

# Role of Institutional Ownership Mechanism under the Effect of Price-to-Earnings Ratio on the Performance and Efficiency of Companies Listed in Tehran Stock Exchange

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## Abstract

In capital markets, corporate governance mechanisms are used as valuation criteria in dynamic markets to assess corporate value. The mechanisms concentrating on ownership structures, regulatory processes, and auditing try to improve corporate performance and to create value for stakeholders. The present research studied the effect of institutional ownership as ownership structure mechanism under price-to-earnings ratio on the performance and efficiency of companies listed in Tehran Stock Exchange in 92 sample companies over an 8-year period within 2006-2013. Analysis of research hypotheses show that there is no significant difference between abnormal return of companies with small and large institutional ownership, and low-, intermediate-, and high price-to-earnings ratios. Evaluation of research models over three regression models indicates that institutional ownership for companies with low price-to-earnings ratio has no effect on performance through assessed normal return, abnormal return, and net profit. Further, assessing three other regression models demonstrates that institutional ownership in companies with high price-to-earnings ratio also showed no effect on performance through normal return, abnormal return, and assessed net profit.

**Keywords:** Ownership structure, institutional ownership, price-to-earnings ratio, normal return, abnormal return, net profit.

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## Introduction

Expansion of economic and financial activities in recent decades has increasingly caused business management more difficult. In general, corporations undergo three major sources of inconsistencies and difficulties including conflict between managers and shareholders; conflict of interests between majority and minority shareholders; as well as conflict of interests between old and fresh shareholders. The relationship between shareholders and company directors is full of conflict of interests resulted from separation of ownership and control, different goals of shareholders and managers, and asymmetrical information between managers and shareholders (Dey, 2008; 1144). This conflict of interest is expressed by agency theory. The agency relation is defined as a contract whereby one or more people (owner or owners) appoint another individual (agent) on his (their) own behalf for some servicing and authorize him for making decision (Jensen and Macling, 1976; 5). One of the most important aspects of agency theory refers to the disparity of interests between managers and shareholders, which is the main subject matter of most studies in this area. Conflict of interests interpreted as the agency issue originates from two main causes: first, each participant has different objectives and priorities; and second, each has partial knowledge of other party's measures, knowledge and priorities.

Obviously, this separation, given lack of corporate governance effective executive mechanisms, provides the opportunity for management to act in line with own interests rather than the interests of shareholders (Berl and Minse, 1932). Corporate governance may influence enterprise performance through management direction and assistance in corporate governance regarding the rights of stakeholders, and may improve firm management processes and performance, maintain the rights of stakeholders, and prevent violation of the right.

Returns and profitability, which is indeed one of the most critical corporate operational performance evaluation criteria is also influenced by corporate governance mechanisms. Ownership structures ensuring disclosed information and the basis for capital market decision makers all are achieved under the light of powerful corporate governance. Ownership structure (owner's characteristics and ownership extent) is an important potential element for corporate governance, and is studied from two aspects of "ownership type" i.e. institutional ownership, management ownership, and family ownership, and of "ownership concentration". It is reasonable to assume that more overlap between ownership and control must lead to decreased conflicts of interests and increased corporate value. There is a complex relationship between ownership, control, and corporate value; however, ownership of the firm director may help in improved alignment of interests among managers and shareholders. Nevertheless, since interests of shareholders and managers are not well matched, higher ownership can offer more freedom to managers to pursue their objectives without fear of being fined that is it can cover the managers as a shelter. Therefore, the ultimate effect of management ownership on corporate value depends on the balance between alignment and entrenchment (Hosseini, 2007; 50). Since ownership has been separated from management, supervision over managers has been increasingly difficult. Therefore, several regulatory mechanisms have been suggested to reduce agency costs. Establishing corporate governance

mechanisms is a fundamental step toward optimal use of resources, enhanced accountability, transparency, fairness, and the rights of all stakeholders.

One of these mechanisms is ownership structure. Corporate ownership structure stemming from absolute control of major shareholders on corporate affairs can also minimize agency issues as major shareholders may better control corporate management performance due to sufficient information (Badavarnahandi et al, 2012). Regarding the effect of ownership structure on performance, the research seeks for the following objectives:

#### *Scientific purpose*

Studying ownership structure factors (institutional ownership) regarding price-to-earnings ratio over performance

#### *Applied purpose*

To direct investors on performance evaluation by ownership structure, to assist investors for performance evaluation and enterprise-returns level, to guide capital market operators making decisions on performance evaluation; and how does the ownership structure comes into decision-making models during analysts evaluations, and to how much do the factors weigh on the performance so that value creation, profitability, and corporate return are best estimated.

#### *Research specific purposes*

How does institutional ownership influence improved organizational performance, and to what extent the effect is influenced by the price-to-earnings ratio.

Regarding that the research has been trying to find the answer to unknown issues, two main questions raised here:

- How does ownership structure influence profitability factors?
- How well the institutional investors influence corporate return and profitability regarding price-to-earnings ratio?

Possible effects of shareholder structure on corporate value and performance in Iran have been recently interested by institutions and various administrative and regulatory groups and researchers. Naturally, this issue is provided by a regulatory institution such as Securities and Stock Exchange in a general framework that is corporate governance in order to create the necessary foundations for better and more protection of the rights of shareholders, especially minority shareholders. Meanwhile, researchers are expected to study this domain adding to the theoretical basics.

### **Research theoretical foundations**

Corporate governance relies upon “accountability” and “responsibility” and embraces two internal and external mechanisms for management, guidance, and control over corporate activities to create value for shareholders. Corporate governance participants including board of directors, audit committee, and internal auditors are examples of internal mechanisms; while, external (independent) auditors, legislators, standard setting authorities, capital market participants including investors, creditors, and other users of corporate reports are cases of external mechanisms. Good corporate governance improves accountability communication between the process main participants enhancing corporate performance and focuses on the interaction between the tasks of various participants. Corporate governance mechanism makes executive responsible to the board of directors; and in turn, the board of directors is accountable to the shareholders. Types of corporate governance are expressed in four models and ownership contribution is examined for four models as shown in Figure 1.

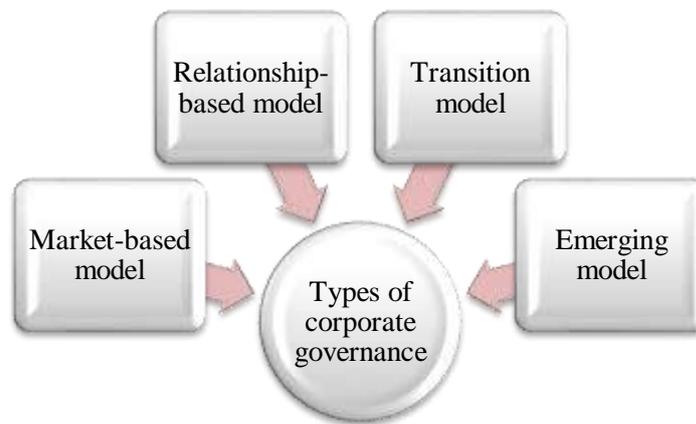


Figure 1. Types of corporate governance

#### *Characteristics, advantages and disadvantages of market-based model*

According to this model, the right of ownership is distributed among cross-section shareholders; capital markets have been enhanced; and capital market liquidity is high. Investors, not occupying management position, present diversified portfolios; hence, professional directors are hired on behalf of investors for corporate management. The main advantage of this model is ease of capitalization and risk distribution among investors.

Corporate governance occurs when managers make information asymmetry, which consequently would result in value lost by shareholders. Since minority shareholders are put aside from management due to low ownership, managers daily consider corporate operations are placed in a position requiring information asymmetry. Beneficial information are confidentially kept; while, trivial information are disclosed to shareholders and others. Thus, to align interests of managers and shareholders, agency costs are incurred. Managers adopt short-term perspective and sacrifice long-term interests for short-time as they are rewarded based on corporate short-term horizon (Rezaei, 2007).

Agency cost is the cost of excessive use of side benefits by management (Jenson and Macling, 1976). Rosse et al (2009) describes agency cost as leisure times at work, dodging, and taking benefits of management facilities.

### *Features and disadvantages of relationship-based model*

Relationship-based model is featured with in-group investment. According to this model, corporate investors have been long investing such that they are in the position of supervising management; thus, no agency costs occur. Holding major corporate stocks, banks dominate corporate ownership and directly participate in corporate supervision and decision-making. On the other side, banks dominance over corporate decision –making hinders specialist training (Rezaei, 2007); further, state over intervention through regulations and individuals in corporate affairs is in turn a hurdle for corporate achievement. Japan, Korea, France, and Germany are some examples of such typical corporate governance.

### *Transition model features*

In this model, capital markets are inactive and weak in which firms gradually turn into minority shareholder from state-owned companies. Legal systems are moving toward competitive systems and investors lack supporting mechanisms. Absence of financial discipline has prevented government supporting loss-making corporations; there are no strong institutional investors, either. Transition economies have underwent large difficulties during the era of transforming state-owned enterprises into private companies (Rezaei, 2007). Central and East Europe, as well as newly independent states of former Soviet Union are some examples of this typical corporate governance.

### *Emerging model features*

This model is characterized with active capital market, successful transformation of state-owned to private companies, existence of relationship-based and market based models, emerging management markets, formal and functional legal systems, as well as family and public corporations. In this model, placed between the first and second models, commercial groups dominate; there are some families holding large extent of authority and ownership. Further, investments have been distributed among various industries. Families with ancestral ownership were now viewed as national economy leaders (Rezaei, 2007). These commercial models have extracted their management control model from relationship model; though, they have considered market-based models through participating in capital markets.

Ownership structure or stockholding indicates how stocks and ownership rights are distributed in term of voting and capital, in addition to the nature and existence of stock owners. Ownership structure (owner characteristics and ownership extent) is a critical potential element in corporate governance. Logically, it is assumed that greater overlap between authority and ownership may lead to decreased conflict of interest; and thus, increased corporate value. Ownership structure is defined based on the two variables of internal and external shareholders. Internal shareholders or stocks hold by internal

shareholders imply that shareholders hold some percent of stock owned by managers and employees; while, external shareholders or shares owned by institutional shareholders refer to some percent of corporate stocks owned by institutional and legal investors (Sarin et al, 2000). Ownership structure is studied from two dimensions as shown in Figure 2.

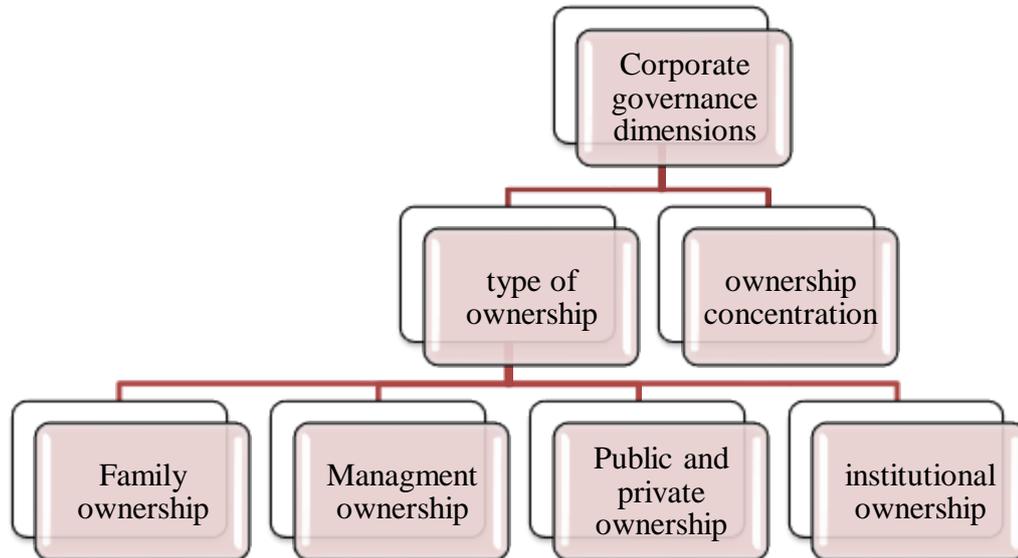


Figure 2. Ownership structure two dimensions

#### Type of ownership

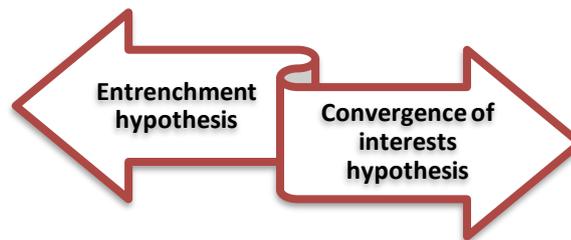
- **Institutional ownership:** institutional investors include banks, insurance companies, pension funds, investment companies, and other institutions, which deal with a large amount of securities transaction (Nouravaesh et al, 2009; 6) and directly influence capital markets managerial decisions using a high percentage of voting rights in corporate assemblies. Sheleifer and Vishny (1986) found out that institutional investors achieve more success in monitoring management group performance. Besides, they also benefit more knowledge and information as they have access to various news sources ( Lev, 1988; 1) and can aid in reducing agency costs, monitor corporate performance and issue of share, change managers, and finally, when it comes to controlling, they can protect interests of shareholders (Jensen, 1986). According to effective monitoring hypothesis, institutional investors enjoy high expertise and resources, and can monitor management at a cost less than mean comparing other private and unaware investors (Pound, 1988).
- **Private and public ownership:** the last theory Starr (1988) provided for justified privatization is the state decreased overload theory. In 1970s, most critics introduced Western states as great poor economic performance - nothing but a paper tiger (Willey, 1969; 67-68). In this regard, privatization is recommended as a solution to lessen expectations of the government. Butler (1985) argues that privatization can be regarded a healing cure for government budget deficit by

directing economy toward market and by encouraging risk-taking. Iran is of countries where government obviously presents at various industries; in spite of large efforts have been made for privatization, many industries are still run by government employing government financial and operational policies. Free market theory justifying privatization claims that the smaller the government and the more the right of choose for public are, provided that it leads to extending ownership rights and market forces, the higher the economics is efficient.

