The Value Relevance of Earnings and Earnings Components: The Case of Saudi Arabia

By

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ABSTRACT

The extant literature on the value relevance of accounting information focuses on common-law or code-law countries. There is no credible evidence on the value relevance of accounting information in Islamic-code countries. This thesis provides the first empirical evidence on this issue in Saudi, which is recognised as the centre of the Islamic faith. The focus of the thesis is on the examination of the Saudi market reaction to the release of accounting reports and the association between reported earnings and earnings components with security returns of Saudi firms. Using a sample from the 1995-1999 period, the empirical evidence suggests that inconsistencies between Islamic principles and adopted accounting principles in Saudi do not affect the value relevance of accounting information in Saudi. Most of the empirical tests provide evidence consistent with and highly comparable to those reported in common-law and code-law countries, in general, and those in the United States, in particular.
Declaration

This to certify that

I. the thesis comprises only my original work,

II. due acknowledgment has been made in the text to all other material used, and

III. the thesis is less than 100,000 words in length, exclusive of tables, bibliographies, and footnotes

Mohammed Sultan Alsehali
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Chapter One

Objective and Motivation

I. Introduction

Most of the existing empirical evidence on the value relevance\(^1\) of accounting information is based on samples drawn from developed capital markets such as those in the United States, United Kingdom, and Australia. However, there is very little known about the validity of the existing empirical evidence in developing capital markets. Recent developments associated with international convergence and harmonization policy resulting from the restructuring of the International Accounting Standards Board suggest that we are heading toward a global set of accounting standards. For example, Mr. Keith Alferdson, the Chairman of the Australian Accounting Standards Board, has just noted in a media release dated the 9\(^{th}\) of August 2001 that “history will eventually record 2001 as the year in which international accounting standard setting was transformed into a robust process designed to lead to a set of high quality global accounting standards supported by national standard setters around the world.”

We argue that the development of a global set of accounting standards ought to take into account the impact of international institutional differences on the demand placed on accounting information. We also argue that national standards setters ought to understand the nature of the demand placed on accounting information by their local investment community and other stakeholders before they rush into adapting a unified set

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\(^1\) Value relevance means that accounting information is associated with some measure of value (e.g. security prices and changes in security prices)
of accounting standards. While a number of recent studies examined the impact of international institutional differences on the value relevance of accounting information within developed economies (see for example, Ball et. al 1997, and Barth and Clinch 1996), very few studies examine the impact of these differences within developing economies.

Furthermore, regardless of the level of the economic developments, most of the existing research tends to focus on a sample of firms from either common-law countries or code-law countries. There is no credible empirical evidence on the value relevance of accounting information in Islamic-law countries. In Islamic law countries, wealth as opposed to earnings is the accounting concept that is of a paramount importance. The concept of earnings in Islam is important to shareholders but only to the extent that it is included in the calculation of wealth for religious tax calculation purposes. Pure historical cost accounting and some of its associated principles (such as conservatism) are not fully accepted under Islamic teachings. These and other similar institutional factors that are unique to Islamic-law countries are likely to affect the demand placed on accounting information, in general, and on accounting earnings, in particular. We argue that Saudi Arabia represents an ideal institutional setting in which to assess the validity of the empirical evidence on the value relevance of accounting information since Saudi Arabia is both a developing economy and an Islamic-law country.

II. Objectives

In light of the unfortunate lack of empirical evidence on the role of accounting information in security valuation in Islamic-law countries as well as developing
economies, this thesis aims to investigate the value relevance of earnings and earnings components of Saudi firms. In particular, this thesis assesses the validity of the existing empirical evidence with respect to the following research issues:

(a) the impact of earnings announcements on returns and trading volume of Saudi firms;

(b) the relationship between earnings levels, earnings changes and annual security returns of Saudi firms;

(c) the impact of the measurement interval on the relationship between earnings levels, earnings changes and annual security returns of Saudi firms;

(d) the differential valuation implications of positive and negative earnings on the relationship between earnings and annual security returns of Saudi firms;

(e) the differential valuation implication of the cash and accrual components of earnings of Saudi firms;

(f) the impact of the measurement interval on the relationship between the cash and accrual components of earnings and security returns of Saudi firms; and

(g) the impact of the magnitude of accruals on the relationship between earnings and security returns of Saudi firms.

This thesis will be the first study to provide empirical evidence on these issues in Saudi. It is worth noting that the scarcity of empirical research on these important research issues in Saudi maybe attributed to the lack of any market or financial electronic databases. In a way, one of the major contributions of this paper is the hand-collection
and the provision of the first Saudi financial and market database for the period of this study.

III. Motivation

As noted earlier, the main motivation for this thesis is the lack of empirical evidence on the role of accounting information in security valuation in an Islamic-law country and the scarcity of such evidence in developing markets. A number of very recent studies, however, appear to be addressing this shortage. Chen et al. (1999), for example, investigate the value relevance of accounting earnings in China. Also, Choi and Choe (1998) investigate the effects of annual earnings announcements on investors' trading behavior in the Korean stock market.

The unique institutional factors of Islamic-law countries and those of developing economies are likely to exert differential influences on the demand for accounting information than those in code-law or common-law developed economies. This line of argument was supported by Ball et al., (1997) who note that differences in international institutional factors moderate the properties of accounting earnings, due to their influence on the level of demand for accounting information. The provision of such evidence has important implications on the recent trend towards harmonising domestic financial accounting standards, and developing a global set of international financial accounting standards.

This thesis aims to provide empirical evidence on the role of accounting information in security valuation in Saudi, a developing country that adopts Islamic-laws. The Saudi stock market is an emerging stock market, considered the largest Arabian
market by market capitalisation and the eighth largest among developing nations (Bakheet, 1999). Moreover, Saudi has a number of unique institutional factors, distinguishable from those in developed countries, that may potentially influence the demand for accounting information, and therefore the relationship between accounting information and security returns. These institutional factors, while specific to Saudi, are nevertheless representative of the types of institutional factors that are likely to be present in other emerging economies. Some of these institutional factors include the following:

First, most of the companies listed on the Saudi stock market are partially owned by the Saudi Government. Hence, unlike that of developed markets, the primary purpose of the accounting reporting system adopted by these companies is to facilitate governmental controls and plans. Furthermore, the high concentration of government ownership in the stock market is likely to mean higher levels of information asymmetry, as government shareholders will usually have direct access to insider information.2

Second, in contrast to the position in developed economies where the provision of accounting information is governed by a coalition of a national set of Generally Accepted Accounting Principles ("GAAP"), Saudi firms have traditionally adopted either United States GAAP, United Kingdom GAAP, or International Accounting Standards ("IAS") GAAP. This creates confusion and inconsistencies in reporting obligations. However, this diversity is being mitigated by the establishment in 1992 of a domestic standard setting body, called the Saudi Organisation for Certified Public Accountants ("SOCPA"),

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2 Traditionally, information asymmetry has been interpreted as differences between managers and owners of firms. That is, managers possess private information about the firm and its earnings that shareholders do not have. The thesis argue that information asymmetry in Saudi exists between investors themselves (government versus non-government). Indeed, These two groups differ in their information resources, their investment horizons, and their investment strategy.
which has been delegated the task of reducing diversity in reporting methods adopted by Saudi firms. However, SOCPA is still very much in its infancy stages, having released only nine accounting standards.

Third, the Saudi capital market lacks a mature investment community of financial analysts. There are fewer alternative information sources other than those published in the accounting reports, suggesting that individual shareholders may be heavily reliant on accounting information and possibly functionally fixated on bottom-line earnings figures. Furthermore, Saudi market participants may be considered, on average, inexperienced. It is worth noting here that accounting education in Saudi is relatively a recent phenomenon, with the first accounting program established in the 1970s.

Fourth, compared to those in developed economies, the Saudi stock market’s participants have different beliefs and values that impinge on their investment decisions. While some investors might be functionally fixated on bottom earnings figures, others do not see reported earnings as a measure of performance because of the use of accounting principles which are inconsistent with Islamic teachings. For example, wealth as opposed to earnings is the accounting concept that is of paramount importance for devoutly Muslim investors. The concept of earnings is important only to the extent it is included in the calculation of wealth, as that is the basis on which the religious tax is paid (Al-Tayer, 1991). While Saudi political and economic situation is moving towards globalization, it seems unlikely that the government will be able to exclude the concern of Islam. Typically, Saudis are conservative Muslims and highly motivated to apply Islamic concepts in their daily life. Globalization is not likely to change Muslims beliefs and their understanding of wealth and earnings. Accordingly, religious doctrines are
likely to influence the value relevance of reported accounting information, in general, and reported earnings figures, in particular.

All of the aforementioned institutional factors suggest that the demand for accounting information in Saudi will be mitigated. However, the Saudi government has recently introduced a number of major economic initiatives that aim to foster and encourage greater participation by domestic and foreign investors in shaping the economic future of Saudi. In contrast to the aforementioned institutional factors, these developments are likely to better align the demand placed on accounting information in Saudi with that of developed economies. Some of these developments include:

(a) Adopting a privatisation plan to enable the Saudi Government to sell its shareholdings in listed companies to Saudi citizens. In order to implement this plan, a Ministerial Committee has been established to regulate and supervise the privatisation process. Already, two of the larger Saudi companies, namely The Saudi Telecommunications Company and The Saudi Electricity Company have proposed to offer their shares to the Saudi public in 2003 and 2004 respectively.

(b) Allowing foreign investors to indirectly invest in the Saudi stock market. This was achieved when the Saudi Government allowed Saudi banks to launch the Saudi Arabian Investment Fund ("SAIF") at the London Stock Exchange in 1997.

(c) Allowing foreign investors to directly invest in domestic Saudi stock funds currently managed by national Saudi banks, from 1999. In 2000, the Saudi Government enacted the Foreign Investment Act, which allows foreign investors to set up businesses and make a long-term investment in the country.
(d) Encouraging private firms to float their shares on the Saudi stock market. It is anticipated, for instance, that The National Commercial Bank, which is one of the largest banks in the Arab world, will offer its shares to the public in the near future, converting its status to a joint stock company.

(e) Increasing the number of mutual funds managed by Saudi banks. For example, the number of mutual funds has increased from 52 in 1992 to 132 in 2000, and the corresponding number of subscribers has increased from 33,162 to 85,735.

The remainder of this thesis is presented as follows. Chapter two provides a general overview of key Saudi institutions as well as a discussion of the impact of Islamic teachings on accounting practice. Chapter three provides an overview of the theoretical framework for the relationship between accounting information and security prices and security returns. Chapter four reviews key relevant studies. Chapter five develops the hypotheses. Chapter six presents the research methodology and outlines of data sources and sample selection criteria. Chapter seven reports the empirical results. Finally, Chapter eight provides concluding comments about the findings.
Chapter Two

Overview of Key Saudi Institutions

The importance of international institutional differences to this study necessitates a fuller understanding of the institutional factors prevailing in Saudi. This Chapter seeks to provide such an understanding. In so doing, this Chapter is divided into four parts. Part A examines the political, legal, economic and financial systems present in Saudi. Part B examines the Saudi stock market, Part C examines the accounting profession in Saudi, and Part D discusses the impact of Islamic teachings on accounting practice. This Chapter seeks only to provide a general overview of the institutional factors present in Saudi Arabia, rather than a detailed analysis of Saudi (for further details see Al-Mubarak, 1997).

Part A

The Political, Legal, Economic, and Financial Systems in Saudi

The Political System

The Kingdom of Saudi Arabia is an Arabic Islamic monarchy, headed by a king who also serves as the country's Prime Minister. The King exercises his authority through a body referred to as the Council of Ministers. The King and the Council of Ministers together constitute the legislative and executive authority of the country, which formulates economic policies and directs the country's development. In addition, two other councils advise the King and Council of Ministers. The first council is the
Consultative Council ("Majlis Alshoura"). This council, established in 1993, is a representative body that communicates the concerns of the electorate to the Government's attention. The Consultative Council consists of 120 members and a chairman, each appointed by the King. Typically, the Consultative Council includes academics, businesspeople, government members and religious scholars. The Consultative Council meets regularly to discuss issues of general importance and debate certain proposed legislation. The Consultative Council makes recommendations to the Council of Ministers by resolution, which requires a simple majority vote. The second council is the Council of the Assembly of Senior Religious Scholars ("Majlis Kibar al-Ulama"), is a body that is charged with the responsibility of ensuring that Saudi is governed in conformity with Islamic law and teaching.

The Legal System

Islamic teaching plays the major role in influencing the formulation and development of the legal system in Saudi Arabia. The Qur'an, the holy book of Islam, is the most important source of legislation, followed by the Sunna, the teachings of the Prophet Mohammed – peace be upon him. The Saudi Arabian Basic Law of Government, enacted in 1992, states, in Chapter I, Article 1:

"The Kingdom of Saudi Arabia is a sovereign Arabic Islamic state with Islam as its religion; ALLAH's Book (The Qur'an) and the Sunna of his Prophet, peace be upon him, are its constitution. Arabic its language and Riyadh is its Capital".

As a matter of Islamic law, if an authoritative legal statement from the Qur'an or the Sunna (collectively referred to as Shari'a) can be cited, it is binding and supersedes all other sources of legislation (Ernst & Young, 1998, pp 56-58). Other sources of law in
Saudi include Royal and Ministerial Decrees and Departmental Circulars. Royal and Ministerial Decrees are issued by the King and Council of Ministers respectively, to govern the organisation and complexities of modern life and commercial and business transactions. An example of such a decree is the Saudi Arabian Regulations for Companies. This decree, issued in 1965 and subsequently amended, provides rules for the formation, administration and dissolution of companies. Departmental Circulars are rules issued by government agencies, such as the Department of Zakat and Income Tax. These circulars are binding, yet are generally not widely publicised (for more details, see Ernst & Young, 1998, pp 56-58). As a matter of convention, proposed legislation is not discussed in public, but is instead considered by ministerial committees and legal experts in the Council of Ministers.

The most popular court in Saudi Arabia is the Shari’a High Court, which forms part of the Ministry of Justice. This court exercises general jurisdiction over civil and criminal matters, excluding commercial cases, which instead usually falls under the authority of the Ministry of Commerce. The appellate jurisdiction of the Shari’a High Court is exercised initially by the Shari’a Court of Appeal, and then subsequently by the King personally. A further council, the Supreme Council of Justice, the highest authority in the Saudi Arabian judicial system, reviews only the most important cases, such as criminal trials where capital punishment is sought.

Numerous other courts have been developed to render judgment in specific cases. These include the Board of Grievances, which hears disputes between companies and contractors as well contraventions of regulations applicable to companies. The Board of Grievances has also acquired the jurisdiction of the Commission for the Settlement of
Commercial Disputes, which previously formed part of the Ministry of Commerce. Justices of the Board of Grievances are qualified in both Shari’a law and related Saudi laws. Other courts include the Commercial Paper Commission, part of the Ministry of Commerce, which hears disputes over cheques, promissory notes and related matters, and the Commission for the Settlement of Banking Disputes, which hears disputes between banks and their customers. Finally, the Preliminary Zakat and Tax Appeal Committees hear disputes between the Department of Zakat and Income Tax on the one hand, and zakat-payers and taxpayers on the other hand, respectively. Its decisions may be appealed to the Zakat and Tax Higher Appeal Committees, respectively. Members of these two committees consist of experts in the accounting profession.

The Economic System

Saudi has the largest economy in the Middle East, with an estimated Gross Domestic Product (“GDP”) of approximately US$139 billion (SAMA, 2000). Its modern economic history began with the discovery of oil in 1938. Saudi now has the world’s largest proven oil reserves. It also is the world’s biggest oil exporter with oil production exceeding eight million barrels per day, a third of the Organisation for Petroleum Exporting Country’s (“OPEC’s”) production quota.

Since the oil price boom in the 1970s, Saudi has rapidly developed a modern infrastructure. The economy of Saudi has been developed through a series of five-year plans. These plans have been formulated to pursue three principal economic objectives. The first objective is economic diversification through the development of private sector activities, in order to minimise the country’s overwhelming dependence on oil. The
second objective is to foster greater economic development from the private sector, and the third objective is to develop and utilise the human resources of Saudi. The first five-year plan commenced in 1970. So far, six five-year plans have been formulated and implemented. The seventh five-year plan, which spans the period 2000-2005, was approved by the Council of Ministers in December 2000.

Given that the sample period for the empirical research in this thesis encompasses the Sixth National Development Plan, which spans the period 1995-2000, it is appropriate to highlight its key elements. The Council of Ministers approved this plan on the 5th of July 1995. The Plan seeks to continue the restructuring and diversification of the Saudi economy through a number of strategic economic objectives. These objectives are:

(a) to increase private sector investment in the agricultural and manufacturing industries;

(b) to further develop mineral resources;

(c) to privatise certain state-owned enterprises;

(d) to expand and complete the ongoing infrastructure projects which support private sector investment; and

(e) to increase the efficiency of the economy.

Furthermore, the Sixth five-year Plan includes a proposal to draw the private sector into management of public utilities and other services. Entities proposed to be privatised include the national Saudi Airlines, the Saudi Telecommunications Company, the Saudi Electricity Company, Saudi Basic Industries Corporation ("SABIC"), as well as the government share of 36 listed companies.
The Financial System

The Government’s commitment to foster greater private sector involvement in its economic development activities suggests that the private sector will play a leading role in financing these development activities. This, in turn, suggests a greater demand for relevant and reliable financial information to facilitate effective decision-making. It also suggests that the financial market in Saudi will be more active and its sophistication level will improve.

