

Article

# Government Ownership and Corporate Cash Holdings: Empirical Evidence from the Amman Stock Exchange

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**Abstract:** While the effect of ownership structure on the level of cash holdings has been widely examined, that of government ownership has been understudied. Using a generalized method of moments (GMM) estimation on the panel data of 107 Jordanian firms listed on the Amman Stock Exchange, this research adds to the limited literature on the relationship between government ownership and the level of corporate cash holdings. Consistent with agency theory, the findings reveal that firms with government ownership hold higher levels of cash and that such ownership creates agency problems. Other types of ownership, namely individual, foreign, and block holders, were found to be insignificant. The results provide an important implication for policy makers in Jordan: in order to reduce agency problems associated with government ownership, the government should revise its ownership policy and ensure it specifies clear purposes and expectations of business ownership and how it intends to exercise its rights as owner.

**Keywords:** cash holdings; government ownership; generalized method of moments**JEL Classification:** G11; G30; G34; M41

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## 1. Introduction

To increase value, firms should not keep non-productive assets and should finance their investments with the cheapest sources of funds. External sources, if available, are thought to be more expensive than internal ones due to asymmetric information, transaction costs, tax benefits, and the cost of financial distress. If capital markets were perfect, this argument would be irrelevant, as there would be no uncertainty, information asymmetry, transaction costs, nor financial constraints. Firms would lend and borrow at the same interest rate, and the capital market would reflect all available information. If this were the case, firms would have no incentive to finance nor to invest in the short term; hence, working capital accounts would be unnecessary.

In the real world, however, issues of information asymmetry and transaction costs must be addressed. While firms have a variety of options, Scherr [1] claims that those including investment and financing through working capital accounts often provide a significant advantage. He argues that when a company is faced with uncertainty about its predicted future cash flows, it will incur significant costs if it has insufficient financial reserves to cover expenses. To deal with this unpredictability and the expenses it may entail, various techniques could be implemented, including working capital investment or financing, such as maintaining a reserve of short-term cash balances above estimated needs. Therefore, management of cash holdings and determination of the level of cash to be held is vital for firms' financial stability and success.

According to the Keynesian Liquidity Preference Theory [2], corporate economic activity requires money or liquidity. Keynes described the three motives in the theory. First, the transactions motive, which is driven by corporate decisions to favor liquidity for routine

business transactions or daily expenses. Instead of struggling or borrowing, businesses prefer to have liquidity to meet their short-term obligations. The second is the speculative motive, which describes how companies intend to profit speculatively from fluctuations in interest rates. It is believed that businesses may require more liquidity when interest rates are low because they anticipate an increase in rates in the future and, as a result, they retain cash. Finally, the precautionary demand motive, which represents the need to cover unforeseen investment possibilities, contingencies, or unexpected expenditures.

Between the opportunity costs of lost investments when holding cash (i.e., a non-earning asset) and the benefits of reducing the transaction costs of external funds and being able to finance projects when necessary, firms vacillate with regard to the levels of cash being held. To make matters more complicated, firms also need to deal with the expected agency problems associated with the high levels of cash, because cash is vulnerable to exploitation by managers [3]. Consequently, examining the factors that affect the level of cash holdings and how cash holdings are used is inevitable.

In Jordan, cash holdings have been examined extensively. A stream of research has examined the determinants of the levels of cash held by Jordanian firms; for example, working capital management [4], directors' ownership, organizational ownership and foreign ownership [5], and disclosure quality [6]. Another stream has examined the effect of cash holdings on firm value [7] and profitability [8]. However, the effect of government ownership on the level of cash holdings has yet to be examined. Therefore, this research intends to fill this gap.

Government ownership is expected to affect cash holdings in either of two ways. On the one hand, it can provide a type of guarantee to the investing firm, especially if the government, through this investment, has social or political goals, such as reducing the level of unemployment or helping certain industries to thrive. Therefore, the government will not allow such firms to fail, by providing capital directly or by serving as a guarantor to lending banks or by relaxing taxes. Therefore, firms are less likely to face distress [9] and will have a lower risk of default, lower capital costs, and hence lower cash holdings. On the other hand, government ownership might provide protection to firm management, resulting in moral hazards and managers who are not afraid of losing their job. In such a case, managers, and government (who might have other priorities), will cause the firm's value to fall and the risk of default to increase, leading to higher capital costs and cash holdings. Moreover, in this scenario, managers are also expected to hold higher levels of cash, because it is less costly to exploit and subject to less market discipline. Consequently, we expect that government ownership will affect the level of cash holdings of Jordanian firms.

