2021-0199

Ammann, M., Oesch, D., & Schmid, M. M. (2010). Corporate governance and firm value: International evidence. *Journal of Empirical Finance*, *18*(1), 36–55. https://doi.org/10.1016/j.jempfin.2010.10.003

Anarfo, E. B., Abor, J. Y., & Osei, K. A. (2020). Financial regulation and financial inclusion in sub-Saharan Africa: Does financial stability play a moderating role? *Research in International Business and Finance*, *51*, 101070. https://doi.org/10.1016/j.ribaf.2019.101070

Anton, S. G. (2021). The efficiency of financial intermediation and SMEs' cash holdings: Empirical evidence from emerging Europe. *European Journal International Management*, *1*(1), 1. (Forthcoming). https://doi.org/10.1504/EJIM.2021.10043368

Anton, S. G., & Nucu, A. E. (2019). Firm value and corporate cash holdings. Empirical evidence from Polish listed firms. *Economics & Management*, *22*(3), 121–134. https://doi.org/10.15240/tul/001/2019-3-008

Arellano, M., & Bond, S. R. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, *58*(2), 277–29. https://doi.org/10.2307/2297968

Azinfar, K., & Shiraseb, Z. (2016). An investigation into the impact of ownership structure on the level of cash holdings in the companies accepted in Tehran stock exchange market. *Marketing and Branding Research*, *3*(2), 194–205. https://doi.org/10.33844/mbr.2016.60223

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115–143. https://doi.org/10.1016/S0304-4076(98)00009-8

Borisova, G., Brockman, P., Salas, J. M., & Zagorchev, A. (2012). Government ownership and corporate governance: Evidence from the EU. *Journal of Banking and Finance*, *36*(11), 2917–2934. https://doi.org/10.1016/j.jbankfin.2012.01.008

Borisova, G., Fotak, V., Holland, K., & Megginson, W. L. (2015). Government ownership and the cost of debt: Evidence from government investments in publicly traded firms. *Journal of Financial Economics*, *118*(1), 168–191. https://doi.org/10.1016/j.jfineco.2015.06.011

Boubakri, N., & Cosset, J. C. (1998). The financial and operating performance of newly privatized firms: Evidence from developing countries. *The Journal of Finance*, *53*(3), 1081–1110. https://doi.org/10.1111/0022-1082.00044

Boubakri, N., El Ghoul, S., Guedhami, O., & Megginson, W. L. (2018). The market value of government ownership. *Journal of Corporate Finance*, *50*, 44–65. https://doi.org/10.1016/j.jcorpfin.2017.12.026

Boycko, M., Shleifer, A., & Vishny, R. W. (1996). A theory of privatisation. *The Economic Journal*, *106*(435), 309–319. https://doi.org/10.2307/2235248

Cambrea, D. R., Calabrò, A., La Rocca, M., & Paolone, F. (2021). The impact of boards of directors' characteristics on cash holdings in uncertain times. *Journal of Management & Governance*, *26*(1), 189–221. https://doi.org/10.1007/s10997-020-09557-3

CEIC. (2023). Jordan market capitalization: ASE. Retrieved January 21, 2023, from https://www.ceicdata.com/en/jordan/amman-stock-exchange-market-capitalization/market-capitalization-ase.

Chen, R. R., El Ghoul, S., Guedhami, O., & Nash, R. (2018). State ownership and corporate cash holdings. *Journal of Financial and Quantitative Analysis*, *53*(5), 2293–2334. https://doi.org/10.1017/S0022109018000236

Chen, R. R., Guedhami, O., Yang, Y., & Zaynutdinova, G. R. (2020). Corporate governance and cash holdings: Evidence from worldwide board reforms. *Journal of Corporate Finance*, *65*, 101771. https://doi.org/10.1016/j.jcorpfin.2020.101771

Choi, I. (2001). Unit root tests for panel data. *Journal of International Money and Finance*, *20*(2), 249–272. https://doi.org/10.1016/S0261-5606(00)00048-6

Chong-En, B., Liu, Q., Lu, J., Song, F. M., & Zhang, J. (2004). Corporate governance and firm valuations in China. *Journal of Comparative Economics*, *32*(4), 599–616. https://doi.org/10.1016/j.jce.2004.07.002

Couzoff, P., Banerjee, S., & Pawlina, G. (2022). Effectiveness of monitoring, managerial entrenchment, and corporate cash holdings. *Journal of Corporate Finance*, *77*, 102258. https://doi.org/10.1016/j.jcorpfin.2022.102258