The financial system of Saudi Arabia, regulated by the Ministry of Finance and National Economy consists of three major institutions: the Saudi Arabian Monetary Agency ("SAMA"), the commercial banks, and the Government’s specialised credit institutions ("SCI"). SAMA, which was established in 1952, functions as the central bank of Saudi Arabia. It therefore serves the role typically ascribed to central banks, namely, regulating the banking system and overseeing the monetary policy (Abdeen and Shook, 1984).

One of the most important financial developments in Saudi Arabia in the late 1980s was the introduction of governmental debt instruments. In December 1987, it was announced as part of Saudi Arabia’s budget that up to SAR30 billion of the projected deficit in the 1998 financial year would be financed through domestic borrowings managed by SAMA. These debt instruments were initially offered only to Saudi Arabian banks and autonomous government institutions ("AGI"), but banks were permitted to trade them to local investors. Furthermore, in November 1991, SAMA’s ability to manage domestic liquidity was greatly enhanced by the introduction of short-term treasury bills. These treasury bills are available only to entities of Saudi Arabia or other
Gulf Cooperation Council ("GCC") countries, which includes Kuwait, Oman, The United Arab Emirates ("UAE"), Bahrain and Qatar.

The commercial banking industry of Saudi Arabia commenced in 1927, with the opening of the first branch of the Algemene Bank Nederlands, now known as the Saudi Hollandi Bank (Johany et al., 1986). The first local private bank to be established was the National Commercial Bank, which opened in Jeddah in 1953. This was followed by the establishment of the Riyadh Bank in the form of Saudi Join Stock Banking Company in 1957. Other foreign banks soon opened in Saudi Arabia. By 1975, there were 10 international banks in Saudi Arabia, with a total of 23 branches (Al-Mubarak, 1997). In 1976, as a result of alleged claims that these foreign banks were operating according to the practices of their foreign parents, which was inconsistent with Saudi Arabian development plans, the Council of Ministers introduced the 'Saudisation' of these foreign banks. These were converted into joint stock companies, with 60% of their ownership transferred to Saudi Arabian nationals (Abdeen and Shook, 1984). Currently, the commercial banking system comprises 10 banks, with a total of 1,199 branches operating throughout the country (SAMA, 2000). The rapid increase in the number of branches provides strong evidence of the growth of banking activities in Saudi Arabia.

In order to promote its planned agricultural, industrial and housing developments with long-term loans, the Saudi government established six specialised credit institutions during the early 1970s. These institutions provide low cost, interest-free long-term credit. Nowadays, the influence of these institutions is diminishing, due to government moves to increase private sector involvement in the economy.
Part B

The Saudi Stock Market (SSM)

Background

All the GCC countries, namely Kuwait, Oman, Bahrain, the United Arab Emirates, Qatar and Saudi Arabia have official stock exchanges. Saudi Arabia has no physical market place, with the exchange of stocks conducted through a sophisticated bank network. Many academic and professional studies, such as IFC (2000), classify the stock market in Saudi Arabia as an “emerging” stock market due to its relatively small size, its young age, and the exclusion of its listings from major world indices. However, this classification underestimates the influence of the Saudi stock market in its region. Bakheet (1999) states that the Saudi stock market is the eighth largest stock market by market capitalisation in the developing world, exceeded only by the stock exchanges of Mexico, Malaysia, Taiwan, Korea, Brazil, India and Thailand. Moreover, it is clearly the largest stock market in the Arab world, accounting for 63% of volume of shares on all Arabian stock markets. The Kuwaiti stock market is the second largest, accounting for 12% with the Bahrain stock market third at 7%.

The Primary and Secondary Markets

The primary market of Saudi commenced in 1934 with the establishment of the first joint stock Company in Saudi, the Arabian Automobile Company. By 1965, the number of joint stock companies reached 17 (Al-Mubarak, 1997). The popularity of the primary stock market resulted in the enactment of the Companies Act in July 1965. This Act, which consisted of 234 articles, regulated all matters related to companies, such as
the formation and dissolution of companies, the board of directors, the annual general meetings, the company’s final accounts and the obligations and benefits of shareholders.

During the period 1976-80, 19 new companies were offered to the public (Felemban, 1989). This growth resulted from the introduction of "Saudisation" policy for foreign banks operating in Saudi and from the government participation in the formation of many joint stock companies through the Public Investment Fund and other government investment agencies. In 1984, the market witnessed another huge growth when the government decided to privatise 30% of the capital of SABIC with the value of SR3 billion. This growth is expected to further persist in the future with the government’s renewed commitment to privatising a number of state-owned enterprises. In April 2000, the government established the Saudi Arabian Investment Authority (“SAGIA”), comprising representatives of all government ministries dealing with the various aspects of investment in the country, to further stimulate foreign investment. Furthermore, the Foreign Investment Act was issued in order to streamline the procedures by which licences for foreign investment are issued.

Prior to 1975, stock investment was unattractive to Saudi investors for two main reasons. Firstly, there was a very few joint stock companies listed on the market, most of them were thinly traded due to the long-term investment horizons adopted by their owners. Secondly, real estate investment was a popular and profitable investment alternative in that time. However, from 1975, the Saudi secondary stock market became progressively more popular in terms of its transactions and marketability. According to Felemban (1989), the increase of the popularity of the market can be attributed to four reasons. First, in 1976 the government implemented a new policy under which 60% of
the capital of foreign banks' operations in Saudi Arabia had to be owned by Saudi nationals. Second, the increase in oil prices during the period of the second five-year development plan, 1975-80, enabled the government to finance many long-term development projects carried out by joint stock companies. These projects increased the profits of joint stock companies, resulting in higher dividends and further capital raisings. Third, the government supported the formation of many new companies during this period (Al-Bogami, 1997). Finally, the oversubscription of issued shares by new joint stock companies resulted in a healthy trade by investors seeking to realise a quick return.

During the period 1975-80, share trading in the secondary market was based on a direct manual negotiation system, whereby an exchange of shares took place in front of the company concerned. A brokerage system soon developed in order to minimise transaction costs, comprising 80 stockbrokers (Al-Bogami, 1996). However, this system was still in its infancy stages, with no licence, capital or credential requirements. Regulation of the Saudi Arabian stock market was fragmented, with three government agencies overseeing the market. These agencies were the Ministry of Finance and National Economy, the Ministry of Commerce and SAMA. The collapse of the Kuwaiti stock market in 1982 prompted the Saudi government to review its stock market operations, in order to avoid problems associated with speculative trading carried out by inexperienced brokers. In 1983, a Royal Decree formed a joint ministerial committee, comprising members of the three government agencies overseeing the stock market, to investigate, review and regulate the stock market.
Regulating the Saudi Market

In 1984, the Ministerial Committee promulgated new rules and regulations that apply for share trading activities commencing on the 1st of January 1985. At that time there were 38 joint stock companies with an aggregate market capitalisation of US$4.03 billion (Azzam, 1988, p 80). These regulations, contained in Royal Decree No.1320/8, 1984, included:

(a) the establishment of a share negotiation system ("SNS") through commercial banks;
(b) the establishment of a supervisory body for all securities trading;
(c) the establishment of a share control administration department under the jurisdiction of SAMA; and
(d) the formation of a securities trading company by the 12 banks in Saudi.

The commercial banks were to act as intermediaries in the trading of shares, and were prohibited from owning shares personally (SAMA, 1985). Under the new SNS, each of the commercial banks were to open a Central Negotiation Unit ("CNU") in the capital city of Riyadh to process share sale and purchase orders received at their branches, which also have their own trading units.³ The SNS has two types of orders. The first type is a limit order, in which clients can specify a price for any share that they wish to sell or buy. The second type is a market order, in which clients authorise banks to buy at the lowest demand price or sell at the highest price available. The new

³ Because there are many investment opportunities that are available for commercial banks in Saudi, they are not very eager to involve in SSM. In fact, SAMA invites banks to participate in SSM mainly for administrative purpose. When SAMA took the responsibility of regulating SSM in 1984, banks were the only agencies that have the resources and techniques needed to administrate the market. SAMA has established many rules to prevent banks from driving to market. For example, banks are prohibited from having direct ownership in Saudi companies except through investment funds.
regulations permit banks to charge a commission based on the transaction value at a maximum of 1% to be paid equally by both the seller and the buyer.

During the late 1980s, SAMA recognised the need for an automated and floorless trading platform to conduct the stock market. The benefits of automation include operational efficiency, accuracy of trading, and enhanced surveillance capabilities. In 1988, SAMA introduced a new trading system, the Electronic Securities Information System ("ESIS") which provides a floorless, continuous trading, order driven market with real time price, volume and company information to be disseminated through the media. ESIS uses central computers in SAMA and terminal workstations in the Banks, both linked by a high-speed telecommunications network (Azzam, 1993).

ESIS provides the means by which investors' order and data are captured, traded, executed and settled before transfer of ownership instructions are sent to the relevant company registrar. In 1993, ESIS was expanded with a new service, which enables bank branches to transmit buy and sell orders to ESIS directly. Additionally, the new service provides branches with all information in ESIS, but they can not execute any buy or sell orders, which have to be executed through CTUs only. ESIS provided the Saudi stock market with transparency, fairness, narrow price spreads, and an efficient and short trading cycle.

Generally speaking, only Saudi nationals may own or otherwise deal in the shares. However, nationals of other GCC countries may also own shares in certain joint stock companies. Additionally, the US$250 million Saudi Arabian Investment Fund ("SAIF"), established in 1997, permits non-Saudi investors to indirectly invest in the Saudi Arabian stock market. This fund is listed on the London Stock Exchange. Furthermore, in 2000,
the government permitted non-Saudi nationals who reside in Saudi to invest in the Saudi stock market through existing local funds managed by the commercial banks in Saudi. As a result of these governmental initiatives, there are currently 132 investment funds managed by the commercial banks. The number of subscribers to these funds has increased from 33,162 in 1992 to 85,735 in 2000, with the value of assets under management increasing from SAR12.4 billion to SAR37.62 billion during the same period.

Current Market Activities

As can be seen in Table 1, the Saudi stock market activity level increased remarkably during the last decade. The number of listed companies on the Saudi stock market increased from 60 in 1992 to 73 at the end of 2000. Market capitalisation reached SAR229 billion at the end of 1999, which represents a 60% growth over the preceding year.

The total number of shares traded in 1999 stood at 528 million as against 293 million during 1998, an increase of 90%. The number of transactions recorded were 438,226 in 1999 against 376,617 in 1998. Furthermore, the share index increased 27.9% from 1998 to 1999 to reach 195.8 points.
Table 1

SSM Activities

<table>
<thead>
<tr>
<th>Year End</th>
<th>No. of Shares Traded (Millions)</th>
<th>Book Value of Shares Traded (Millions SAR)</th>
<th>Market Value of Shares Traded (Billion SAR)</th>
<th>No. of Transactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>31</td>
<td>8527</td>
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<td>35</td>
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<td>293</td>
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<td>1999</td>
<td>528</td>
<td>56578</td>
<td>229</td>
<td>438226</td>
</tr>
</tbody>
</table>

Source: SAMA, Annual Report, 2000

In 1985, the National Centre for Financial and Economic Information ("NCFEI") produced the first index of the Saudi Arabian stock market with an initial base of 100, based on share prices supplied by SAMA. The index includes a general market index as well as six sub-indices for the various sectors in the market, namely; the Banking sector; the Industrial Sector; the Cement Sector; the Services sector; the Electric sector; and the Agricultural sector.
Part C

The Accounting Profession in Saudi

The accounting profession in Saudi Arabia is a maturing phenomenon undergoing a process of continuous development. During its infancy stage, there was not any comprehensive authoritative support. This soon changed with the passage of the first Law of Certified Accountants in 1992. Article 19 of the Law established the first authorised professional association of accountants, referred to as the Saudi Organisation for Certified Public Accountants ("SOCPA"). SOCPA is responsible for regulating the accounting profession and its practices. The regulatory sources of law governing the accounting profession include the Companies Act, the Zakat and Income Tax Act, the Ministry of Commerce 1986 decision, and SOCPA regulations. Each of these will now be discussed in turn.

The Companies Act

The Companies Act is considered the primary authoritative regulation of accounting practices. The Act's regulations, called the Regulations for Companies, enacted by Royal Decree in 1965 and subsequently amended in 1982, 1985 and 1992 (see McKee et al., 1999, pp 93-101) specify the rights and obligations for most companies. Although the Companies Act is primarily concerned with the regulation of the formation of companies, such as capital and director thresholds; it also provides guidance for accounting rules and procedures, especially auditing-related practices.

Article 123 of the Act mandates every company to prepare a balance sheet, a profit and loss statement, a report on its operations and financial position, together with
the proposed method for distribution of retained profits in each year of its operation. The financial statements of all corporations, partnerships limited by shares, and limited liability companies must be audited. The auditor has statutory authority to examine, at any time, the company's books, records, and other documents necessary for it to be able to attest whether the financial statements present a "real view" of the company's financial position and profitability during the period in question. These documents must be disclosed to the shareholders at least 25 days prior to the date set for the Annual General Meeting. Article 89 of the Act further specifies that these statements must be published in a local newspaper. The Act provides rules relating to the appointment, remuneration, independence, responsibilities, and removal of company auditors. Article 128 also specifies that these statements, as well as the auditor's report, must be filed with the General Department of Companies of the Ministry of Commerce.

Article 124 of the Act states that the financial statements are to be prepared having regard to the principle of consistency. Therefore, the elements of the financial statements of a company must be consistently measured and classified over time unless the auditor recommends a change of procedure, which must be ratified by the company shareholders at a general meeting. The Act also requires each company to set aside 10% of its annual profits to build up a reserve fund, referred to as the Statutory Reserve. This reserve is used as a contingency to cover for future losses. However, Article 125 of the Act permits company shareholders to vote to stop the reserve build up when the Statutory Reserve accounts for one half of overall capital. Moreover, Article 126 permits companies to set aside a certain percentage of its annual profits to build up another
reserve, referred to as the Contractual Reserve, which may be used according to the company’s by-laws.

Article 127 of the Act states the company’s by-laws shall specify the percentage of retained profits, after allowing for the statutory reserve, that shall be distributed to stockholders. Such a percentage may not be less than 5% of the company’s capital. A joint stock company is required to maintain a statutory reserve by the allocation of at least 10 percent of the net profit. The statutory reserve may be used to meet losses or to increase the capital. If the reserve exceeds one-half of the capital of the company, the excess could be distributed to shareholders if the company realize insufficient profit to pay the prescribed dividends. The company may cease making a transfer to a statutory reserve once the reserve exceeds one-half of the capital.

The Zakat and Income Tax Act

All entities operating in Saudi, whether owned by Saudi nationals, foreign nationals, or both ("mixed ownership companies"), must submit an annual income tax or Zakat return to the Department of Zakat and Income Tax ("DZIT"). They must also obtain a tax or Zakat clearance certificate each year. Zakat is a religious wealth tax levied on Saudi and other GCC nationals and their wholly owned companies, and that proportion of mixed ownership companies that is owned by Saudi or other GCC nationals. Income tax is levied on companies wholly owned by foreign nationals, and the proportion of mixed ownership companies that is owned by foreign nationals.

Income and Zakat tax are the only direct taxes levied in Saudi. The only indirect tax levied in Saudi Arabia is a customs duty that applies to imported goods. Zakat tax
derives its authority from Shari'a law. It is a fixed rate tax of 2.5% on capital that is not invested in fixed assets or long-term investments. Income tax in Saudi Arabia derives its authority from the Income Tax Regulation of 1951 and its subsequent amendments, as well as DZIT Departmental Circulars. Income tax is levied on taxable income, which is calculated as gross income less all expenses that are necessarily incurred in earning income and satisfy the deductibility rules. The current rate of corporate income tax in Saudi varies from 25% to 45%, with no tax-free threshold.

Every company is required to submit its financial statements, fill out a final income or Zakat tax return, and pay the corresponding tax liability no later than two and a half month after its year end, unless an extension is sought and granted. A licensed CPA firm in Saudi must audit the income or Zakat tax return. Furthermore, the DZIT Ministerial Decree No. 164 of 1988 requires companies to charge income and Zakat tax to the profit and loss statement as an expense rather than to debit the retained profits account. However, Al-Moughwili (1999) provides evidence that several joint stock companies have yet to abide by this rule. Al-Moughwili also states that the DZIT typically accepts any accounting treatment as long as it is an internationally accepted practice. This diversity is expected to be mitigated with the issue of exposure drafts by SOCPA relating to the calculation of Income and Zakat taxes, which shall soon become mandatory.