Government ownership is important for several reasons. First, it is considered common in Middle Eastern countries [10]. Second, due to its power, the government is expected to exercise higher intervention [11], which will affect the attitudes of top management. Third, government owners are the only ones who are not solely concerned with profit maximization [12,13]; rather, they have social and political priorities that will affect decisions taken, which may create conflicts of interest with other owners. However, there is limited research on the effect of government ownership on the level of cash holdings [14]. Hence, here we examine the effect of government ownership on the level of cash holdings in Jordan.

The rationale for researching the Jordanian context is as follows. First, for many market participants, it is critical to provide evidence on how government ownership affects company cash holdings in the Jordanian market, namely the Amman Stock Exchange (ASE). With more than 280 companies listed since its founding in 1999, the ASE is regarded as a relatively high liquid market, with a market capitalization of roughly USD 26 billion, offering diversified choices for portfolio investors. The results of this research provide important insights into the effectiveness of government ownership in monitoring management and agency problems. Therefore, the economic significance of this market drives the importance of this research, which helps improve informational efficiency and sheds light on the factors that investors should consider before making investment decisions on the ASE.

Second, the Jordanian government has been attempting to globalize the ASE to encourage foreign inflow. In a bid to increase the efficiency of the market, since the late nineties the government has surrendered a large share of its equity ownership to the private sector. Firms owned by the government used to suffer from administrative interference, little autonomy, insufficient investment resources, and poorly constructed incentive systems; therefore, privatization in Jordan was aimed at improving firm efficiency and improving operational performance. However, the government still has ownership interests and exercises delegated powers in more than 9% of the listed firms on the Amman Stock Exchange [15]; such firms have received limited attention in the research on cash holdings. Furthermore, the Jordanian government is currently studying the privatization of certain other firms [16]; this research could be of great importance for the government in evaluating privatizing the remaining government ownership.

Consistent with the view that government ownership leads to ineffective monitoring and agency problems, we found that it is positively related to corporate cash holdings. The study contributes to the literature in several ways. First, we provide detailed analysis of the effect of government ownership on the levels of cash held. This issue, despite the dramatic recent increase in government intervention [17], has been little examined in the literature [14] for both developed and developing countries. Second, by understanding the effect of government investment on firms' cash holdings, we provide implications for various market players in Jordan. Third, we extend our analysis to ascertain why firms hold more cash in the case of government ownership and use our empirical evidence to gauge the theoretical explanation of Jordanian firms' attitude to cash holdings. Fourth, if the government of Jordan is to continue to own shares in those firms, it is advised to act as a diligent and informed owner, but at arm's length from management. Moreover, the government is advised to rethink its ownership policy; the policy should set forth the purposes of business ownership and the intended expectations of the owned firms by the government. It should also specify how it will fulfil its rights as owner.

The remainder of the study is organized as follows. In Sections 2 and 3, we present the theoretical background and a review of the literature, respectively, and develop our hypothesis. Section 4 presents the methodology employed to address the research question, while in Section 5, we provide the descriptive statistics and discuss the results. In Section 6, we discuss why government ownership is associated with higher levels of cash, and finally Section 7 presents the conclusion.

## 2. Government Ownership and the Agency Theory

According to agency theory, separation between owners (principals) and management (agents) raises a risk that owners' interests and management interests are not aligned, thus a conflict of interests arise, and agency costs become inevitable [18,19]. Such costs result from monitoring mechanisms employed to keep an eye on management and to rein in their self-interested actions. Corporate governance tools such as ownership structures can play a significant role in monitoring the opportunistic behavior of managers [20–23]. An ownership structure can be used to keep an eye on and exert more control over key corporate decisions. By doing so, the agency problem might be alleviated, and organizational activities might be directed toward the company's interests rather than those of a certain group [22–25]. This might eventually improve the performance of the business [24].

Different types of ownership include managerial, institutional, family, and government ownership; among these, government ownership has aims that are distinct from those of other groups. According to agency theory, government ownership may result in inefficient governance and reduced managerial incentives [17]. As a result, corporate performance could be less impressive than it would be for privately held businesses [26]. This is supported by the claim that the government's major ownership would divert funds away from the business. Instead of focusing on business objectives, such as wealth maximization, government ownership might direct resources toward achieving social and political goals, particularly if the government, through this investment, has social or political goals such as

lowering the unemployment rate, promoting certain industries, or supporting the ruling party [9]. Furthermore, regardless of the company's financial situation, government owners are more likely to keep surplus staff or hire political supporters [17]. These ineffective initiatives ultimately deprive minority shareholders of their resources and raise agency costs, which have an adverse effect on business performance [21].

### 3. Literature Review and Hypothesis Development

According to Keynesian theory, firms value liquidity for three reasons: first, the transaction motive, which facilitates the routine daily business transactions that meet its short-term obligations without facing the risk of insolvency; second, to provide for unforeseen expenditures and contingencies (as explained by the precaution motive); and third, to save opportunity costs associated with lost investments in the case of insufficient funds (a speculative motive), consistent with the pecking order and trade-off theories, otherwise known as the financing friction hypothesis.