- **Management ownership:** it expresses the amount of stocks held by the board of directors' family members. According to the agency theory, managers attain position, status, reputation, prestige, comfort and respect at the expense of the company; hence, they would increase agency costs. It is generally believed that increasing management ownership percentage through less information asymmetry causes declined conflict of interests between management and shareholders. Management ownership results in greater convergence between interests of managers and shareholders and decreases agency issue for both (Jensen et al, 1976; 336). It is expected that managers with high percentage of ownership would stay for a long term in the company (LaFond et al, 2008; 128). As a result, higher management ownership would align management incentives and interests with other stockholders; further, agency issue would be also diluted. However, the results of Anlin Chen et al (2005) and MacCanell et al (1990) demonstrate that management ownership may be in conflict with agency theory and diminishes corporate performance due to management increased agency costs.
- **Family ownership:** companies where at least 20% of their shares are individually or collectively hold by family members, or at least one of family members -by blood or by marriage- is of board of directors and or executive director, actively participates in the board. Agency theory literature demonstrates that increased ownership and management of family shareholders would drop agency conflicts (El Ghouli et al, 2007; 1). In addition, institutions run by family foundations must be more efficient than public institutions as they have less agency costs (Fama and Jensen, 1983; 301).

#### ❖ **Combination of management ownership and shareholding**

One of the most challenging issues in corporate governance domain is the share of managers in corporate ownership as this group accesses corporate internal information and private data, on one hand; and they enjoy the power of decision-making, on the other hand. That is why the issue of ownership is largely sensitive to managers of different levels often more than other employees. Generally, increased insider ownership decreases conflict of interests between managers and shareholders; moreover, ownership of board members positively influences corporate performance. Respecting the effect of management ownership on corporate value and performance, two hypotheses are concerned:



**Convergence of interests:** the higher the size of a firm would usually more extend corporate stock ownership; and thus, managers may lose some share of corporate ownership. Therefore, interests of managers may not fully comply with shareholder demands; and consequently, managers adopt some decisions to more provide benefits and comfort to the managers rather than maximizing wealth of shareholders and meeting their requirements. Regarding increased inner ownership and higher ownership percentage of managers and employees, it is anticipated that conflict of interests is diminished, and corporate value and return are enhanced; in practice, interests of management and shareholders are strongly converged (Na, 2002).

**Entrenchment Hypothesis:** competition in labor market forces the managers, despite a small percent of corporate ownership and lack of convergence between interests of managers and shareholders, encouraging to keep the status and achieving better and higher positions in competing working world, to make every effort to secure shareholders' interests. So if a manager has a major stock so that he can keep his corporate status enjoying sufficient voting right, he may lose his prior motive to maximize its efforts. Increased management ownership dilutes the effects of outsider monitoring, fixing management position, as well as disregarding capital market regulations; this issue would negatively influence corporate value (Na, 2002). According to this hypothesis, when management ownership percent exceeds a certain level, the effect of management ownership on corporate performance may gradually faints.

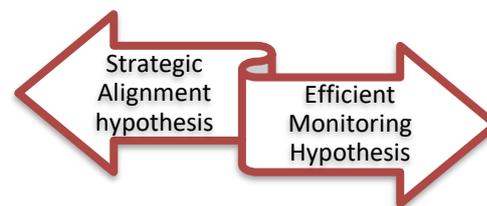
#### ❖ **Combination of ownership with institutional and major shareholders**

Major shareholders in ownership combination may have positive and negative consequences for the company. Berle and Means were the first initially investigated the issue in 1932 and asserted a negative relationship between decentralization and spread of ownership with corporate performance. They believed that the more the number of investors and the lesser their ownership percent is, the weaker the corporate performance will be. This theory was later challenged by some scholars (Demsetz and Vidla Lunga, 2001).

Generally, in East Asia more than two third of corporations are managed and monitored by a major shareholder, and a considerable part of corporate ownership is available to some limited shareholders. In developing markets, natural shareholders who are the minority play a trivial role that can be neglected (Na, 2002). According to some practitioners, major shareholders, on one side, in a company may enhance governance incentives and backgrounds on managers' performance; and on the other side, due to non-compliance of interests and objectives of major shareholders with interests and

expectations of minor shareholders, costs of control and alignment of major shareholders' demand with the interests of other shareholders are increased (Wong and Ziao, 2006). A study, 1993, conducted in Japan on the effect of ownership combination on the performance of a sample of Japanese non-productive company reveals that ownership decentralization positively influences corporate performance; moreover, increased share of institutional and major shareholders is followed by better performance and higher corporate returns. Other studies also exhibit that unlike China and Japan, there is a significant negative relationship between ownership concentration, on one hand; and corporate value and return, on the other hand (Han, 2006).

Respecting the relationship between the effect of institutional (major) shareholder ownership with corporate value and performance, two hypotheses are stated as follows:



### **Efficient monitoring hypothesis**

According to this hypothesis, institutional and major outsider shareholders may cost less than minor shareholders for monitoring corporate performance as they enjoy high expertise and experience. Thus, a positive relationship is expected between institutional ownership and corporate performance.

### **Strategic Alignment hypothesis**

According to this hypothesis, sometimes expectations of institutional shareholders may conflict the interests of managers and the interests of minority shareholders are being ignored due to interests' adaptation of both groups; therefore, effective monitoring of majority shareholders on managers would decrease and a typical conflict of interests may emerge between majorities and other owners.

#### **❖ The effect of financial majority shareholders on agency costs**

When corporate majority owners come from investment companies, corporate portfolio managers act as an attorney and shareholders as clients. Managers' performance is evaluated by corporate shareholders along with assessing the performance of stock exchange companies by corporate investment management portfolio. Moreover, investment corporate portfolio return plays a decisive role in fixing or weakening corporate management status. Furthermore, institutional investors may employ more effective and better monitoring on investment corporate performance if it is of financial institutions because of high experience, expertise, and assessing and management capability through voting right. It is expected that this monitoring results in offering required suggestions, increased return, and improved investment corporate performance (Han, 2006).

## **Ownership and outsider shareholder composition**

In free economies and international capital markets, some corporate ownership is available to outsider investors. Due to several reasons including higher monitoring on management, increased corporate expertise and experience, new capital inflow, as well as higher flexibility and corporate financial power, facilitating merger of companies into the global capital market, and lower rate of cost of capital (Cambell, 2002), presence of outsider shareholders in ownership composition may result in enhanced performance, increased corporate return and value. Outsider ownership serves better than insider ownership in term of return on assets. Rescue Acquisition Hypothesis firstly deals with purchase and acquisition of domestic poor firms by an outsider investor; a phenomenon that has been evolved following 1997 recession in financial markets of developing countries (Na, 2002).

### **- Investment combination with corporate return and value in Iran**

According to the literature, a positive significant relationship is predicted between ownership structure and corporate performance in Iran. In fact, an effective ownership structure is a necessity for improved performance, which is considerably important especially from investors and owners' point of view. The effects of stockholding structure on corporate value and performance in Iran have been largely interested by several executive and regulatory groups, institutions, and researchers in recent years. Naturally, this issue is introduced by a regulatory institution like securities and exchange organization in a general framework that is corporate governance focused on providing required infrastructures for better and more protection of the rights of shareholders, especially minorities. However, researchers also provided theoretical foundations.

### **❖ Majority investors**

Majority investors can abate agency cost because it encourages managers to take steps toward the interests of shareholders; and thus, financial reporting fraud remarkably recedes by manipulating accounting profit. Roy Kouwenberg (2006) declares that the most effective way of ensuring a proper corporate management in emerging market is ownership concentration since majority shareholders who precisely monitor corporate management would negotiate on how to run in an environment where corporate governance regulation is still voluntarily implemented in many emerging markets.

### **- Majority investors from corporate governance system point of view in Tehran Stock Exchange**

In recent years, many efforts have been made in Iran to identify the nature of corporate governance system and its significance from enterprise monitoring perspective. A code of conduct, "corporate strategic system", is merely set in Tehran Stock Exchange; whereas, no specific measures have been taken to institutionalize this issue as firms and to apply it in capital market from rules and regulations point of view. According to the corporate strategic principles code of conduct for Tehran Stock Exchange, which was approved in 2005, majority and minority investors are defined as follows:

- Majority shareholder (block holder): a shareholder that can directly assign one or more members of board of directors and enjoys the most control and dominance over board of directors.
- Minority shareholders: a shareholder that cannot directly assign a member of board of directors, and has the least minimum control over the board of directors.

### Ownership concentration

Ownership concentration is how to distribute the shares among corporate shareholders. The less the number of shareholders is, the more the ownership is concentrated (Mohammadi et al, 2009; 75). However, there are different definitions of ownership concentration. Demsetz and Lehn (1985) explained ownership concentration as the amount of stock held by 5 or 20 block holders and or as Herfindahl index that is measured through the second power of each shareholder stock. Fosberg (2004) defines ownership concentration as the amount of stock held by shareholders and over 5% blockholders. Classens *et al* (2002) merely approves the greatest shareholders as ownership concentration. Prowse (1994) views ownership structure as the stock sum of 5 blockholders. In countries suffering from poor rules and regulations of protecting the rights of shareholders, ownership concentration has often evolved as a solution to control moral hazard in management and their adopted decisions (LaPorta et al, 1998; Shilfer and Vishny, 1997), which not only decreases the conflict between the manager and shareholders, but also increases conflict of interests. As majority shareholders often seek for their own benefits and interests; hence, interests of minority shareholders are ignored (Shilfer and Vishny, 1997; 739).

Majority shareholders are often less oriented to corporate information disclosure than other owners as they deprive other beneficiaries and stockholders from accessing confidential corporate information so that corporate policies and plans are kept hidden (Fan and Wong, 2002). Chau and Leung (2006) believe that more concentrated ownership causes larger hidden and undisclosed opportunities and benefits are created for controlling shareholders. Due to the high corporate stock, these owners would largely dominate management decisions and the consequences. Thus, they directly influence corporate performance. The owners as corporate controlling owners determine corporate policies and select a high or low quality auditing organization based on the interests and costs of selecting an auditor (Lin and Ming, 2009; 48).

Companies with a majority of their shares held by blockholders, in particular controlling shareholders are more exposed to the agency problems. As controlling investors dominate over all decisions taken at the level of board of directors, they can easily ignore regulatory mechanisms for proper and transparent performance comparing other shareholders (Fama and Jensen, 1983).

#### ❖ **The causes of ownership concentration in companies listed in stock exchange**

Tendency to hold management share is an incentive for controlling most corporate capital and getting maximum votes in decision-making meetings on financial

performance and or even corporate general objectives. Majority shareholders or management shareholders are interested in keeping corporate internal information confidential, which is only possible through limited stock market supply (Jianti et al, 2001). The motive of another stock monopolies group, known as blokholders is to hold stocks focusing on increased capital value in long-term. In most cases, the investors are strongly related to the elements of corporate inner information owner (Gourton et al, 2002).

Scholars have classified equity performance into two categories as follows:

- Shareholders that merely focus on earnings per share and portfolio optimization.
- Individuals that try to collect information and to control earnings per share.

Another point on outsider investors is that they are interested in stock market based on domestic investment security and corporate management system, and show a different performance to holding or trading the stock. In addition, many investment companies attract public attentions through supplying a significant corporate stock; once the price has dropped, the same stock is repurchased at the cheapest price. It is risk-taking for investors if a large portion of the share is available to traders. Thus, many companies try monopolies in order to prevent speculations (Jamali, 2008).

### **The effect on stock liquidity**

Several research findings show that ownership concentration is largely related to public float (free float). In general, increased liquidity requires sufficient free float in stock market. In many countries, corporate majority of shares (many public companies listed in stock exchange) are still held by controlling or co-founder shareholders. Despite the requirements for public offering, many controlling shareholders avoid free swapping of large corporate stocks. Causes of increased ownership concentration can be named as follows:

- Vulnerability of controlling shareholders or co-founder in takeover
- Pension funds as “passive investors” significantly presents in capital market; as they often follow long-term investment strategies, they may negatively influence ownership concentration level and total market liquidity
- Investors’ composition also affects market liquidity. Lack of diversity among investors may disable adopting mutual positions in transactions.

Free float amount in Malaysia has been largely interested comparing other countries such that its mean free float forms almost 30% of the paid-up capital. Many Malaysian corporations are controlled by a small group of affiliated partners and run by owner-managers. Anyway, efforts to improve liquidity in market have been intensified using a set of regulations by government and the capital market supervisor. Gradual reduction of stock controlling regulations, minimizing state ownership to add free float, as well as

removing restrictions on foreigners stock ownership in new investments are some taken measures.

