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The Impact of Corporate Governance on Agency Costs in Jordanian Service Companies

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Abstract: The objective of this study investigates the impact of corporate governance (CG) on agency costs (AC) in Jordanian service companies. The analysis is conducted using the random-effects model on a sample of (42) service companies listed in the Amman Stock Exchange, during the period (2012-2018). Independent variables are used (Board Size, CEO Duality, Audit Committee, Managerial Compensation, Dividend, & Leverage). AC are measured by Asset Turnover Ratio (AT), Selling, General & Administrative Expense Ratio (SG&A) & Free Cash Flow (FCF). This study also includes three control variables: firm size, firm growth & firm profitability. The results of this study, according to the AT index, leverage increases AC through decreasing AT ratio, and this indicates that management uses the borrowed funds in an ineffective manner. The results, according to the SG&A index, are that AC caused by squandering the companies' resources on managerial privileges and discretionary expenses are low in large companies and in companies that have high profits. While the results, according to the FCF index, are that the separating of the positions of chairman of the board and CEO & dividend decrease AC through decreasing FCF available under management control, and we find AC caused by possible misuse of FCF are more existing in large companies and in companies that have high profits. This study recommends the Jordanian service companies pay a dividend to shareholders and recommends the Jordanian legislative bodies oblige companies to apply some CG mechanisms, instead of compliance or explain approach. An example includes separating the positions of chairman of the board and CEO for their effective role in reducing AC through reducing FCF available under management control.

Keywords: Agency Costs, Agency Theory, Corporate Governance, Free Cash Flow Theory, Jordan.

1 Introduction

Corporate governance (CG) had an important role in restoring shareholders confidence in the capital markets, as it gave shareholders a guarantee to preserve their wealth and increase its value, which contributed to providing massive inflows of capital to firms [1], where shareholders concern in firms that effectively apply CG and it considers one of the most important criteria that affect their choice of the firm they prefer to invest within it to protect their wealth [2]; [3]. The attention in CG has increased after the collapse of global firms such as Enron and WorldCom because of fraud and manipulation by their management, which prompted the legislative bodies and international organizations and committees to put a package of reforms intended to protect shareholders' interests [4]. In the UK, Cadbury Committee issued a report, "The Financial Aspects of Corporate Governance" in 1992 [5], and the US-issued Sarbanes-Oxley Act in 2002 [6] while the Organization for Economic Co-operation and Development (OECD) issued Principles of CG in 1999 and improved these principles in 2004 which are receiving attention until now and are applied globally [5].

From the agency theory perspective, effective CG plays an important role in protecting shareholders' interests and preventing managerial opportunistic behaviors [7], whereby management may harm shareholders' interests through various forms, such as providing inadequate effort in managing the firm, use of firm's resources for their personal interests, seeking to get the highest managerial compensation, preferring the projects that provide short-term profit time horizons without care for the economic consequences on long term [8] as well as risk aversion through not engaging in profitable projects because of the fear of higher risk in damaging its reputations or losing jobs [9]. To control managerial opportunistic behaviors, shareholders incur costs called agency costs (AC) and [10] divided AC into three parts, and they interpreted them as a following: **Monitoring Cost**, which is the cost that shareholders incur to monitor management behavior to reduce managerial opportunistic behavior. It includes information cost, cost of auditing

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financial statements, cost of preparing the budget to restrict management behaviors, and cost of managerial compensation. **Bonding Cost** is the cost that management spends to assure the shareholders that it works under the shareholders' interests to earn their trust. It includes the cost of preparing financial reports and disclosures. **Residual Loss**, a complete alignment of interests between shareholders and management that is impossible, and as a result there will remain some deviations and harms to the shareholders' interests. It includes all potential damages to shareholders' interests consequent of the separation of ownership and management. The government, through its various regulators, will be concerned about how the various business owners make decisions that could affect the performance of various firms and the economy as a whole [11].

Jordan has adopted CG to organize and develop the capital market and to protect shareholders' interests, as it has applied OECD Principles of CG [12]. The Jordanian legislative body played an important role in implementing the principles of CG in Jordan through the enactment of a set of laws which included the Jordanian Companies Law No. (22) of 1997 and its modifications in 2018, and the Securities Law No. (76) of 2002 as amended to Law No. (18) of 2017. In addition, the board of commissioners of the securities commission acknowledged in 2017 "Instructions of Corporate Governance for Shareholding Listed Companies", which included detailed instructions aimed to increase the effectiveness of CG applied in the Jordanian firms [13]. These instructions were based on a compliance or explanation approach. If a firm doesn't comply with any of these instructions, it must explain the reason in its annual report. This is to enable firms to comply with the instructions progressively, in order for the firms to avoid the high costs of immediate compliance [14].

The objective of this study investigates the impact of CG on AC in Jordanian service companies listed in the Amman Stock Exchange (ASE), during the period (2012-2018). In addition, this study also strives to reveal the extent of compatible agency theory and free cash flow theory perspectives within the Jordanian context, especially in the Jordanian service sector, in contributing to improving the principles of CG applied in Jordan.