The Ministry of Commerce's 1986 Decision

The adoption of the first five-year development plan in 1970 brought massive economical and social changes. This led to a corresponding recognition by the academic
and investment community of the immediate need of a mature accounting profession and the development of national accounting and auditing standards. In response, the Ministry of Commerce appointed one of the leading accounting firms in the country, Alrashed Firm, to study the current accounting practices, to propose accounting and auditing standards, and to develop the structure of the profession more generally. In carrying out this task, Alrashed Firm conducted a comparative study of accounting practices in nine countries, namely the United States, the United Kingdom, Canada, France, West Germany, Sweden, Tunisia, Venezuela and Brazil. In 1986, based on the recommendations of the Alrashed study, the Ministry of Commerce issued Ministerial Decree No.692 stating that two financial accounting standards, relating to general presentation and disclosure, and auditing standards, which by that stage had been promulgated, were to serve as the official guide for all accounting practitioners in Saudi Arabia. The Ministry of Commerce issued Ministerial Decree No.852 four years later, mandating all companies to comply with all accounting standards when preparing their annual reports. The proposal approved by the Ministry of Commerce in 1986 consisted of four major parts, each of which will each be discussed in turn. These are:

(a) the objective of financial accounting;
(b) the concepts of financial accounting;
(c) the general presentation and disclosure standard; and
(d) auditing standards.

Objectives of Financial Reporting
Paragraph 53 of the 1986 proposal stated that the primary external users of financial statements are investors, lenders, suppliers, customers, and employees, both present and prospective. Government agencies such as the DZIT are not considered primary users of financial statements as they have the power and authority to prescribe the form and content of the financial statement submitted to them for their specialised purposes. The general objectives of financial reporting in Saudi Arabia, as stated in the proposal, consist of the following:

(a) providing information suitable for the needs of primary users;
(b) measuring periodically the business enterprise’s ability to generate earnings;
(c) evaluating the enterprise’s ability to generate cash flow;
(d) presenting information on the economic resources of the enterprise; and
(e) presenting information on the sources and application of funds.

Concepts of Financial Accounting

The second objective of the 1986 proposal relates to the concepts of financial accounting. Paragraphs 233 through to 247 define the basic elements of financial statements of business enterprises as assets, liabilities, owner’s equity, revenues, expenses, gain and loss, net income and loss, owner’s contribution and owner’s distribution. In addition, the statement defines the concepts of events, transactions and circumstances that may change the entity’s assets, liabilities and owner’s equity. The 1986 proposal also defines accounting assumptions underling the measurement process and the characteristics of the measurement process itself. It also defines in detail the following accounting concepts: the entity concept; the going concern concept; the
periodic reporting concept; the recognition concept; the measurement concept and the matching concept. Finally, Paragraphs 313 through to 336 of the 1986 proposal specify and define seven key qualitative characteristics, namely relevance, reliability, neutrality, comparability, timeliness, understandability, and materiality and optimal disclosure. In general, all of the above concepts, doctrines, characteristics were defined consistently with their US and UK counterparts.

*General Presentation and Disclosure Standard*

The third objective of the 1986 proposal relates to the general presentation and disclosure standard. The standard sets out the general requirements and identifies the presentation of individual financial statements. Paragraph 583 of the 1986 proposal states that the complete set of financial statements comprises the statement of financial position, the statement of income, the statement of changes in owner's equity or alternatively a statement of retained earnings which discloses in the footnotes the changes in owner's equity, the statement of sources and application of funds, and the notes to the financial statements. It is worth noting here that, in 1990, the Ministry of Commerce issued Ministerial Decree No.852, which cancelled the mandatory status of the statement of sources and applications of funds, such that it became voluntary. However, in 1996, SOCPA issued a requirement for all companies to prepare a statement of cash flow.

The 1986 proposal further clarifies in detail the general presentation requirements of individual financial statements. Paragraphs 592 through to 609 outline the presentation requirements of the statement of financial position. Furthermore, the
proposal illustrates three statements of financial position for an enterprise to choose from. With regard to the statement of income, the proposal requires an enterprise to follow the multi-step format showing appropriate intermediate components of net income. As regards the general disclosure standard, the proposal outlines the following disclosure requirements in financial statements. These relate to the nature of the business, the significant accounting policies, changes in accounting methods, contingencies, commitments, and events subsequent to balance date.

**Auditing Standards**

The final objective of the 1986 proposal is concerned with seven auditing standards. These are standards relating to adequate professional competence, auditors' neutrality and independence, due professional care, audit planning, documentation and control, audit evidence, and audit reporting.

**SOCPA Regulations**

The first Certified Accountants Law was enacted in 1974 which was later revised in 1992 (Royal Decree No. M/12). Article 19 of the revised Law authorised the foundation of the first professional organisation of accountants, SOCPA, to be supervised by the Ministry of Commerce. SOCPA attends to a wide range of functions. It reviews, develops and approves accounting and auditing standards. It also prepares professional examinations, and otherwise supervises the practice of accountancy.

SOCPA operates through six committees to achieve its functions. These are the Accounting Standards Committee, the Auditing Standards Committee, the Training &
Education Committee, the Professional Examination Committee, the Professional Ethics Committee, and the Professional Supervision Committee. These committees comprise academics, practitioners and other experts from the private and public sectors. Each committee has between 8-9 members.

SOCPA introduced a professional qualification for Saudi nationals, which is modeled on the Certified Public Accountants designation in the United States. The Ministry of Commerce issues licences to qualified individuals and to associations of qualified individuals. As at the end of 1997, there were over 300 licensed practising accountants in Saudi. Indeed, the strength of the profession in Saudi is far weaker than that in the West. Accountants and their corporate clients' face lower expected litigation cost in Saudi than in other western countries. While the Ministry of Commerce and SOCPA host a committee that investigates any wrongdoing in the profession, the procedures and decisions of this committee are very secret and not published to the public. As a matter of fact, in Saudi not a single audit firm has been sued up to date. Thus, auditors have less potential legal liability in the case of corporate failures.

Since its inception, SOCPA has issued ten accounting and auditing standards. These include the cash flow statement; accounting for inventory; accounting for foreign currency transactions; disclosure of related party transactions; auditing organisations using computers; and supervision of CPA firms. In addition, SOCPA has issued numerous exposure drafts on other accounting and auditing issues. These include establishment costs, income and Zakat tax, segmental reporting, administrative and general expenses, revenue recognition, sales and distribution expenses, fixed assets, interim reports, research and development, securities investment, consolidated financial
statements, auditing special reports, auditing interim reports, and examining internal control systems.

Accordingly, Saudi companies do not yet have a unified set of GAAP. Indeed, given the lack of a complete set of SOCPA accounting standards, Saudi companies are still informally guided by US, UK and/or IAS standards. Merei (1985, p 43) notes the diversity in the reporting practice by Saudi firms as follows:

"Since the Tax Authority has not yet defined the term 'internationally accepted', any support for an accounting treatment is accepted. Some firms in Saudi Arabia make reference to the standards issued by the International Accounting Standards Committee; others are using the US GAAP; a few are using Canadian Standards; possibly others use the British GAAP".

AlRehaily (1992) provides evidence that IAS standards are the most commonly used standards by practitioners in Saudi Arabia, followed by US standards and then UK standards.
Part D

The Impact of Islamic Teachings on Accounting Practice

The aforementioned discussion suggests that the supply of accounting information in Saudi tends to follow closely U.S. GAAP, U.K GAAP, and/or International Accounting Standards Board’s GAAP. However, Saudi investors tend to be devoted Muslims and would demand accounting information that is compatible with Islamic teachings. Since many Western GAAPs do not align perfectly with Islamic teachings, it is likely that Islamic investors discount the value relevance of accounting information produced under Western GAAPs. The degree to which such discounting takes place is an empirical question and it is in a way one of the main motivations for conducting this research.

The Source of Accounting Policies in Islam

Many non-Muslims think that Islam is nothing more than a spiritual religion. They do not realise that Muslims look to Islam for rules that govern their daily business conduct. It is extremely important to note that Islam does not recognise the separation between spiritual and temporal affairs. Muslims are required to conduct their daily activities, including business activities, according to what has been revealed to them. In other words, in Islam, the concept of two sets of books does not exist. Thus, it is not allowed, for example, to have one set of books for financial reporting purposes and another one for Zakat calculation purposes.

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4 Generally speaking, Saudi firms adapt some of the foreign GAAP in spite of their conflict with the religious directives. An obvious reason for this is the lack of complete Saudi GAAP. However, there is a recent move in Saudi to apply Islamic principles to accounting practices. For example, SOCPA introduced lately an exclusive standard about Zakat. Moreover, SOCPA issued a statement requiring that all companies to report earnings per share after excluding all interest (Riba) income.
Accounting policies, as any other rules in Islam, can be derived from its two major sources. First, the Qur'an, the words of God that were revealed to the prophet, Mohammed from 610 AD to 632 AD, is the primary source of every Muslim's faith and practice. It provides guidelines for a just society, proper human conduct and an equitable economic system. The Qur'an also includes many rules about business ethics and policies. The second authority for Muslims is the Sunna. The Sunna contains the practice and teachings of the prophet Mohammed. For example, during his life, the prophet Mohammed commanded his companions to the right way to conduct their business. He said,

"The truthful and trusty business man is associated with the prophets, the saints and the martyrs." (Riyaadh-Us-Salehenn, 1994).

The Qur'an and Sunna together are referred to as the Shari'a. The Shari'a is supplemented by the Ijma, which contains the pronouncements presenting the consensus of Islamic scholars on matters not addressed explicitly by the Qur'an and the Sunna. Muslims are expected to be able to deduce generally accepted accounting principles from the principles contained in these writings.

A Brief Comparison of Islamic GAAP and Western GAAP

In general, the entity concept, the going concern assumption, and the periodicity principle do not contradict with Islamic teachings. In contrast, there is a definite misalignment between Islamic teachings and the historical cost accounting method, the conservatism principle, and the traditional income measurement approach. The next few sections briefly discuss each of these similarities and differences.

The Entity Concept
The doctrine that each corporation is an entity separate from its owners is consistent with the Islamic interpretation of the nature of the relationship between the corporation and its owners. In Islam, for Zakat calculation purposes, a corporation, a proprietorship, or a partnership is a separate and distinct accounting entity. However, the emphasis is on the wealth generated by the entity itself, rather than on that which accrues to the owners of the entity.

**The Going Concern Assumption**

The going concern assumption holds that the business entity will continue its operations long enough to realise its projects, commitments and ongoing activities (Belkaoui, 1996). This assumption is related to (1) the practice of classifying assets and liabilities as current and non-current and (2) the matching principle to determine periodic earnings. In Islam, the primary purpose for classifying assets as current and non-current is to determine the amount to be paid as Zakat. Zakat is levied on wealth acquired for trading (most current assets) but not on wealth obtained for utilisation (most non-current assets). As a result, capital invested in fixed assets is free from Zakat. Thus, Islam does not reject the going concern assumption as long as it complies with other Islamic rules.

**The Periodicity Principle**

In the West, the accounting period principle is justified on the basis that users of financial statements cannot wait until the end of a firm's life to know the result of its operation. This principle has led to the development of accrual accounting and the principles of income recognition and matching. Islamic teachings justify the periodicity principle on totally different grounds. That is, Islamic accounting statements must be
prepared annually (every lunar year) to identify the amounts on which Zakat would be levied. Therefore, the periodicity principle in Islam is acceptable as a religious rule.

The Historical Cost Principle

In Western accounting, most balance sheet elements are reported using the historical cost accounting method. In Islam, all balance sheet elements are recognised using the mark-to-market accounting method. This is done in order to assess each entity’s net worth for Zakat calculation purposes. While a number of Western accounting standards do apply mark-to-market accounting, this application is not universal. This discussion about the historical cost in Islam does not imply that Saudi companies do not use historical cost measurement system. In fact, the discussion is about the difference between Islamic GAAP and Western GAAP in theory. However, it is likely that Saudi investors, who are devoted Muslims may discount the value relevance of accounting information produced under the historical cost system.

The Conservatism Principle

In Western accounting, the conservatism principle holds that when choosing among two or more acceptable accounting techniques, some preference is shown for the option that has the least favourable impact on the stockholders' equity. In Islamic accounting, this principle is not acceptable. For example, the evaluation of inventories on the basis of market price for Zakat calculation purposes would mean that no consideration is given to the lower of cost or market price. However, Islam permits the use of the conservatism principle in some situations, such as determining the useful life and residual value of assets for depreciation accounting.

The Income Measurement Principle
Income measurement in Islam is quite different to that adopted by most Western GAAPs. Islamic accounting measures income as a comprehensive income in clean-surplus format. That is, income is measured as the change in net equity during a period using mark-to-market accounting. Thus, income includes profit resulting from the sale of current assets, unrealised gain resulting from the increase of the value of current assets, and realised and unrealised holding gains on fixed assets (Gambling and Karim 1986, p.102).
Chapter Three

Theoretical Framework

One of the most influential theories on early market-based accounting research is that advanced by Miller and Modigliani (1961, 1966) which relates the market value of the firm to, among other things, its future earnings. However, that theory was silent on how and when investors learn about future earnings. In an attempt to address these questions, early market-based accounting research examines the impact of the release of earnings and earnings components on the firm value as evidenced by changes in security prices. Broadly speaking, most of the research that followed progressed without the benefit of a well-structured accounting valuation theory.

Furthermore, a number of researchers recently argue that accounting research should move beyond the focus on earnings. For example, Easton (1997) suggests that accounting research should attempt to learn (1) how security markets may be used to evaluate the validity of financial statement data other than earnings, and (2) how financial statement data (other than earnings) and non-financial statement data convey information to security markets. Similarly, Ou (1990) and Penman (1992) argue that accounting procedures aggregate a large amount of information into summary numbers, and these numbers are value measures. One of these numbers is net income (earnings), and the other summary number is book value. Thus, one might start with both of these numbers to determine the value of securities.

In response to these and other similar calls, Ohlson (1995) develops an accounting valuation model that specifies the relation between security prices, accounting earnings,
book value and other information. In effect, Ohlson (1995)'s valuation model provides a foundation for moving accounting research beyond an emphasis on accounting earnings. According to Ohlson (1995), the relation between security prices, accounting earnings, book value and other information can be formalised as follows:

\[ P_t = k (\theta X_t - d_t) + (1 - k) BV_t + \alpha v_t \]  

(1)

Where:

- \( P_t \) the price per share at time \( t \),
- \( X_t \) accounting earnings per share at time \( t \),
- \( d_t \) dividends per share at time \( t \)
- \( BV_t \) book value of owners' equity per share at time \( t \)
- \( v_t \) information not captured in either earnings or book value per share at time \( t \) that has effected price at time \( t \),

\( 0 \leq k \leq 1 \)

\( \theta = 1 + r^{-1} \)

\( r \) is the expected rate of return

\( \alpha = (1 + r)(1 + r - \omega)^{-1}(1 + r - \gamma)^{-1} \)

\( \omega \) is the persistence (autocorrelation) in abnormal earnings \((X_t - rBV_{t-1})\)

Ohlson's (1995) model is based on the following assumptions. First, the present value of expected dividends determines the market value (Williams 1938, and Modigliani and Miller, 1961). Second, regular owners' equity accounting applies, ie, accounting data and dividends satisfy the clean surplus relations, and dividends reduce book value without affecting current earnings. Clean surplus accounting satisfies the equation that book value in one accounting period is equal to book value of the previous accounting
period plus net income less dividend distributions. Third, abnormal earning and non-
accounting information satisfies the autoregressive process.\(^5\)

Ohlson (1995, p.662) notes that his model "generalises prior analysis and literate to derive a convex combination of a “pure” flow model of value and a “pure” stock model of value. This model brings the bottom-line item of the income statement and that of the balance sheet into a valuation function. In addition, the model admits information beyond earnings, book value, and dividends. This indicates that some value-relevant events may affect future expected earnings as opposed to current earnings, and therefore some accounting measurements incorporate value-relevant events only after a

time lag. However, the model shows that the weighted factor of capitalised earnings and book value still provide the core of the valuation function.\(^6\)

Ohlson (1991,1995) shows that his valuation model (equation 1) also serves as the economic model underlying returns studies. Taking first differences in equation 1, rearranging terms, and dividing through by lagged price yields:

\[
R_t = k\theta (\Delta X_t/p_{t-1}) + (1 - k)(X_t / p_{t-1}) + \alpha (\Delta V_t / p_{t-1})
\]

Where: \(R_t\) is the realised return for period \(t-1\) to \(t\).

\(^5\) In his discussion of Ohlson's (1995) model, Easton (1997, p.16) states that the evolution of the financial statements (earnings and book value) and of other information is captured by the time-series:

\[(X_{t+1} - rBV_t) = (X_t - rBV_{t-1}) + \nu_{t+1} + \epsilon_{t+1}\]

and

\[\nu_{t+1} = \gamma \nu_{t+1} + \epsilon_{2t+1}\]

Where \(\gamma\) is the coefficient relating the current non-financial statement information to the future. The features of these time-series relationships satisfy the fundamental attributes of accounting that earning aggregate over time and the articulation of the balance sheet and the income statement is summarized by the clean surplus relation. Also, they are consistent with the assumptions of Modigliani and Miller (1961).

\(^6\) While equation 1 is theoretically valid, accounting researchers debated the empirical application of Ohlson’s model due to what Easton (1998) calls the spurious effects of scale. The phenomenon of spurious effects of scale refers to the spurious relation between large (small) dependent variables and large (small) explanatory variables. Therefore, Easton (1998) argues that caution should be exercised when interpreting the empirical results of price-level regressions that are based on the Ohlson’s (1995) model.
While equation 1 uses prices to assess the extent to which the financial statements reflect the state of the firm at a given point in time, equation 2 uses returns to assess the summary of change in the firm’s financial state as provided in the financial statements. In equation 1, the factors $0k$ and $1-k$ capture the weights on earnings of the most recent period and on book value, respectively. However, in equation 2, the two factors, $0k$ and $1-k$, are the weights on change in earnings and change in book value (earnings) over the return period. Ohlson (1991) demonstrates that only under certain narrow circumstances, the earnings change variable $(X_{t+1} - X_t / p_t)$ correlates strictly more with returns compared to $(X_{t+1}/p_t)$. Thus, the $(X_{t+1}/p_t)$ variable takes on a premier role as explanatory earnings variable of returns because it is the correct variable under idealized conditions.  