A study conducted in Oman exhibits that increasing government assets has an adverse effect on turnover. Oman focuses on long-term public investment horizons. In addition, the research also displayed that sharp decline of free float in the market has had a negative effect on liquidity. Another similar study, in 1998, on state intervention in Hong Kong market, uncovered that government intervention has a negative effect on stock liquidity in Hang Seng Index (Caluk et al, 2002).

### **Effect on information quality**

Greater ownership concentration leads in more control over the board of director; and consequently, information asymmetry for concentrated owners. The owners through penetrating in management and adjustment can attain information economic rent and information asymmetries comparing other owners and add their assets through the value. On the other side, previous studies examined the regulatory role of concentrated institutional investors, too. Chau and Heflin (2002) indicated an information rent for major shareholders. They figured out a positive relationship between major shareholders' ownership and various criteria of information asymmetry. Moreover, Bejraj and Snagupta (2003) inferred that institutional ownership is positively (negatively) related to bond credit rating (return) that is the more the institutional ownership is concentrated it negatively affects bond credit rating and return. Research findings exhibited that although institutional ownership regulatory mechanisms are considered positive by bondholders; concentrated ownership may lead to movement toward personal interests. In addition, Jenkins and Velouri (2006) implied a negative relationship between institutional investors and earning quality. Noravesh and Ibrahimikordlar (2005) have also scrutinized the relationship between institutional shareholders and information symmetry. They have found that companies with greater institutional ownership would contain more future profits information stock prices in comparison to companies with less institutional ownerships; thus, the present research studies the effect of concentrated institutional investors on earning quality.

The issue of agency stems from the fact that investors usually lack the tendency or adequate capability to run a company; thus, the task is delegated to the directors. If both managers and investors intend to maximize private interests, and regarding that monitoring agent performance also requires some cost, this issue implicitly implies that the agent may not always seek to secure and maximize interests of owner (Amiraslani, 2005). Therefore, selecting a proper criterion ensuring corporate goal achievement i.e. maximizing the wealth of owners is of the critical solutions investors adopt for corporate performance evaluation; and thus, appropriate economic decision making.

### **❖ Corporate value and performance**

Venkateshwarlu and Tiwari claim a close correlation between corporate value and performance criteria, and suggest that shareholders consider the wealth created by the company in addition to performance criteria (Venkateshwarlu and Tiwari, 2005).

Fernandez believes that corporate wealth created by investors is one of the most critical factors of determining corporate value. He asserts that corporate value and the wealth created by investors depends on to the extent the firm can create surplus return on the cost of capital. He defines value as a function of return (Fernandez, 2001).

According to Venkateshwarlu and Tiwari, such factors as operational efficiency, long-term solutions, and corporate status in the market critically contribute in corporate value. They think that the aforementioned factors can be analyzed through accounting profit, free cash flows, and business growth rate. Venkateshwarlu and Tiwari explicitly express that companies are more valuable and can influence owners' wealth through creating excess return on opportunity cost (Venkateshwarlu and Tiwari, 2005). Venkateshwarlu and Tiwari classified performance criteria into three classes and summarized all financial ratios for corporate performance assessment in the following categories (Venkateshwarlu and Tiwari, 2005) as shown in Table 1.

Table 1. Financial ratios

Growth rate criteria	Cash flow criteria	Profitability criteria
Interest growth rate Sales growth rate	per share cash flow cash returns current ratios Quick ratio	Earnings per share Return on investment Return on investment in company Return on equity Return on sales

Hauser and Bertl, analyzing the relationship between corporate performance criteria, considered three following performance criteria, taking each company cash flows and profitability as performance criteria believe that each criterion refers to one dimension of corporate performance. On the other hand, it is also asserted that each criterion typically shows the corporate wealth created for shareholders.

Hauser and Bertl believe that companies with higher profitability would enjoy greater cash flows; thus, more cash earnings can be distributed among investors as dividend. Hence, corporate stock price goes up in the market (correlation).

On the other hand, it is stated that companies with high profitability and cash flows may refuse paying cash dividend and reinvest again in the company; however, it does not necessarily results in reduced corporate stock price in the market (interaction effect). Hauser and Bertl refer to other effective factors of corporate value in addition to profitability and cash flows as market price effective factors (corporate value) (Hauser and Bertl, 2006):

1. Firm size
2. Firm growth rate
3. Capital structure

4. Cash conversion cycle
5. Research and development expenditure
6. Promotion expenditure
7. Invested capital expenditure
8. Auditor opinion
9. Proper financial criteria
10. Percentage of sales changes
11. Ratings announced by regulatory factors of stock companies

From long ago, many studies have been carried out to attain a proper criterion for management and corporate performance evaluation to ensure firm's alignment with the interests of potential investors and to establish the foundation for economic decisions of potential investors and creditors.

Performance criteria are classified into four categories based on the type of information used for measurements:

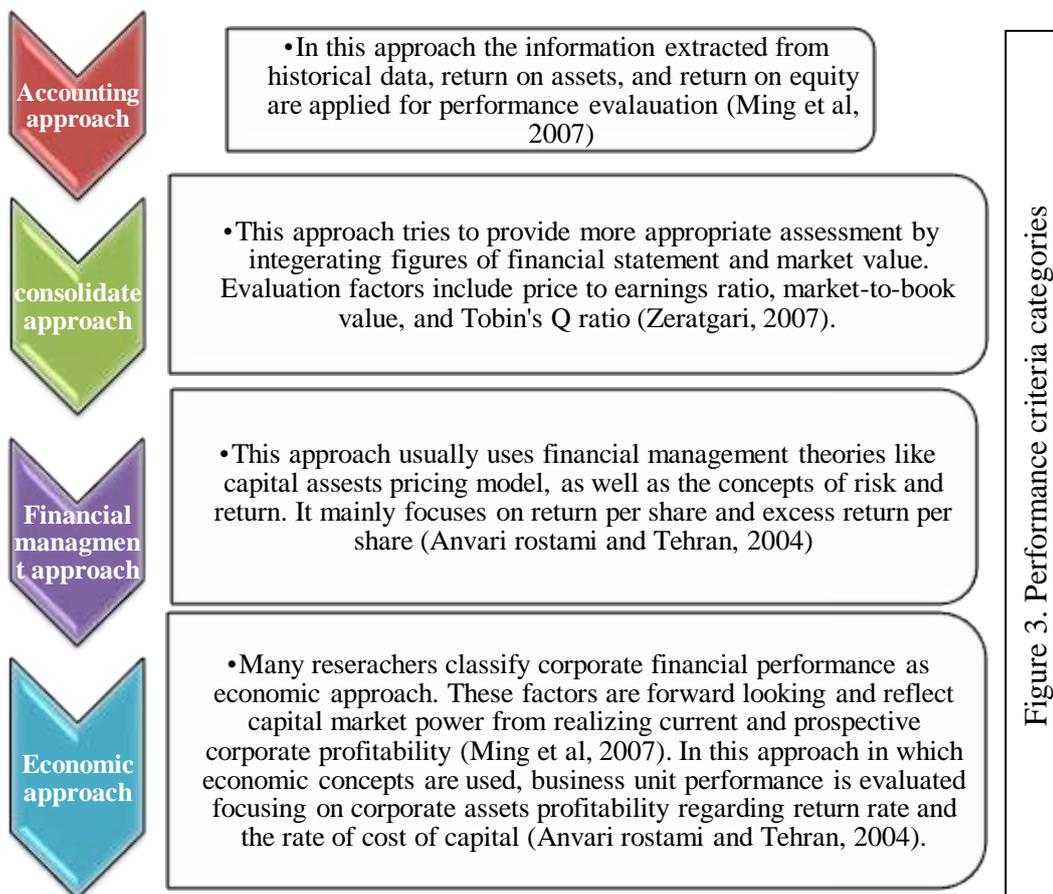


Figure 3. Performance criteria categories

## **Performance criteria-based approaches**

### **Performance accounting criteria**

Performance appraisal accounting criteria focus on income statement and balance sheet; meaning that a cash outflow can be represented as a cost in income statement, or a capital asset in the balance sheet; therefore, various different income statements and balance sheets are provided because of different approaches (Author, 2007). Accounting standards can be categorized into two classes: the first is based on accounting information; and the second, relies upon accounting and market information (Jahankhani and Sajadi, 1995).

➤ Accounting information-based criteria: often measure corporate performance using historical data of basic financial statements and explanatory notes. The criteria contain earnings, earnings per share, interest rate, dividend, free cash flows, return on equity (ROE), and rate on assets (ROS) (Jahankhani and Sajadi, 1995).

➤ Market and accounting information based- criteria: these criteria often use market information in addition to data of basic financial statements and explanatory notes for corporate performance appraisal. Criteria are more consistent as market data are applied; however, they are less relevant as market data are constantly changing (Jahankhani and Zarif fard, 1995).

➤ Profit: accounting profit is earnings minus costs (Jahankhani and Zarif fard, 1995).

➤ Earnings per share: earnings per share are the corporate per share performance criterion over a period of time. Effective capital value of increased earnings is not considered in earnings per share. In some cases, increased earnings per share results from increased non-economic investments such that investment return may not be sufficient for cost of capital (Congo et al, 2002). Moreover, irrelevance and artificial objections on accounting earnings because of historical cost accounting and impossible comparison over periods and economic units due to different accounting methods are also true for earnings per share. Therefore, earning per share is not a decisive criterion for performance appraisal. In finding the answer to the question that whether earning per share information must merely represent historical data or predictive information, Accounting Principal Board (APB) in statement No.15 emphasizes on prediction notion as it is believed that these information are more effective for investment decisions and analyzing corporate potential to grant credit. Earnings per share is only one side of the coin; in other word, in determining corporate value, the quality of earning must also be regarded as much as the quantity i.e. how much earning has been obtained through investment and how much was the cost of capital. Regarding that accounting criteria concentrate on earning, spending can be as cost in income statement or a capital asset in balance sheet can significantly affect earnings per share. Stewart claims that when the company is allowed to select one approach from multiple accounting methods the effect comes to a peak (Stewart and Benit, 1999).

➤ Interest rate: it is obtained from investment rate multiplying in rate of return (Jahankhani and Zarif fard, 1995).

➤ Dividend: it depends on corporate investment policy. Companies enjoying profitability investment opportunities view profit as a financial source (Jahankhani and Zarif fard, 1995).

➤ Return on equity (ROE): it is a financial ratio measured dividing earning before tax by equity. Of accounting performance criteria, equity is the most popular common accounting performance criteria. According to some scholars, it is popular among analysts, financial managers, and shareholders as ROE is separated into profitability, asset turnover, and leverage ratios through DuPont Analysis (Wit and Tweit, 2007). ROE signifies that to what extent the return has been created by investors through investment amounts. It is properly used in sectors where managers are dominant in decisions related to assets acquisition, purchase, credit aspects, cash management, and current debts.

➤ Return on Asset (ROA): it is calculated through dividing net profit plus interest expense to total assets.

Return on assets is of other accounting criteria representing management efficiency in using existing sources to earn a profit; further, it is of profitability ratios analyzed through source of profit (Ramezani, 2008). ROA is measured and analyzed through DuPont analysis as follows (Jahankhani and Parsaeiyan, 2005):

$$ROA = \frac{NI}{Asset} = \frac{NI}{Sales} \times \frac{Sales}{Asset}$$

ROA: return on assets

Price to earnings ratio (P/E): P/E ratio is a common instrument to analyze corporate, industries and market status, and is obtained through dividing a share market price into the same earnings per share illustrating the amount investors must pay per earnings

$$\text{Annual profit} = \frac{P}{E} \times \text{Equity value}$$

➤ **Price-to-book value ratio:** it is measure through dividing market capitalization per share into book value of the very share. Book value per share represents historical values.

➤ **Market-to-book value ratio** indicates how investors view previous and prospective corporate performance.

$$\text{Value per share} = P/BV \times \text{book value per share}$$

Or

**Return on equity** =  $P/BV \times$  book value of the equity

➤ **Tobin's Q ratio:** Tobin's Q ratio is another corporate performance appraisal tools measured by dividing corporate market capitalization to book value or replacement value (RV) of corporate assets. James Tobin initially introduced this ratio in 1978 form macroeconomic analyses to predict prospective investment activities. He was intended to establish a cause and effect relationship between Tobin's Q and corporate capitalization. If the measured Tobin's Q is larger than one for market capitalization, there would be high motive for investment; in a better word, large Tobin's Q ratio symbolizes the value of corporate growth opportunities. If Tobin's Q ratio is smaller than one, the investment will be stopped. In case that company utilizes all investment opportunities, Tobin's Q ultimate value reaches to one.

### **Economic performance criteria**

Economic criteria try to base economic information as corporate performance appraisal foundation by converting accounting information through some adjustments into economic information. To say it differently, these criteria evaluate corporate performance regarding the power of earning from current assets and potential investments and respecting rate of return and rate of cost of capital (Jahankhani and Zarif fard, 1995).

➤ **Economic added value (EVA):** is a measure of interests of shareholders. It is not a new concept rather is the so-called economic profit by economists; but, until recently, it lacked any measurement method. Following almost a long evolution, EVA measurement has been initiated in 1989 by Stern Stewart Co. From then now, over 300 companies have been consistent with this system around the world (Izadiniya, 2005).