Pecking order theory expects firms with expensive external financing and higher capital costs to depend on internal financing and to hold higher levels of cash, or vice-versa [3]. In addition, trade-off theory consistently expects that firms with higher capital costs will accrue more benefits from holding higher levels of cash, i.e., their optimal level of cash is expected to be higher [27]. Second, managers might hold cash to exploit it for personal interests, which is what the free cash flow theory expects; they will hold higher levels of cash to increase the assets under their control and to reduce the need for external financing, hence leading to less market discipline [28].

Studies on cash holdings provide support for the above-mentioned reasons. For example, regarding the transaction motive, the objective of corporate cash holdings is to ensure the liquidity levels required to meet short-term obligations, thus avoiding the risk of insolvency and the cost of short-term borrowing. In the Jordanian context, this argument is consistent with the findings of Shubita and Shubita [4]. With regard to the precautionary motive, firms have been found to hold higher cash levels when faced with difficulties in raising external capital [27] and by higher cash-flow uncertainty [29]. Al-Amarneh [30] and Iskandrani et al. [31] found that firms in Jordan hold cash for precautionary reasons. In the same vein, McLean [32] found that firms faced with higher R&D expenses increase their cash holdings as a precaution. Firms in Jordan have been found to hold higher levels of cash when they have higher growth opportunities [33,34], consistent with the speculative motive. On the contrary, it has been found that firms hold more cash in case of higher agency problems at the firm and country levels [32,35].

Government ownership, as previously explained, can affect the level of cash holding through the predictions of Keynesian theory. Simply put, firms hold cash for speculation, precaution, and transaction motives. If the government provides different kinds of support, such as laxer taxes, direct finance of capital as part of its investment policy, or by guaranteeing firms will receive preferential loans [36,37], firms with government ownership will have easier access to cash, and will therefore have less motive to hold it. This is consistent with the expectations of the soft budget constraints theory [38], which expects that when a government owns shares in a firm, it will provide different kinds of support, such as laxer taxes and access to credit; moreover, in cases of financial distress, the government might intervene to save the firm [39]. If this holds true, government-owned firms will make fewer transactions and have fewer precautionary motives. As expected by pecking order and trade-off theories, such firms will therefore hold less cash.

On the other hand, agency theory predicts that government ownership will increase agency costs. Such costs are partly expected to rise because managers, under the pressure of government, might serve political interests rather than those of shareholders. Moreover, the managers in such firms are less subject to effective monitoring because, with the role played by government and politicians, fewer owners will engage in such action [40,41]. In fact, it has been found that state ownership increases agency problems because of ineffective monitoring [11,42,43]. Research on the effect of government ownership on cash holdings

has provided mixed results. Megginson et al. [44] found that it was negatively related to cash holdings in China, while Abramov et al. [45] demonstrated that government-owned firms increased their cash holdings to serve political interests. Chen et al. [14] argued that government ownership is positively related to cash holdings. Based on the mixed empirical and theoretical evidence, the following non-directional hypothesis is formulated:

**Hypothesis 1 (H1).** *Government ownership is significantly related to the level of cash holdings of Jordanian firms.*

## 4. Data and Methodology

### 4.1. Data

The study employs a panel dataset for 107 Jordanian listed companies in the service and industrial sectors covering the period 2009 to 2018. Financial data were gathered from the official website of the Amman Stock Exchange (ASE). The operational measures of the variables utilized in the analysis are shown in Table 1, and their summary statistics and correlation matrix can be seen in Table 2. The average value of cash holdings is 16.1%; compared to other developing countries, this is considered to be high. For example, Al-Najjar [46] reported an average CH of 5.6% for Brazil, Russia, India, and China over the period 2002 to 2008. For the period 2007 to 2012, Maheshwari and Rao [47] reported an average CH of 14.4% in India. This average is also high if compared to developed countries; for example, it was 5.9% for a sample of UK-listed firms [48] and 10.19% for Spanish firms [49].

The average value of the main independent variable, government ownership (Govt.), is 7.5%. This is considered low compared to other developing countries, for example, 24.35% in Vietnam [52] and 25% in China [14]. However, it is still high compared to firms in Kuwait, another Middle Eastern country, where government ownership is on average 3% [52,53]. Averages for other types of ownership, as in Table 1, are block-holders (Block) at 63.7%, Individuals (Indiv) at 48%, and Foreigners (Foreign) at 19.2%. Cash flow from operations (CFlow) is on average 6.1%, although some firms had negative operating cash flows. Debt issues (DbtIssues) stood at 15.2%, meaning that Jordanian firms increase their debt by 15% on average. SGr is 13.6%, indicating that, on average, firms increase sales by approximately 14%. Finally, CapEx is on average of 24.7%, meaning that firms increase their capital expenditure on average by 25%. The criterion of non-multicollinearity was confirmed, and there was no evidence of multicollinearity among the variables in the correlation coefficient matrix.