2 Problem Statement

Jordan's countrywide capital market experienced several financial scandals, such as the collapse of Petra Bank and the financial problems of Jordan Phosphate Mines firm due to embezzlement and managerial fraud [15]. These issues revealed the existence of an agency problem and the weakness of internal control systems in the Jordanian capital market, these necessitated the adoption of CG mechanisms to reducing AC arising from the separation of ownership and management, as well as the consequent managerial opportunistic behavior. The topic of the impact of CG on AC has garnered research interest in the previous Jordanian literature. However, its study on the Jordanian service sector has been overlooked, and the specificity of this sector may lead to different results. With this in mind, this study seeks to fill this research gap. In addition, this study examines a set of CG mechanisms and measures AC by three proxies. These mechanisms and proxies were not studied together in a single study in the Jordanian context, to the best of the authors' knowledge. Therefore, this study seeks to expand previous literature.

The problem of the study can be formulated in answering the following question: Is there a negative impact of CG (board size, CEO duality, audit committee, managerial compensation, dividend, and leverage) on AC (as measured by asset turnover ratio, selling, general & administrative expense ratio, and free cash flow) in Jordanian service companies?

3 Significance of the Study

This study derives its importance from three aspects. First, the studied topic, in which we study the inherent problem in public companies and the remedial procedure for this problem. The separation of ownership and management leads to AC arising from conflict of interest between shareholders and management. This is the main problem that CG seeks to reduce by providing mechanisms that contribute to controlling managerial behaviors. Second, this study also derives its significance from the importance of the service sector on the Jordanian economy. In which this study provides an added value to previous Jordanian literature by studying a sector that has not been studied so far. Third, to cover this research gap more comprehensively, we measure AC by three proxies to reveal different forms of damage to the shareholders' interests. The results of this study can be used as a useful source for Jordanian legislative bodies in the CG reform process.

4 Literature review and hypothesis development

Capital markets are not perfect, and firms in the markets suffer from many problems, including AC. If investors expect the existence of AC, significantly in the firms, then, the value of the firms will decrease. Here lies the importance of CG

mechanisms in reducing AC and their negative effect on the value of firms [16]. The agency theory suggests a set of CG mechanisms that contribute to controlling management behaviors and achieving a consensus of interests between shareholders and management to reduce AC [17]; [18]. The agents and principals pay incurred fees to ensure that the shareholder's interests are not put at stake. In the context of an organization, an agent is a manager, and the principal is the shareholder [19].

4.1 Board Size

The size of the board of directors shouldn't be considered as a standard for all situations. Rather, it should be a response to the firm's current circumstances, and it should be studied periodically to determine the optimal size for the new circumstances through a trade-off between benefits and costs of large board size [20]. Because of this, so far the impact of board size on AC remains mysterious, as discussions still show mixed results. [21] agreed with agency theory, in which they found the large board decreases AC by its contribution in increasing the effective monitoring of management performance, and by protecting shareholders' interest. In addition, [22] agreed with resource dependence theory, in which they found that a large board contributes to decreasing AC through the diversity of experiences of the board members. Board size is also seen as a measure of a firm's ability to form various environmental linkages [23]. Board size is related positively to the firm's need to link with the external environment because of the political, economic, and social power possessed by the members of the board [24]. While [8]; [16]; [17]; [25]; [26]; [27]; [28]; [29]; [30] all found that large boards increase AC, and supported a presumption of [31] that cost of coordination is high in a large board, which outweighs its benefits, also the difficulty of conducting discussions in the large board in the limited time available. Scheduling board meetings around various board member's schedules can also be problematic. However, according to the article (4) of instructions of corporate governance for shareholding listed companies for the year 2017 in Jordan, it recommends the board size should be more than five members and less than thirteen members. Therefore, based on the previous discussion the following hypothesis is formulated as follows:

H1: There is a negative significant impact for board size on AC in Jordanian service companies.

4.2 CEO Duality

From the perspective of agency theory, the Chairman/CEO duality gives power to the CEO, which can be used in ways that harm shareholders' interests [32]. CEO duality weakens a board's ability to monitor CEO performance [33]. [34] supported the agency theory, in which they found that the duality leads to allocation of a firm's capital on inefficient investment decisions and that this problem appears more in firms that suffer from high AC, and in firms that have high free cash flows. [35] revealed that analysts' forecast accuracy is related negatively with CEO duality. This leads to an increase in the level of asymmetric information between management and shareholders [36]. Conversely, other studies have refuted the perspective of agency theory. [22] found that duality decreases AC through decreasing the costs of transferring information and increasing the effective utilization of assets within the Indian context. [37] found the duality has a positive impact on firms performances that have effective CG, that have a highly competitive environment, and that have high information costs because the duality contributes to reducing costs of transferring information and speeding up the decision-making process within the U.S. context and [38] agreed with this as they found that duality reduces AC and contributes to adding value in the Italian family firms. However, according to the article (4) of instructions of corporate governance for shareholding listed companies for the year 2017 in Jordan, it recommends separating the position of chairman of the board and any executive position in the company. Therefore, based on the previous discussion the following hypothesis is formulated as follows:

H2: There is a negative significant impact for separation of the positions of chairman of the board and CEO on AC in Jordanian service companies.

