# Relationship between corporate governance and capital formation using the financial development channel in the Middle East and OECD countries

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## ABSTRACT

The purpose of this study is to examine the relationship between corporate governance and capital formation using the financial development channel. According to the investigations, it was found that the direct effect of corporate governance on capital formation is unclear, which depends on several factors. The analysis of the data showed that corporate governance through the channel of financial development can have an effect on capital formation, which, of course, is different among countries and the reason for that is the different level of development of the countries. In this study, the data of 30 countries including 12 countries in the Middle East region and 18 countries of the OECD during the years 2005-2020 have been used in the form of Panel-GMM method. The results of the research showed that corporate governance in Middle East countries, which have a lower level of corporate governance and development, has a positive and significant effect on capital formation, and improving corporate governance improves capital formation. But this relationship has not been significant for OECD countries. Also, financial development in both groups of countries had a positive and significant impact on capital formation, but its impact was greater in the Middle East countries. Also, the results of examining financial development in more detail showed that financial development from the perspective of market development improves capital formation in countries, but financial development from the perspective of institutional development has no effect on improving capital formation.

**Keywords:** financial development, corporate governance, capital formation and investors protection.

# 1. Introduction

Two events have increased attentions in corporate governance. During the financial crisis of 1998 in Russia, Asia and Brazil, the behavior of companies affected the entire economies and the defects in corporate governance put the stability of the global financial system at risk. Just three years later, corporate confidence was strained by corporate governance scandals in the United States and Europe, which led to some of the largest bankruptcies in history. After that, not only did the term corporate governance become a buzzword, but economists, corporations, and policymakers everywhere began to recognize the potential macroeconomic consequences of weak corporate governance. But scandals and crises are only signs of the reasons why corporate governance is more important for economic development and prosperity (Bakht et al., 2003).

The process of private and market-based investment is now much more important for most economies than it used to be, and this process is better influenced by corporate governance. With the increase in the size of companies and the role of financial intermediaries and the growth of institutional investors, capital allocation has also become more complicated, because investment choices have expanded with the opening and liberalization of financial markets, and as structural reforms, including lower prices and increased competition have made companies more exposed to the risks of market forces. These developments have increased the monitoring of the use of capital in complex ways, increasing the need for good corporate governance.

Definitions of corporate governance vary widely. They are divided into two categories. The first set of definitions is related to a set of behavioral patterns: that is, the actual behavior of companies, in terms of measures such as performance, efficiency, growth, financial formation, and shareholder behavior. The second set is related to the normative framework: that is, the rules in which companies operate, with rules that come from sources such as the legal system, the judicial system, financial markets, and (labor) market agents.

To study countries or a company in a country, the first type of definition is the logical choice. These issues are related to how the board of director’s works, the mandatory role in determining the company's performance, the relationship between the work policies and the company's performance, and the role of shareholders. For comparative studies, the second type of definition is more logical. This investigation of how the difference in the normative framework affects the behavior patterns of companies, investors and others. This definition can be expanded to consider the definition of corporate governance as solving collective problems among investors and reconciling the conflict of interests between the owners of different companies' assets. A broader definition is the definition of corporate governance as a set of mechanisms that companies work when ownership is separated from management.

According to this broad definition, the goal of a good corporate governance framework is to maximize the contribution of companies to the economy as a whole, that is, to include all stakeholders. In this definition, corporate governance includes the relationship between shareholders, creditors and companies; between financial markets, institutions and companies, and between employees and companies; corporate governance also includes the issue of corporate social responsibility.

Why has corporate governance attracted a lot of attention recently? One of the reasons mentioned earlier is the increase in scandals and financial crises. As mentioned, scandals and crises are only an indication of a number of reasons why corporate governance has become more important for economic development and is an important issue in many countries. First, the process of private and market-based investment, which is based on good corporate governance, is now much more important for most economies than it used to be. Privatization has increased corporate governance issues in sectors that were done previously by government (3). Second, due to technological progress, the liberalization and opening of financial markets, trade liberalization and other structural reforms - especially the reduction of prices and the removal of restrictions on products and ownership - have made the allocation of capital within and between countries more complicated. And therefore it has made it more difficult to monitor the use of capital. Third, capital mobilization is increasingly increasing; Due to the increase in the size of companies and the growing role of financial intermediaries, it becomes more important. The role of institutional investors is growing in many countries.

These issues have created the necessity of having good corporate governance standards. (5)

Fourth, deregulation and reform programs have changed the local and global financial landscape. Long-standing corporate governance arrangements have been replaced by new organizational arrangements, but at the same time, inconsistencies and gaps have emerged. Fifth, international financial integration has increased and trade and investment flows are increasing. This has led to many boundary issues in corporate governance. For example, international investments have increased, resulting in corporate governance.