**Table 1.** Operational measures of the variables.

Variable	Measurement	References
Cash holdings (CH)	(Cash + cash equivalent)/total assets at time $t - 1$ .	[34,49]
Sales growth (Sgr)	Change in net sales/net sales at time $t - 1$ .	[49,50]
Debt issues (DbtIssues)	Annual change in long-term debt/total assets at time $t - 1$ .	[35,50]
Cash flow (CFlow)	Total internally generated funds/total assets at time $t - 1$ .	[34,50,51]
Block Holders (Block)	Percentage of non-management equity owners with more than 5% ownership	[13,24]
Individuals (Indiv)	Percentage of shares held by individuals	[7]
Government (Govt)	Percentage of shares held by the government	[12–14]
Foreign (Foreign)	Percentage of shares held by foreign investors	[13,17]
Capital expenditure (CapEx)	Annual change in net fixed assets/total assets at time $t - 1$ .	[34,35]

**Table 2.** Pair-wise correlation matrix and descriptive statistics.

Variable	MEAN	S.D.	Obs	CH	SGr	DbtIssues	CFlow	Block	Indiv	Govt	Foreign	CapEx
CH	0.161	0.378	1062	1.000								
SGr	3.020	12.954	980	0.029	1.000							
DbtIssues	0.152	0.411	843	0.264 ***	0.077 **	1.000						
CFlow	0.061	0.490	1075	0.322 ***	−0.032	0.098 ***	1.000					
Block	0.637	0.234	1086	0.006	0.013	0.055	−0.017	1.000				
Indiv	0.480	0.299	1086	0.005	−0.059 *	−0.080 **	−0.002	−0.433 **	1.000			
Govt	0.075	0.156	1086	0.124 ***	0.066 *	0.149 ***	0.056 **	0.081 ***	−0.355 **	1.000		
Foreign	0.192	0.246	1086	0.003	−0.004	−0.049	0.004	0.153 ***	−0.301 **	−0.071 **	1.000	
CapEx	0.247	0.590	939	0.227 ***	0.076 **	0.338 ***	0.209 ***	0.002	0.059 *	0.012	−0.004	1.000

\*, \*\*, and \*\*\* reflect significance at levels of 10%, 5% and 1%, respectively.

#### 4.2. Methodology

According to Roodman [54], the generalized method of moments (GMM) is the most appropriate econometric estimator for dynamic model estimation. The system-GMM estimator is designed to accommodate a variety of data-generation assumptions and to deal with the dynamic generating process, which occurs when lagged dependent variables affect the dependent variable. It also manages the existence of unobserved heterogeneity and takes into account unobserved time-invariant effects. Third, the endogeneity issue caused by the explanatory factors is addressed by this methodology. Fourth, it is specially developed to deal with panels that have many individuals and few time periods (large N and small T), as well as to deal with the assumption that good instruments are available internally based on the lags of the instrumented variables and are not available outside the immediate dataset. Accordingly, to examine how government ownership affects the level of cash holdings (the aim of this research), the analysis is based on the following regression model:

$$CH_{i,t} = \beta_1 CH_{i,t-1} + \beta_2 SGr_{i,t} + \beta_3 DbtIssues_{i,t} + \beta_4 CFlow_{i,t} + \beta_5 Block_{i,t} + \beta_6 Indiv_{i,t} + \beta_7 Govt_{i,t} + \beta_8 Foreign_{i,t} + \beta_9 CapEx_{i,t} + f_i + d_t + \varepsilon_{i,t} \quad (1)$$

In order to control for corporate growth and investment demand, as discussed in the accelerator theory, SGr has been added to the model, together with DbtIssues and CFlow, which are used to control for trade-off and pecking order theories, and CapEx, which is used to control for capital expenditures. The model also controls for firm-fixed effects ( $f_i$ ) and year-fixed effects ( $d_t$ ). However, due to the lack of information in Jordanian firms' annual reports, we were unable to add equity issues and research and development expenditure to the list of predictors.