4.3 Audit Committee

The audit committee considers one of the most important CG mechanisms, which the existence is necessary to improve the quality of financial information provided by management. The role of the audit committee improves the reliability and transparency of financial information to protect shareholders' interests [39]. The audit committee assists management in improving the decision-making processes through increasing the quality of financial reports. Whereas, the quality of financial reports is the basis of effective CG and contributes to apply managerial accountability effectively. The need for audit committee increases with increasing AC in the firms [40]. Whereas [17]; [41] found that audit committee contributes to reducing AC within the Bangladeshi and Ghanaian context respectively. While [42] argued that when the existence of an audit committee became obligatory, its presence is often only to comply with the

mandatory requirements, not to achieve its goals of increasing reliability of financial information and protecting shareholders' interests. Furthermore, [21] revealed that the presence of audit committees increased AC within the Indonesian context because its presence is a formality and that their role is ineffective in helping boards to control management performance. However, according to the article (7) of instructions of corporate governance for shareholding listed companies for the year 2017 in Jordan, it determines the duties of audit committees and includes supervising and controlling the accounting and auditing processes of the firm. This helps to ensure a firm's compliance with the legislation, as well as providing recommendations to the board of directors in matters related to internal control and audit procedures. Therefore, based on the previous discussion the following hypothesis is formulated as follows:

H3: There is a negative significant impact for the audit committee on AC in Jordanian service companies.

4.4 Managerial Compensation

Agency theory [10] indicated the contribution of managerial compensation to reduce AC through aligning the financial interests between shareholders and management. In addition, managerial compensation considers effective managerial motive to behave within shareholders' interests [43]. [16]; [44] supported these assumptions whereas they found that managerial compensation contributes to reducing AC within the UK and German context respectively. While [45] don't see managerial compensation as a mechanism to reduce AC, but as a part of the AC. This is because a self-interested manager may use his power to influence the board to obtain a higher percent of compensations and to identify compensations structure in forms less sensitive with performance to avoid risks. This viewpoint is consistent with [46], in which they divided managerial compensation into performance pay and power pay. They found that performance pay decreases AC while power pay increases AC, and that managers use their power to increase their managerial compensation. With this in mind, [47] suggested to avoid problems of managerial compensation link with a firms' long-term performance to exclude the possibility that management will link managerial compensation with a firms' short-term profitability, such as high-risk projects, which may cause economic consequences that harm shareholders' interests in the long run. In addition, a firm should disclose all information related to managerial compensation. However, according to the article (14) of instructions of corporate governance for shareholding listed companies for the year 2017 in Jordan, it recommends that firms disclose all information about privileges that are enjoyed by members of the board and executive management in an accurate, clear, non-misleading and timely manner. Therefore, based on the previous discussion the following hypothesis is formulated as follows:

H4: There is a negative significant impact for managerial compensation on AC in Jordanian service companies.

4.5 Dividend

Free cash flow theory [48] argued the firms that have large free cash flows have high AC because the management of these firms often wastes these free cash flows by using them for its personal interests or on ineffective investments. So, dividend considers one of the solutions to reduce free cash flows available under management control, thereby reducing AC. Furthermore, [9] stated that dividend distribution decreases internal sources of financing and increases firms' need for external financing thus undergo firms to intensive monitoring by the capital market and this leads to decrease monitoring costs then decrease AC. [49] supported these viewpoints in which he found that dividend mitigates conflict of interests between shareholders and management and decrease AC. However, the dividend isn't without cost, as it weakens the firm's ability to finance using its internal sources of financing, which is the cheapest source of financing. Therefore, firms may not distribute dividend to finance their future investments [50]. In contrast, [51] found a positive relationship between firms' investments that were financed by external financing and dividend. This is because dividend contributes to reducing asymmetric information and gives an indication that management does not use free cash flows to achieve its personal interests, thereby reducing AC. This reduces the cost of external financing. Therefore, based on the previous discussion the following hypothesis is formulated as follows:

H5: There is a negative significant impact for dividend on AC in Jordanian service companies.