In the last decade, the importance of the financial system for growth and poverty reduction has become clear (Levin, 1997; World Bank, 2001). Almost regardless of how financial development is measured, there is a relationship between that country and the level of GDP and per capita income. A large body of evidence has accumulated over the past few years to suggest that there is a causal relationship: that is, better countries have larger financial systems as well as faster growth (although this plays an important role). (15)

Importantly, for the analysis of corporate governance, both the development of the banking system and the development of the financial market contribute to economic growth. Banks and the stock market are complementary in their functions, although the markets naturally play a greater role for listed companies. In general, the findings support the financial perspective. It does not mean that financial institutions or financial markets are not important; In particular, the results are consistent for any growth regression model chosen by adding different variables of stock market development than banking system development. None of these indicators of the formation of the financial sector have an effect on economic growth (Demirgos Kant and Levin, 2001). In order to function well, financial institutions and financial markets in turn need some fundamentals, including good governance.

The main hypothesis of the research is that corporate governance significantly affects on capital formation. This relationship is very strong in countries with weak corporate governance. The article is structured in such a way that after the introduction, in the second part the theoretical foundations and background of the research, in the third part the research methodology along with the design and testing of the experimental model will be stated, in the fourth part the research findings and in the fifth part the conclusions and suggestions will be stated.

## 2. Literature Review

### 2.1 Corporate governance

Corporate governance is a term that is not understood by everyone, but researchers and shareholders understand it, and it is currently becoming a concern and the main stream of discussions in large companies. Definitions of corporate governance vary widely. They are divided into two categories. The first part of the definitions is related to a set of behavioral patterns: that is, the actual behavior of companies, in terms of measures such as performance, efficiency, growth, financial formation, and the behavior of shareholders and other stakeholders. The second set is related to the normative framework: that is, the rules in which companies work, or the rules that come from other sources such as the legal system, judicial system, financial markets and factors (labor). (1)

In a more precise definition, the focus will be on how investors without insider information can protect themselves from abuse by insider owners. This includes the protection of minority rights and the power of debtors' rights of debt holders, which are reflected in the bail and bankruptcy laws. It can also include issues such as the composition and rights of executive directors and the ability to follow it up. This definition is close to the definition of economists such as Andrey Shleifer and Robert Wishney: "Corporate governance includes the methods by which suppliers of financial resources of companies guarantee themselves to receive investment returns" (1997).

This definition can be expanded to consider corporate governance as a method of solving problems among scattered investors and reconciling the conflict of interests between the owners of different companies' assets. A somewhat broader definition is the definition of corporate governance as a set of mechanisms that companies work when ownership is separated from management. This is close to the definition used by Sir Adrian Cadbury, Chairman of the Finance Committee on Corporate Governance in England: "Corporate governance is the system by which companies are directed and controlled" (Cadbury Committee, 1992, Introduction). (4)

Corporate governance can be defined as a complex set of restrictions to increase profits by the company in the course of established relationships and contracts. This refers to the added value of companies and its allocation among the shareholders who are related to the company. (2)

According to this broad definition, the goal of good corporate governance is to maximize the contribution of companies to the economy as a whole, that is, to include all stakeholders. Accordingly, corporate governance includes the relationship between shareholders or creditors and companies, between financial markets, and companies, and between employees and companies. (2)

## 2.2 Financial development

Undoubtedly, economic development can be considered the ideal of all societies. In fact, the main effort of all countries is to reach this goal and take steps in the path that results in the increasing welfare of the people of the society. Among the multitude of talented minds who addressed this issue, there is a huge volume of studies that have shown that the financial system and its related components play an important and important role in providing a suitable platform for economic development. (19) Although the emphasis on the importance of the financial sector and its role in economic development has a historical history, but until a few decades ago, this link was not well understood and economists were unaware of this importance. Following the pioneering studies of people such as McKinnon and Shaw, the importance of the financial system was gradually revealed, and the understanding arose that without capital and money, taking imaginary fundamental steps is invalid, and taking basic steps in this difficult path requires having theoretical foundations and it is empirically relevant. In 1973, McKinnon and Shaw developed models of economic development in which financial development intensified the rate of economic growth. McKinnon emphasizes financial discipline as a prerequisite for successful liberalization. (1)

There has been considerable debate among economists about the role of financial development in economic growth and poverty reduction, but a balance of theoretical argument and empirical evidence suggests that finance plays a central role in socio-economic development (Levin (1997, 2005)). Economies with higher levels of financial development grow faster and experience faster reductions in poverty levels. This section introduces the concept of financial development and provides a brief review of the literature on the relationship between financial development, economic growth and poverty reduction.