Covrig, V., Lau, S. T., & Ng, L. (2006). Do domestic and foreign fund managers have similar preferences for stock characteristics? A cross-country analysis. *Journal of International Business Studies*, *37*(3), 407–429. https://doi.org/10.1057/palgrave.jibs.8400195

Cuervo-Cazurra, A., Inkpen, A., Musacchio, A., & Ramaswamy, K. (2014). Governments as owners: State-owned multinational companies. *Journal of International Business Studies*, *45*(8), 919–942. https://doi.org/10.1057/jibs.2014.43

Curtiss, J. (2012). Determinants of financial capital use: Review of theories and implications for rural businesses, factor Markets Working. Paper No. 19, CEPS,

Dalloshi, P. (2022). Measurement: Financial development comparison of the high- and low-income countries. *Journal of Governance & Regulation*, *11*(2), 41–49. https://doi.org/10.22495/jgrv11i2art4

De Vito, A., & Gómez, J. P. (2020). Estimating the COVID-19 cash crunch: Global evidence and policy. *Journal of Accounting and Public Policy*, *39*(2), 106741. https://doi.org/10.1016/j.jaccpubpol.2020.106741

Diaw, A. (2021). Corporate cash holdings in emerging markets. *Borsa Istanbul Review*, *21*(2), 139–148. https://doi.org/10.1016/j.bir.2020.09.005

Dittmar, A. K., & Duchin, R. (2010). The dynamics of cash. Michigan Ross School of Business, MI, Working paper No. 1138.

Donaldson, G. (1984). *Managing corporate wealth*. Praeger.

Duchin, R. (2010). Cash holdings and corporate diversification. *The Journal of Finance*, *65*(3), 955–992. https://doi.org/10.1111/j.1540-6261.2010.01558.x

Easterbrook, F. H. (1984). Two agency cost explanations of dividends. *The American Economic Review*, *74*(4), 650–659.

Faccio, M., Masulis, R. W., & McConnell, J. J. (2006). Political connections and corporate bailouts. *The Journal of Finance*, *61*(6), 2597–2635. https://doi.org/10.1111/j.1540-6261.2006.01000.x

Fazzari, S. M. R., Glenn, H., Bruce, C. P., Blinder, A. S., & Poterba, J. M. (1988). Financing constraints and corporate investment. *From Brookings Papers on Economic Activity*, (1), 141–195. https://doi.org/10.2307/2534426

Ferreira, M. A., & Matos, P. (2008). The colors of investors' money: The role of institutional investors around the world. *Journal of Financial Economics*, *88*(3), 499–533. https://doi.org/10.1016/j.jfineco.2007.07.003

Feyen, E., & Zuccardi, H. I. (2020). Bank lending rates and spreads in EMDEs: Evolution, drivers, and policies. World Bank, Policy Research Working Paper No. 9392.

Flannery, M. J., & Hankins, K. W. (2013). Estimating dynamic panel models in corporate finance. *Journal of Corporate Finance*, *19*, 1–19. https://doi.org/10.1016/j.jcorpfin.2012.09.004

Gan, J., Guo, Y., & Xu, C. (2017). Decentralized privatization and change of control rights in China. *The Review of Financial Studies*, *31*(10), 3854–3894. https://doi.org/10.1093/rfs/hhx100

Gao, H., Harford, J., & Li, K. (2013). Determinants of corporate cash policy: Insights from private firms. *Journal of Financial Economics*, *109*(3), 623–639. https://doi.org/10.1016/j.jfineco.2013.04.008

Grossman, S. J., & Hart, O. D. (1980). Takeover bids, the free-rider problem, and the theory of the corporation. *The Bell Journal of Economics*, *11*(1), 42–64. https://doi.org/10.2307/3003400

Gul, R., Ullah, S., Rehman, A. U., Hussain, S., Alam, M., & Ntim, C. G. (2020). Corporate governance and cash holdings: Family versus non-family controlled firms. *Cogent Business & Management*, *7*(1), 1854562. https://doi.org/10.1080/23311975.2020.1854562

Gupta, C. P., & Bedi, P. (2020). Corporate cash holdings and promoter ownership. *Emerging Markets Review*, *44*, 100718. https://doi.org/10.1016/j.ememar.2020.100718

Harford, J. (1999). Corporate cash reserves and acquisitions. *The Journal of Finance*, *54*(6), 1969–1997. https://doi.org/10.1111/0022-1082.00179

Harford, J., Mansi, S. A., & Maxwell, W. F. (2008). Corporate governance and firm cash holdings in the US. *Journal of Financial Economics*, *87*(3), 535–555. https://doi.org/10.1016/j.jfineco.2007.04.002

Hingorani, A., Lehn, K., & Makhija, A. K. (1997). Investor behavior in mass privatization: The case of the Czech voucher scheme. *Journal of Financial Economics*, *44*(3), 349–396. https://doi.org/10.1016/S0304-405X(97)00008-1

Jebran, K., Iqbal, A., Bhat, K. U., Khan, M. A., & Hayat, M. (2019). Determinants of corporate cash holdings in tranquil and turbulent period: Evidence from an emerging economy. *Financial Innovation*, *5*(1), 1–12. https://doi.org/10.1186/s40854-018-0116-y

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review*, *76*(2), 323–329.