➤ **Market Value Added (MVA):** market value added is another assessment criterion of shareholders capitalization. According to this criterion, total value created for shareholders is presented since the company establishment (Parsaeiyan, 2003). MVA is closely related to EVA. It is measured by the difference between equity market value and equity book value.

➤ **Remaining interest:** it is defined as remaining interest minus cost of capital. In other word, remaining interests equals net profit minus interest expense attributed to capitalization. Attributable interest cost is often the least acceptable return of investment. Remaining interest is used for performance appraisal of subsidiaries and departments. The fundamental notion of remaining interest is similar to economic added value with the difference that it requires no applied adjustments of economic added value. Although, remaining interest is a much better criterion than ROE and RONA for performance appraisal, as it is an absolute monetary criterion and a function of firm size, it has not been widely welcomed (Cong et al, 2002).

➤ **Value of continuity:** the value of post-prediction period is referred value of continuity. Using value of continuity may remove the needs to predict cash flows and corporate economic added value in long-term. Value of continuity measurement is critically important since a major percentage of corporate total value is often dedicated to the value of continuity. However, it does not mean that most corporate value belongs to

the continuity period; rather, it means it is sometimes difficult to predict cash inflows resulting from cash outflows spent on capital expenditures and working capital investment, especially in early years of corporate operations, since it is expected that cash outflows (expenditures) would create larger cash inflows for the upcoming years (Copiland et al, 1994). P/E is the simplest measurement methods of value of continuity. In this method, with multiplying corporate P/E for the last year of prediction period by corporate net profit in the same year, the value of continuity can be approximated. In addition to P/E method, value creation method can also be used:

$$\text{Value of continuity} = \frac{NOPAT_{t+1} (1 - g/ROIC)}{WACC - g}$$

Where,  $NOPAT_{t+1}$  indicates net operating profit after tax (NOPAT) following prediction period;  $g$  is the growth rate of NOPAT; ROIC signifies expected rate of Return on invested capital; and WACC shows weighted average cost of capital.

✓ **Investment** is turning financial fund into one or more assets, which can be stored for a certain term in the future. The goal of investors is to maximize their own interests. In the present research, investment refers to investing in securities. Generally, analysts and investors apply three major capitalization methods (Abde tabrizi and Hanifi, 2007) including technical analysis, fundamental analysis, and analysis through private information.

✓ **Efficient-capital market hypothesis:** if a capital market is efficient, both securities are fairly and properly priced, and the capital is optimally allocated as the most important economic development and production factor (Jahankhani and Abde tabrizi, 1993).

In real world, capital market is characterized with three informational efficiency, allocation efficiency, and operational efficiency (Raei and Talangi, 2004; 481).

**Informational efficiency:** an efficient market is referred to a market in which securities price like common stock reflects all existing market information. An efficient market must be sensitive to new information. In such a market, if new information is publicized, the prices would vary respecting the mentioned information (Raei and Talangi, 2004; 481). Informational efficiency is also subdivided into three weak, semi-strong, and strong forms.

**Allocation efficiency:** according to this term, allocation efficient markets are the markets where investment projects are financed by marginal productivity of investment (Frankfourter and MacGoei, 1996; 61). Capital allocation is properly carried out when companies with better investment opportunities supply the required fund; the economic sectors with less return are deprived of capital use (Raei and Talangi, 2004; 482).

**Operational efficiency:** it results in increased liquidity of assets (Francfourter and MacGoei, 1996; 61). A market is operationally efficient where transaction costs are as least as possible.

✓ **Market efficiency tests**

Moore (1964), Fama (1964), Samuelson (1965), Alexander (1965), and Fama and Blume (1965), etc. have tested market efficiency at weak level. The results have confirmed this level of efficiency. Other scholars such as Kaplan and Roll (1972), Pettit (1972), Mandeler (1974), Basu (1977), Rendman, Jones and Lattan (1982), Donald Kim (1983), Haugen and Lakonishkok (1988), and Ritter and Chopra (1989) performed market efficiency tests at semi-strong level. This level of efficiency was maintained in most studies.

Strong tests of efficient market hypothesis analyze returns of various investment groups that whether any group earned return is larger than the mean. Sharpe (1966), Jensen (1969), as well as Crockett, Friend and Blume are some examples of market efficiency test at strong level. Really and brown (1973) have also noted that most studies of market efficiency at strong level have maintained this hypothesis.

✓ **Risk and return are investment foundations**

Securities for stock exchange have various amounts of risk and return. Investors are basically risk-averse, and wile investing look for less-risky securities. However, investors vary in term of risk taking. Some invest on riskless treasury bonds; whereas, others invest on other risky securities like common stock. Therefore, investors must determine the risk and return given the utility and risk tolerance. Investors have indifference curves where the points show combined risk and return the investor is indifferent (Mathew et al, 2000).

✓ **Return definition**

Return is a financial asset item over one year, which is interpreted as a discount rate that if calculates future cash flows, the current value equals asset price (Pinoo, 2001; 348). Return on investment is realizable cash flows acquired by the investment owners over a given time period. Return is expressed as a percent of investment value at the beginning of the period (Afshari, 2001; 64). Return on investment consists of two “quantitative return” and “qualitative return” parts (Islami bidgoli, 1996; 96).

**Research methodology**

This is a retrospective study on the area of positive accounting research based on real data of financial statements of companies listed in Tehran Stock Exchange. This is an applied correlational research in term of purpose testing the relationship between independent (ownership structure regarding price-to-earnings ratio) and dependent (normal return, abnormal return, and net profit) variables using collected information. Research data were gathered through library and field studies. For library study, research theoretical basics have been extracted from national and international specialized journals and books, digital books, and online sources. For field study, the required data have been

collected from CDs developed by Tehran Stock Exchange, as well as software of Rahavarde- Novin and Tadbirpardaz Co, and online webpages like “Islamic research, development, and studies”. Research data were measured by Excel and analyzed through EVIEWS.

### *Research questions*

The research has tried to find the answer to the following main research questions:

- How does institutional ownership influence normal return regarding price-to-earnings ratio?
- How does institutional ownership influence abnormal return regarding price-to-earnings ratio?
- How does institutional ownership influence net profit regarding price-to-earnings ratio?

### *Research hypotheses*

Regarding the research main questions, research hypotheses are as follows:

#### First main hypothesis

Respecting price-to-earnings ratio, enterprise return is affected by institutional ownership.

#### First sub-hypothesis

There is a significant difference between abnormal returns of companies with small/large institutional ownership and low price-to-earnings ratio.

#### Second sub-hypothesis

There is a significant difference between abnormal returns of companies with small/large institutional ownership and intermediate price-to-earnings ratio.

#### Third sub-hypothesis

There is a significant difference between abnormal returns of companies with small/large institutional ownership and high price-to-earnings ratio.

#### Second main hypothesis

Institutional ownership in companies with low price-to-earnings ratio may negatively influence corporate performance.

#### First sub-hypothesis



Institutional ownership in companies with low price-to-earnings ratio has a negative effect on corporate normal return.

#### Second sub-hypothesis

Institutional ownership in companies with low price-to-earnings ratio has a negative effect on corporate abnormal return.

#### Third sub-hypothesis

Institutional ownership in companies with low price-to-earnings ratio has a negative effect on corporate net profit.

#### Third main hypothesis

Institutional ownership in companies with high price-to-earnings ratio has a positive effect on corporate performance.

#### First sub-hypothesis

Institutional ownership in companies with high price-to-earnings ratio has a positive effect on corporate normal return.

#### Second sub-hypothesis

Institutional ownership in companies with high price-to-earnings ratio has a positive effect on corporate abnormal return.

#### Third sub-hypothesis

Institutional ownership in companies with high price-to-earnings ratio has a positive effect on corporate net profit.

#### *Research variables*

Research variables are divided into two classes based on their contribution in research:

1. Independent variable
2. Dependent variable

Table 2. Research hypotheses

Row	Main hypothesis	Sub hypotheses	Dependent variable	Independent variable	Control variable
1	First	1 <sup>st</sup>	Abnormal return	Low and high institutional ownership (in %) and low price-to-earnings ratio	-
2		2 <sup>nd</sup>	Abnormal return	Low and high institutional ownership (in %) and intermediate price-to-earnings ratio	-
3		3 <sup>rd</sup>	Abnormal return	Low and high institutional ownership (in %) and high price-to-earnings ratio	-
4	Second	1 <sup>st</sup>	Abnormal return	Institutional ownership in low price-to-earnings ratio companies	Firm size, financial leverage, and change in ownership
5		2 <sup>nd</sup>	Abnormal return	Institutional ownership in low price-to-earnings ratio companies	Firm size, financial leverage, and change in ownership
6		3 <sup>rd</sup>	Net profit	Institutional ownership in low price-to-earnings ratio companies	Firm size, financial leverage, and change in ownership
7	Third	1 <sup>st</sup>	Normal return	Institutional ownership in high price-to-earnings ratio companies	Firm size, financial leverage, and change in ownership
8		2 <sup>nd</sup>	Abnormal return	Institutional ownership in high price-to-earnings ratio companies	Firm size, financial leverage, and change in ownership
9		3 <sup>rd</sup>	Net profit	Institutional ownership in high price-to-earnings ratio companies	Firm size, financial leverage, and change in ownership

The main model for research hypotheses testing is as follows:

$$FP_{it} = \alpha_1 \text{CONTROLS} + \alpha_2 \text{HighIO}_{it-1} + \alpha_3 P/E_{it-1} + \alpha_4 \text{HighIO}_{it-1} * P/E_{it-1} + e_{it}$$

Where,

FP: corporate performance at t period for the i company

CONTROLS: are control variables

HighIO: is the evaluation criterion of institutional ownership

P/E: is the evaluation criterion of price-to-earnings ratio

### A. Testing the first main hypothesis

For testing research main hypothesis, sample enterprises have been initially classified into three portfolios based on the price-to-earnings ratio. The portfolios included portfolios of companies with high price-to-earnings ratio (the upper 20%), companies with intermediate price-to-earnings ratio (the middle 60%), and companies with low price-to-earnings ratio (the lower 20%). Then, each portfolio was divided into two high and low institutional ownership classes. Thus, samples were classified into three portfolios, and each portfolio was subdivided into two categories. The first main hypothesis has been evaluated using compare means tests. Portfolios are divided and subdivided as shown in Table 3.

Table 3. First main hypothesis portfolio

Sub hypothesis of the first main hypothesis	Portfolio	First class	Second class
First	First	Low price to earning/high institutional ownership ratio	Low price to earning/high institutional ownership ratio
Second	Second	Medium price to earning/high institutional ownership ratio	Medium price to earning/high institutional ownership ratio
Third	Third	High price to earning/high institutional ownership ratio	High price to earning/high institutional ownership ratio

### B. Testing the second main hypothesis

Regression model for testing the first sub-hypothesis of the research second main hypothesis is as follows:

$$\begin{aligned}
 RET_{it} = & \beta_0 + \beta_1 \ln ASET_{it} + \beta_2 LEV_{it} + \beta_3 DEL_{it} + \beta_4 DEL_{it-1} + \beta_5 HighIO_{it-1} \\
 & + \beta_6 Bottom\_Quintile\_PtoE_{it-1} \\
 & + \beta_7 HighIO * Bottom\_Quintile\_PtoE_{it-1} + \varepsilon
 \end{aligned}$$

Regression model for testing the second sub-hypothesis of the research second main hypothesis is as follows:

$$\begin{aligned} \text{ARET}_{it} = & \beta_0 + \beta_1 \ln \text{ASET}_{it} + \beta_2 \text{LEV}_{it} + \beta_3 \text{DEL}_{it} + \beta_4 \text{DEL}_{it-1} + \beta_5 \text{HighIO}_{it-1} \\ & + \beta_6 \text{Bottom\_Quintile\_PtoE}_{it-1} \\ & + \beta_7 \text{HighIO} * \text{Bottom\_Quintile\_PtoE}_{it-1} + \varepsilon \end{aligned}$$

The regression model for testing the third sub-hypothesis of the research second hypothesis is as follows:

$$\begin{aligned} \text{ERN}_{it} = & \beta_0 + \beta_1 \ln \text{ASET}_{it} + \beta_2 \text{LEV}_{it} + \beta_3 \text{DEL}_{it} + \beta_4 \text{DEL}_{it-1} + \beta_5 \text{HighIO}_{it-1} \\ & + \beta_6 \text{Bottom\_Quintile\_PtoE}_{it-1} \\ & + \beta_7 \text{HighIO} * \text{Bottom\_Quintile\_PtoE}_{it-1} + \varepsilon \end{aligned}$$

Where, significance of the independent variable coefficient (institutional ownership regarding low price-to-earnings ratio) in the model shows its effect on dependent variable (corporate performance); further, type of the coefficient also reveals that how institutional ownership influences performance given low price-to-earnings ratio. The coefficient used for analyzing the abovementioned sub-hypotheses is  $\beta_7$  the significance of which demonstrates the significant effect of institutional ownership on performance. The direction also determines the type of effect.