Easton (1997) further shows that Ohlson’s (1995) model may be used to provide an understanding of the market reaction to the release of earnings information. That is, equation 2 may be modified to consider change in earnings, change in book value (earnings) and change in other information variables over the short time interval $(t - \varepsilon$ to $t)$ surrounding earnings announcement as follow:

$$R_t^{\varepsilon} = k_0 [(X_t - E_t [X_t] p_t] + (1-k)[BV_t - E_t [BV_t] p_t] + a [V_t - E_t [V_t] p_t]$$

Where:

- $R_t^{\varepsilon}$ is the return over $t-\varepsilon$ to $t$, and
- $E_{t-\varepsilon}$ is the expectation at $t - \varepsilon$

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7 Ohlson and Shroff (1991) considered some theoretical aspects of the earnings specification issue with focusing on the earnings levels versus earnings change variable. They concluded that the earnings levels variable could be the best explanatory variable for returns even though the time-series of earnings follow a random walk. These findings taken together run counter to established concepts. A long tradition in market based accounting research centers on the earnings change variable as the benchmark explanatory variable for return (and unexpected return).
However, since $(BV_t - E_t - [BV_t])$ is equal to $(X_t - E_t - [X_t])$, information in income and information in book value may be combined as follows:

$$R_t^{E} - E_t(R_t^{E}) = (k\theta + 1 - k) \left( \left( X_t - E_t \left[ X_t \right] \right) / \left[ p_t \right] + \alpha \left( X_t - E_t \left[ v_t \right] \right) / \left[ e_t \right] \right)$$

(4)

Where

$(k\theta + 1 - k)$ captures the response of the market to the news in earnings.

Dechow et al. (1999, P.32) note that the main features of the Ohlson’s model can be summarised as follows. First, the model provides a unifying framework for a large number of previous “ad hoc” valuation models. Second, the model provides a basic framework upon which subsequent research can develop. Finally, the focus of the model on the relation between current information variables and future abnormal earnings is heuristically appealing. In fact, Bernard (1995) suggests that Ohlson’s (1995) model provides a foundation for redefining the appropriate objective of research on the relation between financial statement data and firm value and that the “Ohlson’s (1995) model provides some structure for modelling in a field where structure has been sorely lacking (p. 733).
Chapter Four

Literature Review

As was noted earlier, the objective of this thesis is to assess the validity of existing empirical evidence on the value relevance of earnings and earnings components in a Saudi context. While value relevance studies encompass return regression studies (equations 2 and 4) as well as price regression studies (equation 1), the focus of the thesis is on studies that apply return regressions. Accordingly, this Chapter provides a brief review of exemplary research papers that investigate (1) the impact of earnings announcements on security returns and trading volume, (2) the value relevance of earnings in terms of its ability to explain variations in raw and abnormal security returns, and (3) the value relevance of earnings components in terms of their ability to explain variations in raw and abnormal security returns.

The Impact of Earnings Announcements on Security Returns and Trading Volume

Ball and Brown (1968) and Beaver (1968) pioneered market-based accounting research, as we know it today. Ball and Brown (1968) correlate the sign of the abnormal security return in the month of the earnings announcement with the sign of the firms’ earnings forecast error. In particular, they use two earnings expectation models to assign firms to portfolios of positive earnings forecast error “good news” and negative earnings forecast error “bad news”. Based on correlating the sign of the earnings forecast error with the sign of abnormal returns measured over the period t-11 to t+6 month, they demonstrate that accounting earnings contemporaneously capture a portion of the
information set that is reflected in security returns. However, they report two additional interesting findings. First, annual accounting earnings are not a particularly timely source of information to the capital markets in that earnings capture around 15% of the information set that is reflected in security returns during the earnings announcement month. Second, there is strong evidence in favour of a post-earnings announcement drift in that the market takes a few more months beyond the earnings announcement month to fully adjust to the earnings signal. As Kothari (2000) notes the maintained hypothesis underlying the Ball and Brown test is that the earnings expectation models are well specified.

Beaver (1968) avoids the problems associated with the specification accuracy of the earnings expectation models by examining security returns' volatility (as a measure of information flow) and trading volume (as a measure of revisions in investors' expectations) surrounding the earnings announcement date. However, unlike Ball and Brown (1968), Beaver uses weekly measurement interval. Observing abnormal price reaction as well as abnormal volume reaction, Beaver clearly demonstrates that not only are expectations of individual investors altered by the earnings report but also the expectation of the market as a whole.

The Value Relevance of Earnings

Extending the work by Ball and Brown (1968), Beaver, Clarke, and Wright (1979) note that a sign test is not as powerful as an ordinal test since the relationship between abnormal returns and abnormal earnings is an ordinal one. They examine the ordinal association between abnormal security returns cumulated over the 12 months
ended three months after the fiscal year end, and the magnitude (rather than merely the sign) of earnings forecast errors at both portfolio and individual security levels. Their results indicate that abnormal returns were positively associated with the magnitude of earnings forecast errors.

Foster (1977) examines the timeliness issue addressed by Ball and Brown (1968) by investigating the relationship between abnormal quarterly earnings and abnormal returns. His results suggest that quarterly earnings are more timely source of information than annual earnings. Kothari (2000), however, states that it is not surprising to find that earnings are not timely source of information as reflected in security returns since “accounting earnings measurement rules emphasise transaction-based revenue recognition, compared to the stock market’s focus on current and expected future revenues (p. 13)”.

The research that followed the work of Ball and Brown (1968) during the 1970s and 1980s has mostly examined the value relevance of accounting earnings by investigating the relationship between abnormal returns (measured over a short window or over one year) and earnings forecast error (measured using alternative expectation models including analysts forecast). However, most of this work has progressed without the benefit of a well-structured accounting valuation model. By the end of the 1980s, the theoretical work by Ohlson (1991, 1995), Feltham and Ohlson (1995), and Ohlson and Shroff (1991), among others, enabled accounting researchers to re-examine the role of accounting information in security valuation under a structured valuation framework.

For example, Easton and Harris (1991) utilise the Ohlson model (equation 2) to re-investigate the association between accounting earnings and security returns. They
estimate equation 2 for pooled sample as well as for each sample year (19 years) and run univariate and multivariate regressions of raw returns (and abnormal returns) on earnings levels and earnings changes. Consistent with Ohlson (1995), the empirical findings suggest that earnings levels and earnings changes are relevant for explaining security returns and that earnings levels have higher explanatory power than earnings changes.

Easton, Harris and Ohlson (1992), and Warfield and Wild (1992) also utilise equation 2 of the Ohlson (1995)'s model to investigate the association between security returns and accounting earnings. However, they allow the measurement windows for both returns and earnings to vary. Kothari (2000, P. 35) states that "expanding the measurement window mitigates both errors in variables and omitted variable problems that arise because of prices leading earnings." Effectively, expanding the measurement window yields a less biased earnings association coefficient and a higher explanatory power than in the case of a single period return-earnings regression. According to Easton, et al. (1992), the improvement in the explanatory power is derived from a fundamental attribute of accounting in which "earnings aggregate over periods and that earnings are more likely to reflect the value-relevant events and their effect on value changes over longer period (p.140)". The empirical results confirm a stronger association between earnings level and security returns as the measurement interval increases.

Hayn (1995) extends Easton and Harris (1991) and Easton et al. (1992) by assessing the differential impact of loss cases vis-à-vis profit cases on the return-earnings relationship. She uses a sample of 85,919 firm-year observations over the 29-year period 1962-1990. Losses appeared in 19.6% of all firm-years with almost all firms share the incidence of losses. The earnings variable was, alternately, the level of primary earnings-
per-share (EPS) of the current year or the change in EPS in the current year. She estimates regressions for both a pooled samples of firm-years and individual firms and partitions both samples into subgroups. The empirical tests show that the explanatory power of the regressions drops significantly with the inclusion of loss cases. She also reports that, regardless of the sign of cumulative earnings, the return-earnings relationship improves as the measurement period increases. However, the explanatory power of regressions for periods with aggregate losses are all close to zero, which suggests that “shareholders have the option to liquidate the firm when the current losses are projected to perpetuate if the firm continues to operate (p.150)”.

Basu (1997) extends the extant research by demonstrating that timeliness is asymmetrically greater for “bad” news than for “good” news. He uses negative and positive unexpected annual stock returns to proxy for bad news and good news, respectively. Basu argues that the reported earnings number responds more completely and quickly to bad news than to good news and, therefore, the earnings-return association is relatively stronger for bad news vis-a-vis good news. The sample consists of 43,321 firm-year observations from 1963-90. Approximately 59% of the sample constitute positive returns, with the remainder constituting negative returns. Basu calculates buy-and-hold annual returns that end three months after the fiscal year end. As predicted, Basu finds that earnings is contemporaneously more sensitive to negative unexpected returns than positive unexpected returns, as measured by the slope coefficient and the $R^2$ from a ‘reverse’ regression of earnings on returns. The concurrent sensitivity of earnings to negative returns is two to six times as large as the concurrent sensitivity of earnings to positive returns. The Adjusted R-Squared from
separate regressions on positive and negative returns indicate that the explanatory power of negative returns, at 6.64% for 17,790 firm-years, is greater than positive returns, at 2.09% for 25,531 firm-years. These results are consistent with earnings being more time sensitive in reporting publicly available bad news than good news, suggesting conservatism among capital market participants.

Ball, Kothari and Robin (1997) assess the impact of institutional factors on the demand on accounting earnings and hence the value relevance of earnings. Specifically, the authors evaluate the role of institutional factors in influencing the demand on accounting earnings in a sample of common law countries, represented by Australia, Canada, the United Kingdom, and the United States, vis-a-vis that of a sample of code law countries, represented by France, Germany, and Japan. They focus on three factors: (a) the economic role of public disclosure in common law countries relative to code law countries; (b) variations in the amount of regulation and litigation risk within common law countries; and (c) differences in laws and practices that cause short-term dividends, bonus and tax payout policies to influence reported earnings. The authors assess these differences against two properties of earnings: (a) timeliness, defined as the extent to which earnings incorporate current value-relevant information, and (b) conservatism, defined as the extent to which earnings incorporate current bad news more than good news (as in Basu, 1997).

Ball et al., predict that reported earnings in code law countries incorporate a lower proportion of the currently available value-relevant information, and consequently they are more likely to smooth its incorporation over time, than earnings reported in common law countries. Consistent with this prediction, the authors find that earnings in
code law countries are less timely than in common law countries. Furthermore, the
demand for conservative accounting in common law countries is believed to be
accentuated by the enhanced disclosure to arm’s length parties in public markets,
especially capital markets. However, while the authors find that earnings in common law
countries are timelier than earnings in code law countries, in reflecting decreases in the
market value of shareholders’ equity, they also find earnings in common law countries
are less timely than earnings in code law countries in reflecting increases in the market
value of shareholders’ equity. This suggests that the greater timeliness, overall, of
earnings reported in common law countries is attributable to their greater timeliness in
reflecting bad news, which more than compensates for the lesser timeliness in reflecting
good news. Furthermore, the results indicate that earnings reported in the United
Kingdom are less conservative than earnings reported in the other common law countries,
yet more conservative than earnings reported in any of the code law countries. The
authors attribute this to looser accounting regulation, and to lower expected costs of
stockholders’ and bondholders’ litigation.

The Value Relevance of Earnings Components

SOCPA and most standard setters around the world maintain that the primary
focus of financial reporting is to provide information about a firm’s performance provided
by measures of earnings and its components. During the last three decades, several
studies investigated the value relevance of various components of earnings. Overall, these
studies indicate that some components of earnings are informative, and that some
information is lost when earnings components are aggregated into a single-line item.
Kothari (2000) notes that this research generally aims to evaluate standards that require earnings components to be disclosed and fundamental analysis.

Most of the above studies focus on the examination of value relevance of the cash and accrual components of earnings. For the most part, this line of research is motivated by conflicting views with respect to the value relevance of each component. While some academics argue that cash is "king", standard setters and other academics argue that earnings is superior to cash flows as a predictor of future cash flows. For example, the U.S. Financial Accounting Standards Board (FASB) (1978, paragraph 44) maintains that:

> Information about enterprise earnings based on accrual accounting generally provides a better indication of an enterprise's present and continuing ability to generate favourable cash flows than information limited to the financial aspects of cash receipts and payments.

As Kothari (2000) notes, accruals represent accountants' attempt to transform cash flows into earnings that are more informative about firm performance. However, "self-interested managers might use accounting discretion opportunistically and manipulate accruals, which would distort earnings as a measure of firm performance (p. 48)." In spite of that, the empirical evidence that follows show that, in general, there is incremental information in accruals beyond cash flows.

Ball and Brown (1968), and Beaver and Dukes (1972) are among the earliest papers that attempt to provide an empirical evidence about the ability of accruals vis-a-vis cash flows to reflect firm performance. They show that earnings is more value relevant that “net income plus depreciation and amortisation” (which they use to proxy for cash flows). However, Bowen, Burgstahler, and Daley (1987) report that the evidence provided by Ball and Brown (1968) and Beaver and Dukes (1972) is only indirectly relevant since comparisons of abnormal performances (as in Ball and Brown)
or comparisons of correlations (as in Beaver and Dukes) do not constitute tests of incremental information content. Patell and Kaplan (1977) note that they are unable to reject the hypothesis that unexpected cash flows (defined as the percentage changes in working capital from operations) are unrelated to unexpected returns, after controlling for unexpected earnings. The authors caution, however, that the correlation between earnings and working capital from operations was quite high.

Bowen, Burgstahler, and Daley (1986) report descriptive evidence on the contemporaneous correlations between various measures of cash flow and accrual earnings during the sample period of 1971 through 1981. The authors find that traditional measures of cash flow (net income plus depreciation, and working capital from operations) are highly correlated with earnings, while the correlation of alternative measures of cash flow with earnings are low. This result suggests that the traditional cash flow measures are unlikely to provide users with different information from that contained in the earnings number. In addition, based on a simple one- and two-period-ahead forecast models, the authors find that, under a strict interpretation of the FASB's statements that accruals are synonymous with earnings, earnings do not provide better forecasts of future cash flows than do cash flow measures.

Wilson (1987) investigates whether the cash and accrual components of earnings have information content beyond earnings itself. He regresses market model prediction errors on unexpected cash flows for a nine-day event interval, centred on the financial report release date during the sample period of fourth quarters of 1981 and 1982. Wilson

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8 The third cash flow measure is: working capital from operations minus changes in non-cash current assets plus changes in current liabilities. The fourth cash flow measure adjusts the third measure for the period's investment activities. The final measure adjusts the fourth measure for financing activities.
(1987) shows analytically that the coefficient for the cash flow variable at the financial report release date represents the net effect of the combined coefficients for unexpected cash flow and unexpected accruals. The empirical results suggest that the coefficient for cash from operations is positive and significant, unlike that for working capital from operations. The positive and significant coefficient indicates that for a given amount of earnings the market reacts more favourably the larger (smaller) is the cash flow (accrual) component.

Wilson (1986) extends Wilson (1987) by introducing a model that addresses the question of whether accruals have incremental information content beyond cash flows. The model structures the way information about earnings components is extracted from earnings when earnings are announced and links the association between this component and stock returns to the association between stock returns and the common information released on the annual report release date. Wilson finds that the cash and total accrual components of earnings have incremental information content beyond earnings and that the total accrual component of earnings has incremental information content beyond the cash component. Although none of the tests have considered jointly the information content of the cash from operations, current accruals, and noncurrent accruals, the combined evidence from Wilson (1986, 1987) suggests that most of the total accruals information content is due to its current accruals component.

Bowen, Burgstahler, and Daley (1987) use a pooled regression approach to examine the relation between abnormal returns and unexpected cash flows, after

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controlling for the relations between unexpected security return and unexpected earnings. They also examine the relation between unexpected security returns and unexpected earnings, after controlling for the relation between unexpected security returns and unexpected cash flows.\textsuperscript{10} Using data from the period 1972-1981, the authors find significant incremental information content for the cash flow variables after controlling for the association between security returns and earnings. They also find significant incremental content for the cash flow variables after controlling for both earnings and working capital from operations. There is little evidence, however, to suggest that working capital from operations has incremental information content relative to that of earnings. The authors conclude that these results suggest that the market reacts more favourably to unexpected cash flows than to unexpected current accruals, and more favourably to unexpected current accruals than to unexpected noncurrent accruals.\textsuperscript{11}

In contrast, Rayburn [1986], based on a sample from 1962-1982, finds no difference in the market response to unexpected cash flows\textsuperscript{12} and unexpected current accruals.\textsuperscript{13} She reports positive but approximately equal estimates of the coefficients of the cash flow and current accrual variables. With respect to noncurrent accruals, Rayburn finds mixed results.

\textsuperscript{10} The authors use the same cash flow measures discussed in their 1986 study.

\textsuperscript{11} Jennings [1990] notes that data from Bowen et al. [1987] provide only weak evidence that current accrual and cash flow components of income are valued differently by investors.