4.6 Leverage

Regarding the free cash flow theory, [48] argued that leverage considers an effective alternative for the dividend to decrease AC. This is because paying periodic liabilities reduces the level of free cash flow available under management control. In addition, default risk exposes the firms to bankruptcy risk, and risk of management losing its jobs. Therefore, these risks motivate management to use firms' resources in effective investments. Furthermore, [52] stated that the monitoring of lenders decreases the monitoring burdens of shareholders, thus decreasing AC as well. Lenders consider

the important source of financing information and they contribute to reducing asymmetric information between shareholders and managers. In line with these arguments, [53] found that the benefit of leverage in reducing AC is multiplied in firms that also suffer from the over-investment problem generated by the abundance of free cash flows and the absence of growth opportunities. This can lead to bad investment decisions. [54]; [55]; [56]; [57] supported free cash flow theory, where they found that leverage is an important mechanism that contributes to reducing AC within the context of Pakistani, Indian, Iranian and Kenyan respectively. On the other hand, [25]; [58] rejected the free cash flow theory, as they found that leverage increases AC through decreasing the effectiveness of using firms' resources within the context of US and Indonesian respectively. Furthermore, [59] revealed that leverage increases AC and decreases firms' performance within the Indian context. This is because when a firm's liabilities increase, management's fear of loss increases. As such, management may not engage in risky and profitable investments, which can lead to an under-investment problem. Therefore, based on the previous discussion the following hypothesis is formulated as follows:

H6: There is a negative significant impact for leverage on AC in Jordanian service companies.

5 Methodology

5.1 Data sources and Sample Selection

Secondary sources were relied upon, in which the data for this study was obtained from a sample collected from firms' financial reports published on the Amman Stock Exchange website. The population of this study consisted of all the Jordanian service-listed firms, which are (47) firms that include eight sectors involving (health services, educational services, hotels and tourism services, transportation services, energy and utilities services, commercial services, technology and communications services, and Media) [60]. This study consisted of the Jordanian service-listed firms that disclosed all the data needed for this study through their annual reports, where (5) firms were excluded due to the lack of study's data for some years during the covered period, and thus the study sample settled on (42) firms, and the length of this study was 7 years, from (2012-2018), thus the number of observations of this study reached (294) observations.

5.2 Agency costs measurement

Based on previous literature, this study employs three proxies for AC, since it is impossible to determine AC precisely. They contain any losses that shareholders may incur due to the possibility of appointing management its interests are unfavorable to shareholders' interests. Therefore, these proxies are a complement to each other rather than substitutes to each other since each of them discovers an aspect of AC that arises from various forms of damages to shareholders' interests. These proxies are as the following:

5.2.1 Asset Turnover Ratio (AT)

This ratio indicates the management's effectiveness in using the firm's assets to generate revenues, as a high asset turnover ratio (AT) indicates that the management implements good investment decisions and provides sufficient efforts to create value for shareholders. Therefore, a high (AT) ratio indicates low AC in the firm. On the contrary, a low (AT) ratio indicates that the management makes bad investment decisions such as over-purchases of unproductive assets that serve their personal interests. Therefore, a low (AT) ratio indicates high AC in the firm. [25]; [52]. This ratio was taken for each firm during the period of this study from the [60] website. It is calculated by dividing the firm's total operating revenue by its total assets, consistent with previous studies [16]; [25]; [52]; [61].

5.2.2 Selling, General & Administrative Expense Ratio (SG&A)

These expenses include the privileges enjoyed by the management such as salaries and travel expenses, as well as the expenses that the management has discretionary authority such as rent expenses, utilities expenses, and advertising and marketing expenses that can be easily manipulated by the management. Therefore, a high SG&A expense ratio indicates high AC in the firm [25]. This ratio is calculated by dividing the selling, general and administrative expenses of the firm by its total operating revenue [16].

5.2.3 Free Cash Flow (FCF)

From the perspective of the free cash flow theory, [48], a large free cash flow (FCF) which is the financial surpluses of firms that exceed what is required to finance all profitable investment opportunities, is an indicator of the existence of

AC. Its availability gives the management greater freedom to use the firm's resources for its personal interests or on ineffective investments. In addition, [62] found that FCF increases AC in the firms through increasing an over-investment problem, which is the investment that management engages within it to achieve personal interests instead of returning this FCF to shareholders as a dividend. Also, when management retains FCF, this spares it of monitoring by the capital market. Therefore, FCF gives management more discretion then increases AC [18]. Free Cash Flow is calculated by finding operating income before depreciation, less corporate income tax paid, interest expenses, and dividends paid, with this sum divided by total assets [63]; [64].

5.3 Independent variables

A set of CG variables are selected which may contribute to reducing AC from the perspective of agency theory [10], and free cash flow theory [48] to reveal the extent of compatibility of these perspectives within the Jordanian context.

Board Size (BS) is measured by the total number of members serving in a firm's board. CEO Duality (DU) is measured by a dummy variable that assigns a value (1) if the positions of the Chairman of the board and CEO are separated and a value (0) otherwise. Audit Committee (ACO) is measured by a dummy variable that assigns a value (1) if the existence of an audit committee in the firms and a value (0) otherwise. Managerial Compensation (MC) is measured by a dummy variable that assigns a value (1) if the firms give managerial compensation to their executive management and a value (0) otherwise. Dividend (DY) is measured by Dividend yield is calculated by dividing the dividends per share by the market value of the share. Leverage (L) is calculated by dividing the firm's total liabilities by its total assets.