### C. Testing the third main hypothesis

The regression model testing the first sub-hypothesis of the research third main hypothesis is as follows:

$$\begin{aligned} \text{RET}_{it} = & \beta_0 + \beta_1 \ln \text{ASET}_{it} + \beta_2 \text{LEV}_{it} + \beta_3 \text{DEL}_{it} + \beta_4 \text{DEL}_{it-1} + \beta_5 \text{HighIO}_{it-1} \\ & + \beta_6 \text{TOP\_Quintile\_PtoE}_{it-1} + \beta_7 \text{HighIO} * \text{TOP\_Quintile\_PtoE}_{it-1} \\ & + \varepsilon \end{aligned}$$

The regression model for testing the second sub-hypothesis of the research third main hypothesis is as follows:

$$\begin{aligned} \text{ARET}_{it} = & \beta_0 + \beta_1 \ln \text{ASET}_{it} + \beta_2 \text{LEV}_{it} + \beta_3 \text{DEL}_{it} + \beta_4 \text{DEL}_{it-1} + \beta_5 \text{HighIO}_{it-1} \\ & + \beta_6 \text{TOP\_Quintile\_PtoE}_{it-1} + \beta_7 \text{HighIO} * \text{TOP\_Quintile\_PtoE}_{it-1} \\ & + \varepsilon \end{aligned}$$

The regression model for testing the third sub-hypothesis of the research third main hypothesis is as follows:

$$\begin{aligned} \text{ERN}_{it} = & \beta_0 + \beta_1 \ln \text{ASET}_{it} + \beta_2 \text{LEV}_{it} + \beta_3 \text{DEL}_{it} + \beta_4 \text{DEL}_{it-1} + \beta_5 \text{HighIO}_{it-1} \\ & + \beta_6 \text{TOP\_Quintile\_PtoE}_{it-1} + \beta_7 \text{HighIO} * \text{TOP\_Quintile\_PtoE}_{it-1} \\ & + \varepsilon \end{aligned}$$

Where, the model significance of independent variable (institutional ownership regarding high price-to-earnings ratio) shows its effect on the model dependent variable (corporate performance); in addition, the type of coefficient determines how institutional



ownership influences performance regarding high price-to-earnings ratio. The coefficient was  $\beta_7$ . Significance of the coefficient uncovers the significant effect of institutional ownership on performance.

*Research variables operational definitions*

Research variables operational definitions are illustrated in Table 4.

Table 4. Research operational variables

Variable	Variable type	Symbol	Definition
Normal return	Dependent	RET	Return on stock: $RET_{it} = \frac{p_e(1 + \alpha + \beta) - (p_b - c\alpha) + DPS}{p_b + c\alpha}$ Ret <sub>it</sub> :Return on stock of firm i over period t P <sub>e</sub> :stock price at the end of financial period α :Percent of capital increase from collection and cash inflows β :Capital increase percentage from reserves p <sub>b</sub> :stock price at the onset of financial period Dps :dividend over financial period Ca :Increased capital percentage of collections and cash inflows per share nominal value
Abnormal return	Dependent	ARET	Abnormal return: $ARET_{it} = RET_{it} - E(R_{it})$ Where E(R) is the expected return, which is measured through CAPM model.
Net profit	Dependent	ERN	It is corporate net profit (loss) extracted from income statements
Institutional ownership	-	-	Stock percentage held by institutional shareholders. Institutional shareholders are defined based on Article one, paragraph 27 of securities market regulation of Islamic Republic of Iran and includes shareholders holding over 50% of corporate stock.
High institutional ownership	Independent	HighIO	Dummy variable: one for companies where their institutional ownership is over 30%; otherwise, zero.
Low price-to-earnings ratio	Independent	Bottom_quintile_P/E	Dummy variable: One for corporate portfolios with low price-to-earnings ratio (the lower 20%); otherwise, zero.
High price-to-earnings ratio	Independent	TOP_quintile_P/E	Dummy variable: one for corporate portfolios with high price-to-earnings ratio (the upper 20%); otherwise, zero.
Leverage	Control	LEV	It is total debt-to-assets ratio
Ownership change	Control	DEL	It is change in the ownership of other owners except institutional owners comparing last year
Firm size	Control	LnASET	It is log of corporate assets

### *Research territory*

The research territory includes companies listed in Tehran Stock Exchange and their financial statements. They have been selected as they are largely interested by most investors and financial analysts of stock market, as well as availability of accounting information. Stock requirements for timely publication of accounting information have provided a proper informational environment for the research.

### *Research time scope*

To study research hypotheses, an 8-year of time period has been used within 2006 to 2013.

### *Research subject scope*

The present research studies the effect of ownership structure on performance given price-to-earnings ratio in companies listed in Tehran Stock Exchange.

Research statistical population included all companies listed in Tehran stock exchange. Research samples were selected through systemic elimination or filtering, with no statistical sampling method, according to the following:

1. Financial statement items that have been somewhat reported by the company exist within 2006-2013.
2. Stocks of the aforementioned companies have been frequently exchanged in Tehran Stock Exchange from 2006 to 2013.
3. No change in operation or financial year within the research period is allowed.
4. Investment companies, financial intermediary, holding, bank, and leasing companies are excluded.
5. No more than three months of transaction interruptions.

Regarding systemic elimination, the number of sample firms and research samples are as follows in Table 5.

Table 5. Research Sample

Description	Number
Total number of companies listed in the Stock Exchange up to the beginning of 2006 is subtracted:	318
Number of eliminated companies from early 2006 to the present	109
Number of companies in investment industries, financial intermediaries, bank, and leasing	8
Number of companies changing financial year	3
Number of companies with more than three months of transaction interruption	65
Number of companies with financial year not ending in 12/31	41
Number of statistical samples	92

*Data analysis method*

For experimental analysis, three types of time series, cross-section, and panel data (combination of series and cross-section data) area available. The research used panel data.

*Regression model*

For regression model, the first hypothesis is:

$H_0$ : there is no significant model

$H_1$ : There is a significant model

Or in other word,

$$\begin{cases} H_0 : \beta_i = 0 \\ H_1 : \beta_i \neq 0 \end{cases} \quad i = 0,1,2,\dots,k$$

According to analysis of variance table in Table 6, the aforementioned hypothesis is maintained or rejected.

Table 6. ANOVA

F ratio	Mean square	Sum of square	Degree of freedom	Change sources
MSReg/MSE	MSReg=SSReg/k-1	SSReg	k-1	Regression changes
	MSE=SSE/n-k	SSE	n-k	Error changes
		SST	n-1	Total changes

For the regression model significance in each hypothesis and testing all factors implying a significant relationship between dependent and independent variables, F

statistics has been used. Comparing F statistics with F measured at error level 5% with k-1 and n-k degrees of freedom, the hypothesis model has been examined. Since for statistical test, research hypotheses were considered as alternative hypotheses (H1), the hypothesis is maintained when the measured F is larger than the table F. The significance of model independent variables factors was analyzed using t-statistics. The t-table is compared with the observed t. If the observed t absolute value is larger than the t in the table, the considered factor is significant indicating that there is a relationship between independent and dependent variables. Coefficient of determination is the most critical criterion explaining the relationship between the dependent and independent variables, which is often represented with  $R^2$ .  $R^2$  equals  $\frac{SSR_{es}}{SS_T}$ . The more this value reaches closer to one, it has a stronger relationship.

Panel data regression is differentiated with regular time series or cross-section regressions as panel data regression has binary footprints for its variables. In general, the following model represents a panel data model:

$$Y_{it} = \alpha_{it} + \sum_{k=1}^k \beta_{kit} X_{kit} + u_{it} \quad \text{Model 1-3}$$

Where,  $i=1, \dots, N$  shows cross-section units (like companies), and  $t=1, \dots, T$  refers to time.  $Y$  is the dependent variable for the  $i^{\text{th}}$  cross-section units in year  $t$ ,  $X_{kit}$  is also the  $k^{\text{th}}$  nonrandom independent variable for the  $i^{\text{th}}$  cross-section unit in year  $t$ .  $\beta_{kit}$  is the passive (unknown) model parameters measuring dependent variable reaction to  $k^{\text{th}}$  changes in the  $i^{\text{th}}$  cross-section at  $t^{\text{th}}$  time.

#### *Constant and random effects*

Pooled and panel data can be interchangeably used; however, they are conceptually different. Model 1.3 is estimated relying on the interception ( $\alpha$ ), slope coefficient ( $\beta$ ), and error statement ( $u_{it}$ ) hypotheses. In pooled model, it is assumed that interception and slope coefficients are constant over time and place; while, in panel model, one or both varies over time and place, which is called constant effects model. Econometrics usually provides random approximation that is economies of scale. If a phenomenon is explained through several variables or effective factors, the theory lost its value as controlling and policy making is impossible in practice; and the theory explanatory value is unexpectedly decreased. Thus, constant effects only embrace the models in which slope coefficients are constant; whereas, intersection varies for years, which is the so-called Time-Fixed Effect Model. It includes the models where slope coefficients are fixed; while, intersections vary for companies. It is called Cross section-Fixed Effect Model.

Consider the following regression model:

$$Y_{it} = X_{it}\beta + u_{it}$$

Most panel data functions use a one-way error component model for error statement:

$$u_{it} = \mu_i + v_{it}$$

Here, the term  $u_{it}$  objective ignorance consists of two parts: the first part  $\mu_i$  is constant among companies, but varies over time, which may depend on  $x_{it}$  or independent from. The second part also independently varies over time among companies. In random effect model,  $\mu_i$  shows no correlation with  $x_{it}$ ; however, it shows the correlation for fixed effect model.

For pooled data, prior model estimation, it is necessary to recognize that which pooled and panel data model is appropriate for statistical estimations and inferences. In this regard, the model has been approximated by combining all data as money, and remaining sum of squares is obtained. Pooled and panel data are selected using the following test:

$$\left\{ \begin{array}{l} \text{Model Pooled} \iff \text{All intercepts are equal} \iff \mathbf{H_0: \alpha_1 = \alpha_2 = \alpha_3 = \dots = \alpha_{T-1}} \\ \text{Model Panel} \iff \text{At least, one intercepts is different from others} \iff \mathbf{H_1: \alpha_i \neq \alpha_j} \end{array} \right.$$

The aforementioned hypothesis is tested using Chow test statistics. If null hypothesis is maintained, pooled model is used for data fitting. But is it true if null hypothesis is rejected, fixed effect model must be used for data fitting. The answer depends on whether intercepts are assumed fixed constant or random terms. In the next step, the model as panel data model is estimated using random and fixed-effect methods; and sum of squares is obtained. To select from random and fixed-effect models, null and alternative hypotheses are presented in the following:

$H_0$ : There is no correlation between individual effects and explanatory variables  
**Random-effect model**

$H_1$ : There is a correlation between individual effects and explanatory variables  
**Fixed-effect model**

The aforementioned hypotheses are tested using Huasmen test statistics.

### *Testing research hypotheses*

Statistical hypotheses are statements parametrically written using statistical symbols directing the researcher in selecting statistical test. Statistical test is a process in which a set of random variable values are determined for which  $H_0$  must be rejected. The random variable used here is called test statistics, and values of the random variable for which  $H_0$  is rejected are called test rejection area. The test is determined using test statistics and test rejection area (Ebn Shahrashub and Mikaeile, 1996).

According to the aforementioned, statistical hypotheses are stated as follows:

a. Null hypothesis ( $H_0$ ). A hypothesis enables the researcher to evaluate research hypothesis. As it indicates no relationship between the two variables, rejecting null hypothesis means the alternative hypothesis is maintained.

b. Alternative hypothesis ( $H_{1+}$ ). It is often consistent with research hypotheses and represents the researcher's expectations of research results.

Hence, the first step to test hypotheses was to explain statistical hypotheses as two null and alternative hypotheses. Then, depending on the type of statistical test and error level ( $\alpha$ ), and comparing with minimum probability (P-value), research null hypothesis was maintained or rejected (Kianiyan, 1991). In Table 7., data normality was tested. Finally, hypotheses were analyzed by econometrics and regression models.

Table 7. Statistics of dependent and independent variables

Index	Ret	ARET	Earn	Earn/Asset	Size	LEV	LINST	P/E
	Normal return	Abnormal return	Profitability	Earning-to-assets ratio	Firm size	Leverage	Institutional ownership	Price-to-earnings ratio
Mean	0.37	0.02	269633.68	0.09	14.01	0.64	60.53	38.19
Standard deviation	0.6486	0.8137	878544.9890	0.1141	1.3373	0.2096	23.0737	496.7448
Median	0.23	-0.04	67268.00	0.08	13.79	0.66	68.02	5.21
Maximum	3.54	3.56	7695801.00	0.45	18.55	1.39	97.67	11108.77
Minimum	-0.90	-2.50	-3975928.00	-0.34	10.99	0.01	5.63	-30.97
Kurtosis	3.1602	2.5222	33.4471	0.7597	0.6727	0.5933	-0.0901	373.6008
Skewness	1.4437	0.5765	4.7179	0.2211	0.6862	-0.1790	-1.0718	18.5653

## Research findings

In this section, first, descriptive statistics including measures of central tendency (maximum, minimum, and mean), and index of dispersion including variance, standard deviation, skewness and kurtosis are discussed. The main widely used measure of central tendency is mean, which is exactly obtained at the balanced center point. The variables are properly qualified if there is no difference between the mean and median.

### *Research variables normality*

The following hypothesis has been tested using Kolmogorov–Smirnov test. The null and alternative hypotheses are as follows:

$H_0$ : Data of dependent variable follows a normal distribution.

$H_1$ : Data of dependent variable follows no normal distribution.