\textsuperscript{12} She defines operating cash flows to be: earnings before extraordinary items plus the change in working capital (except current maturities of long-term debt); the change in deferred taxes; and depreciation, depletion, and amortization.

\textsuperscript{13} Jennings [1990] reports new evidence that support Rayburn's findings.
Bernard and Stober [1989] extend the work of Wilson [1986, 1987] by assessing its generality and robustness over 32 quarters (1977-1984). In general, the results do not contradict those of Wilson’s for the two quarters he examines, but there is no evidence of similar results for the overall sample period. They conclude that there is no systematic difference between the implications of cash flows and accruals, as reflected in stock price behaviour surrounding the release of detailed financial statements. Bernard and Stober then examine the validity of Wilson’s speculation that the market preference for cash flow might be a function of the economic conditions (i.e., as the economy contracts, the market would react favourably when management liquidates noncash working capital and vice versa during periods of economic expansion). Again, they do not find support of the macroeconomic condition explanation. Bernard and Stober then examine the validity of an alternative hypothesis under which the stock price implications of cash flows and current accruals may vary across firms according to their specific mix of current accrual components. As in previous hypotheses, they are unable to find any empirical support for this hypothesis. Bernard and Stober [1989, p.648] conclude that further progress will require a better understanding of the economic context in which the implications of detailed earnings components are interpreted.

In the spirit of Bernard and Stober’s (1989) suggestion, Dechow (1994) develops cross-sectional predictions about the conditions that make earnings more informative about a firm’s performance than cash flows. She notes that the superiority of accruals to more closely reflect expected cash flows stem from the ability of accruals to mitigate timing and matching problems in cash flows. Dechow hypothesises that earnings are predicted to better reflect firm performance (i) the shorter the performance measurement
interval, (ii) the greater the volatility of the firm's working capital requirements and investment and financing activities, and (iii) the longer the firm's operating cycle.

Dechow indicates that the focus of her study is "to assess the ability of each measure (accruals and cash flows) to reflect firm performance in their realised form as opposed to their innovative or unexpected form" (p.6). Therefore, stock price performance is used as a benchmark to assess whether earnings or realised cash flows better summarise the firm performance. Effectively, she argues, that cash flows and earnings competed against each other to explain stock returns.\(^{14}\) Her sample consists of 20,716 firm-quarter observations from 1980 to 1989, 28,647 firm-year observation from 1964 to 1989, and 5,454 firm-four-year observations from 1964 to 1989. The results of the study are consistent with Dechow's predictions.

Basu (1997) extends Dechow (1994) by arguing that timeliness is asymmetrically greater for "bad" news than for "good" news, and that earnings is more timely than cash flow in reflecting bad news. His empirical results support his predictions. The earnings-return association is relatively stronger than the cash flow-return association for bad news as opposed to good news.

\(^{14}\) Dechow used two return metrics: (I) market adjusted returns, and (ii) raw returns.
Chapter Five

Hypotheses Development

The primary motivation of this dissertation is to assess the validity of existing empirical evidence with respect to the value relevance of accounting earnings and its cash and accrual components in Saudi. This thesis provides the first market-based empirical evidence with respect to the value relevance of accounting earnings and earnings components in a Saudi context. As noted earlier, the supply of accounting information in Saudi tends to be in line with that of Western GAAPs. However, the demand for this information in Saudi is heavily influenced by unique institutional factors including the impact of Islamic teachings. The findings of this thesis are highly relevant for Saudi standard setters (SOCPA) especially since they continue to issue new accounting standards that are, for the most part, mere translated versions of Western-based accounting standards, without properly accounting for the demand placed on accounting information by Saudi investors.

The examination of the value relevance of accounting earnings and earnings components is an issue of obvious importance and is of a major concern to the accounting standards setting process since the outcome of that process directly reflects upon the utility of the accounting activity. For example, the Financial Accounting Standards Board (SFAC No 1) considers information relating to earnings and components of earnings as the primary purpose of external financial reporting. Similarly, SOCPA states, in paragraph 514 of the Saudi Arabian Disclosure and Exposure Standard, that all Saudi
firms must report their earnings and components of earnings in the income statement, since these figures are value relevant for capital market participants.

Given the lack of any empirical evidence on the value relevance of accounting information in Saudi, this thesis investigates multiple aspects of the value relevance of accounting earnings and its components. These aspects are not mutually exclusive in that, combined, they provide an understanding of the demand placed on accounting earnings by Saudi market participants.

The aim of the first two hypotheses is to establish benchmark evidence about the usefulness of accounting information to Saudi market participants. These hypotheses are concerned with assessing the market reaction to the release of accounting information in Saudi. In line with most early market-based accounting research, the first two hypotheses view the role of accounting as “providing information that is useful for investors in forming or revising expectations about the future stream of benefits that accrue from investment in the firm for which the accounting report has been prepared (Easton 1997, p. 4)”. This role of accounting is often referred to as the information perspective.

An equally important role of accounting is to provide “a financial summary of the events that have affected the firm over the fiscal period for which the report has been prepared (Easton 1997, p. 5)”. This role of accounting is often referred to as the measurement perspective. According to Barth (2000), determining whether earnings is value relevant can reflect both perspectives. While the first two hypotheses adopt an information perspective, the remainder of the hypotheses adopt a measurement perspective.
The impact of earnings announcements on returns and trading volume of Saudi firms

Ball and Brown (1968) argue that, assuming an efficient and unbiased security market, changes in security prices will reflect the flow of new information to the market as it becomes publicly available. Accordingly, an observed revision of stock prices associated with the release of the income report would thus provide evidence that the information reflected in income numbers is useful.

In the spirit of the Ball and Brown (1968), we investigate the association between the sign of security returns and the sign of annual earnings of Saudi firms surrounding the week of the release of earnings announcements. While this test provides only benchmark evidence on the usefulness of earnings of Saudi firms, this association may not reflect the value relevance of earnings figures alone since Saudi firms do not disclose their earnings figures separately from the rest of the annual report. Typically, Saudi firms publish their entire annual report in a public newspaper, without foreshadowing the earnings figure for the year. Furthermore, even if Saudi firms announce earnings figures separately, we may not observe such association due to (1) high ownership concentration level among Saudi firms and (2) high governmental ownership level. High concentration levels as well as the existence of close personal contacts between owners and managers may result in private information release before the annual report publication date which would mitigate the significance of the observed abnormal security returns during the annual report release week. The degree to which this behaviour takes place is an empirical question and it may be investigated by examining the relationship between the sign of security returns and the sign of reported earnings surrounding the annual report release date as follows:
H01: There is no association between the sign of security returns and the sign of reported earnings surrounding the release of Saudi firm's annual report.

Beaver (1968) notes that the introduction of new piece of information (such as earnings) may induce a lack of consensus by investors and that some time may elapse before a consensus is reached. During that time, an increase in trade volume would be observed. Even after an equilibrium price has been reached, volume reaction might still be observed if investors risk preferences differ. Beaver (1968, P. 69) states that an important distinction between security price tests and trade volume tests is that "the former reflects changes in the expectations of the market as a whole while the latter reflects changes in the expectations of individual investors."

As noted above, it is likely that the "market-makers" investors in Saudi have access to private information before the rest of the market which would improve their ability to forecast earnings more accurately. This implies that (changes in security prices) tests may not be as sensitive to the release of earnings reports of Saudi firms as those of volume. In the spirit of Beaver's proposition, we test for abnormal volume reaction surrounding the release of Saudi firms' annual reports as follows:

H02: There is no abnormal trading volume reaction surrounding the release of Saudi firms' annual reports.

The relationship between earnings levels, earnings changes and annual security returns

For a long time, Saudi companies reported their financial performance by adopting US GAAPs, UK GAAPs, or IAS GAAPs. In effect, as long as Saudi companies are consistent in their reporting practice, they can adopt whichever system they choose. Recently, SOCPA commenced a process of issuing national accounting standards. The aim is to unify financial reporting and to make it more comparable across firms.
However, SOCPA is still in its infancy stage having only issued nine accounting standards. Therefore, divergence of financial reporting still prevail. On the other hand, we show earlier that a number of Western GAAPs do not align perfectly with Islamic teachings. This may have a significant impact on the value relevance of accounting information, in general, and accounting earnings, in particular. In order to assess the value relevance of accounting earnings, we adopt the measurement perspective on the role of accounting. That is, the interest here is in assessing whether accounting earnings provides a financial summary of the events that have affected the firm over the fiscal period for which the report has been prepared.

If Saudi investors view accounting earnings as value relevant, in spite of its misalignment with Islamic teachings, then earnings should significantly improve the power of the estimating equation to explain security returns. If it is not relevant, there would be no relation with security returns. Consistent with Ohlson (1995)'s model, Easton and Harris (1991) show that changes in earnings and level of earnings complement each other in explaining security returns. This suggests that both variables should be included in the estimation equation to explain security returns. This gives rise to the following hypothesis, stated in the null form:

\[ H_0: \text{There is no association between annual earning levels and changes in annual earnings, combined, and annual security returns of Saudi firms.} \]

The impact of the measurement interval on the relationship between earnings levels, earnings changes and security returns of Saudi firms

Investigating annual contemporaneous association between earnings and security returns assumes that there is a certain degree of alignment between market value changes and accounting earnings during the accounting period. However, in Saudi, this alignment
might be mitigated due to the degree of divergence between Western GAAPs and Islamic teachings. For example, Islamic teachings measure financial performance as comprehensive income in clean-surplus format. That is, income is measured as the change in net equity during a period using mark-to-market accounting. This method of income measurement is clearly different from that reported by Saudi firms. If Saudi investors adjust reported earnings to align better with Islamic teachings, we would expect lower annual contemporaneous association between reported earnings and security returns.

Long-interval analyses, such as examining returns and earnings cumulated over several years, may be very useful in examining the alignment issue. Based on the Easton, Harris, and Ohlson’s (1992) model, we would expect to find stronger association between earnings and security returns as the measurement interval increases. That is, misalignment “errors” in aggregate earnings are likely to become relatively less important for longer periods of aggregation. This gives rise to the following hypothesis, stated in the null form:

\[ H_0: \text{The association between earnings and security returns of Saudi firms does not improve as the measurement interval is increased.} \]

*The differential valuation implications of positive and negative earnings on the relationship between earnings and security returns of Saudi firms*

Hayn (1995) posits that reported losses are perceived by investors as temporary since investors can always liquidate the firm rather than suffer from indefinite losses. Losses are therefore more weakly associated with security returns than profits. The Saudi institutional factors suggest that such relationship might also hold in Saudi. Some Saudi firms tend to be partly owned by the government and anecdotal evidence suggest
that the Saudi government has always introduced initiatives that aim to maintain a minimum level of performance by the firms in which it holds some ownership. These initiatives include raising rates, imposing significant market entry barriers, or more importantly the provision of subsidies and grants. Other Saudi firms tend to have semi-complete monopoly over their products and service in a market with low price elasticity.

On the other hand, given that the financial reporting system in Saudi does not align perfectly with Islamic teachings, Hayn's (1995) proposition may not hold in Saudi. That is, the reported income figure might differ significantly if one is to use Islamic-based income measurement perspective. This gives rise to the following hypothesis, stated in the null form:

$$H_0: \text{There are no differential valuation implications for losses vis-à-vis profits in terms of their association with annual security returns of Saudi firms.}$$

The differential valuation implication of the cash and accrual components of earnings of Saudi firms

Accounting standards setters around the globe (including SOCPA) believe that the accrual process mitigates timing and matching problems inherent in cash flows as a measure of firm performance during finite periods. Many financial analysts, however, believe that accruals can be used opportunistically by managers. If detected, opportunistic use of accruals can reduce the ability of earnings to provide a credible signal about firm performance and improve the ability of cash flows to better reflect firm performance.

This thesis argues that, in a Saudi context, it is not clear that earnings should be a preferred summary measure of performance to cash flows, even if one is to ignore the opportunistic use of accruals. Two Saudi institutional factors might counter-balance the
benefits of the use of accruals in order to mitigate the timing and matching problems associated with cash flows.

First, Saudi firms have the option to use US GAAPs, UK GAAPs, or IAS GAAPs as the basis for their financial reporting. Divergent reporting practice by Saudi companies can distort the ability of earnings to provide a credible measure of performance and can make cash flows a relatively better summary measure of performance. Regardless of the Saudi context, differing accounting practice can distort the value relevance of earnings. For example, Chemical Week (May 8, 1991) notes that "

"Many financial analysts regards operating cash flow as a better gauge of corporate financial performance than net income, since it is less subject to distortion from differing accounting practices (p. 28)."

Second, the misalignment between Islamic teachings and GAAPs used to generate reported earnings might further distort the ability of earnings to measure firm performance. If Saudi investors discount the value of reported earnings as a measure of performance because of its inconsistencies with Islamic teachings, then cash flow might provide relatively more credible evidence about firm performance.

The degree to which accruals improve or reduce the ability of earnings to measure firm performance in Saudi is an empirical question. In the spirit of Dechow (1994), this thesis uses stock price performance as the benchmark against which to compare "realised" cash flows and "realised" earnings. Dechow (1994) uses the realised form of these variables since her interest is to examine which measure is a relatively superior summary measure of firm performance given the choice of one. This thesis follows Dechow's approach and in effect replicates her tests in a Saudi context.
Dechow (1994) predicts that, on average, earnings is a more useful measure of performance than either net cash flows or operating cash flows. Since net cash flow does not have any accrual adjustments, it suffers from timing and matching problems. While operating cash flows include long-term accruals, they exclude accruals associated with changes in firms’ working capital requirements. Thus, Dechow hypothesises that both cash measures suffer from timing and matching problems. The aforementioned discussion gives rise to the following hypothesis, stated in null form:

\[ H_0: \text{There are no differential valuation implications for annual cash flows vis-à-vis annual earnings in terms of their association with annual security returns of Saudi firms.} \]

The impact of the measurement interval on the relationship between the cash and accrual components of earnings and security returns of Saudi firms

Dechow (1994) hypothesises that over longer intervals, earnings and cash flows are expected to converge as measures of firm performance (assuming clean surplus). Over longer measurement intervals, cash flows will suffer from fewer timing and matching problems and therefore the relative importance of accruals will diminish. In Saudi context, misalignment errors resulting from the divergence between Islamic teachings and GAAPs are also expected to become relatively less important over longer intervals. This should also improve the value relevance of aggregate earnings relative to short interval earnings. Thus, both performance measures should exhibit improvement in terms of their association with security returns. In spite of that, Dechow’s prediction should still hold in Saudi. The aforementioned discussion gives rise to the following hypothesis, stated in alternative form:
H₀₇: The association between cash flows and security returns of Saudi firms improves relative to the association between earnings and security returns as the measurement interval is increased.

The impact of the magnitude of accruals on the relationship between earnings and security returns

Dechow (1994) argues that if accruals reduce timing and matching problems in cash flows, then earnings are expected to reflect relatively more value-relevant events when earnings and cash flows differ by the greatest magnitude (either positive or negative). Accruals typically increase in absolute terms when firms undertake new investment and financing activities or experience large changes in their working capital requirements. In Saudi, larger absolute accruals also reflect wider divergence between earnings reported using Western GAAPs and earnings based on Islamic teachings. It is therefore possible that larger absolute accruals result in lower association between security returns and earnings relative to the association between security returns and cash flows. This gives rise to the following hypothesis, stated in alternative form:

H₀₈: The association between earnings and security returns of Saudi firms improves relative to the association between cash flows and security returns as the magnitude of absolute aggregate accruals increases.
Chapter Six

Research Methodology

Recall that Chapter Five presents the research hypotheses. This Chapter presents the testing procedures for each hypothesis, variables definitions, data sources, and sample selection procedures. In general, the testing procedures adopt the theoretical model of Ohlson (1995), as outlined in Chapter 3.

Hypothesis Testing Procedures

Testing the impact of earnings announcements on security returns ($H_{01}$) and trading volume ($H_{02}$) of Saudi firms

Recall that Saudi firms do not announce earnings ahead of the annual report release date. Recall also that Saudi investors may have access to private information about firm performance before the release week of the annual report. For these reasons, the aim of this section is to examine the market movement surrounding and including the annual report release date. If earnings provide a summary performance measure, we should observe positive (negative) market returns for profitable (losing) firms. Accordingly, the testing procedures for the impact of earnings announcement on security returns of Saudi firms differ slightly from those used by Ball and Brown (1968). Rather than constructing an abnormal performance index (as is in Ball and Brown), a wealth index in constructed. The wealth index traces out the value of one dollar invested (in equal amounts) in all securities at the end of week -52 (that is, 52 weeks prior to the week...
of the annual report) and held to week +13 (that is, 13 weeks after the week of the annual report). In other words:

\[ W_{lw} = \frac{1}{N} \sum (1 + r_{n,w}) \]  

(5)

Where:

- \( W_{lw} \) is the wealth index during week \( w \);
- \( r \) is the raw rate of return for security \( n \) during week \( w \); and
- \( N \) is the number of securities

Similar to Ball and Brown (1968), the wealth index is then plotted for portfolios constructed for (1) all firms and years, (2) all firms and years in which the reported earnings level (change) figure is positive, and (3) all firms and years in which the reported earnings level (change) figure is negative. In order to test \( H_0 \), chi-square statistics are computed for a two-by-two classification of firms by the sign of earnings levels (and changes), and the sign of raw returns for each week. More powerful statistical tests on this issue are provided when \( H_0 \) is formally tested.