Due to the study model's dynamic structure and the endogeneity of its predictors, traditional least squares regressions produced somewhat inconsistent results. The association between the lagged dependent variable and the unobservable fixed effects, as well as the endogenous nature of the predictors, explain this inconsistency [55]. As a result, Arellano and Bond [56] introduced the differenced-GMM estimator and took the initial difference to solve this issue; nonetheless, this approach does not completely avoid the association between the disturbances and the lagged dependent variable. To solve the endogeneity problem, it is crucial to utilize instruments that are not correlated with the residuals, but with the explanatory factors. However, as Blundell and Bond [57] and Alkhataybeh [50] point out, in the presence of weak instruments, estimates of the difference-GMM are not totally reliable because estimations tend to be downward biased (According to Alkhataybeh [50], inconsistent difference-GMM estimates can be discovered if the coefficient of the lagged dependent variable falls between OLS (upward-biased) and fixed-effect (downward-biased) estimates, with being closer to the second).

Blundell and Bond [57] created the system GMM estimator, which involves a set of the moment conditions for the differenced equation as well as for the equation in level to improve the estimator. It is preferable to utilize one-step or two-step estimation while using it. Homoscedastic errors are assumed in the one-step estimator, while heteroscedastic

ones are assumed in the two-step version. Flannery and Hankins [55] found that the two-step estimator was asymptotically more efficient in this setting, but that its standard error estimates were frequently biased downwards. As a result, the use of finite-sample standard error correction is encouraged. This study therefore considers the use of finite sample correction in the estimation of the two-step system-GMM. It should be emphasized that the instruments employed for the level equation in this study are the lagged difference and lagged level endogenous variables (dated  $t - 2$  to  $t - 2$ ) for the equation in difference.

## 5. Results and Discussion

The estimation results of the dynamic GMM model for the CH determinants are shown in Table 3. The lagged dependent variable (cash) has a positive and significantly different from zero coefficient, indicating that lagged cash levels positively influence current cash levels. Sgr, a control for growth opportunities, is almost zero. According to our results, sales growth does not have an impact on the level of CH. This is consistent with previous research [48,58,59] Therefore, growth opportunities do not play an important role in determining CH. This is inconsistent with the predictions of theories explaining CH levels. As mentioned previously, the financial system in Jordan is bank oriented, and government ownership also ensures preferential access to credit. Therefore, the opportunity costs of lost investments and growth opportunities are less relevant in Jordan.

**Table 3.** Estimation results of the dynamic cash holding model.

	One-Step GMM	Two-Step GMM
	CH	CH
$CH_{i,t-1}$	0.140 * (0.080)	0.140 * (0.080)
$Sgr_{i,t}$	−0.002 (0.002)	−0.002 (0.002)
$DbtIssues_{i,t}$	0.063 * (0.037)	0.064 * (0.037)
$CFlow_{i,t}$	0.295 *** (0.112)	0.294 *** (0.111)
$Block_{i,t}$	0.011 (0.181)	0.014 (0.175)
$Indiv_{i,t}$	0.157 (0.135)	0.157 (0.135)
$Govt_{i,t}$	0.605 *** (0.210)	0.603 *** (0.209)
$Foreign_{i,t}$	0.150 (0.129)	0.148 (0.130)
$CapEx_{i,t}$	0.082 * (0.043)	0.082 * (0.043)
Firm dummies	Yes	Yes
Year dummies	Yes	Yes
# of observations	625	625
# of firms	107	107
# of instruments	105	105
AR (1)	−2.91 ( $p = 0.004$ )	−2.58 ( $p = 0.010$ )
AR (2)	1.07 ( $p = 0.285$ )	1.14 ( $p = 0.256$ )
Hansen-test	92.18 ( $p = 0.332$ )	92.18 ( $p = 0.332$ )

\*, \*\*, and \*\*\* indicate significance of the coefficients at levels of 10%, 5%, and 1%, respectively.

$DbtIssues$  is found to be significantly and positively related to the level of  $CH$ , indicating that firms with new debt issues tend to hold more cash; this is in line with the findings of Maheshwari and Rao [47] and with trade-off theory. Such theory expects that firms with

higher debt levels will hold higher levels of cash because of the greater risk of bankruptcy. Companies with insolvency problems and facing the risk of bankruptcy tend to hold more cash [60] as a precaution. Therefore, such firms will raise more debt, if available, to increase their cash reserves.

CFlow has a positive significant effect on CH; in other words, firms tend to hold more cash when higher cash flows are in place, a finding that is consistent with free cash flow and pecking order theory. The positive result is consistent with the works of Ozkan and Ozkan [48] and Sher [51]. Capital expenditure (CapEx) is positively and statistically related to the levels of cash holdings, which is consistent with Jinkar [61] and Jebran et al. [62]. Supporting trade-off theory, this indicates that with higher capital expenditure in place, firms tend to hold higher levels of cash as a precaution in anticipation of investment frictions and time lags.

Finally, regarding our main variable, government ownership (Govt) was found to be significantly and positively associated with the levels of CH. Therefore, firms in Jordan with more shares owned by the government tend to hold higher levels of cash. The result is consistent with Gao et al. [63] and Chen et al. [14]. The results of the Arellano–Bond test of autocorrelation and Hansen’s J-test for the validity of the used instruments confirm the consistency of the one-step and two-step system-GMM estimates.