Table 8. Kolmogorov–Smirnov test for dependent variables

Dependent variable	Kolmogorov–Smirnov test statistics	P-Value	Result
Normal return	0.641	0.446	Normal
Abnormal return	0.265	0.694	Normal
Net profit	0.299	0.585	Normal

As seen in Table 8., P-value for dependent variables is larger than the significance level 0.05. Thus, it can be stated that  $H_1$  is rejected and  $H_0$  is maintained at 5% i.e. data distribution is normal.

### *Model estimation using panel analysis*

In this section, the model has been analyzed using Panel Analysis. This method is used due to data nature as in panel analysis; data have been collected by cross-section-time series model. In such collected data, observations are dependent since each firm has several dependent observations for multiple years. In other word, in this analysis, data number is the number of firms multiplied by number of years.

### *Model recognition test*

The tests must be performed prior model estimation. The first test is to examine the following hypothesis. According to the constant coefficient of variables, is the intercept constant for all years or not. In general, Pooled or Panel model is selected using the following test:

$$\left\{ \begin{array}{l} \text{Model Pooled} \iff \text{All intercepts are equal} \iff \mathbf{H_0: \alpha_1 = \alpha_2 = \alpha_3 = \dots = \alpha_{T-1}} \\ \text{Model Panel} \iff \text{At least, one intercept varies} \iff \mathbf{H_1: \alpha_i \neq \alpha_j} \end{array} \right.$$

The aforementioned hypothesis is tested using Chow statistics the results of which are represented in the following table. If P-value is less than 5%, Panel model is used for estimation. Models used in this research include:

Model (1):

$$\text{RET}_{it} = \beta_0 + \beta_1 \ln \text{ASET}_{it} + \beta_2 \text{LEV}_{it} + \beta_3 \text{DEL}_{it} + \beta_4 \text{DEL}_{it-1} + \beta_5 \text{HighIO}_{it-1} + \beta_6 \text{Bottom\_Quintile\_PtoE}_{it-1} + \beta_7 \text{HighIO} * \text{Bottom\_Quintile\_PtoE}_{it-1} + \varepsilon$$

Model (2):

$$\text{ARET}_{it} = \beta_0 + \beta_1 \ln \text{ASET}_{it} + \beta_2 \text{LEV}_{it} + \beta_3 \text{DEL}_{it} + \beta_4 \text{DEL}_{it-1} + \beta_5 \text{HighIO}_{it-1} + \beta_6 \text{Bottom\_Quintile\_PtoE}_{it-1} + \beta_7 \text{HighIO} * \text{Bottom\_Quintile\_PtoE}_{it-1} + \varepsilon$$

Model (3):

$$\text{ERN}_{it} = \beta_0 + \beta_1 \ln \text{ASET}_{it} + \beta_2 \text{LEV}_{it} + \beta_3 \text{DEL}_{it} + \beta_4 \text{DEL}_{it-1} + \beta_5 \text{HighIO}_{it-1} + \beta_6 \text{Bottom\_Quintile\_PtoE}_{it-1} + \beta_7 \text{HighIO} * \text{Bottom\_Quintile\_PtoE}_{it-1} + \varepsilon$$

Model (4):

$$\text{RET}_{it} = \beta_0 + \beta_1 \ln \text{ASET}_{it} + \beta_2 \text{LEV}_{it} + \beta_3 \text{DEL}_{it} + \beta_4 \text{DEL}_{it-1} + \beta_5 \text{HighIO}_{it-1} + \beta_6 \text{TOP\_Quintile\_PtoE}_{it-1} + \beta_7 \text{HighIO} * \text{TOP\_Quintile\_PtoE}_{it-1} + \varepsilon$$

Model (5):

$$\begin{aligned} \text{ARET}_{it} = & \beta_0 + \beta_1 \ln \text{ASET}_{it} + \beta_2 \text{LEV}_{it} + \beta_3 \text{DEL}_{it} + \beta_4 \text{DEL}_{it-1} + \beta_5 \text{HighIO}_{it-1} \\ & + \beta_6 \text{TOP\_Quintile\_PtoE}_{it-1} + \beta_7 \text{HighIO} * \text{TOP\_Quintile\_PtoE}_{it-1} \\ & + \varepsilon \end{aligned}$$

Model (6):

$$\begin{aligned} \text{ERN}_{it} = & \beta_0 + \beta_1 \ln \text{ASET}_{it} + \beta_2 \text{LEV}_{it} + \beta_3 \text{DEL}_{it} + \beta_4 \text{DEL}_{it-1} + \beta_5 \text{HighIO}_{it-1} \\ & + \beta_6 \text{TOP\_Quintile\_PtoE}_{it-1} + \beta_7 \text{HighIO} * \text{TOP\_Quintile\_PtoE}_{it-1} \\ & + \varepsilon \end{aligned}$$

Table 9. Model testing (Fixed effect test)

Model	F Limer statistics (Chow)	P-Value	Result	The model
1	0.98	0.51	Intercepts are equal	Pooled
2	1.44	0.00	Intercepts are not equal	Panel
3	6.87	0.00	Intercepts are not equal	Panel
4	1.07	0.30	Intercepts are not equal	Pooled
5	1.40	0.01	Intercepts are not equal	Panel
6	6.86	0.00	Intercepts are not equal	Panel

As seen in Table 9., regarding that in models 2, 3, 5, and 6 P-value is less than 5%; hence, the null hypothesis indicating equal intercepts is rejected. In addition, the hypotheses were tested by Panel method; whereas, in models 21 and 4, Pooled model has been used. Now, in Panel model, the fixed-effect model is tested against random-effect model using Hausman test. In a better word, it is tried to find the answer to the question that if the intercept is constant for several cross-sections given the fixed variable coefficients. Or the difference intercepts of cross-sections is fixed, or random performance may clearly describe the different cross-sections. Therefore, there are two well-known fixed- and random-effect methods in panel data literature. The question raises here is that in practice which of the aforementioned methods must be used. Hence, Hausman test statistics is applied. The hypothesis test is as follows:

**H<sub>0</sub>: Random-effect model**

**Fixed-effect model H<sub>1</sub>:**

Table 10. Selection test of fixed- and random-effect tests

Model number	Hausman statistics	Degree of freedom	P-value	Result
2	23.7	7	0/00	Fixed effect
3	87.9	7	0/00	Fixed effect
5	20.4	7	0/00	Fixed effect
6	72.9	7	0/00	Fixed effect

As seen in Table 10., Hausman test statistics measured for the abovementioned model is larger than Chi-Square at df=7 (number of independent variables in the model), and P-

Value is less than 5%; thus, the model null hypothesis is maintained and the model is processed using fixed-effect method.

*Testing hypotheses*

The first hypothesis is examined using mean test. For the first hypothesis analysis, the means of two populations are compared. For compare means test, it is necessary to initially investigate that whether the two variances equal or not. In other word, equal variance test is preceded by equal mean test. Variance equality is tested using Levene test, which requires no normal data distribution.

*Variance equality test*

Table 11. Summary of variance equality test

Symbol	Levene test statistics	P-Value	Result
RET	9.346	.002	Unequal variances
AbRET	5.467	.020	Unequal variances
Earn	17.356	.000	Unequal variances

As clearly observed in Table 11., variances are not equal at confidence level 95%.

*Compare means test*

Table 12. Summary of compare means test

Symbol	Low mean institutional ownership	High mean institutional ownership	t-test	p-value	Difference	Result
RET	.2276	.4543	-2.917	.004	-.22676	Mean differences is significant at 95%
AbRET	.0137	-.0799	.880	.379	.09351	Mean differences is insignificant at 95%
Earn	382217.06	128865.4	1.962	.051	253351.63	Mean differences is insignificant at 95%

*The first sub-hypothesis of the research second main hypothesis*

Table 13. Results of first sub-hypothesis test of the research second main hypothesis

Model (1)	$RET_{it} = \beta_0 + \beta_1 \ln ASET_{it} + \beta_2 LEV_{it} + \beta_3 DEL_{it} + \beta_4 DEL_{it-1} + \beta_5 HighIO_{it-1} + \beta_6 Bottom\_Quintile\_PtoE_{it-1} + \beta_7 HighIO * Bottom\_Quintile\_PtoE_{it-1} + \varepsilon$			
Explanatory variables	Variable coefficients in the model	t-statistics value	P-Value	Result
Constant	0.202594	0.444535	0.6568	Model insignificance
<i>lnASET</i>	-0.023780	-0.767974	0.4428	Model insignificance
<i>LEV</i>	-0.500832	-2.402354	0.0166*	Significant at 95%
<i>DEL</i>	0.000384	0.175723	0.8606	Model insignificance
<i>DEL<sub>it-1</sub></i>	0.006087	3.297458	0.0010*	Significant at 95%
<i>HighIO</i>	0.147262	1.222170	0.2221	Model insignificance
<i>Bottom_Quintile_PtoE</i>	-0.295274	-2.305137	0.0215*	Significant at 95%
<i>HighIO * Bottom_Quintile_PtoE</i>	0.057941-	0.274254-	0.7840	Model insignificance
F test values		4.832265	Durbin-Watson test	1.811413
P-Value		0.000026*	R <sup>2</sup> values	0.054310
			Adjusted R <sup>2</sup>	0.043071
Model adequacy results	Regarding F test values and P-Value less than 5%, the relationship is significant.			

\*significant at 95%

P-value is 0, which is smaller than 0.05; thus, research null hypothesis is rejected at 95%. It means that there is a significant model and a linear relationship is seen between dependent and independent variables.

Regression test results indicate that variable coefficient of institutional ownership in companies with low price-to-earnings ratio ( $\beta_7$  coefficient is negative in the model meaning that there is an inverse relationship between institutional ownership variable in companies with low price-to-earning ratio and normal return level. However, the relationship is so trivial that the hypothesis is rejected at 95% as firstly, the absolute value t-statistics is smaller than the corresponding value ( $t_{\alpha=0.975} = 1.96$ ); and further, the

calculated p-value is larger than 5%. Thus, the negative effect of institutional ownership on corporate normal return in companies with low price-to-earnings ratio is not statistically maintained.

Model coefficient of determination is almost 5.4%. This coefficient implies that independent variables can justify over 5% of changes in normal return.

One of model adequacy tests is to study lack of autocorrelation in the model remaining. Autocorrelation causes t-value is too large; as a result, the confidants are wrongly significant leading to inappropriate interpretation of coefficients and second type error. Autocorrelation values are examined using Durbin-Watson test values, which must be within 1.5-2.5. In this model, Durbin-Watson statistics in the aforementioned model is 1.81 where values close to 2 indicate lack of autocorrelation among model remaining. Another model adequacy method is studying regression model error normality. According to this hypothesis, regression equation errors must be normally distributed. Figure 4. shows error normality for this model.

Error level for model (1):

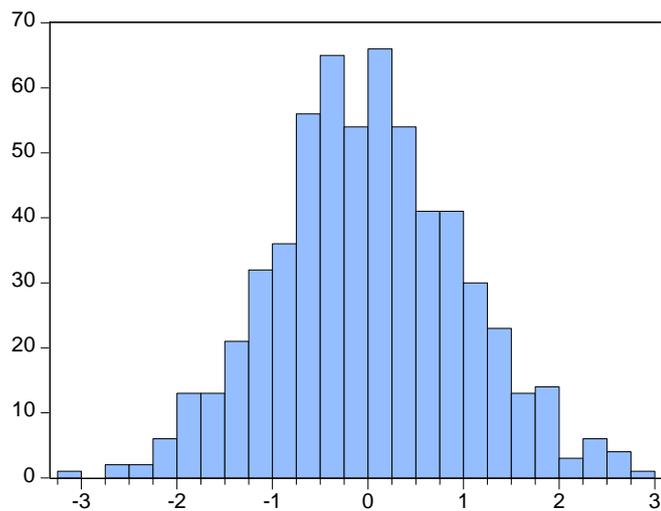


Figure 4. Error values of the first sub-hypothesis of the research second main hypothesis

*The second sub-hypothesis of the research second main hypothesis*

Table 14. Results of the second sub-hypothesis of the research second main hypothesis

Model 2	$AbRET_{it} = \beta_0 + \beta_1 lnASET_{it} + \beta_2 LEV_{it} + \beta_3 DEL_{it} + \beta_4 DEL_{it-1} + \beta_5 HighIO_{it-1} + \beta_6 Bottom\_Quintile\_PtoE_{it-1} + \beta_7 HighIO * Bottom\_Quintile\_PtoE_{it-1} + \varepsilon$			
Explanatory variables	Variable coefficients in the model	t-statistics value	P-Value	Result
Constant	5.728678	5.266915	0.0000*	Significant at 95%
<i>lnASET</i>	-0.415034	-5.676338	0.0000*	Significant at 95%
<i>LEV</i>	-0.094522	-0.539156	0.5900	Model insignificance
<i>DEL</i>	0.003358	2.134180	0.0333*	Significant at 95%
<i>DEL<sub>it-1</sub></i>	-0.001309	-1.059479	0.2899	Model insignificance
<i>HighIO</i>	-0.044411	-0.446878	0.6552	Model insignificance
<i>Bottom_Quintile_PtoE</i>	0.081018	0.932525	0.3515	Model insignificance
<i>HighIO * Bottom_Quintile_PtoE</i>	0.107510-	-0.792819	0.4283	Model insignificance
F test values		2.931455	Durbin-Watson test	2.020297
P-Value		0.000000*	R <sup>2</sup> values	0.072042
			Adjusted R <sup>2</sup>	0.045128
Model adequacy results	Regarding F test values and P-Value less than 5%, the relationship is significant.			