At a broader level, financial development can be defined as improving the quality of five key financial functions: (i) generating and processing information about potential investments and allocating capital based on these assessments; (ii) Monitoring individuals and companies and applying corporate governance after capital allocation. (iii) Trade facilitation, diversification and risk management. (iv) Mobilization and consolidation of savings. And (v) facilitating the exchange of goods, services and financial instruments. Financial institutions and markets around the world vary considerably in their provision of these key services. Although this paper sometimes focuses on the role of financial systems in reducing information, contracting and transaction costs, it primarily takes a broader view of finance and emphasizes the key functions provided by the financial system for the economy as a whole. (17)

## 2.3 Capital formation

Capital formation is a concept used in macroeconomics, national accounts and financial economics. Sometimes it is also used in corporate accounts. It can be defined in three ways: It is a special statistical concept that is also known as net investment and is used in national accounts statistics, econometrics and macroeconomics. In this sense, it refers to a measure of the net additions to the (physical) capital stock of a country (or an economic sector) over an accounting period, or a measure of the amount by which the total stock of physical capital has increased. An accounting course uses standard valuation principles to achieve this standard. It is also used in economic theory as a modern general term for capital formation, which refers to the total "capital stock" formed or the growth of this total capital stock. In a much broader or more ambiguous sense, the term "capital formation" has been used in recent times in financial economics to refer to savings incentives, establishment of financial institutions, financial measures, public borrowing, development of capital markets, and privatization of financial institutions. Is The development of secondary markets in this application refers to any method of increasing the amount of capital at your disposal or under your control or any method of using or mobilizing capital resources for investment purposes. Therefore, capital can be formed in different ways in the sense of "put together for the purpose of investment". This broad meaning relates neither to the concept of statistical measurement nor to the classical understanding of this concept in economic theory. Instead, credit-based economic growth emerged during the 1990s and 2000s, accompanied by the rapid growth of the financial sector and the resulting increased use of financial terminology in economic discussions.

## Theoretical framework

The quality of corporate governance can affect the behavior of companies during economic shocks and in fact cause financial dissatisfaction and economic effects in these countries. During the East Asian financial crisis, the cumulative stock returns of firms whose managers had high control but little direct ownership were 10–20% lower than other firms (Lemon and Linz, 2003). This shows that corporate governance can play an important role in determining the individual behavior of companies, especially the motivations of corporate controllers to destroy the rights of minority shareholders. (2)

The study of stock performance of listed companies from Indonesia, Korea, Malaysia, Philippines and Thailand shows that stock returns are higher in companies with better reporting quality (using big six auditors). (Mitton, 2002). Evidence shows that corporate governance contributes to firm performance during the financial crisis. There is also country-level evidence that weak legal institutions for corporate governance were key factors in exacerbating stock price declines during the 1997 Asian financial crisis (Johnson et al. 2000). In countries where investor protection is weaker, net capital flows are more sensitive to negative events that negatively affect investor confidence. In such countries, during hard times, the risk of expropriation increases, because the expected return on investment is lower, and in this way, the country sees the fall in currency and stock prices. In general, an efficient financial and legal system can help reduce financial volatility.

The view that weak corporate governance in private companies can have economic effects at the country level is not limited to developing countries. The weakness of corporate governance has not caused the financial crisis in these countries, but it is clear that the lack of corporate governance is the reason for the decrease in the value of companies even in developed countries. In the same way, weak corporate governance rules can reflect the economic effects on the economy of each country. (21)

Weak corporate governance can affect the performance of countries' financial markets. One of the channels is that the weakness of corporate governance increases financial volatility. When transparency is weakly supported, due to the lack of transparency and that the controllers (major shareholders) who have an impact on the performance and prospects of the companies, then the investors and analysts have the ability to analyze the companies (because the total cost There is a lot of information gathering) and they don't have the motivation. In the conditions of lack of transparency, controlling investors may trade with information that has not yet been released to the public. There is evidence that weaker transparency leads to the simultaneous movement of stock prices and limits the role of stock market price discovery (Yu, 2000). The study of stock prices (Hong Kong Stock Exchange) showed that the stock price gap in the environment with less investors protection is more than other markets, and the depth of the market is also less compared to the markets with more support from small shareholders (Brockman and Chang, 2003). Evidence for Canada shows that ownership structures that indicate potential corporate governance problems affect the size of the price gap (Long, 2003).

On the other hand, neoclassical models are established when transaction costs are zero. Of course, some scientists believe that institutions are irrelevant when transaction costs are zero, but when transaction costs are positive, institutions become important. North (1987) believes that both the transaction cost is the key to the functioning of the economic system and that the industrialized countries successfully developed the complex institutional formations that are necessary to carry out transactions at minimum cost. Without this institutional development, economic growth will face problems. Financial systems make necessary arrangements to minimize transaction costs.