5.4 Control variables

Other factors can affect agency costs apart from the independent variables, and they may lead to misleading results. Firm size, growth of the firm, and profitability of the firm are used as control variables consistent with prior literature. Firm Size (S) is calculated by the natural logarithm of the firm's total assets. The growth of the firm (G) is calculated by dividing the market value of the firm's shares by its book value. The profitability of the firm (P) is calculated by dividing earnings before interest and tax by the firm's total assets.

Our methodology includes estimating three regressions the difference between them lies in the proxies of the dependent variable. Estimation regression models are presented in the following forms:

$$AT_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 DU_{it} + \beta_3 ACO_{it} + \beta_4 MC_{it} + \beta_5 DY_{it} + \beta_6 L_{it} + \beta_7 S_{it} + \beta_8 G_{it} + \beta_9 P_{it} + \varepsilon_{it}$$

$$SG\&A_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 DU_{it} + \beta_3 ACO_{it} + \beta_4 MC_{it} + \beta_5 DY_{it} + \beta_6 L_{it} + \beta_7 S_{it} + \beta_8 G_{it} + \beta_9 P_{it} + \varepsilon_{it}$$

$$FCF_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 DU_{it} + \beta_3 ACO_{it} + \beta_4 MC_{it} + \beta_5 DY_{it} + \beta_6 L_{it} + \beta_7 S_{it} + \beta_8 G_{it} + \beta_9 P_{it} + \varepsilon_{it}$$

Table 1 summarizes the variables of this study, their measurements, and a measurement source for each variable.

Variable	Abbreviation	Measurement	Source	Exp.sign on AC
D.V	AT	Dividing the firm's total operating revenue by its total assets.	[60]	
Asset Turnover Ratio				
Selling, General & Administrative Expense Ratio	SG&A	Dividing the selling, general and administrative expenses of the firm by its total operating revenue.	[16]	
Free Cash Flow	FCF	Operating income before depreciation less corporate income tax paid, interest expenses and dividends paid, with this sum divided by total assets.	[63]; [64]	
IN.V	BS	The total number of members serving in a firm's board.	[17]; [25]	-
Board Size				

CEO Duality	DU	Dummy variable that assigns a value (1) if the positions of the Chairman of the board and CEO are separated and a value (0) otherwise.	[17]; [26]	-
Audit Committee	ACO	Dummy variable that assigns a value (1) if the existence of an audit committee in the firm and a value (0) otherwise.	[17]; [65]	-
Managerial Compensation	MC	Dummy variable that assigns a value (1) if the firms give managerial compensation to their executive management and a value (0) otherwise.	[16]	-
Dividend	DY	Dividing the dividends per share by the market value of the share.	[63]	-
Leverage	L	Dividing the firm's total liabilities by its total assets.	[29]; [63]	-
C.V Firm Size	S	Natural logarithm of firm's total assets.	[16]	
Firm Growth				
Firm Profitability	P	Dividing earnings before interest and tax by firm's total assets.	[68]	

6 Results and discussion

6.1 Results of Descriptive Statistics

Table 2 shows that the mean of the Asset Turnover Ratio (AT) is (2.293) with a median of (1.05). This indicates that management of the Jordanian service firms listed in the Amman Stock Exchange uses firms' assets effectively to generate revenues, also it indicates the quality of the investment decisions taken by the management of firms in purchasing productive assets that increase the firms' revenues. The maximum value of (AT) is (18.39) and the minimum value is (0.05), the disparity between the maximum and the minimum values can be explained by the different capabilities of firms in using their assets effectively. In comparison with other Jordanian sectors, [69] found the mean of AT ratio in the industrial sector was (0.62) and [61] found the mean of AT in the real estate sector was (0.603).

The mean of Selling, General & Administrative Expense Ratio (SG&A) is (0.234) with a median of (0.171). This indicates that management does not exaggerate in spending on its privileges and on the expenses that it has discretionary authority over, such as advertising and marketing expenses in comparison with previous literature in which [25] found the mean of SG&A expenses within the US context was (0.266). [16] found the mean of SG&A expenses within the UK context was (0.45), [63] found the mean of SG&A expenses within the Australian context was (0.369), and [30] found the mean of SG&A expenses within the France context was (0.343).

The mean of Free Cash Flow (FCF) is (0.014) with a median of (0.016). This indicates unavailability of a large amount of FCF under management control, in which its existence gives the management more freedom to use the firm's resources for its personal interests. In addition, it may cause an over-investment problem by making investment decisions that don't add value to the shareholders' interest. In comparison with other Jordanian sectors, [70] found the mean of FCF in the industrial sector was (0.096), while [71] found the mean of FCF in the banking sector was (-0.106).

The mean Board Size (BS) is (8.354), the median is (8), the maximum value is (13), and the minimum value is (4). These results indicate that most of the Jordanian service-listed firms are committed to "instructions of corporate governance for shareholding listed companies for the year 2017" in Jordan, as they recommended that the size of the board should be more than five members and less than thirteen members. It should be noted that the minimum value represented in (4) members is for one firm and in one fiscal year. In comparison with other Jordanian sectors, [72] found the mean of board size in the industrial sector was (8.13), while [15] found the mean of board size in the banking sector was (11.28).