\*significant at 95%

P-value for this model equals 0 and as it is smaller than 0.05; thus, the null hypothesis is rejected at 95%. It means that there is a significant model and a linear relationship between dependent and independent variables.

The second hypothesis examines that whether institutional ownership in companies with low price-to-earnings ratio has a negative influence on corporate abnormal return. Regression test results demonstrate that institutional ownership variable

coefficient for companies with low price-to-earnings ratio ( $\beta_7$  coefficient) is negative for this model i.e. there is an inverse relationship between institutional ownership at companies with low price-to-earnings ratio with abnormal returns. However, the relationship is insignificant and the hypothesis is rejected at 95% as, firstly, t-statistics absolute value for this variable is smaller than the corresponding value in the table ( $t_{\alpha=0.975}= 1.96$ ); and secondly, corresponding measured P-value is larger than 5%. Thus, the claim of negative effect of institutional ownership on corporate abnormal return for companies with low price-to-earnings ratio is statistically rejected.

Model  $R^2$  is 7.2% indicating that the model independent variables can justify over 5% of changes in abnormal return. Durbin-Watson statistics value for the above model is 0.2 where values close to 2 imply lack of autocorrelation among model remaining. Figure 5 illustrates error normality for the model.

Error values for model 2:

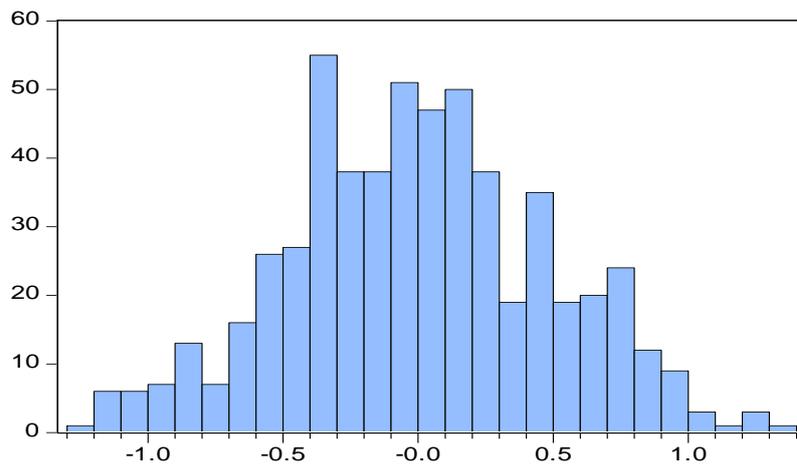


Figure 5. Model error values of the second sub-hypothesis of the second main hypothesis

*The third sub-hypothesis of the research second main hypothesis*

Table 15. Results of the third sub-hypothesis of the research second main hypothesis

Model 3	$  \begin{aligned}  Earn_{it} = & \beta_0 + \beta_1 lnASET_{it} + \beta_2 LEV_{it} + \beta_3 DEL_{it} \\  & + \beta_4 DEL_{it-1} + \beta_5 HighIO_{it-1} \\  & + \beta_6 Bottom\_Quintile\_PtoE_{it-1} \\  & + \beta_7 HighIO \\  & * Bottom\_Quintile\_PtoE_{it-1} + \varepsilon  \end{aligned}  $			
Explanatory variables	Variable coefficients in the model	t-statistics value	P-Value	Result
Constant	1.122828	9.376601	0.0000*	Significant at 95%
<i>lnASET</i>	-0.070390	-8.671024	0.0000*	Significant at 95%
<i>LEV</i>	-0.201777	-10.62959	0.0000*	Significant at 95%
<i>DEL</i>	0.001560	9.549271	0.0000*	Significant at 95%
<i>DEL<sub>it-1</sub></i>	1.22E-05	0.090506	0.9279	Model insignificance
<i>HighIO</i>	0.023175	2.234360	0.0259*	Significant at 95%
<i>Bottom_Quintile_PtoE</i>	-0.011699	-1.278069	0.2019	Model insignificance
<i>HighIO</i> <i>* Bottom_Quintile_PtoE</i>	-0.017576	-1.193250	0.2334	Model insignificance
F test values		15.52864	Durbin-Watson test	1.546065
P-Value		0.000000*	R <sup>2</sup> values	0.761850
			Adjusted R <sup>2</sup>	0.712789
Model adequacy results	Regarding F test values and P-Value less than 5%, the relationship is significant.			

\* significant at 95%

For this model, P-value is 0 and as it is smaller than 0.05; hence, null hypothesis is rejected at 95% confidence level meaning that the model is significant; further, there is a linear relationship between dependent and independent variables.

The third hypothesis investigates that whether institutional ownership for companies with low price-to-earnings ratio has a negative effect on corporate net profit. Regression test results uncover that institutional ownership variable coefficient for companies with

low price-to-earnings ratio ( $\beta_7$  coefficient) is negative for this model indicating that there is an inverse insignificant relationship between institutional ownership variables and net profit level for companies with low price-to-earnings ratio; hence, the hypothesis is rejected at 95%. As t-statistics absolute value is less than the corresponding value in the table ( $t_{\alpha-0.975} = 1.96$ ); further, the calculated corresponding P-value is larger than 5% for this variable. Therefore, the assumption of negative effect of institutional ownership on corporate net profit for companies with low price-to-earnings ratio is statistically rejected.

According to  $R^2 = 76.1\%$ , the model independent variables can explain over 76% of changes in net profit. Durbin-Watson statistics is obtained 1.54 that values around 2 indicate lack of autocorrelation for model remaining. Figure 6. illustrates the model error values normality.

Error value figure for model 3

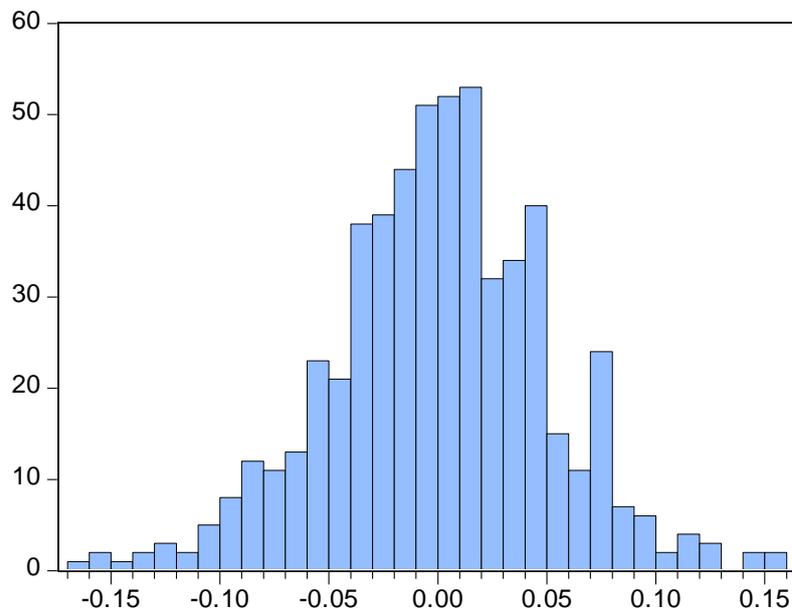


Figure 6. Model error values of the third sub-hypothesis of the second main hypothesis

*The first sub-hypothesis of the research third main hypothesis*

Table 16. Results of the first sub-hypothesis of the third main hypothesis

Model 4	$RET_{it} = \beta_0 + \beta_1 \lnASET_{it} + \beta_2 LEV_{it} + \beta_3 DEL_{it} + \beta_4 DEL_{it-1} + \beta_5 HighIO_{it-1} + \beta_6 TOP\_Quintile\_PtoE_{it-1} + \beta_7 HighIO * TOP\_Quintile\_PtoE_{it-1} + \varepsilon$			
Explanatory variables	Variable coefficients in the model	t-statistics value	P-Value	Result
Constant	0.252520	0.548226	0.5837	Model insignificance
<i>lnASET</i>	-0.029850	-0.961954	0.3365	Model insignificance
<i>LEV</i>	-0.605064	-2.910050	0.0038*	Significant at 95%
<i>DEL</i>	0.000620	0.281716	0.7783	Model insignificance
<i>DEL<sub>it-1</sub></i>	0.006328	3.400993	0.0007*	Significant at 95%
<i>HighIO</i>	0.133572	1.132830	0.2577	Model insignificance
<i>Top_Quintile_PtoE</i>	0.099872	0.775392	0.4384	Model insignificance
<i>HighIO * Top_Quintile_PtoE</i>	0.116441	0.485131	0.6278	Model insignificance
F test values		4.013612	Durbin-Watson test	1.804408
P-Value		0.000264*	R <sup>2</sup> values	0.045528
			Adjusted R <sup>2</sup>	0.034185
Model adequacy results	Regarding F test values and P-Value less than 5%, the relationship is significant.			

\* Significant at 95%

For this model, P-value is 0 and as it is smaller than 0.05; hence, null hypothesis is rejected at 95% confidence level meaning that the model is significant; further, there is a linear relationship between dependent and independent variables.

The first sub-hypothesis examines that whether institutional ownership has a positive effect on corporate normal return in companies with high price-to-earnings ratio. Regression test results demonstrate that the institutional ownership variable coefficient for companies with high price-to-earnings ratio ( $\beta_7$  coefficients) is positive for this model meaning that there is a direct insignificant relationship between institutional ownership

variable and normal return for companies with high price-to-earnings ratio. As a result, the hypothesis is statistically rejected at 95%. As the t-statistics value obtained for this value is smaller than the corresponding value in the table ( $t_{\alpha=0.975} = 1.96$ ); in addition, the corresponding measured P-value is larger than 5%; thus, the hypothesis of positive effect of institutional ownership in companies with high price-to-earnings ratio on corporate normal return is statistically rejected.

For this model,  $R^2 = 4.5\%$  indicating that the model independent variables can explain more than 4% of changes in normal return. According to Durbin-Watson value (1.81), the values around 2 show lack of autocorrelation among the model remaining. Figure 7. illustrates error values normality for this model.

#### Error values for Model 4

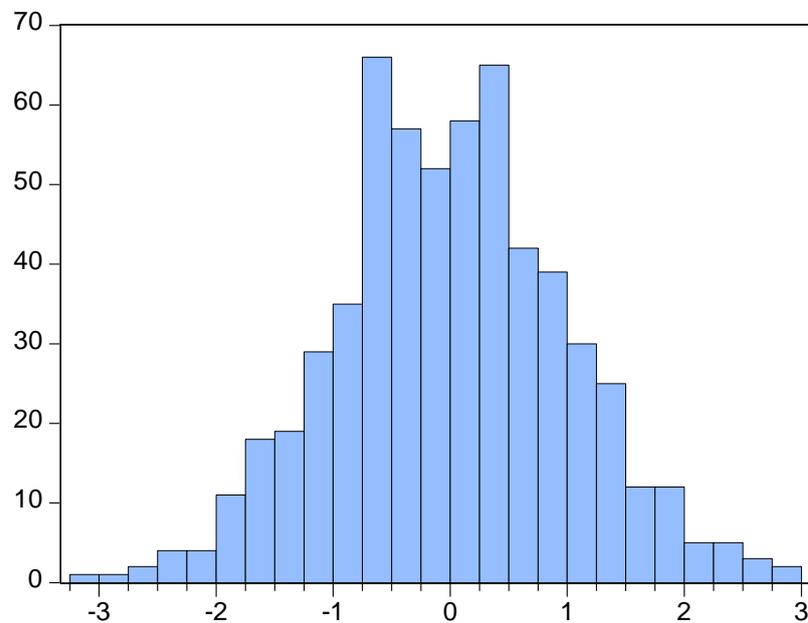


Figure 7. Error values of the first sub-hypothesis of the third main hypothesis

*Examining the second sub-hypothesis of the third main hypothesis*

Table 17. A summary of results of the second sub-hypothesis of the research third main hypothesis

Model 5	$AbRET_{it} = \beta_0 + \beta_1 lnASET_{it} + \beta_2 LEV_{it} + \beta_3 DEL_{it} + \beta_4 DEL_{it-1} + \beta_5 HighIO_{it-1} + \beta_6 TOP\_Quintile\_PtoE_{it-1} + \beta_7 HighIO * TOP\_Quintile\_PtoE_{it-1} + \varepsilon$			
Explanatory variables	Variable coefficients in model	t-statistics values	P-Value	Result
Constant	6.098354	5.562403	0.0000*	Significant at 95%
<i>lnASET</i>	-0.443092	-6.014314	0.0000*	Significant at 95%
<i>LEV</i>	-0.024136	-0.136660	0.8914	Lack of significance
<i>DEL</i>	0.003418	2.143949	0.0325*	Significant at 95%
<i>DEL<sub>it-1</sub></i>	-0.001468	-1.170887	0.2422	Lack of significance
<i>HighIO</i>	0.020836	0.209173	0.8344	Lack of significance
<i>Top_Quintile_PtoE</i>	0.058389	0.706787	0.4800	Lack of significance
<i>HighIO * Top_Quintile_PtoE</i>	0.116492	0.788483	0.4308	Lack of significance
F test values		2.931629	Durbin-Watson test	2.032411
P-Value		0.000000*	values R <sup>2</sup>	0.071075
			Adjusted R <sup>2</sup> values	0.044498
Model adequacy result	According to F-test values and P-Values smaller than 5%, there is a significant relationship.			