New and used financial claims that have the same characteristics and are complete substitutes for each other. Where secondary markets thrive, they become so large compared to primary markets that they actually dominate the price-setting process. If there is an increase in the demand in the secondary market, then their earnings will decrease. Therefore, borrowers can issue new financial claims in the primary markets, with lower interest rates, and borrowing becomes cheaper. The increase in the number of markets and financial instruments will boost capital formation. Of course, many developing countries have a limited range of these markets and tools. More diversity in financial instruments encourages more financial savings and, under favorable economic conditions, more investment.

Financial intermediaries can increase investment levels by reducing search costs. Therefore, it seems logical to support the removal of existing obstacles on the way of competitive financial intermediation to accelerate the steps of economic development. To achieve this goal, the Kinnon-Shaw school recommends financial liberalization and non-interference of the government in the financial markets. Recent theoretical studies conducted on the microeconomic aspects of financial intermediation show a case of market failure caused by information asymmetry. So there may be cases for government intervention. The table below shows the results of the above articles.

Goel (2018) conducted the Implications of Corporate Governance on Financial Performance: An Analytical Review of Governance and Reporting Reforms in India. Examining the effectiveness of corporate governance reforms by Indian companies in two reform periods (2012-2013 fiscal year as period 1) and (2015-2016 fiscal year as period 2) shows the existence of a significant relationship between the integrated framework of the company's overall social performance and financial performance alone. In period 1, the report was with corporate governance. Corporate governance reforms have not affected financial linkages in the Indian market in period 2.

Gupta et al (2011) examined financial development, corporate governance and cost of capital. Investigating the interactive effect of legal and financial development at the country level and corporate governance characteristics on the cost of equity capital using a comprehensive sample of 7380 company years taken from 22 developed countries, showed that the characteristics of corporate governance on the cost of equity capital only It affects common law countries with a high level of financial development.

Dehghan and Pak Niat (2017) investigated the role of corporate governance in economic growth and development. The purpose of this research was to examine the relationship between corporate governance and economic development and prosperity based on experience in many countries, sectors and business organizations. For this purpose, some channels through which corporate governance affects growth and development have been identified; These channels at the company level include more access to external financing, lower cost of capital, better operational performance, more value to the company, and better relationships with other stakeholders. The results showed that the optimal corporate governance framework causes economic growth and development through these channels.

## Methodology

For the main purpose of the research, which is to investigate the relationship between the two variables of corporate governance and financial development, the model used in the research of Gupta et al. (2011) is used. In this model, the relationship and influence of corporate governance on financial development is emphasized along with control variables.

$$CF_{i,t} = \beta_0 + \beta_1 CG_{i,t} + \beta_2 FD_{i,t} + \beta_3 inf_{i,t} + \beta_4 G_{i,t} + \beta_5 Openness_{i,t} + \varepsilon_{i,t}$$

In fact, the goal is to estimate the impact of the corporate governance variable (CG) on the capital formation index (CF) using the financial development transmission channel (FD).

In pattern (1) we have:

CG equals to corporate governance. To measure corporate governance, the number of ISOs obtained each year is used. Standard ISOs include ISO 9001, ISO 14001 and ISO 50001. Source: OECD

FD is equal to financial development index. According to the standard definition of the International Monetary Fund according to Figure (1), the financial development index is composed of two indicators: the financial development of markets (FM) and the financial development of institutions (FI) and is graded between zero and 100. Each of the indicators has been calculated using the criteria of depth (size and liquidity), accessibility (ease of access to financial services) and efficiency (ability to provide financial services at a low cost and stable income).

CF is equal to capital formation, which according to the definition of the World Bank is equivalent to a percentage of the value of the gross domestic product (GDP) of each country, which is spent on domestic investment in fixed assets and inventory and is presented as a percentage.

The control variables *Inf* are equivalent to inflation, *G* is equivalent to economic growth and Openness is equivalent to the degree of openness of the economy. Panel-GMM method is used to estimate the above patterns. The statistical population of this research includes 12 selected countries in the Middle East and 18 selected OECD countries between 2005-2020. The criteria for selecting countries were the availability of information related to corporate governance, capital formation and financial development.

In order to collect theoretical resources, subject literature and theoretical topics of the research, scientific sources such as (books, articles and magazines available in the field of research) theses, international authoritative publications that are available online on the Internet and other authoritative scientific databases will be used. Also, the databases of the World Bank and the International Monetary Fund are used to extract the data required for the research.