#### Robustness Tests and Results

To check the robustness of the main findings, we ran two alternative model specifications to investigate the impact of government ownership on corporate cash holdings. First, following Tobin’s q theory, we considered an alternative controlling proxy for corporate growth and investment demand; that is, the market to book ratio (MBR) instead of the SGr. As presented in Table 4, the inclusion of this control verified the initial findings reported in Table 3, despite the apparent slight variations in the coefficients’ magnitude. We continued to find statistical effects of DbtIssues, CFlow, CapEx, and Govt on corporate cash holdings.

**Table 4.** Estimation results of the dynamic cash holding model (controlling for MBR).

	Two-Step GMM	Two-Step GMM
	CH	CH
$CH_{i,t-1}$	0.149 * (0.009)	0.149 * (0.087)
$MBR_{i,t}$	0.009 (0.011)	0.008 (0.011)
$DbtIssues_{i,t}$	0.100 ** (0.040)	0.101 ** (0.040)
$CFlow_{i,t}$	0.334 *** (0.106)	0.335 *** (0.103)
$Block_{i,t}$	0.214 (0.236)	0.211 (0.230)
$Indiv_{i,t}$	0.260 (0.153)	0.263 (0.155)
$Govt_{i,t}$	0.656 *** (0.213)	0.657 *** (0.213)
$Foreign_{i,t}$	0.075 (0.122)	0.078 (0.120)
$CapEx_{i,t}$	0.080 ** (0.039)	0.080 ** (0.040)
Firm dummies	Yes	Yes
Year dummies	Yes	Yes
# of observations	625	625
# of firms	107	107
# of instruments	105	105



Table 4. Cont.

	Two-Step GMM	
	CH	
AR (1)	−2.14 ( <i>p</i> = 0.032)	−1.40 ( <i>p</i> = 0.061)
AR (2)	1.40 ( <i>p</i> = 0.162)	1.44 ( <i>p</i> = 0.149)
Hansen-test	94.01 ( <i>p</i> = 0.285)	94.01 ( <i>p</i> = 0.285)

\*, \*\*, and \*\*\* indicate significance of the coefficients at levels of 10%, 5%, and 1%, respectively.

Second, the potential interaction effect of different types of ownership on corporate cash holding was investigated. The inclusion of the ownership type interaction variables shown in Table 5 does not demonstrate that these interactions boost the model's explanatory power or make a statistical contribution. Despite the slight changes in the magnitudes of the coefficients, we continued to observe statistical effects of *DbtIssues*, *CFlow*, *CapEx*, and *Govt* on corporate cash holdings, which is consistent with the initial findings shown in Table 3.

Table 5. Estimation results of the dynamic cash holding model with ownership interactions.

	Two-Step GMM	Two-Step GMM	Two-Step GMM	Two-Step GMM	Two-Step GMM	Two-Step GMM
	CH	CH	CH	CH	CH	CH
$CH_{i,t-1}$	0.130 (0.081)	0.137 * (0.082)	0.140 * (0.080)	0.141 * (0.078)	0.138 * (0.062)	0.121 (0.074)
$Sgr_{i,t}$	−0.001 (0.002)	−0.002 (0.002)	−0.002 (0.002)	−0.002 (0.002)	−0.002 (0.002)	−0.002 (0.002)
$DbtIssues_{i,t}$	0.066 * (0.038)	0.066 * (0.087)	0.062 * (0.036)	0.063 * (0.037)	0.064 * (0.036)	0.070 * (0.039)
$CFlow_{i,t}$	0.294 *** (0.111)	0.298 *** (0.001)	0.295 ** (0.111)	0.292 *** (0.108)	0.296 *** (0.101)	0.304 *** (0.098)
$Block_{i,t}$	−0.053 (0.192)	0.005 (0.179)	0.137 (0.403)	0.016 (0.188)	0.030 (0.186)	0.103 (0.555)
$Indiv_{i,t}$	0.153 (0.132)	0.167 (0.133)	0.308 (0.438)	0.173 (0.172)	0.151 (0.123)	0.274 (0.489)
$Govt_{i,t}$	0.079 (1.074)	0.659 *** (0.215)	0.591 ** (0.232)	0.612 ** (0.218)	0.600 ** (0.214)	0.281 (1.229)
$Foreign_{i,t}$	0.153 (0.130)	0.184 (0.143)	0.140 (0.139)	0.164 (0.186)	0.249 (0.819)	0.705 (1.135)
$CapEx_{i,t}$	0.085 ** (0.042)	0.083 * (0.044)	0.081 ** (0.042)	0.082 * (0.042)	0.084 * (0.042)	0.086 * (0.044)
$Block \times Govt_{i,t}$	0.708 (1.416)					−0.537 (1.729)
$Block \times Foreign_{i,t}$		−0.713 (0.794)				−0.579 (1.282)
$Block \times Indiv_{i,t}$			−0.212 (0.538)			−0.111 (0.638)
$Indiv \times Foreign_{i,t}$				−0.052 (0.308)		−0.174 (0.388)
$Govt \times Foreign_{i,t}$					−0.124 (1.021)	−1.027 (1.064)
Firm dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
# of observations	625	625	625	625	625	625
# of firms	107	107	107	107	107	107
# of instruments	105	105	105	105	105	105