This thesis also examines the trading volume surrounding (and including) the annual report release date. Benchmarked against trading volume during non-reporting weeks, it is expected to find abnormal trading volume movements during (and surrounding) the annual report release date. Similar to Beaver (1968), a weekly average of daily percentage of shares traded is calculated for each firm for each week in the report period as follows:

\[ V_{i,w} = \frac{\text{number of shares of firm } i \text{ traded in week } w}{\text{number of shares outstanding for firm } i \text{ in week } w} \times (1 / \text{number of trading days in week } w) \]  

(6)

67
The weekly volume is divided by the number of shares outstanding in order to remove any bias caused by firms with large numbers of shares outstanding. The percentage of shares traded per week is divided by the number of trading days in order to adjust for non-trading days such as public holidays. The normal trading week in Saudi Arabia is equal to five and one half days (five full days and one half-day on Thursdays).

The report period is defined as the 7-week period surrounding the release date (3 weeks before the release date, and 3 weeks after). In order to test $H_0$, the thesis computes average volume across all observations for each week during the report period, benchmarked against the average volume during non-report period (week -52 ~ week -3, week +4 ~ week +13).

**Testing the relationship between earnings levels, earnings changes and annual security returns ($H_0$)**

Ohlson’s (1995) model provides a role for earnings and book value in a dynamic uncertainty environment that relies on the clean surplus relation and the Miller and Modigliani (1961) propositions. Recall that Ohlson’s model also serves as the economic model underlying returns studies. Following Easton and Harris (1991), the following regressions are estimated for the pooled cross-section and time series sample as well as for each year (t) of available data:

\[
\text{Ret}_{i,t} = \alpha + \beta_1 \left( \frac{E_{i,t}}{P_{i,t-1}} \right) + \epsilon_{i,t}
\]

(7)

\[
\text{Ret}_{i,t} = \alpha + \beta_1 \left( \frac{\Delta E_{i,t}}{P_{i,t-1}} \right) + \epsilon_{i,t}
\]

(8)

\[
\text{Ret}_{i,t} = \alpha + \beta_1 \left( \frac{E_{i,t}}{P_{i,t-1}} \right) + \beta_2 \left( \frac{\Delta E_{i,t}}{P_{i,t-1}} \right) + \epsilon_{i,t}
\]

(9)

Where,
In order to test $H_03$, this thesis examines the ability of earnings levels and earnings changes to explain variations of security returns during the return interval. Similar to Easton and Harris (1991), and Lev and Zarowin (1997), the thesis empirically tests whether the sum of the coefficients ($\beta_1 + \beta_2$) in Equation 9 equals zero. The sum of $\beta_1$ and $\beta_2$, dubbed the "earnings association coefficient" reflects the average change in the security price associated with a Saudi Riyal change in earnings.

Testing the impact of the measurement interval on the relationship between earnings levels, earnings changes and security returns of Saudi firms ($H_04$)

Hypothesis $H_04$ focuses on the association between security returns and accounting earnings with a particular emphasis on the increase in the strength of this association as the time period for calculation of returns and earnings increases. In order to test $H_04$, the regression outlined in Equation 9 is re-estimated for alternately across two-year and five-year return intervals. Inferences about the role of the length of the measurement interval on the association between security returns and earnings can be drawn from comparing the explanatory power ($R^2$) of each model (that is, annual association, two-year association, and 5-year association).
Testing the differential valuation implications of positive and negative earnings on the relationship between earnings and security returns of Saudi firms (H05)

To empirically examine this hypothesis, the pooled sample is divided into four groups. The first group includes observations where the level of earnings and the change in earnings are both positive. The second group includes observations where the level of earnings is positive but the change in earnings is negative. The third group includes observations where the level of earnings and the change in earnings are both negative. The final group includes observations where the level of earnings is negative but the change in earnings is positive. The regression model outlined in equation 9 is then estimated for each subgroup. Inferences about the role of the sign of reported earnings on the association between security returns and earnings can be drawn from comparing the R-squared of the pooled model for each group for annual as well as longer measurement intervals (2-year and 5-year).

Testing the differential valuation implication of the cash and accrual components of earnings of Saudi firms (H06)

This hypothesis is examined by estimating the following regressions for the pooled cross-section and time series sample as well as for each year (t) of available data:

\[ \text{Ret}_{it} = \alpha + \beta_1 \left( \frac{E_{it}}{P_{i,t-1}} \right) + \varepsilon_{it} \quad (10) \]

\[ \text{Ret}_{it} = \alpha + \beta_1 \left( \frac{\text{CFO}_{it}}{P_{i,t-1}} \right) + \varepsilon_{it} \quad (11) \]

\[ \text{Ret}_{it} = \alpha + \beta_1 \left( \frac{\text{NCF}_{it}}{P_{i,t-1}} \right) + \varepsilon_{it} \quad (12) \]

Where,

- **E** earnings level per share
- **CFO** net cash flows from operating activities per share
Following Dechow (1994), inferences about the differential valuation implications of cash flows and accruals can be drawn from comparing the coefficients (β₁) and the explanatory power (R²) of the pooled regressions outlined in equations 10, 11, and 12.

Testing the impact of the measurement interval on the relationship between the cash and accrual components of earnings and security returns of Saudi firms (H₀7)

This hypothesis is examined by re-estimating the regressions outlined in equations 10, 11, and 12 for alternately across two-year and five-year return intervals. Following Dechow (1994), inferences about the role of the length of the measurement interval on the differential valuation implications of the cash and accruals components can be drawn from comparing the explanatory power (R²) of each model (that is, annual association, two-year association, and 5-year association).

Testing the impact of the magnitude of accruals on the relationship between earnings and security returns (H₀8)

This hypothesis is tested by first forming two portfolios on the basis of the absolute level of aggregate accruals. The first (second) portfolio contains observations for which the absolute level of aggregate accruals is higher than or equal to (lower than) the median value of absolute aggregate accruals. Unlike Dechow (1994), data limitations preclude the formation of more portfolios. Separate regressions are then estimated for

NCF net cash flows per share
Ret raw annual security return
D dividends paid per share of firm i
P the price per share of firm i at time t
each portfolio for equations 10 and 12. Following Dechow (1994), these procedures are replicated for annual, two-year, and five-year intervals. Inferences about the validity of this hypothesis are then drawn from comparing the coefficients ($\beta_1$) and the explanatory power ($R^2$) of each regression.

Variables Definitions

Market Variables

$\text{Ret}_{it}$: The raw security returns for firm $i$, adjusted for stock dividend, stock split and capitalisation changes compounded over the time period $t$, where $t$ is either one week, one year, or five years.

$\text{Vi}_{it}$: The traded volume for security $i$ adjusted for stock split over the contemporaneous Week, $t$.

Financial Variables

All financial statement variables used in the empirical procedures in this dissertation are stated on a per-share basis and scaled by beginning-of-period price. The required financial statement variables are defined as follows:

$E_{ei}$: Earnings per share for firm $i$ for period $t$ excluding extraordinary items, discontinued operations, and zakat and tax obligations scaled by beginning-of-period price. Zakat and tax obligations are excluded from the measurement of earnings for four distinct reasons. First, the sample consists of two groups of firms. Fully Saudi owned firms that are required to pay only zakat. Partly Saudi
owned firms that are required to pay both zakat and income tax. Thus ignoring zakat and tax obligations ensures a measure of consistency. Second, since the zakat obligation represents a religious duty, some firms believe that they should be in charge of paying only the minimum amount of zakat required by law. Accordingly, many firms may engage in active zakat management practice. Third, certain firms are entitled to special tax concessions for certain periods. Finally, flexibility inherent in the Saudi Zakat and Tax Code generally leads to disputes between companies and ZITD regarding the amount due for Zakat and tax, which suggests that it is difficult to ascertain a firm’s final tax liability.

\( \Delta E_{i,t} \): Change in earnings per share for firm \( i \) for period \( t \). This variable proxies for unexpected earnings for firm \( i \) for period \( t \).

\( CA_{i,t} \): The current accrual component of earnings for firm \( i \) for period \( t \) \( \{ \Delta \) (noncash) working capital\( _{i,t} \)/ no. of common shares outstanding\} / \( P_{t-1} \) With \( \Delta \) (noncash)working capital = \( \Delta \) Account receivables + \( \Delta \) Inventory + \( \Delta \) other Current Assets - \( \Delta \) Accounts payables - \( \Delta \) other Current Liability other than notes payable and the current portion of long term debt, where \( \Delta \) is the change in each variable from period \( t-1 \) to \( t \).

\( CFO_{i,t} \): Net cash from operations per share for firm \( i \) for period \( t \), scaled by beginning-of-period price \{\((\text{operating income before depreciation} - \text{taxes} - \text{zakat} - \Delta \) (noncash) working capital\)\( _{i,t} \)/ no. of common shares outstanding\} / \( P_{t-1} \).

\( NCA_{i,t} \): Non-current accruals per share for firm \( i \) for period \( t \), scaled by beginning-of-period price \{\((E_{i,t} - CFO_{i,t} - \Delta CA_{i,t})\)/ no. of common share outstanding\}/ \( P_{t-1} \).

\( TA_{i,t} \): Total accruals = \( CA_{i,t} + NCA_{i,t} \).
CFFI_{i,t}: Net cash flow from investing activities per share for firm \( i \) for period \( t \), scaled by beginning-of-period price.

CFFF_{i,t}: Net cash flow from financing activities per share for firm \( i \) for period \( t \), scaled by beginning-of-period price.

NCF_{i,t}: Net cash flow is the change in the balance of the cash account on a per share basis for firm \( i \) for period \( t \), scaled by beginning-of-period price.

AA_{i,t}: Aggregate accruals is the net change in all non-cash accounts on a per share basis for firm \( i \) for period \( t \), scaled by beginning-of-period price \( \{(E_{i,t} - NCF_{i,t}) / \text{no of common shares outstanding}\}/P_{t-1} \).

Sample Selection Procedures

The study period chosen is the five-year period from 1995-1999. The sample was drawn from the total population of firms listed on the Saudi stock market during the full five-year sample period, of which there were 72 firms. Table 2 outlines the sample selection procedures. Of these 72 firms, ten firms were suspended from trading on the Saudi Arabian stock market, pending satisfaction of certain operating and financial criteria imposed by the Saudi stock market. These ten firms were excluded from the sample. Of the remaining 62 firms, 52 firms satisfy the following selection criteria:

1. complete weekly share prices series for the 1995-1999 sample period;
2. complete financial statements data for at least four years from the 1995-1999 sample period;
3. complete dividend and stock split data for the 1995-1999 sample period; and
4. clearly identifiable earnings announcement dates for each yearly observation.
Table 2

Sample Selection Procedure

<table>
<thead>
<tr>
<th>Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saudi listed firms in 1999</td>
</tr>
<tr>
<td>Less: Non-traded firms'</td>
</tr>
<tr>
<td>Small regional firms'</td>
</tr>
<tr>
<td>Missing data firms'</td>
</tr>
<tr>
<td>Total firms included in this study</td>
</tr>
</tbody>
</table>

The final sample represents 72% of the total population by number, represents 96.45% of the total population by market capitalisation. The final data set includes 256 annual earnings announcements relating to 52 Saudi Arabian firms for the sample period 1995-1999.

Data Sources

Due to lack of any form of electronic market or financial database in Saudi, all of the required data were hand collected. Specifically, the following information was collated from the following sources. Weekly high, low, and closing stock prices and trading volume for each security were obtained from SAMA. Dividend data was obtained from SSRC. Stock split data was obtained from the Saudi Stock Market Review publications issued by Bakheet Financial Advisors. Financial accounting data were manually obtained from the relevant annual reports, hard copies of which were housed in the library of SOCPA or the library of the Institute of Public Administration in Riyadh,
Saudi Arabia. Data for few missing annual reports were obtained from the microfilm archives of three leading Saudi Arabian newspapers: Al-Riyadh, Al-Jazeerah, and Okaz.

Unfortunately, the Saudi stock market does not have any database housing earnings announcement data. Instead, all firms listed on the Saudi stock exchange are required by law to publish their complete financial statements in at least two Saudi newspapers within three months after the fiscal year end. Accordingly, earnings announcement data were hand obtained from the microfilm archives of the financial sections of these newspapers. The archives of Saudi newspapers were carefully checked to determine the exact earnings announcement date. This is defined as the date on which the complete financial statements of a firm first appeared in any Saudi Arabian newspaper. In cases where the financial statements were published on a Thursday, which is the last day of the trading week in Saudi Arabia, the announcement week is assumed to be the following week.
Chapter Seven

Empirical Results

This Chapter presents the empirical results for the hypotheses outlined in Chapter Five. The Chapter first discusses the descriptive statistics of the main variables of interest. It then provides the empirical findings for each hypothesis. The Chapter concludes with a discussion and analysis of the sensitivity of the results to alternative measurement and specification issues.

Descriptive Statistics

Table 3 presents summary statistics for the main variables of interest. All accounting variables are stated on a per share basis and scaled by beginning of period price. As can be seen in Table 3, the mean (median) value for annual earnings per share as a percentage of beginning share price is 4.8% (5.3%). Almost 25% of the firms reported annual losses. The mean (median) value for net annual operating cash flows per share as a percentage of beginning share price is 15.7% (10.4%). Almost 21% of the firms reported negative annual operating cash flows.

Two-year earnings are lower than twice annual earnings and five-year earnings are greater than five times annual earnings. A similar pattern is observed for operating cash flows. Since the variables are scaled by beginning of period price, average reported values will tend to increase disproportionately over longer intervals due to the reinvestment of earnings and the influence of negative values.
Table 3
Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. of Observations</th>
<th>Mean</th>
<th>Std. Error</th>
<th>Std Deviation</th>
<th>Lower quartile</th>
<th>Median</th>
<th>Upper quartile</th>
<th>Percent Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>254</td>
<td>0.048</td>
<td>0.008</td>
<td>0.130</td>
<td>0.003</td>
<td>0.053</td>
<td>0.103</td>
<td>25.09</td>
</tr>
<tr>
<td>CA</td>
<td>254</td>
<td>0.016</td>
<td>0.032</td>
<td>0.517</td>
<td>-0.067</td>
<td>0.040</td>
<td>0.116</td>
<td>36.47</td>
</tr>
<tr>
<td>CFO</td>
<td>254</td>
<td>0.157</td>
<td>0.035</td>
<td>0.559</td>
<td>0.008</td>
<td>0.104</td>
<td>0.198</td>
<td>20.78</td>
</tr>
<tr>
<td>TA</td>
<td>254</td>
<td>0.152</td>
<td>0.038</td>
<td>0.611</td>
<td>-0.011</td>
<td>0.122</td>
<td>0.265</td>
<td>25.27</td>
</tr>
<tr>
<td>RET</td>
<td>254</td>
<td>0.046</td>
<td>0.019</td>
<td>0.299</td>
<td>-0.168</td>
<td>-0.022</td>
<td>0.243</td>
<td>53.14</td>
</tr>
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</table>

Panel A: Annual pooled observations

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. of Observations</th>
<th>Mean</th>
<th>Std. Error</th>
<th>Std Deviation</th>
<th>Lower quartile</th>
<th>Median</th>
<th>Upper quartile</th>
<th>Percent Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>100</td>
<td>0.079</td>
<td>0.021</td>
<td>0.209</td>
<td>-0.039</td>
<td>0.095</td>
<td>0.186</td>
<td>28.00</td>
</tr>
<tr>
<td>CA</td>
<td>100</td>
<td>0.043</td>
<td>0.060</td>
<td>0.598</td>
<td>-0.116</td>
<td>0.059</td>
<td>0.176</td>
<td>38.00</td>
</tr>
<tr>
<td>CFO</td>
<td>100</td>
<td>0.267</td>
<td>0.071</td>
<td>0.708</td>
<td>0.037</td>
<td>0.183</td>
<td>0.375</td>
<td>17.00</td>
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<tr>
<td>TA</td>
<td>100</td>
<td>0.292</td>
<td>0.073</td>
<td>0.727</td>
<td>0.007</td>
<td>0.255</td>
<td>0.456</td>
<td>24.00</td>
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<tr>
<td>RET</td>
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<td>0.178</td>
<td>0.043</td>
<td>0.435</td>
<td>-0.173</td>
<td>0.163</td>
<td>0.420</td>
<td>36.00</td>
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</table>

Panel B: Two-yearly pooled observations

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. of Observations</th>
<th>Mean</th>
<th>Std. Error</th>
<th>Std Deviation</th>
<th>Lower quartile</th>
<th>Median</th>
<th>Upper quartile</th>
<th>Percent Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>48</td>
<td>0.258</td>
<td>0.053</td>
<td>0.364</td>
<td>-0.012</td>
<td>0.285</td>
<td>0.543</td>
<td>23.07</td>
</tr>
<tr>
<td>CA</td>
<td>48</td>
<td>0.177</td>
<td>0.098</td>
<td>0.609</td>
<td>-0.137</td>
<td>0.178</td>
<td>0.495</td>
<td>30.76</td>
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<tr>
<td>CFO</td>
<td>48</td>
<td>0.612</td>
<td>0.112</td>
<td>0.778</td>
<td>0.128</td>
<td>0.569</td>
<td>0.945</td>
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<td>0.143</td>
<td>0.886</td>
<td>0.143</td>
<td>0.446</td>
<td>1.324</td>
<td>17.30</td>
</tr>
<tr>
<td>RET</td>
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<td>0.265</td>
<td>0.120</td>
<td>0.831</td>
<td>-0.300</td>
<td>0.140</td>
<td>0.920</td>
<td>30.76</td>
</tr>
</tbody>
</table>

Panel C: Five-yearly pooled observations

E: Earnings per share excluding extraordinary items, discontinued operations, and zakat and tax obligations scaled by beginning-of-period price.
CA: Current accruals per share scaled by beginning-of-period price.
CFO: Net cash from operations per share scaled by beginning-of-period price.
TA: Total accruals per share scaled by beginning-of-period price.
RET: Annual security returns.