Jensen, M., & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X

Jiang, F., & Kim, K. A. (2020). Corporate governance in China: A survey. *Review of Finance*, *24*(4), 733–772. https://doi.org/10.1093/rof/rfaa012

Jiang, Y., Mubarik, M. S., Zaman, S. I., Alam, S. H., & Arif, M. (2023). Corporate governance, cash holding, and firm performance in an emerging market. *International Journal of Finance & Economics, Forthcoming*. https://doi.org/10.1002/ijfe.2804

Jinkar, R. T. (2013). Analisa faktor-faktor penentu kebijakan cash holding perusahaan manufaktur di Indonesia [analysis of the determinants of cash holding policy of manufacturing companies in Indonesia]. *Mini Economica*, *42*, 129–146.

Keynes, J. M. (1937). The general theory of employment. *The Quarterly Journal of Economics*, *51*(2), 209–223. https://doi.org/10.2307/1882087

Khataybeh, M. A., & McMillan, D. (2021). Do financing constraints hinder corporate fixed investment? Evidence from the amman stock exchange. *Cogent Business & Management*, *8*(1), 1910161. https://doi.org/10.1080/23311975.2021.1910161

Kornai, J. (1979). Resource-constrained versus demand-constrained Systems. *Econometrica*, *47)4*(4), 801–819. https://doi.org/10.2307/1914132

Kusnadi, Y., Yang, Z., & Zhou, Y. (2015). Institutional development, state ownership, and corporate cash holdings: Evidence from China. *Journal of Business Research*, *68*(2), 351–359. https://doi.org/10.1016/j.jbusres.2014.06.023

Lel, U. (2019). The role of foreign institutional investors in restraining earnings management activities across countries. *Journal of International Business Studies*, *50*(6), 895–922. https://doi.org/10.1057/s41267-018-0195-z

Li, X. (2019). Economic policy uncertainty and corporate cash policy: International evidence. *Journal of Accounting and Public Policy*, *38*(6), 106694. https://doi.org/10.1016/j.jaccpubpol.2019.106694

Loncan, T. (2018). Foreign institutional ownership and corporate cash holdings: Evidence from emerging economies. *International Review of Financial Analysis*, *12*(3), 5–11.

Maheshwari, Y., & Rao, K. V. (2017). Determinants of corporate cash holdings. *Global Business Review*, *18*(2), 416–442. https://doi.org/10.1177/0972150916668610

Mansur, Y., Al-Khatib, B., & Anzeh, W. A. (2019). Economic policy in Jordan. Rosa Luxemburg Stiftung Regional Office Palestine & Jordan. Retrieved September 10, 2023, from https://www.rosalux.ps/wpcontent/uploads/2019/06/rosa-Jordan-study-English.Pdf.

Martínez-Sola, C., García-Teruel, P. J., & Martínez-Solano, P. (2018). Cash holdings in SMEs: Speed of adjustment, growth and financing. *Small Business Economics*, *51*(4), 823–842. https://doi.org/10.1007/s11187-018-9990-y

Megginson, W. L. (2017). Privatization, state capitalism, and state ownership of business in the 21st century. *Foundations and Trends in Finance*, *11*(1–2), 1–153. https://doi.org/10.1561/0500000053

Megginson, W. L., Ullah, B., & Wei, Z. (2014). State ownership, soft-budget constraints, and cash holdings: Evidence from China's privatized firms. *Journal of Banking and Finance*, *48*, 276–291. https://doi.org/10.1016/j.jbankfin.2014.06.011

Mersni, H., & Can, G. (2022). The moderator effect of institutional ownership on the relationship between cash holdings of life-cycle stages: Evidence from Borsa Istanbul. *Business and Economics Research Journal*, *13*(3), 417–443. https://doi.org/10.20409/berj.2022.381

Moin, A., Guney, Y., & El Kalak, I. (2020). The effects of ownership structure, sub-optimal cash holdings and investment inefficiency on dividend policy: Evidence from Indonesia. *Review of Quantitative Finance & Accounting*, *55*(3), 857–900. https://doi.org/10.1007/s11156-019-00862-z