Experimental results of model estimation the purpose of this section is to analyze the research findings. Therefore, the research variables are examined first and then the models are estimated.
Finally, to check whether the financial development index affects capital formation (CF) through which of the financial indices of markets (FM) or institutions (FI), the following models are also estimated.

$$CF_{i,t} = \beta_0 + \beta_1 CG_{i,t} + \beta_2 FM_{i,t} + \beta_3 inf_{i,t} + \beta_4 G_{i,t} + \beta_5 Openness_{i,t} + \varepsilon_{i,t}$$

$$CF_{i,t} = \beta_0 + \beta_1 CG_{i,t} + \beta_2 FI_{i,t} + \beta_3 inf_{i,t} + \beta_4 G_{i,t} + \beta_5 Openness_{i,t} + \varepsilon_{i,t}$$

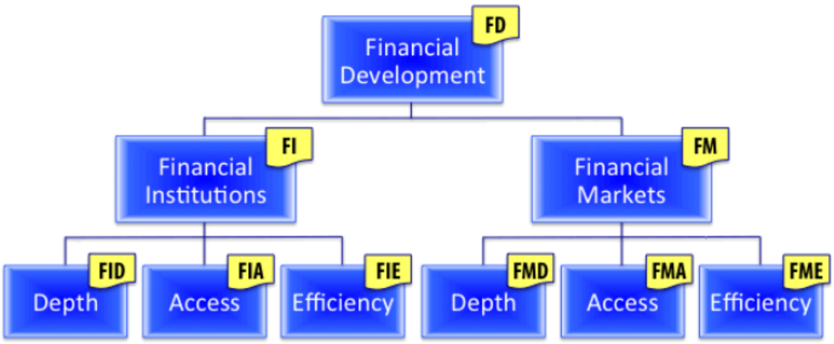


**Figure (1) – Financial development index**
Source: International Monetary Fund

## 4.1 Descriptive statistics

Descriptive statistics of variables at the level of Middle East countries (12 countries)

Table (1) shows the descriptive statistics of the main research variables for the selected countries of the Middle East during the years 2005-2020. According to the presented statistics, the average corporate governance in these countries is 945, which indicates the average number of ISOs obtained which is very different from the average ISOs in all countries of the world (4501) and indicates the low level of corporate governance in the Middle East countries. The standard deviation of 1065 also shows the great difference between the countries in this index. The average financial development index for these countries is about 42, which is not significantly different from the average financial development of all countries in the world (average 41) and shows the average performance of the Middle East countries. The standard deviation of 8 also shows the small distance between the countries. The highest level of the financial development index is 67, which is far from the ideal situation, which is the index of 100, and indicates that they are still far from the best countries in the world.

The average index of financial development of markets is 42, which is far from the average level of financial development of all countries in the world (average of 33). Also, the highest level of this index in the Middle East countries is about 73, which of course has a big difference with the best level of the index, i.e. 100, which are the best countries in the world. The average index of financial development of institutions is 41, which is not far from the average level of institutional financial development of all countries in the world (average 48). Also, the highest level of this index in the Middle East countries is 70, which is far from the highest level of the index, which are 100. The average capital formation index is 26, which shows that the Middle East countries have spent an average of 26% of their GDP on domestic investment.

Table (2) shows the descriptive statistics of the main research variables for selected OECD countries during the years 2005-2020. According to the presented statistics, the average corporate governance in these countries is 5016, which indicates the average number of ISOs obtained, which is very different from the average ISOs in the Middle East countries and indicates the high level of corporate governance in these countries. The standard deviation of 12823 also shows the great difference between OECD countries in this index.

| Variables | Ave | SD | Max | Min |
|---|---|---|---|---|
| (CG) Corporate Governance | 945 | 1065 | 4992 | 2 |
| (FD) Financial Development | 42 | 8 | 67 | 25 |
| (FM) Financial Development(Market) | 42 | 16 | 73 | 7 |
| (FI) Financial Development (Institution) | 41 | 9 | 70 | 22 |
| (CF) Capital Formation | 26 | 8 | 49 | 5 |

Source: research findings

**Table (2) - Descriptive statistics of research variables at the level of OECD countries (18 countries)**

| Variables | Ave | SD | Max | Min |
|---|---|---|---|---|
| (CG) Corporate Governance | 5016 | 12823 | 80518 | 1 |
| (FD) Financial Development | 38 | 23 | 90 | 8 |
| (FM) Financial Development(Market) | 31 | 25 | 87 | 0.3 |
| (FI) Financial Development (Institution) | 45 | 22 | 93 | 16 |
| (CF) Capital Formation | 24 | 6 | 54 | 5 |

Source: research findings

The average financial development index for these countries is about 38, which is not significantly different from the average financial development of all countries in the world (average 41). The standard deviation of 23 also shows the small distance between the countries. The highest financial development index is 90, which is a little far from the maximum financial development index, which is 100. The average financial development index of the markets is also 31, which is a little far from the average level of financial development of all the countries of the world (average 33). And shows the average performance of OECD countries in this index.