The standard deviation of operating cash flows is consistently higher than that of earnings. However, over longer intervals, both the standard deviation and the proportion of negative realisations for operating cash flows decline relative to earnings. Dechow (1994) shows that this pattern can be explained by the fact that accruals off-set extreme negative and positive cash flows realisations associated with mismatched cash receipts and disbursements over short measurement intervals.

The mean (median) value for annual security returns is 4.6% (-2.2%) and is significantly different from zero. Interestingly, while over 53% of the observations had negative annual security returns, this percentage is quite similar to those reported in US studies. Nevertheless, aggregate security returns over longer intervals are positive and the proportion of negative return realisations drop significantly.
The impact of earnings announcements on security returns (H01)

Table 4 presents the time lag between the end of fiscal year and the week of the release of the annual report (earnings announcement week) for the sample firms. The average lag period in weeks is 11.50, 10.73, 10.63, 10.80, and 7.10 during 1995, 1996, 1997, 1998, and 1999, respectively. While it is not clear why there has been a sharp drop in the average lag period during 1999, the average time lag in each sample year is below the three-month rule imposed by SOCPA. By the end of week 4, 13% of firms released their annual report, and by the end of week 13, 70% of the firms released their annual report.

Table 4

Number of Weeks between Fiscal Year-End and Annual Report Release Date

<table>
<thead>
<tr>
<th>Number of Weeks</th>
<th>1995</th>
<th>1996</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>Total</th>
<th>Cumulative %</th>
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</thead>
<tbody>
<tr>
<td>4 or less than 4</td>
<td>5</td>
<td>4</td>
<td>7</td>
<td>1</td>
<td>16</td>
<td>33</td>
<td>13</td>
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<td>15</td>
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<td>4</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>13</td>
<td>81</td>
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<tr>
<td>More than 15</td>
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<td>48</td>
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79
As can be seen in Table 5, the most frequent firm year-end in Saudi is December in that it represents approximately 83% of the sample. During the sample period, there has not been any year-end change for any firm. The most frequent annual report release month is March, which accounted for 27% of the sample, and the months of January, February, and March, combined, accounted for 63%.

Table 5

Distribution of Financial Statement and Announcements Dates

<table>
<thead>
<tr>
<th>Month</th>
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<th>Times Earnings Reports Were Announced in Each Month</th>
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Figure 1 plots the average weekly wealth indices for three portfolios constructed from all firms and all years. The first portfolio includes all 256 observations. The positive portfolio includes 191 observations, all of which had positive reported earnings.
The negative portfolio includes 65 observations, all of which had negative reported earnings.

Figure 1 - Wealth Index for Various Portfolios (Earnings Levels)

Figure 1 shows a marked positive association between the sign of reported earnings and the sign of the wealth index. Weekly Chi-square statistics for two-by-two classification by sign of reported annual earnings and sign of wealth index show that it is unlikely that there is no relationship between the two signs in the majority of the weeks up to that of annual report announcement. These statistics are especially strong for the total sample portfolio and for the positive earnings portfolio. The Chi-square statistics for the negative earnings portfolio are only significant during 32 weekly periods.

Similar to the US evidence reported in Ball and Brown (1968) and the Australian evidence reported in Brown (1970), Figure 1 shows that most of the information
contained in reported earnings is anticipated by the Saudi market before the annual report is released in that the actual earnings number does not appear to cause any unusual jumps in the wealth index during the announcement week. The upward and downward drifts begin at least 52 weeks before the annual report is released. This evidence suggests not only that the Saudi market begins to anticipate reported earnings 52 weeks before the announcement week but also that it continues to do so with increasing success.

Consistent with international evidence, the upward drift for the positive earnings portfolio continues for approximately 10 weeks after the announcement week. Surprisingly, there does not appear to be any post-earnings announcement drift for the negative earnings portfolio. If anything, it appears that the market goes through a period of correction for potential over-reaction.

Table 6 presents the weekly wealth index values for three portfolios shown in Figure 1. The average annual wealth index value for the total sample increased by 7.17% during the 52 weeks leading to the annual report release week. The average annual wealth index value for the positive (negative) earnings portfolio increased (decreased) by 12.03% (9.32%) during the 52 weeks leading to the annual report release date.

Only 11% (1%) of the increase (decrease) in the wealth index for the positive (negative) earnings portfolio took place during the 4 weeks leading to the annual report release date. Consistent with international evidence in the US and Australia, this finding suggests that annual earnings reports are not providing timely information to Saudi market participants since most of the information contained in earnings have trickled into the market throughout the year.
The aforementioned analysis focuses on the examination of the association between the sign of reported earnings and the sign of the wealth index for different portfolios. In Figure 2, the focus of the examination is on the association between the sign of reported earnings changes and the sign of the wealth index. Figure 2 plots the average weekly wealth indices for three portfolios constructed from all firms and all years (4 years). The first portfolio includes all 205 observations. The positive portfolio includes 109 observations, all of which had positive reported earnings changes. The

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negative portfolio includes 96 observations, all of which had negative reported earnings changes.

Figure 2 shows a marked positive association between the sign of reported earnings changes and the sign of the wealth index for the total sample portfolio and the positive earnings changes portfolio only. Weekly Chi-square statistics for two-by-two classification by sign of reported annual earnings changes and sign of wealth index show that it is unlikely that there is no relationship between the two signs in the majority of the weeks up to that of annual report announcement.

With respect to the negative earnings changes portfolio, the results are very weak and for the most part insignificant. The Chi-square statistics for the negative earnings portfolio are only marginally significant during 8 weekly periods. In a way, Hayns

84
(1995) and Easton and Harris (1991) provide U.S. evidence consistent with our findings. One explanation for the weak evidence of negative earnings changes portfolio is that Saudi investors do not believe that negative earnings changes will persist especially since the Saudi Government has, on many occasions, provided subsidies and other forms of support to losing Saudi firms. Nevertheless, this issue will be further investigated in $H_5$. 

The impact of earnings announcements on trading volume ($H_2$)

Figure 3 shows the average volume across all observations for each week during the 7-week report period (3 weeks before and 3 weeks after the report release week as well as the report release week itself).

![Figure 3 - Volume Analysis](image)

The average trading volume during the non-report release period is 0.156% and the average volume during the week of the release of the annual report is 0.186%, which is 19.23% larger than that during the non-report release period and it is the largest during
the reporting period. This finding clearly shows that Saudi investors do shift their portfolio positions at the time of the annual report release week and is consistent with the contention that Saudi annual reports are value relevant. Interestingly, Table 7 also shows that the trading volume tends to also peak around the release of half-yearly financial reports.

Table 7

Average Trading Volume of all Firms

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The above analysis is further extended by the examining the trading volume of profit reporting firms separately from that of loss reporting firms. Effectively, the calculation of relative volume (V) is replicated for each group. The average trading volume of profit (loss) firms during the reporting period is benchmarked on the average trading volume of profit (loss) reporting firms during non-reporting period.

Figure 4 shows the average volume across all profit reporting observations for each week during the 7-week report period (3 weeks before and 3 weeks after the report release week as well as the report release week itself). Table 8 provides the data used to extract Figure 4.

The average trading volume for profit reporting firms during the non-report release period is 0.13% which is lower than that for the total sample. The average volume during the week of the release of the annual report of profit firms is 0.175% which is also lower than that for the total sample but is 34.6% larger than that during the
non-report release period and it is the largest during the reporting period. Consistent with the evidence reported for the total sample, this finding clearly shows that Saudi investors do shift their portfolio positions at the time of the annual report release week of profit reporting firms and is consistent with the contention that Saudi annual reports are value relevant.

Figure 5 shows the average volume across all loss reporting observations for each week during the 7-week report period (3 weeks before and 3 weeks after the report release week as well as the report release week itself). Table 8 provides the data used to extract Figure 5.

![Figure 5 - Volume Analysis (Loss Firms)](image)

The average trading volume for loss reporting firms during the non-report release period is 0.23% which is significantly higher than that for the total sample and for the profit group. The average volume during the week of the release of the annual report of loss reporting firms is 0.22% which is higher than that for the total sample and for the profit group but is 5% lower than that during the non-report release period. Interestingly,
all of the weekly trading volume averages during the reporting period are lower than that during the non-report release period.

This evidence stands in contrast to that reported for the total sample and for the profit group and clearly shows that Saudi investors do not shift their portfolio positions at the time of the annual report release week of loss reporting firms. Consistent with Haynes (1995), this finding suggests that Saudi investors perceive reported losses as temporary.

Table 8
Average Trading Volume of Profit and Loss Reporting Firms

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<td>0.0015</td>
<td>12 0.0020</td>
<td>0.0013</td>
</tr>
<tr>
<td>-19 0.0037</td>
<td>0.0014</td>
<td>13 0.0002</td>
<td>0.0014</td>
</tr>
</tbody>
</table>
The relationship between earnings levels, earnings changes and annual security returns (H₀3)

The left hand side of panels A, B, and C of Table 9 presents the empirical results for the regressions outlined in equations 7, 8, and 9, respectively, for the total sample. To ensure that the inferences made are not affected by any inefficiency caused by heteroscedasticity, all t-statistics are calculated after correcting for the heteroscedasticity in the manner described by White (1980).

The adjusted R-squared from the pooled regression based on the levels model (equation 7) is 17.9% compared to the adjusted R-squared of 1.5% from the equivalent regression for the changes model (equation 8). For the year-by-year regressions, the adjusted R-squared from the levels model is a great deal higher than the adjusted R-squared from the changes model in 1996, 1997, and 1999. During 1998, both earnings levels and earnings changes are not significantly different from zero at conventional levels.

The multi-variate analysis shows a similar picture. The regression using the pooled sample yields an estimated coefficient for earnings levels of 1.31 (significant at the 1% level) and earnings changes of 0.302 (insignificant at conventional levels). Similar to the uni-variate regressions' findings, the yearly coefficients for earnings levels are also significant in every year except of 1998. On the other hand, none of the yearly coefficients for earnings changes is significant at the 5% level. Partial F-statistics show that when earnings changes are added to the levels regressions, the change in the R-squared is significant for the pooled sample but is insignificant in three out of the four years.
Table 9

Regression of Annual Security Returns on Earnings and Earnings Changes

Levels Model: \( \text{Ret}_{it} = \alpha + \beta_1 (E_i/t_1 / P_{t-1}) + \varepsilon_{it} \)

Changes Model: \( \text{Ret}_{it} = \alpha + \beta_1 (\Delta E_i/t_1 / P_{t-1}) + \varepsilon_{it} \)

Levels and Changes Model: \( \text{Ret}_{it} = \alpha + \beta_1 (E_i/t_1 / P_{t-1}) + \beta_2 (\Delta E_i/t_1 / P_{t-1}) + \varepsilon_{it} \)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Sample</th>
<th>Total Sample less Electricity Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a</td>
<td>B1</td>
</tr>
<tr>
<td>Pooled</td>
<td>-0.001 **</td>
<td>0.980 **</td>
</tr>
<tr>
<td>1995</td>
<td>-0.144 ***</td>
<td>0.681 **</td>
</tr>
<tr>
<td>1996</td>
<td>0.011 **</td>
<td>1.360 **</td>
</tr>
<tr>
<td>1997</td>
<td>0.175 **</td>
<td>1.001 **</td>
</tr>
<tr>
<td>1998</td>
<td>-0.200 ***</td>
<td>0.189 *</td>
</tr>
<tr>
<td>1999</td>
<td>0.144 **</td>
<td>2.164 ***</td>
</tr>
</tbody>
</table>

Panel A: Levels Model

Panel B: Changes Model

Panel C: Levels & Changes Model

WHITE ** White-based significant at the 1% level

** White-based significant at the 5% level

* White-based significant at the 10% level

E Earnings per share scaled by beginning-of-period price

\( \Delta E \) Changes in earnings per share scaled by beginning-of-period price

Ret Annual security returns

The right hand side of Panels A, B, and C of Table 9 presents the empirical results for the same regressions after excluding all Saudi Electricity companies. These observations are excluded for two reasons. First, during December 1998, the Saudi government outlined a plan to merge all Electricity companies. The announcement of this plan has positively affected the raw security returns of these firms during 1998 and 1999. Second, the Saudi government has consistently provided generous subsidies to all electricity companies and especially during periods of reported losses. During 1998, all
of the electricity companies reported significant losses yet their raw security returns were positive (even after adjusting for market returns) possibly reflecting a view that the reported losses will be covered by governmental subsidies.

The adjusted R-squared from the pooled regression based on the levels model is 24.9% compared to the adjusted R-squared of 17.9% from the equivalent regression for the total sample. The adjusted R-squared from the pooled regression based on the changes model is 1.5%, which is unchanged from the equivalent regression for the total sample. For the year-by-year regressions, the adjusted R-squared from the levels model is a great deal higher than the adjusted R-squared from the changes model in each year, including 1998. The multi-variate analysis shows a similar picture. The regression using the pooled sample yields an estimated coefficient for earnings levels of 1.94 (significant at the 1% level) and earnings changes of 0.156 (insignificant at conventional levels).

Similar to the uni-variate regressions’ findings, the yearly coefficients for earnings levels are also significant in every year including 1998. Partial F-statistics show that when earnings changes are added to the levels regressions, the change in the R-squared is significant for the pooled sample but is insignificant in three out of the four years. Partial rank correlations also support this conclusion.

The aforementioned findings are consistent with those reported in the U.S. (see for example, Easton and Harris, 1991). While observations concerning the magnitude of the association coefficients ($\beta_1, \beta_2$) are beyond the scope of this thesis, some discussion

---

15 We conduct the same empirical test after controlling the effect of the scale variable $\{1/P_{t+1}\}$ by including it as an additional explanatory variable. In fact, the findings do not reveal any major differences compared to the original tests. For example, the regression using the pooled sample yields an estimated coefficient for earnings level of 0.965 (0.980 for the original regression) and earnings changes of 0.780 (0.756 for the original regression).
seems appropriate given the extensive literature on the slope coefficient from various returns and earnings metrics. Note that the reported coefficients for earnings levels in Panel A are 0.98 and 1.261 for the total sample and for the reduced sample, respectively. Interestingly, these coefficients are not much different from those reported using a US sample of firms. For example, Easton and Harris (1991) report a pooled coefficient of 0.82 and mean coefficient of 1.02 using a sample of from the 1968-1986 period. These coefficients suggest that a dollar of earnings evidently is associated with about one dollar of change in value in a US and in a Saudi context. While the reported coefficients in Table 9 suggest that reported earnings by Saudi firms are value relevant, the closeness of their magnitude to those reported in the U.S. indicates that Saudi investors do not discount earnings figures simply because they are based on GAAPs that do not align perfectly with Islamic teachings.

*The impact of the measurement interval on the relationship between earnings levels, earnings changes and security returns of Saudi firms (H04)*

Table 10 presents the empirical results for the regression of contemporaneous returns on earnings levels, earnings changes, and both earnings levels and changes for two-year pooled data and five-year pooled data. That is, Table 10 provides the estimation results for equations (7), (8), and (9) for different measurement intervals.