Myers, S. C., & Majluf, N. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*(2), 187–221. https://doi.org/10.1016/0304-405X(84)90023-0

Myers, S. C., & Rajan, R. G. (1998). The paradox of liquidity. *The Quarterly Journal of Economics*, *113*(3), 733–771. https://doi.org/10.1162/003355398555739

Nguyen, P., & Rahman, N. (2020). Institutional ownership, cross-shareholdings and corporate cash reserves in Japan. *Accounting & Finance*, *60*(1), 1175–1207. https://doi.org/10.1111/acfi.12415

Nguyen, T. T. H., & Wong, W. K. (2021). Do state ownership and business environment explain corporate cash holdings? Empirical evidence from an emerging country. *Asian Academy of Management Journal of Accounting and Finance*, *17*(1), 1–33. https://doi.org/10.21315/aamjaf2021.17.1.1

Office of King Hussein 1. (n.d.) Privatization. Retrieved August 25, 2023, from http://www.kinghussein.gov.jo/economy5.html

Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (1999). The determinants and implications of corporate cash holdings. *Journal of Financial Economics*, *52*(1), 3–46. https://doi.org/10.1016/S0304-405X(99)00003-3

Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (2005). Corporate cash holdings. *Journal of Applied Corporate Finance*, *52*(3), 3–460.

Ozkan, A., & Ozkan, N. (2004). Corporate cash holdings: An empirical investigation of UK companies. *Journal of Banking and Finance*, *28*(9), 2103–2134. https://doi.org/10.1016/j.jbankfin.2003.08.003

Rashid Khan, H. U., Khidmat, W. B., Hares, O. A., Muhammad, N., & Saleem, K. (2020). Corporate governance quality, ownership structure, agency costs and firm performance. Evidence from an emerging economy. *Journal of Risk and Financial Management*, *13*(7), 15–189. https://doi.org/10.3390/jrfm13070154

Roodman, D. (2009). How to do xtabond2: An introduction to difference and system GMM in stata. *The Stata Journal*, *9*(1), 86–136. https://doi.org/10.1177/1536867X0900900106

Sakawa, H., & Watanabel, N. (2020). Institutional ownership and firm performance under stakeholder-oriented corporate governance. *Sustainability*, *12*(3), 1021. https://doi.org/10.3390/su12031021

Saleh, I., Abu Afifa, M., & Alkhawaja, A. (2023). Internal corporate governance mechanisms and earnings manipulation practices in MENA countries. *Economic Research-Ekonomska Istraživanja*, *36*(2), 2134902. https://doi.org/10.1080/1331677X.2022.2134902

Scherr, F. C. (1989). *Modern Working capital management: Text and cases*. Prentice Hall.

Seifert, B., & Gonenc, H. (2016). Creditor rights, country governance, and corporate cash holdings. *Journal of International Financial Management & Accounting*, *27*(1), 65–90. https://doi.org/10.1111/jifm.12033

Sher, G. (2014, December). Cashing in for growth: Corporate cash holdings as an opportunity for investment in Japan. Working paper, International Monetary Fund.

Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of Political Economy*, *94*(3, Part 1), 461–488. https://doi.org/10.1086/261385

Shleifer, A., & Vishny, R. W. (1994). Politicians and firms. *The Quarterly Journal of Economics*, *109*(4), 995–1025. https://doi.org/10.2307/2118354

Stulz, R. (1990). Managerial discretion and optimal financing policies. *Journal of Financial Economics*, *26*(1), 3–28. https://doi.org/10.1016/0304-405X(90)90011-N

Sun, L., Phan, H. V., & Simpson, T. (2021). Blockholder exit threats and corporate cash holdings. *Financial Review*, *56*(4), 821–843. https://doi.org/10.1111/fire.12278

Tayem, G. (2017). The determinants of corporate cash holdings: The case of a small emerging market. *International Journal of Financial Research*, *8*(1), 143–154. https://doi.org/10.5430/ijfr.v8n1p143

Tayem, G., Tayeh, M., & Spetan, K. A. (2019). Corporate cash holdings and ownership structure: A quantile regression analysis. *Jordan Journal of Economic Sciences*, *6*(1), 65–80. https://doi.org/10.35516/1250-006-001-004

Thi, Q. N. N., Tran, Q. T., & Doan, H. P. (2021). Foreign ownership, state ownership and cash holdings under the global financial crisis: Evidence from the emerging market of Vietnam. *International Journal of Emerging Markets*. https://doi.org/10.1108/IJOEM-03-2020-0303