The average financial development index of institutions is 45, which is higher than the average level of institutional financial development of all Middle East countries. Also, the highest value of this index in OECD countries is 93, which is a little far from the maximum financial development index, i.e. 100. The average capital formation index is 24, which shows that OECD countries have spent an average of 26% of their GDP on domestic investment.

Chart (1) shows the relationship between the corporate governance index and capital formation in all countries.

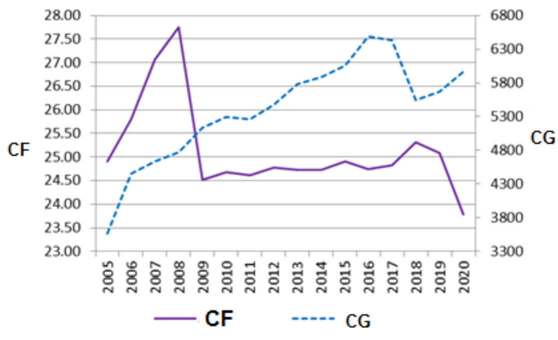


**Chart (1) –Relationship between corporate governance and capital formation**

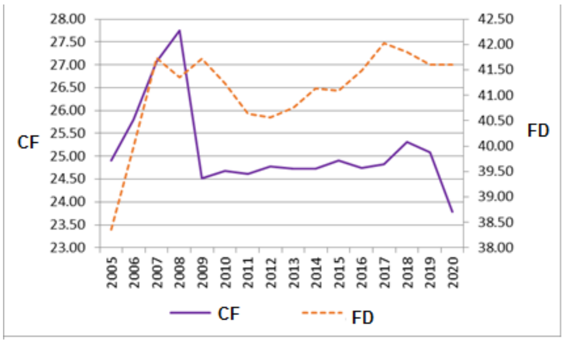


**chart (2) – The relationship between financial development and capital formation**

As chart (1) shows, in the early years of the period under review, the increase in the corporate governance index led to an increase in the capital formation index, but in the years 2008 and 2009 and the creation of severe financial crises in the world, the level of the capital formation index decreased. Although the corporate governance index was growing, but the increase in the capital formation index was very small and had almost the same amount, and since 2019, with the increase in the corporate governance index, the capital formation index had a noticeable drop, which is the main reason is to introduce the Corona Pandemic. In a period when the amount of domestic investment in fixed assets has decreased. Therefore, according to the mentioned results, it can be said that the relationship between the corporate governance index and the capital formation index is unclear at the level of all countries and needs further investigation and estimation of mathematical models.

Diagram (2) shows the relationship between financial development and capital formation in all countries.

As chart (2) shows, in the early years of the period under review, the increase in the financial development index led to an increase in the capital formation index, but in the years 2008 and 2009 and the creation of severe financial crises in the world, the level of the capital formation index simultaneously It decreased with financial development. After these years, the sharp increase in financial development caused a slight increase in capital formation, but since 2019 and the start of the Corona pandemic, both indicators have decreased. According to the results, it can be said that there is a direct relationship between financial development indicators and capital formation.

## 4.2 Examining the stationary of the research variables

Before calculating and estimating the research patterns, the stationary of the variables of the pattern is first examined using the LLC stationary test, the results of which can be seen in the table below.

The results of the stationary test showed that all the variables of the research are stationary at the confidence level of 95%.

**Table (3) - Analysis of stationary of variables**

| Variables | | Value | Prob | Result |
|---|---|---|---|---|
| Corporate Governance | CG | -8.56 | 0.000 | ✓ |
| Financial Development | FD | -9.11 | 0.000 | ✓ |
| Capital Formation | CF | -8.52 | 0.000 | ✓ |
| Inflation | Inf | -10.98 | 0.000 | ✓ |
| Economic growth | G | -1.96 | 0.02 | ✓ |
| Openness Of Economic | Openness | -4.81 | 0.000 | ✓ |

Source: research findings

### 4.3 Correlation Test

Before estimating the research model in order to better understand the relationship between the variables, it is first investigated how the independent variables are related to the dependent variables of the research model. For this purpose, Spearman's correlation test was used, the results of which can be seen in the table below. In this table, the correlation of independent variables with the dependent variable (CF) along with their significance is presented.

**Table (4) - Checking the correlation of the research variables with the dependent variable CF**

| Variables | All countries | OECD | Middle East |
|---|---|---|---|
| CG | -0.16<br>(0.00)* | 0.07<br>(0.24) | -0.09<br>(0.19) |
| FD | -0.19<br>(0.00)* | -0.06<br>(0.31) | 0.15<br>(0.02)* |
| Inf | 0.18<br>(0.00)* | 0.07<br>(0.22) | 0.15<br>(0.03)* |
| G | 0.35<br>(0.00)* | 0.17<br>(0.00)* | 0.15<br>(0.04)* |
| Openness | 0.04<br>(0.08) | -0.06<br>(0.33) | -0.08<br>(0.24) |

(*) is the probability of the correlation test, which means the significance of the relationship with the probability of 95%.