\*significance at 95%

For this model, P-value is 0 and as it is smaller than 0.05; hence, null hypothesis is rejected at 95% confidence level meaning that the model is significant; further, there is a linear relationship between dependent and independent variables.

The second sub-hypothesis studies that whether institutional ownership for companies with high price-to-earnings ratio has a positive effect on corporate abnormal return. Regression test results exhibit that institutional ownership variable coefficient is positive for companies with high price-to-earnings ratio ( $\beta_7$  coefficient i.e. there is a direct

insignificant relationship between institutional ownership variable and abnormal return for companies with high price-to-earnings ratio; thus, the hypothesis is statistically rejected at confidence level 95%. As the t-statistics value obtained for this value is smaller than the corresponding value in the table ( $t_{\alpha=0.975} = 1.96$ ); in addition, the corresponding measured P-value is larger than 5%; thus, the hypothesis of positive effect of institutional ownership in companies with high price-to-earnings ratio on corporate abnormal return is statistically rejected.

For this model,  $R^2 = 7.1\%$  indicating that the model independent variables can explain more than 7% of changes in abnormal returns. According to Durbin-Watson value (2.03), the values around 2 show lack of autocorrelation for model remaining. Figure 8. illustrates error values normality for this model.

#### Error values for Model 5

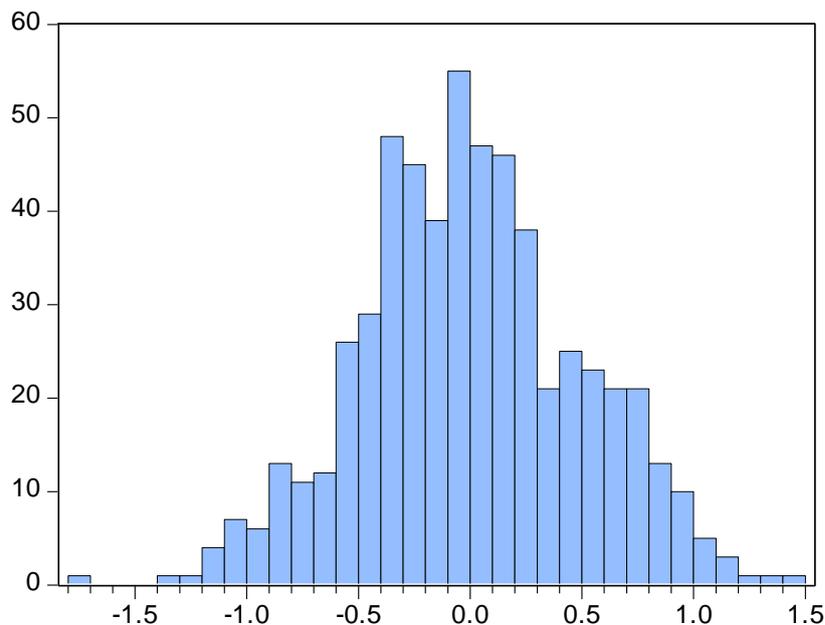


Figure 8. Error values for the second sub-hypothesis of the third main hypothesis

*The third sub-hypothesis of the research third main hypothesis*

Table 18. Results of the third sub-hypothesis of the research third main hypothesis

Model 6	$Earn_{it} = \beta_0 + \beta_1 \lnASET_{it} + \beta_2 LEV_{it} + \beta_3 DEL_{it} + \beta_4 DEL_{it-1} + \beta_5 HighIO_{it-1} + \beta_6 TOP\_Quintile\_PtoE_{it-1} + \beta_7 HighIO * TOP\_Quintile\_PtoE_{it-1} + \varepsilon$			
Explanatory variables	variable coefficients in model	t-statistics value	P-Value	Result
Constant	1.115088	9.378141	0.0000*	Significant for the model at 95%
<i>lnASET</i>	-0.070220	-8.707877	0.0000*	Significant for the model at 95%
<i>LEV</i>	-0.199465	-10.54903	0.0000*	Significant for the model at 95%
<i>DEL</i>	0.001588	9.723454	0.0000*	Significant for the model at 95%
<i>DEL<sub>it-1</sub></i>	-5.66E-07	-0.004194	0.9967	Insignificant for the model
<i>HighIO</i>	0.015338	1.486385	0.1379	Insignificant for the model
<i>Top_Quintile_PtoE</i>	0.002342	0.270994	0.7865	Insignificant for the model
<i>HighIO * Top_Quintile_PtoE</i>	0.024836	1.627238	0.1044	Insignificant for the model
F-test values		15.43625	Durbin-Watson statistics	1.601222
P-Value		0.000000*	R <sup>2</sup>	0.759985
			Adjusted R <sup>2</sup>	0.710751
Model adequacy result	Regarding F-test value and P-value (<5%), the relationship is significant.			

\*Significant at 95%

For this model, P-value is 0 and as it is smaller than 0.05; hence, null hypothesis is rejected at 95% confidence level meaning that the model is significant; further, there is a linear relationship between dependent and independent variables.

The third sub-hypothesis analyzes that whether institutional ownership for companies with high price-to-earnings ratio has a positive effect on corporate net profit. Regression test results show that there is an insignificant direct relationship between institutional ownership variable and net profit for companies with high price-to-earnings ratio as the t-statistics value obtained for this value is smaller than the corresponding value in the table ( $t_{\alpha=0.975} = 1.96$ ); in addition, the corresponding measured P-value is larger than 5%; thus, the hypothesis of positive effect of institutional ownership in companies with high price-to-earnings ratio on corporate net profit is statistically rejected.

For this model,  $R^2 = 75.9\%$  indicating that the model independent variables can explain more than 75% of changes for net profit. According to Durbin-Watson value (1.60), the values around 2 show lack of autocorrelation for model remaining. Figure 9. illustrates error values normality for this model.

### Error value for model 6

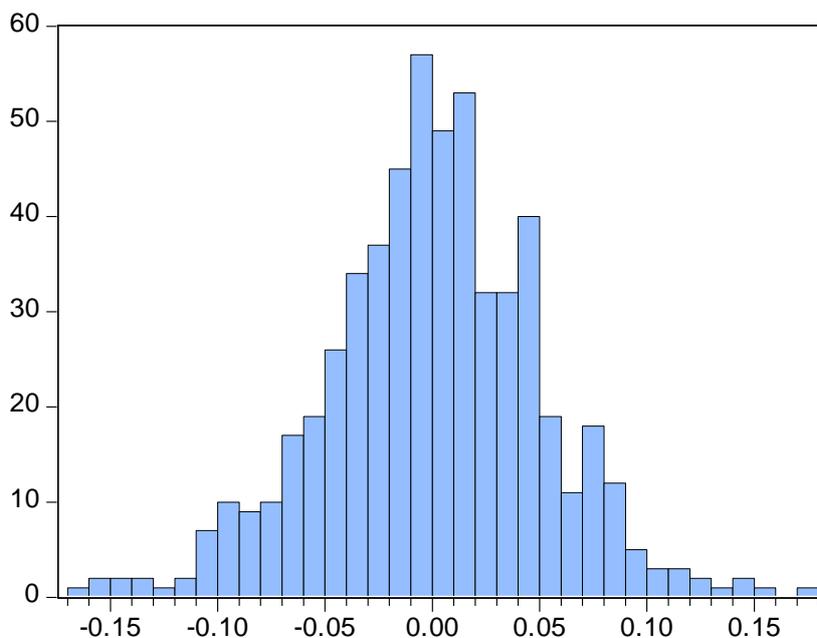


Figure 9. Error values of the third sub-hypothesis of the third main hypothesis

### Conclusions

Research hypotheses analysis demonstrated that there is no significant difference seen among corporate abnormal return of high/small institutional ownership at low price-to-earnings ratio, corporate low/large institutional ownerships at intermediate price-to-earnings ratio, and corporate large/small institutional power at high price-to-earnings ratio. Moreover, evaluation of three regression models revealed that institutional ownership for companies with low price-to-earnings ratio showed no effect on performance evaluated through normal return, abnormal return, and net profit. Finally,

assessing research models in three other regression models uncovered that institutional ownership has no effect on corporate performance through normal return, abnormal return and net profit for companies with high price-to-earnings ratio.

### *Comparing research results with similar studies*

In the following, the research results are compared with earlier studies in two consistent and inconsistent sections:

#### Consistent studies

Rastgarniya and Abasi (2012) investigated the effect of ownership structure on corporate values in companies listed in Tehran Stock Exchange. They found that there is no significant relationship between major shareholder ownership concentration, blockholder log variable, and Herfindahl index with corporate values.

#### Inconsistent studies

Mohammadi (2010) analyzed the effect of ownership structure on corporate performance and value of companies listed in Tehran Stock Exchange focusing on two concentration and combination approaches. Research findings indicated of a positive linear and significant relationship between ownership concentration and corporate returns.

Namazi and Kermani (2008), studying the effect of ownership structure on corporate performance of companies listed in Tehran Stock Exchange within 2003-2007, concluded that there is a negative significant relationship between institutional ownership and corporate performance; moreover, they deduced a positive significant relationship between corporate ownership and corporate performance.

### *Suggestions and Recommendations*

#### Practical suggestions

According to the obtained results, the following suggestions are recommended for managers and owners for decision-making processes.

#### Suggestions for investors and shareholders

1. Regarding the results of the first hypothesis, shareholders, owners, and investors of Iran capital market are advised to view price-to-earnings ratio and institutional ownership as an effective factor of abnormal return in evaluating abnormal returns of companies listed in Tehran Stock Exchange. Indeed, they are suggested to avoid considerable weighting of institutional ownership and price-to-earnings ratio in their decision making models.

2. According to the results of the first sub-hypothesis of the second main hypothesis, Iranian capital market investors, owners, and shareholders are recommended not to view

institutional ownership as an effective factor of normal return in assessing normal return evaluation of companies listed in Tehran Stock Exchange regarding low price-to-earnings ratio. In fact, they are advised not to considerably weigh institutional ownership in evaluating normal return regarding low price-to-earnings ratio.

3. According to the results of the second sub-hypothesis of the second main hypothesis, Iran capital market investors, shareholders, and owners are recommended not to take account institutional ownership regarding low price-to-earnings ratio as an effective factor of abnormal return assessment in evaluating abnormal returns of companies listed in Tehran Stock Exchange. In fact, they are advised not to give much weight to institutional ownership regarding low price-to-earnings ratio in their evaluation decisions of abnormal return.

4. According to the results of the third sub-hypothesis of the second main hypothesis, Iran capital market investors, shareholders, and owners are recommended not to take account institutional ownership regarding low price-to-earnings ratio as an effective factor of net profit assessment in evaluating abnormal returns of companies listed in Tehran Stock Exchange. In fact, they are advised not to give much weight to institutional ownership regarding low price-to-earnings ratio in their evaluation decisions of net profit.

5. According to the results of the first sub-hypothesis of the third main hypothesis, Iran capital market investors, shareholders, and owners are recommended not to take account institutional ownership regarding high price-to-earnings ratio as an effective factor of normal return assessment in evaluating normal returns of companies listed in Tehran Stock Exchange. Indeed, they are suggested not to give much weight to institutional ownership regarding high price-to-earnings ratio in their evaluation decisions of normal return.

6. According to the results of the second sub-hypothesis of the third main hypothesis, Iran capital market investors, shareholders, and owners are recommended not to take account institutional ownership regarding high price-to-earnings ratio as an effective factor of abnormal return assessment in evaluating abnormal returns of companies listed in Tehran Stock Exchange. Indeed, they are suggested not to give much weight to institutional ownership regarding high price-to-earnings ratio in their evaluation decisions of abnormal return.

7. According to the results of the third sub-hypothesis of the third main hypothesis, Iran capital market investors, shareholders, and owners are recommended not to take account institutional ownership regarding high price-to-earnings ratio as an effective factor of net profit assessment in evaluating net profit of companies listed in Tehran Stock Exchange. Indeed, they are suggested not to give much weight to institutional ownership regarding high price-to-earnings ratio in their evaluation decisions of net profit.

#### Recommendations for Stock Exchange and official accounting community

Regarding the results obtained from the first, second, and third hypotheses, Tehran Stock Exchange is recommended to figure out enhancing corporate governance

mechanisms in combination with ownership. As the results showed that institutional ownership, which must be an effective corporate governance mechanism has no effect on corporate performance. It results from inefficient corporate governance mechanisms, which may be removed through standard rules, guidelines and regulations.

### *Further studies*

According to the research results, the following subjects are proposed for further studies:

1. Studying the relationship between ownership structure and corporate focusing on the corporate life cycle
2. Investigating the relationship between ownership structure and profitability based on economic periods
3. Studying the effect of corporate governance mechanisms on corporate performance regarding price-to-earnings ratio
4. Analyzing the effect of ownership and management structures on corporate performance in different industries
5. Comparative studying of ownership and management structures with profitability factors of loss and profit companies in Stock Exchange
6. Examining the role of ownership concentration in performance based on corporate price-to-earnings ratio
7. Studying the relationship between ownership structure with cost of capital and cost of debt regarding corporate price-to-earnings ratio
8. Studying the relationship between ownership concentration with corporate risk and returns relying on the corporate price-to-earnings ratio

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