Tran, Q. T. (2019). Corruption, agency costs and dividend policy: International evidence. *The Quarterly Review of Economics & Finance*, *76*, 325–334. https://doi.org/10.1016/j.qref.2019.09.010

Tran, Q. T. (2021). State ownership and value of cash: New evidence from an emerging market. *International Journal of Emerging Markets*, Forthcoming. https://doi.org/10.1108/IJOEM-02-2020-0196

Tsang, A., Xie, F., & X, X. I. N. (2019). Foreign institutional investors and corporate voluntary disclosure around the world. *The Accounting Review*, *94*(5), 319–348. https://doi.org/10.2308/accr-52353

Udin, S., Khan, M. A., & Javid, A. Y. (2017). The effects of ownership structure on likelihood of financial distress: An empirical evidence. *Corporate Governance the International Journal of Business in Society*, *17*(4), 589–612. https://doi.org/10.1108/CG-03-2016-0067

U.S. Department of State. (2020). Investment climate statements: Jordan. Retrieved August 25, 2022, from https://www.state.gov/reports/2020-investment-climate-statements/jordan/.

Vickers, J., & Yarrow, G. K. (1988). *Privatization: An economic analysis*. MIT Press.

Vo, X. V. (2018). Foreign ownership and corporate cash holdings in emerging markets. *International Review of Finance*, *18*(2), 297–303. https://doi.org/10.1111/irfi.12130

Wang, Y., Ji, Y., Chen, X., & Song, C. (2014). Inflation, operating cycle, and cash holdings. *China Journal of Accounting Research*, *7*(4), 263–276. https://doi.org/10.1016/j.cjar.2013.07.001

World Bank. (2022). The global financial development database. Retrieved December 25, 2022, from https://www.worldbank.org/en/publication/gfdr/data/global-financial-development-database.

Wright, F. K. (1978). Minimizing the costs of liquidity. *Australian Journal of Management*, *3*(2), 203–224. https://doi.org/10.1177/031289627800300207

Yu, D., Soh, W., Noordin, B. A. A., Yahya, M. H., & Latif, B. (2022). State ownership, information asymmetry and cash holding: Impact of COVID-19 on Chinese-listed firms. *Frontiers in Psychology*, *13*, 1052979. https://doi.org/10.3389/fpsyg.2022.1052979

Appendix A

Table A1. Logistic regression estimates (RE).

Variable	Coef	Std Error	p-value
Investment Decision (Increased *CapEx*)			
CH $_{i,t-1}$	−0.882	0.616	0.182
*Gov*CH*	10.968	12.886	0.395
SalesGr $_{i,t}$	−0.424	0.294	0.150
Dbt $_{i,t}$	1.674**	0.826	0.043
CFlow $_{i,t}$	2.354***	0.792	0.003
Block $_{i,t}$	0.017	0.747	0.982
Indiv $_{i,t}$	−0.076	0.661	0.908
Gov $_{i,t}$	2.999*	1.400	0.098
Foreign $_{i,t}$	−1.019	0.725	0.161
Divid	0.126	0.247	0.719
Intspread $_{i,t}$	−0.138	0.269	0.608
InfGDP $_{i,t}$	−0.032	0.060	0.590
# of firms	101		
# of observations	564		
Chi-Sq (12)	23.47		0.024

***, ** and * represent significance levels of 1%, 5% and 10%, respectively.
Increase Capex: a dummy variable equal to 1 if a firm increases capital expenditure in the following year, and zero otherwise.

Table A2. Logistic regression estimates (RE).

Variable	Coef	Std Error	p-value
Pay-out Policy (Increased Div)			
CH $_{i,t-1}$	8.215***	2.624	0.002
*Gov*CH*	43.976	93.056	0.637
SalesGr $_{i,t}$	0.794*	0.456	0.082
Dbt $_{i,t}$	0.173	1.451	0.905
CFlow $_{i,t}$	1.764*	0.903	0.051
Block $_{i,t}$	−0.467	1.371	0.733
Indiv $_{i,t}$	−0.440	1.197	0.713
Gov $_{i,t}$	6.745**	2.786	0.020
Foreign $_{i,t}$	2.323	1.651	0.160
CapEx $_{i,t}$	4.053**	1.921	0.035
InfGDP i,t	0.094	0.088	0.286
Intspread i,t	0.475	0.386	0.219
# of firms	107		
# of observations	625		
Chi-Sq (12)	28.73		0.004

***, ** and * represent significance levels of 1%, 5% and 10%, respectively.
INCREASE DIV: a dummy variable equal to 1 if a firm increases the sum of dividends in the following year, and zero otherwise.