The mean of Dividend Yield (DY) is (0.034), the median is (0.033), the maximum value is (0.116), and the minimum value is (0). As for the minimum value, it is represented by 11 firms that didn't pay dividends throughout the period of this study. Thus, the dividend distribution ratio is represented in (0.74) firms of this study sample. These results indicate that a high percentage of the Jordanian service-listed firms use the dividend to reduce AC through reducing free cash flow available under management control. The results of this study are consistent with previous studies in other Jordanian sectors in which [73] found the mean of DY in the industrial sector was (0.035) and [74] found the mean of DY in the banking sector was (0.039).

The mean of Leverage (L) is (0.364), the median is (0.307), the maximum value is (0.957), and the minimum value is (0.031). This contrast between the maximum and minimum values can be explained by the difference in the financing policies and borrowing capabilities for the firms. In comparison with other Jordanian sectors, [67] found the mean of leverage in the industrial sector was (0.454), while [15] found the mean of leverage in the banking sector was (0.870).

Concerning the control variables, the mean of firm size (S), firm growth (G), and firm profitability (P) are (7.650), (1.385), and (0.056) respectively.

Table 2 Descriptive Statistics for Dependent, Independent and Control variables

variable	Minimum	Maximum	Mean	Median	S.D.
AT	0.05	18.39	2.293	1.05	4.892
SG&A	0.003	1.565	0.234	0.171	242.0
FCF	-0.237	189.0	014.0	0.016	061.0
BS	4	13	8.354	8	2.457
DY	0	0.116	0.034	0.033	0.033
L	0.031	957.0	0.364	0.307	0.243
S	6.209	9.255	7.650	8	0.543
G	0	12.41	1.385	1.087	1.173
P	-0.283	0.393	0.056	0.052	0.081

Table 3 shows the frequencies and percentages for three variables that were measured by dummy variables. The results show (86.4%) of Jordanian service-listed firms separate the positions of Chairman of the Board and CEO. This indicates that a high percentage of firms are committed to "instructions of corporate governance for shareholding listed companies for the year 2017" in Jordan, as they recommended separating the position of chairman of the board and any executive position in the firm for the importance of the board's role in monitoring management performance. The results also show that the existence of the audit committee is (85%) of the firms, we conclude that a high percentage of firms adopt the audit committee as a CG mechanism for its important role in assisting the board in monitoring the management performance. And that (53.4%) of firms give managerial compensation (MC) to their executive management and that they consider MC as an important CG mechanism that contributes to aligning the financial interests between managers and shareholders.

Table 4 shows the correlation matrix of Pearson coefficients. It is used to verify that the model of study does not suffer from multicollinearity problem between a study's variables. This problem exists if the correlation between the variables is 70% or more [75]; [76]. The results of the correlation matrix show that there are no high correlations between the study's variables, as the highest correlation is (54.3%) between the firms' profitability and dividends. Based on this, multicollinearity is not considered a threat to the results of the regression models.

Table 3 frequencies and percentages for variables measured by dummy variables

Variable		Definition	Frequency	Percentage
DU	1	Separation of the positions of Chairman of the board and CEO.	254	864.0
	0	Not separating the positions of Chairman of the board and CEO.	40	0.136
ACO	1	Existence of an audit committee.	250	0.850
	0	Not existence of an audit committee.	44	0.150
MC	1	Paid MC to the executive management.	157	534.0

0	Not paid MC to the executive management.	137	0.466
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Table 4 Correlation Matrix of Pearson Coefficients

	DY	MC	L	BS	DU	ACO	P	G	S
DY	1.000								
MC	0.237	1.000							
L	-0.011	-0.134	1.000						
BS	0.150	0.188	-0.028	1.000					
DU	0.140	0.107	0.190	0.114	1.000				
ACO	0.045	0.029	0.043	-0.068	0.251	1.000			
P	0.543	0.163	-0.209	0.073	-0.048	0.010	1.000		
G	0.191	0.034	0.167	0.171	-0.060	-0.022	0.401	1.000	
S	0.258	0.052	0.447	0.488	0.249	0.070	0.129	0.232	1.000

Table 5 shows the Wooldridge test for autocorrelation in panel data for three models, and **Table 6** shows the Breusch-Pagan / Cook-Weisberg test for heteroskedasticity for three models. The results show no autocorrelation and heteroscedasticity problems in the regression models in which the value of ($p > 0.05$) in the three models.