As Table (4) shows, the relationship between corporate governance (CG) and capital formation (CF) is different in different countries. In the Middle East and OECD countries, the relationship is not significant, but for all countries in the world, this relationship is significant and negative. Therefore, it can be said that corporate governance has different effects on capital formation in different countries, and this influence depends on other factors such as the level of development, geographical region, level of import and export, amount of investments and various factors. Considering that in this research, the auxiliary variable of the financial development index (FD) is also used, therefore, in the following, we try to investigate the effect of the variable of corporate governance on capital formation using the channel of the financial development index.

## Model

According to the results of the correlation test, which stated that the relationship between corporate governance (CG) and capital formation (CF) cannot be proven, for this purpose, to investigate the relationship between these two variables using the channel of foreign investment transfer (FD) using the Panel method. GMM is used. The estimated model in this research is as follows.

$$CF_{i,t} = \beta_0 + \beta_1 CG_{i,t} + \beta_2 FD_{i,t} + \beta_3 inf_{i,t} + \beta_4 G_{i,t} + \beta_5 Openness_{i,t} + \varepsilon_{i,t}$$

In fact, the goal is to estimate the impact of the corporate governance variable on the capital formation index using the financial development transmission channel. In order to estimate the GMM model, the type of explanatory variables (exogenous/exogenous) should be specified, and the following results were obtained using the Wooldridge test.

**Table (5) - checking the type of explanatory variables**

| Variables | | Value | Prob | Result |
|---|---|---|---|---|
| Corporate Governance | CG | 2.22 | 0.13 | exogenous |
| Financial Development | FD | 11.67 | 0.00 | Endogenous |
| Inflation | Inf | 0.99 | 0.31 | exogenous |
| Economic growth | G | 2.23 | 0.14 | exogenous |
| Openness Of Economic | Openness | 7.26 | 0.007 | Endogenous |

Source: research findings

Now, using the results of the above table, we will examine the model number (1) of the research.

**Table (6) - estimation of model (1)**

| Variables | All countries | OECD | Middle East |
|---|---|---|---|
| CG | -0.004<br>(-0.01) | -0.21<br>(-0.29) | 1.57<br>(2.38)* |
| FD | 0.16<br>(6.01)* | 0.36<br>(2.17)* | 0.39<br>(7.45)* |
| Inf | 0.14<br>(0.03)* | 0.09<br>(0.65) | 0.12<br>(4.19)* |
| G | 0.16<br>(0.00)* | 0.18<br>(2.24)* | 0.23<br>(1.85)* |
| Openness | 0.07<br>(0.00)* | 0.09<br>(1.27) | -0.009<br>(-0.32) |
| Sargan-Hansen | 0.27 | 1.0 | 1.0 |
| Autocorrelation | 0.76 | 0.59 | 0.24 |

(*) is the test statistic, which means variable significance with a probability of 95%.

Source: research findings

As the estimation results show, the corporate governance variable has a positive and significant effect on capital formation in selected countries of the Middle East, but this relationship is not significant in OECD countries. This result clearly shows that the impact of corporate governance on capital formation is different in different countries. And improving corporate governance in countries that are at a lower level of corporate governance improves capital formation, but this relationship is not significant for OECD countries. Also, the financial development index has a positive and significant effect on capital formation in both groups of countries. The amount of this influence is slightly higher in the Middle East countries. Regarding the control variables, it can be said that, as already predicted, the increase in inflation and economic growth improves capital formation.

The last two rows of table (6) show the results of Sargan-Hansen and autocorrelation tests. The result of Sargan-Hansen test indicates the compatibility of GMM estimators with respect to the probability greater than 0.05. The results of Arellano and Bond's autocorrelation test show that in both models, the null hypothesis of this test (absence of autocorrelation) is confirmed and therefore the models do not have autocorrelation. As mentioned in the research method section, the financial development index is derived from the two indicators of financial development of markets (FM) and financial development of institutions (FI). In order to investigate whether the effect of the financial development index on capital formation is greater than that of the market index or the institutions, patterns (2) and (3) of the research are examined.