Table 5. Cont.

	Two-Step GMM	Two-Step GMM	Two-Step GMM	Two-Step GMM	Two-Step GMM	Two-Step GMM
	CH	CH	CH	CH	CH	CH
AR (1)	−2.57 ( <i>p</i> = 0.010)	−2.58 ( <i>p</i> = 0.010)	−2.59 ( <i>p</i> = 0.010)	−2.59 ( <i>p</i> = 0.009)	−2.60 ( <i>p</i> = 0.009)	−2.62 ( <i>p</i> = 0.009)
AR (2)	1.16 ( <i>p</i> = 0.248)	1.15 ( <i>p</i> = 0.251)	1.20 ( <i>p</i> = 0.230)	1.16 ( <i>p</i> = 0.245)	1.14 ( <i>p</i> = 0.253)	1.19 ( <i>p</i> = 0.233)
Hansen-test	90.63 ( <i>p</i> = 0.345)	91.93 ( <i>p</i> = 0.311)	92.03 ( <i>p</i> = 0.309)	94.33 ( <i>p</i> = 0.253)	91.25 ( <i>p</i> = 0.329)	89.25 ( <i>p</i> = 0.274)

\*, \*\*, and \*\*\* indicate significance of the coefficients at levels of 10%, 5%, and 1%, respectively.

## 6. Why Do Jordanian Firms Hold Cash?

We continued to investigate why firms with government ownership in Jordan hold more cash by following Gao et al. [63], examining whether they use cash for investments, use capital expenditures as a proxy or for pay outs, or use dividends as a proxy. The results are reported in Appendix A Table A1 for the former and Appendix A Table A2 for the latter.

Other types of ownership did not have an impact on the level of cash holdings and were found to be statistically insignificant, which is very surprising due to the high average stakes held by the owners. Government ownership is more salient to the levels of cash, even when a high number of shares are held by other types of owners. In fact, a study by Tayem [64] found that ownership (by the largest shareholder) had no effect on the level of cash holdings in Jordan. It could be inferred that ownership structure as a governance mechanism in Jordan is not effective, except for the government for political reasons. However, this question will be left for future research.

According to our results, firms with higher levels of government ownership tend to hold higher levels of cash. On the one hand, this could be attributed to the agency problems associated with government ownership, as predicted by the free cash flow theory. While government owners are more interested in political and social goals rather than shareholder interests, the managers of such firms are more likely to be directed towards also exploiting other shareholders' interests [64]. The weakness of corporate governance and the moral hazards associated with government ownership also need to be considered [65–67]. Therefore, in such an environment of weak internal monitoring, managers find it more convenient to hold greater levels of cash and reduce the need for external financing and their associated monitoring and scrutiny.

On the other hand, government-owned firms might use cash to make investments in research and development, acquisitions, and capital expenditure or to pay dividends. Therefore, we extend our analysis to examine why such firms hold higher levels of cash. To further understand this question, we investigate the effect of government ownership on the relationship between cash holdings and pay Not necessarily-out policies, and cash holdings and investment decisions.

Specifically, we examine the interaction between government ownership and cash holdings in investment decisions and pay-out policies. Capital expenditure is employed as a proxy for investment policies, and dividends as a proxy for pay-out policies. We were unable to examine other proxies, for example, research and development and acquisitions, due to data unavailability.

As shown in Appendix A Table A1, the coefficient on Govt.  $\times$  Ch is statistically insignificant; therefore, according to the results, as government ownership increases, firms are unlikely to increase capital expenditure. The coefficient on Govt  $\times$  Ch, as shown in Appendix A Table A2, is also insignificant, indicating that as government ownership increases, firms are unlikely to use more cash to pay dividends.