Table 5 Wooldridge test for autocorrelation in panel data

	F	Prob > F
Model 1 (AT)	2.805	0.1016
Model 2 (SG&A)	5.151	0.1286
Model 3 (FCF)	28.296	0.0859

Table 6 Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

	chi ²	Prob > chi ²
Model 1 (AT)	233.07	0.0962
Model 2 (SG&A)	66.25	0.3810
Model 3 (FCF)	1.55	0.2125

6.2 Regression Results

The results of the Lagrangian multiplier test (LM test) show that the Pooled OLS is inappropriate for this study, and the results of the Hausman tests show that the random-effects model is more appropriate than the fixed-effects model in which the LM test is statistically significant at a 1% level for three proxies of AC, while the Hausman test is statistically insignificant for three proxies of AC. Therefore, the results of the random-effects model will be discussed and interpreted. To investigate the impact of CG on AC, we will interpret the significance of each variable in the three regressions. **Table 7** shows the results of our regressions, LM test, and Hausman test.

Table 7 Results of the impact of corporate governance on agency costs and results of the LM test & Hausman test

Hypothesis	Variable	Exp.sign	Model 1 (AT)	Model 2 (SG&A)	Model 3 (FCF)	Results
	Constant		-2.537	1.324***	-0.154	
H1	BS	-	0.176	-0.007	-0.001	Not accepted
H2	DU	-	-0.242	0.036	-0.018**	Just Accepted in Model 3
H3	ACO	-	-0.262	0.027	0.006	Not accepted
H4	MC	-	0.374	-0.001	-0.001	Not accepted
H5	DY	-	-0.054	0.003	-0.003***	Just Accepted in Model 3
H6	L	-	-5.762***	0.017	-0.032	Not accepted

-	S		0.800	-0.142**	0.025*	
-	G		-0.048	0.009	-0.001	
-	P		-3.326	-0.550***	0.320***	
Adjusted R ²			0.076	0.113	0.274	
P-value			0.016**	0.000***	0.000***	
LM test			0.000***	0.000***	0.000***	
Hausman test			0.910	0.361	0.663	

This table shows the results of the random-effects model for the impact of corporate governance mechanisms & control variables on agency costs that are measured by three proxies: asset turnover ratio (AT), selling, general & administrative expense ratio (SG&A) & free cash flow (FCF). The sample consisted of (42) service companies listed in the ASE from 2012 to 2018. Independent and control variables are defined previously in table 1. This table also shows the results of the LM test & Hausman test. The symbols (*), (**), and (***) denote significance at 10, 5, and 1 percent, respectively, in a two-tailed test.

* As noted earlier, the proxies are used to measure AC complement each other rather than substitutes to each other since each of them discovers an aspect of AC that arises from various forms of damages to shareholders' interest. Such as the AT index reveals management's effectiveness in using the firm's assets to generate revenues and effectiveness of investment decisions. The SG&A index reveals if management is overspending on its privileges and on the expenses that it has discretionary authority over. The FCF index reveals the availability of financial surpluses under management control that give the management greater freedom to use the firm's resources in opportunistic behaviors. Therefore, if the results of the regressions are different, this does not mean that they are conflicting.

The results of the regressions analysis show that board size (BS) has an insignificant impact on three indexes of AC. This result is consistent with [65] and contradicts [21] in which they found that the large board decreases AC due to the importance of its role in the internal monitoring of management behaviors. While [8]; [16]; [17]; [25]; [26]; [27]; [28]; [29]; [30] found that large board increases AC this is due to the higher coordination costs of the large board that outweighs its benefits.

Our results also indicate that separating the positions of the chairman of the board and CEO (DU) has an insignificant impact on the AT index and SG&A index, which is consistent with [16]; [17]; [18]. On the other hand, we find that separating the chairman and CEO positions has a negative and significant impact on the FCF index (coefficient = -0.018, $p < 0.05$). This indicates that separating the chairman and CEO positions reduces the financial surpluses available under management control because it contributes to the effective monitoring of managerial decisions and improves the decision-making process in the firms, which leads to decreasing AC. This result is consistent with [34] in which they found that CEO duality leads to allocation of a firm's capital on inefficient investment decisions and that this problem appears more in firms that suffer from high free cash flow, this is because CEO duality weakens a board's ability to monitor managerial decisions.

The audit committee (ACO) has an insignificant impact on the three indexes of AC. This result is consistent with [44]; [63]; [65], and contradicts [17] in which they found that ACO reduces AC. While [21] found that ACO increases AC because its role is ineffective in assisting the board in monitoring management performance.

Managerial compensation (MC) has an insignificant impact on three indexes of AC. This result indicates the ineffectiveness of the agency theory perspective in the Jordanian service sector, which argued that MC contributes to reducing AC through aligning the financial interests between shareholders and management. This result contradicts [16]; [44] in which they found that MC reducing AC.

Dividend (DY) has an insignificant impact on the AT index and SG&A index. Otherwise, we find that DY has a negative and significant impact on the FCF index (coefficient = -0.003, $p < 0.01$). This result indicates the effectiveness of the free cash flow theory perspective regarding dividends in the Jordanian service sector, which argued the role of dividend in reducing the cash surpluses that management can squander on ineffective investments, thereby reducing AC. In addition, dividend distribution decreases internal sources of financing and increases firms' need for external financing thus undergo firms to intensive monitoring by the capital market and this leads to decrease monitoring costs then decrease AC [9]. Moreover, dividend contributes to reducing asymmetric information and gives an indication that management does not use free cash flows to achieve its personal interests, thereby reducing AC [51].