**Table (7) - Examining research pattern (2)**

| Variables | All countries | OECD | Middle East |
|---|---|---|---|
| CG | 0.57<br>(2.86)* | 0.11<br>(0.14) | 1.89<br>(2.63)* |
| FM | 0.10<br>(6.10)* | 0.31<br>(2.92)* | 0.22<br>(8.20)* |
| Inf | 0.15<br>(5.17)* | 0.12<br>(2.03) | 0.13<br>(5.54)* |
| G | 0.23<br>(11.64)* | 0.17<br>(2.03)* | 0.19<br>(1.56) |
| Openness | 0.06<br>(7.81)* | 0.09<br>(1.32) | -0.01<br>(-0.59) |
| Sargan-Hansen | 0.32 | 1.0 | 1.0 |
| Autocorrelation | 0.78 | 0.46 | 0.21 |

(*) is the test statistic, which means variable significance with a probability of 95%.
Source: research findings

As the estimation results show, taking into account the variable of financial development of markets (FM), the variable of corporate governance has a positive and significant effect on capital formation in Low IP countries of the Middle East, but this relationship is not significant in OECD countries. This result also shows that improving corporate governance in countries that are at a lower level of corporate governance can improve capital formation. Another result of table (7) is that the improvement of the financial development index of the markets in all countries leads to the improvement of capital formation, and its effect is greater in the Middle East countries. Now it's time to examine the impact of corporate governance on capital formation using the channel variable of the financial development index of institutions (FI).

**Table (8) - Examining research pattern (3)**

| Variables | All countries | OECD | Middle East |
|---|---|---|---|
| CG | -0.34<br>(-0.70) | 0.07<br>(0.11) | 1.08<br>(1.24) |
| FI | 0.08<br>(1.63) | -0.04<br>(-0.16) | -0.02<br>(-0.15) |
| Inf | 0.12<br>(2.53)* | 0.07<br>(0.46) | 0.18<br>(5.12)* |
| G | 0.18<br>(4.41)* | 0.18<br>(2.04)* | 0.24<br>(1.97)* |
| Openness | 0.05<br>(2.44)* | 0.08<br>(1.17) | -0.005<br>(-0.15) |
| Sargan-Hansen | 0.34 | 1.0 | 1.0 |
| Autocorrelation | 0.63 | 0.8 | 0.28 |

(*) is the test statistic, which means variable significance with a probability of 95%.
Source: research findings

As the estimation results show, considering the variable of financial development of institutions (FI), the variable of corporate governance does not have much effect on the index of capital formation. This means that the improvement of corporate governance along with the improvement of the financial development index of institutions cannot have a great impact on the improvement of capital formation in countries. The reason for this can be considered the appropriate state of the financial development index of the institutions in the countries, and it can be stated that the countries have reached a level of development of the institutions that its improvement, along with the improvement of corporate governance, has no effect on capital formation.

Another result of table (8) is that the separate improvement of the financial development index of institutions has no effect on the capital formation index of countries. The reason for this, as it was said, is the favorable situation of the countries in the financial development index of the institutions, and the improvement of this index cannot help to improve the capital formation. Now it's time to examine the research hypothesis. Corporate governance significantly affects capital formation. This relationship is very strong in Middle Eastern countries that are at a low level of corporate governance. According to the results of table (6), it was found that the improvement of corporate governance in countries that are at a low level of corporate governance leads to the improvement of capital formation. Also, this relationship is significant and positive for Middle East countries, while this relationship is not significant for OECD countries. Therefore, this hypothesis was also confirmed.

## Conclusion

In this research, the impact of corporate governance on capital formation was investigated using the financial development channel. According to the studies conducted by using the time trend of the variables as well as the correlation test, it was determined that the effect of corporate governance on capital formation in the countries is unclear directly, and it indicates that corporate governance probably does not directly affect capital formation. It can affect capital formation through different channels. Based on this, attention was paid to the fundamental theories of capital and growth theory, and in this regard, the relationship between these two variables was investigated through the channel of financial development. In this sense, the corporate governance index through the financial development channel, which is derived from two indicators of financial development of markets and financial development of institutions, can have an effect on capital formation. Based on the studies of the World Bank in order to examine the financial development index, the issue is considered in three dimensions of efficiency, depth and access, as well as in two levels of financial markets and financial institutions. In addition to the historical and statistical observations that confirmed this issue, the results of the estimation of research patterns also showed that improving corporate governance through the financial development channel can improve capital formation in countries where corporate governance is weak. But this relationship was meaningless for countries that have reached maturity in corporate governance. It was also found that financial development through the financial development of markets can improve capital formation in all countries. The final result of the research was that in countries that are not yet at an optimal level in terms of corporate governance, improving corporate governance can improve capital formation. But in advanced countries and countries that have reached maturity in corporate governance, improving corporate governance will not affect capital formation. Using this result, it can be suggested to the statesmen and policy makers of Iran, considering Iran's position among the countries where corporate governance is weak, by improving and facilitating the conditions of corporate governance and revising investment laws and restrictions, the conditions Facilitate domestic investment to improve the index of capital formation and thus improve the country's economic development and growth. Since the subject of corporate governance has been taken into account at the level of accounting, while the category of corporate governance can be considered from the perspective of macroeconomics, economics students are suggested to examine other channels that influence capital formation and financial development in Iran and developing countries.

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