The evidence suggests that, as government ownership increases, firms in Jordan do not hoard higher levels of cash for investments nor for paying dividends. Alternatively, we interpret our results to support the expectations of free cash flow theory, that higher

government ownership is associated with more agency problems, which is consistent with the work of Firth et al. [68] and Chen et al. [14]. As the most liquid asset, cash is expected to be the first and most vulnerable to be exploited by management [3]; therefore, in light of government political goals, the way firms manage their cash holdings can be a clear measure of the existence of agency problems. Moreover, according to our results, managers in Jordan are more likely to implement the convenience mechanism [68]; higher cash holdings keep firms at a convenient and significant distance from market scrutiny, so managers prefer the convenience of cash and hold higher levels of it.

Our results support the common understanding that government ownership suffers from poorly structured governance and moral hazards. It was found to increase agency problems, so it is recommended that government ownership policy is revised to clarify its roles as an owner of firms and to set the objectives and expectations of its business ownership to ensure that it acts as a diligent owner and maintains an arm's length relation with the client. Moreover, the Jordanian government is considering the privatization of more listed firms in an attempt to enhance the performance of the capital market; the results of this research provide support for this step to be evaluated.

## 7. Conclusions

The research has examined the effect of government ownership on the level of cash holdings in 107 Jordanian listed firms covering the period 2009 to 2018. GMM was employed to investigate the main hypothesis. We provide evidence of the dynamic nature of cash holdings; firms tend to adjust their cash to reach an optimal level. It was found that capital expenditure and cash flow were positively and significantly associated with the level of holdings. With regard to the hypothesis, the results support the explanation of the free cash flow theory regarding the level of cash holdings. Agency costs in Jordanian firms with government ownership are high; managers who are protected by the government tend to hoard high levels of cash to serve political or their own interests.

The research provides implications for investors in Jordan. Prior to making investment decisions in any firm, they are advised to consider its ownership structure, more specifically the level of government ownership. For example, in firms with higher government ownership levels, investors should expect higher cash holdings, which are likely to be used for non-profit maximization objectives. In addition, an implication for corporate managers seeking to maximize the wealth of their principals (other than government) is to find horizons that lead to increasing the value of the firm and to attracting potential new investors who might be needed as a future means of finance.

The research is not without limitations. Due to the small sample size, we were unable to examine the differences in the level of cash holdings between different groups of firms; for example, dividend-paying and non-paying ones, and young and mature firms. In addition, market researchers are particularly advised to consider the ineffectiveness of the various types of ownership as a governance mechanism with regard to the level of cash holdings. Finally, we would recommend that researchers consider agency cost proxies to investigate the impact of agency conflict of corporate cash holdings.

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## Appendix A

**Table A1.** Random Effects Logistic Regression Estimates.

Investment Decision (Increase CapEx)			
Variable	Coef	Std Error	p-Value
CH <sub>i,t-1</sub>	−0.402	0.861	0.640
Govt × Ch	10.728	12.354	0.385
Sgr <sub>i,t</sub>	0.010	0.013	0.405
DbtIssues <sub>i,t</sub>	1.512 *	0.799	0.058
CFlow <sub>i,t</sub>	1.889 **	0.883	0.032
Block <sub>i,t</sub>	0.192	0.735	0.793
Indiv <sub>i,t</sub>	0.012	0.635	0.984
Govt <sub>i,t</sub>	2.416 *	1.396	0.084

**Table A1.** Cont.

Investment Decision (Increase CapEx)			
Variable	Coef	Std Error	p-Value
Foreign <sub>i,t</sub>	−0.915	0.725	0.207
Divid <sub>i,t</sub>	0.133	0.218	0.541
Industry dummy	Yes		
Year dummy	Yes		
# of firms	107		
# of observations	788		
Chi-Sq (21)	38.98		0.001

\*\*\*, \*\*, and \* denote significance at levels of 1%, 5%, and 10%, respectively. Increase Capex: a dummy variable equal to 1 if a firm increases capital expenditures in the following year.

**Table A2.** Random Effects Logistic Regression Estimates.

Pay-Out Policy (Increase Div)			
Variable	Coef	Std Error	p-Value
CH <sub>i,t-1</sub>	12.584 ***	2.903	0.000
Govt × Ch	7.622	56.293	0.892
Sgr <sub>i,t</sub>	0.025	0.028	0.377
DbtIssues <sub>i,t</sub>	0.109	1.010	0.913
CFlow <sub>i,t</sub>	1.916 *	1.049	0.068
Block <sub>i,t</sub>	−0.553	1.137	0.626
Indiv <sub>i,t</sub>	1.037	0.948	0.274
Govt <sub>i,t</sub>	5.206 **	2.235	0.020
Foreign <sub>i,t</sub>	1.795	1.335	0.179
CapEx <sub>i,t</sub>	2.650	1.639	0.106
Industry dummy	Yes		
Year dummy	Yes		
# of firms	107		
# of observations	724		
Chi-Sq (21)	35.23		0.008

\*\*\*, \*\*, and \* denote significance at 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.

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