Leverage (L) has an insignificant impact on the SG&A index and FCF index. Otherwise, we find that L has a negative and significant impact on the AT index (coefficient = -5.762, $p < 0.01$). This result indicates that management uses the borrowed funds on ineffective investments that do not generate revenue for the firms, such as the over-purchasing of unproductive assets that serve its personal interests, thereby increasing AC. This result indicates the ineffectiveness of the free cash flow theory perspective regarding L in the Jordanian service sector, which argued that default risk exposes the firms to bankruptcy risk, and risk of management losing its jobs. Therefore, these risks motivate management to use firms' resources in effective investments. [30] added that the negative impact of L on the AT index indicates there is no awareness among the lenders to monitor management's strategic decisions and depend more on shareholders to monitor the management decisions. This result is consistent with [21]; [25] While contradicting [16]; [18]; [27]; [28]; [44]; [65] in which they found that L reduces AC.

Firm size (S) has an insignificant impact on the AT index. Otherwise, we find that SG&A expenses are lower in large firms. This indicates that AC caused by squandering the companies' resources on managerial privileges and discretionary expenses are low in large firms. [77] explained that large firms have more access to the capital market, so these firms undergo more monitoring of the capital market. In addition, financial analysts have more interest in following up the large firms, which increases the level of disclosure in these firms and reduces the asymmetry of information between management and shareholders, thus contributing to reducing AC. This result is consistent with [25]; [27]; [28]. As for the free cash flow index, the results show that the free cash flow is higher in large firms. This indicates that AC caused by misuse of free cash flow are more existing in these firms. This result is consistent with [44].

Firm growth (G) has an insignificant impact on three indexes of AC. This result indicates the ineffectiveness of the free cash flow theory perspective in the Jordanian service sector, which argued that AC will increase in a firm if it has high free cash flows with the absence of growth opportunities. This result contradicts [16]; [28]; [44] in which they found firm growth increases AC.

Firm profitability (P) has an insignificant impact on the AT index. Otherwise, we find that SG&A expenses are lower in firms that have high profitability. This indicates that AC caused by squandering the companies' resources on managerial privileges and discretionary expenses are low in high-profit firms. This result is consistent with [44]; [65]. As for the free cash flow index, the results show that the free cash flow is higher in the firms that have high profitability. This result is consistent with what was indicated by [68] in that the firms that have high profitability are more vulnerable to AC caused by misuse of free cash flow by management and that these firms use internal sources of financing to avoid monitoring by the capital market.

7 Conclusions

The objective of this study investigates the impact of corporate governance (CG) on agency costs (AC) in Jordanian service companies listed in the Amman Stock Exchange, during the period (2012-2018). A set of CG mechanisms are selected which may contribute to reducing AC from the perspective of agency theory [10] and free cash flow theory [48] these mechanisms are (Board Size, CEO Duality, Audit Committee, Managerial Compensation, Dividend, & Leverage) to reveal the extent of compatibility of these perspectives within the Jordanian context. Based on previous literature, this study employed three proxies for AC, since it is impossible to determine AC precisely. They contain any losses that shareholders may incur due to the possibility of appointing opportunistic management. These proxies are complement each other rather than substitutes to each other since each of them discovers an aspect of AC that arises from various forms of damages to shareholders' interests. These proxies are Asset Turnover Ratio (AT), Selling, General & Administrative Expense Ratio (SG&A), and Free Cash Flow (FCF).

Our findings reveal that leverage increases AC through decreasing AT ratio, and this indicates that management uses the borrowed funds in projects that do not generate revenues for the companies such as the over-purchasing of unproductive assets that serve its personal interests. While the results reveal that the SG&A expenses ratio is lower in large companies and in high-profit companies, this indicates that AC caused by squandering the companies' resources on managerial privileges and discretionary expenses are low in large companies and in companies that have high profits. The results also reveal that separating the positions of the chairman of the board and CEO and dividend decrease AC through decreasing FCF that exceeds what companies need to finance their profitable projects, and is possibly used by management in decisions that conflict with shareholders' interests. The results also find that FCF is higher in large companies and in high-profit companies. This indicates that AC caused by possible misuse of free cash flow are more existing in these companies.

8 Recommendation

The findings of this study recommend the Jordanian service companies pay a dividend to shareholders and recommend the Jordanian legislative bodies oblige companies to apply some CG mechanisms, instead of compliance or explain approach. An example includes separating the positions of chairman of the board and CEO for their effective role in reducing AC through reducing the level of free cash flow available under management control. In addition, we recommend future studies to investigate the impact of CG on AC in the Jordanian service sector by using other CG mechanisms that may reduce AC in this sector, such as board independence, the existence of remuneration and nomination committees, and use other proxies for AC such as operating expenses ratio.

Conflict of interest

The authors declare that there is no conflict regarding the publication of this paper.

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