In light of the observed influence of the Electricity group on the reported findings of the annual regressions, Table 10 provides the empirical results for both the total sample (left side) and the total sample excluding the Electricity group—dubbed hereafter, the reduced sample—(right side). However, the forthcoming discussion of the estimates reported in Table 10 focuses solely on those for reduced sample.
Table 10
Regression of Security Returns on Earnings and Earnings Changes
(Two-Year and Five-Year Analysis)

Levels Model: \( \text{Ret}_{it} = \alpha + \beta_1 \left( \frac{E_{it}}{P_{it-1}} \right) + \epsilon_{it} \)

Changes Model: \( \text{Ret}_{it} = \alpha + \beta_1 \left( \frac{\Delta E_{it}}{P_{it-1}} \right) + \epsilon_{it} \)

Levels and Changes Model: \( \text{Ret}_{it} = \alpha + \beta_1 \left( \frac{E_{it}}{P_{it-1}} \right) + \beta_2 \left( \frac{\Delta E_{it}}{P_{it-1}} \right) + \epsilon_{it} \)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Sample</th>
<th>Total Sample less Electricity Companies</th>
<th>Year</th>
<th>Total Sample</th>
<th>Total Sample less Electricity Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( a )</td>
<td>( b_1 )</td>
<td>( b_2 )</td>
<td>Adj R²</td>
<td>N</td>
</tr>
<tr>
<td>2-yearly-Pooled</td>
<td>0.073 **</td>
<td>1.320 ***</td>
<td>0.359 99</td>
<td>2-yearly-Pooled</td>
<td>0.056 **</td>
</tr>
<tr>
<td>1996-1997</td>
<td>0.170 ***</td>
<td>1.324 ***</td>
<td>0.451 51</td>
<td>1996-1997</td>
<td>0.049 **</td>
</tr>
<tr>
<td>1998-1999</td>
<td>-0.019</td>
<td>0.988</td>
<td>0.161 47</td>
<td>1998-1999</td>
<td>-0.166 ***</td>
</tr>
<tr>
<td>5-yearly</td>
<td>-0.153</td>
<td>1.737 ***</td>
<td>0.509 47</td>
<td>5-yearly</td>
<td>-0.391 ***</td>
</tr>
</tbody>
</table>

Panel A: Levels Model

Panel B: Changes Model

Panel C: Levels Model & Changes Model

*** White-based significant at the 1% level
** White-based significant at the 5% level
* White-based significant at the 10% level

\( E \) Earnings per share scaled by beginning-of-period price
\( \Delta E \) Changes in Earnings per share scaled by beginning-of-period price

Panel A shows that the R-squared obtained from the pooled earnings level regression for the two-year return interval is 63%. For the two samples of two-year return intervals, the average value of the R-squared statistics is 60.2%. These R-squared statistics are significantly larger than the R-squared obtained for the pooled annual level regression (24.2%) and the mean R-squared for the individual annual levels regressions (42%). Spearman rank correlations produce similar evidence. Clearly, these statistics suggest that doubling the measurement interval significantly improve the association between earnings levels and security returns.
Panel B shows, on average, no improvement in the association between security returns and earnings changes as the measurement interval increases. Panel C further confirms the evidence conveyed in Panels A and B. Consistent with the results for the annual regressions, partial F-statistics show that when earnings changes are added to the level regressions, the change in the R-squared is insignificant.

Panel A further indicates that the R-squared obtained from the pooled earnings level regression for the five-year return interval is 73%, which is significantly larger than the R-squared obtained for the pooled two-year level regression (63%). Spearman rank correlations produce similar evidence. Panel B shows no improvement in the association between security returns and earnings changes as the measurement interval increases. Panel C further confirms the evidence conveyed in Panels A and B. Consistent with the results for the annual and the two-year regressions, partial F-statistics show that when earnings changes are added to the level regressions, the change in the R-squared is insignificant. 16

Clearly, these statistics suggest that increasing the measurement interval significantly improve the association between earnings levels and security returns of Saudi firms. This evidence is consistent with Easton, Harris, and Ohlson (1992)'s

---

16 We check for the impact of dirty surplus items in the owner equity section of Saudi companies by reviewing all the hard copies of the financial statements of our sample during the period 1995-1999. Indeed, we find that the owner equity section of Saudi firms do not include dirty surplus items that can violate the clean surplus assumption. In other words, Saudi firms account for dirty surplus items in their income statements. This finding reveals that net income (earnings after Zakat and income tax) is identical to comprehensive income of all our sample firms. Furthermore, we conduct the same empirical tests after substituting the “earning before Zakat and income tax” with “comprehensive income” to examine the affect of using “comprehensive income” as the earnings variables. The empirical results were identical to these reported using earnings before Zakat and income tax as the proxy for earnings.
proposition that "errors" in aggregate earnings are likely to become less important for longer periods of aggregation.

All of the reported R-squared statistics for the level regressions are significantly higher than those reported using U.S. samples. For example, Easton, Harris, and Ohlson (1992) report an average R-squared value of 15.4% for the two-year level regressions compared to 60.2% in this thesis and an average R-squared value of 33% for the five-year level regressions compared to 73% in this thesis.

While observations concerning the magnitude of the association coefficients for the levels regressions ($\beta_1$) are beyond the scope of this thesis, it is worth noting that $\beta_1$ increases steadily with the length of the measurement interval. For a one-year interval, $\beta_1$ for the pooled level regression is 1.26 (see Panel A of Table 9). For a two-year interval, $\beta_1$ for the pooled level regression is 2.06. For a five-year interval, $\beta_1$ for the pooled level regression is 2.25. The observed steady increase in $\beta_1$ is consistent with that reported in Easton, Harris, and Ohlson (1992).

_The differential valuation implications of positive and negative earnings on the relationship between earnings and security returns of Saudi firms (H05)_

Table 11 presents a breakdown of the annual frequency and percentage of loss reporting firms in Saudi during the sample period 1995-1999. It is clear that the incidence of loss is quite common in Saudi in that it ranges from 19.2% in 1997 to 29.1% in 1999.
Table 11
Frequency of Losses

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Firms</th>
<th>No. of loss</th>
<th>% of loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>52</td>
<td>12</td>
<td>23.00</td>
</tr>
<tr>
<td>1996</td>
<td>52</td>
<td>14</td>
<td>26.90</td>
</tr>
<tr>
<td>1997</td>
<td>52</td>
<td>10</td>
<td>19.20</td>
</tr>
<tr>
<td>1998</td>
<td>52</td>
<td>14</td>
<td>26.90</td>
</tr>
<tr>
<td>1999</td>
<td>48</td>
<td>14</td>
<td>29.10</td>
</tr>
<tr>
<td>All years</td>
<td>256</td>
<td>64</td>
<td>25.00</td>
</tr>
</tbody>
</table>

As can be seen in Table 12, the R-squared statistic for the earnings level and the earnings change model (equation 9) for all firms is 22.6%. When loss-reporting firms are excluded, the R-squared statistic increases by 27% to 28.7%. The R-squared statistic based exclusively on loss-reporting firms is only 3.5%. This pattern is consistent with that reported in a U.S. context (see for example Hayn, 1995) and suggests that losses are perceived by Saudi investors as temporary. Hayn (1995) notes that losses are likely to be considered temporary since shareholders can always liquidate the firm rather than suffer from indefinite losses.
Table 12

R-Squared Statistics based on Regression of Security Returns on Earnings and Earnings Changes 
(Profit and Loss Analysis)

\[ R_{it} = \alpha + \beta_1 \left( \frac{E_{it}}{P_{t-1}} \right) + \beta_2 \left( \frac{\Delta E_{it}}{P_{t-1}} \right) + \varepsilon_{it} \]

<table>
<thead>
<tr>
<th>Reported Earnings</th>
<th>Changes in Earnings</th>
<th>N</th>
<th>Adjusted R-Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profit</td>
<td>Positive and Negative</td>
<td>152</td>
<td>28.70%</td>
</tr>
<tr>
<td>Profit</td>
<td>Positive only</td>
<td>88</td>
<td>29.60%</td>
</tr>
<tr>
<td>Profit</td>
<td>Negative only</td>
<td>64</td>
<td>20.10%</td>
</tr>
<tr>
<td>Loss</td>
<td>Positive and Negative</td>
<td>50</td>
<td>3.50%</td>
</tr>
<tr>
<td>Loss</td>
<td>Positive only</td>
<td>19</td>
<td>-8.00%</td>
</tr>
<tr>
<td>Loss</td>
<td>Negative only</td>
<td>31</td>
<td>30.90%</td>
</tr>
<tr>
<td>All Observations</td>
<td></td>
<td>202</td>
<td>22.60%</td>
</tr>
</tbody>
</table>

\( E \) Earnings per share scaled by beginning-of-period price
\( \Delta E \) Changes in Earnings per share scaled by beginning-of-period price
\( \text{Ret} \) Annual Security Returns

However, the above argument suggests that losses are likely to be recurring. Hayn (1995) uses a time-series analysis to show a constant decline in R-squared statistics as the frequency of losses for a given firm increases. Given the limited data in Saudi context, time series analysis is not feasible. Accordingly, we examine this issue by observing the R-squared statistics for four different sub-groups constructed on the basis of the sign of reported earnings as well as the sign of the reported change in earnings.

As can be seen in Table 12, for firms that report a profit as well as a positive increase in earnings, the R-squared statistic increases to 29.6%. For firms that report a profit accompanied by a decrease in earnings, the R-squared statistic drops to 20.1%.
Interestingly, for firms that report a loss and a decrease in earnings (a much stronger ground to the R-squared statistics increases to 30.9%.

While the above results provide a mixed evidence with respect to the validity of the liquidation option argument, the reported findings have to be interpreted with caution due to the following reasons. First, the sample size is quite small. Second, a number of the loss-reporting firms are partially owned by the Saudi government. Finally, a number of loss-reporting firms receive governmental subsidies.

The differential valuation implication of the cash and accrual components of earnings of Saudi firms (H06)

The left hand side of Table 13 presents the empirical results for the regressions outlined in equations 10, 11, and 12, respectively, for the total sample. To ensure that the inferences made are not affected by any inefficiency caused by heteroscedasticity, all t-statistics are calculated after correcting for the heteroscedasticity in the manner described by White (1980).

The adjusted R-squared from the pooled regression based on the earnings level model (equation 10) is 17.9% compared to the adjusted R-squared of 5.8% and -.04% from the equivalent regression for operating cash flows (equation 11) and net cash flows (equation 12), respectively. Similarly, the coefficient β1 from the pooled regression based on the earnings level is 0.98 (significant at the 1% level) compared to the coefficients of 0.13 and 0.009 (both insignificant at conventional levels) for operating cash flows and net cash flows, respectively. Rank correlations yield equivalent findings.
Table 13
Tests Comparing the Association of Annual Earnings, Annual Cash Flow from Operations, and Net Annual Cash Flows with Annual Stock Returns

\[ R_{\text{E}}^{i,t} = \alpha + \beta_1 \frac{(E_{i,t} / P_{t-1})}{E_{i,t}} + \varepsilon_{i,t} \]
\[ R_{\text{CFO}}^{i,t} = \alpha + \beta_1 \frac{(\text{CFO}_{i,t} / P_{t-1})}{E_{i,t}} + \varepsilon_{i,t} \]
\[ R_{\text{NCF}}^{i,t} = \alpha + \beta_1 \frac{(\text{NCF}_{i,t} / P_{t-1})}{E_{i,t}} + \varepsilon_{i,t} \]

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th>Total Sample Excluding Electricity Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>CFO</td>
</tr>
<tr>
<td>Intercept</td>
<td>-0.001</td>
<td>0.026</td>
</tr>
<tr>
<td>Coefficient</td>
<td>0.980</td>
<td>***</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>17.90%</td>
<td>5.80%</td>
</tr>
</tbody>
</table>

** *** White-based significant at the 1% level
** White-based significant at the 5% level
* White-based significant at the 10% level
E Earnings per share scaled by beginning-of-period price
CFO Operating cash flows per share scaled by beginning-of-period price
NCF Net cash flows scaled by beginning-of-period price
Ret Annual security returns

The right hand side of Table 13 presents the empirical results for the regressions outlined in equations 10, 11, and 12, respectively, for the reduced sample after removing the electricity group. These results are consistent with those reported for the total sample. The adjusted R-squared from the pooled regression based on the earnings level model (equation 10) is 24.2% compared to the adjusted R-squared of 9.5% and -0.4% from the equivalent regression for operating cash flows and net cash flows, respectively.

Similarly, the coefficient \( \beta_1 \) from the pooled regression based on the earnings level is 1.26 (significant at the 1% level) compared to the coefficients of 0.18 and 0.008 (both insignificant at conventional levels) for operating cash flows and net cash flows, respectively.
In sum, these results show that earnings has a stronger association with security returns of Saudi firms than operating cash flows or net cash flows over annual intervals. They also indicate that reported earnings provide a better summary measure of firm performance than cash flows-based measures, in spite of the fact that the accounting principles used to generate earnings are not fully compatible with Islamic teachings.

Dechow (1994) shows that cash flows have times series properties consistent with them suffering from matching problems. She argues that if cash flows suffer from temporary mismatching of cash receipts and payments, then this suggests that changes in cash flows will exhibit negative autocorrelation (a large cash outflow this period is more likely to be followed by a large cash inflow next period). That is, changes in cash flows are likely to contain temporary components that are reversed over time. Dechow (1994) also argues that if accruals are used to match cash receipts and payments associated with the same economic event, then this suggest that changes in accruals will exhibit negative autocorrelation and accruals will be negatively correlated with changes in cash flows.

Table 14 shows that Dechow’s predictions are valid in Saudi context. Panel A of Table 14 presents firm specific first order annual autocorrelations for each performance measure: earnings, cash flow from operation, aggregate accruals, and current accruals. The results indicate that changes in earnings exhibit negative autocorrelation of $-0.092$. Changes in operating cash flow exhibit larger negative correlation of $-0.583$. The changes in aggregate accruals and current accruals also exhibit negative autocorrelation of $-0.109$ and $-0.539$, respectively. These results confirm that cash flows contain larger temporary components than earnings. Panel B of Table 14 also shows that the correlation between annual operating cash flows and annual current accruals is $-0.792$ and the
correlation between annual operating cash flows and annual earnings is 0.459. In sum, these results indicate that earnings is a superior measure of performance over short intervals because cash flows contain temporary components that are reversed over time and that accruals are used to match cash receipts and payments associated with the same economic event.

**Table 14**

Annual First Order Autocorrelation Coefficients and Pearson Correlations for Earnings (E), Operating Cash Flows (CFO), and Current Accruals (CA)

<table>
<thead>
<tr>
<th>Panel A: Annual first-order autocorrelation coefficient (n=152)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Variables</strong></td>
</tr>
<tr>
<td>Ch_ E</td>
</tr>
<tr>
<td>Ch_ CFO</td>
</tr>
<tr>
<td>Ch_ CA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B: Pearson Correlations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Corr (CFO, CA)</td>
</tr>
<tr>
<td>Annual Corr (CFO, E)</td>
</tr>
</tbody>
</table>

The impact of the measurement interval on the relationship between the cash and accrual components of earnings and security returns of Saudi firms (H4.7)

Table 15 presents the empirical results for the regressions outlined in Equations 10, 11, and 12 for both the total sample as well as the reduced sample after excluding the electricity group.
Table 15

Tests Comparing the Association of Aggregate Earnings, Aggregate Cash Flow from Operations, and Aggregate Net Cash Flows with Stock Returns Over 2 and 5-Year Intervals

\[
\begin{align*}
\text{Ret}_{it} = \alpha + \beta_1 \left( \frac{E_{i,t}}{P_{i,t-1}} \right) + \varepsilon_{i,t} \\
\text{Ret}_{it} = \alpha + \beta_1 \left( \frac{\text{CFO}_{i,t}}{P_{i,t-1}} \right) + \varepsilon_{i,t} \\
\text{Ret}_{it} = \alpha + \beta_1 \left( \frac{\text{NCF}_{i,t}}{P_{i,t-1}} \right) + \varepsilon_{i,t}
\end{align*}
\]

<table>
<thead>
<tr>
<th>Total Sample</th>
<th>Total Sample Excluding Electricity Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>CFO</td>
</tr>
<tr>
<td><strong>Panel A: Two-Year Analysis</strong></td>
<td><strong>Panel A: Two-Year Analysis</strong></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.073***</td>
</tr>
<tr>
<td>Coefficient</td>
<td>1.320***</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>39.69%</td>
</tr>
<tr>
<td>R² (\text{CFO}/\text{E} = 0.48)</td>
<td>R² (\text{NCF}/\text{E} = 0.00)</td>
</tr>
<tr>
<td>Intercept</td>
<td>-0.153</td>
</tr>
<tr>
<td>Coefficient</td>
<td>1.737***</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>56.90%</td>
</tr>
<tr>
<td>R² (\text{CFO}/\text{E} = 0.57)</td>
<td>R² (\text{NCF}/\text{E} = 0.06)</td>
</tr>
</tbody>
</table>

*** White-based significant at the 1% level  
** White-based significant at the 5% level  
* White-based significant at the 10% level  
\(E\) Earnings per share scaled by beginning-of-period price  
\(\text{CFO}\) Operating cash flows per share scaled by beginning-of-period price  
\(\text{NCF}\) Net cash flows scaled by beginning-of-period price  
\(\text{Ret}\) Security returns

Compared to the empirical results for annual intervals (Table 14), it is clear that the association between returns and earnings and cash flow measures improves as the measurement interval increases. However, the improvement in the association for operating cash flows is higher than that for earnings. Whereas the R-squared values for earnings for the total sample are 17.9%, 39.6% and 56.9% for annual, 2-year, and 5 year regressions, respectively, the equivalent values for operating cash flows are 5.8%, 19%, and 32.7%. Similar evidence can be observed for the reduced sample. That is, it appears that the matching problems of cash flows are more severe relative to those of earnings.
during shorter periods and that both earnings and cash flows measures suffer less from mismatching as the measurement interval increases.

Table 16

Pearson Correlations for Earnings (E), Operating Cash Flows (CFO), and Current Accruals (CA) over 1, 2, 4, and 5 Year Intervals

<table>
<thead>
<tr>
<th></th>
<th>Corr (CFO, CA)</th>
<th>Corr (CFO, E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual</td>
<td>-0.792</td>
<td>0.459</td>
</tr>
<tr>
<td>2 years</td>
<td>-0.799</td>
<td>0.605</td>
</tr>
<tr>
<td>4 years</td>
<td>-0.466</td>
<td>0.751</td>
</tr>
<tr>
<td>5 years</td>
<td>-0.366</td>
<td>0.727</td>
</tr>
</tbody>
</table>

Table 16 confirms the empirical results shown in Table 15. The negative correlation between operating cash flows and current accruals decreases as the measurement period increases. That is, accruals' role in matching cash receipts and payments associated with the same economic event declines as the measurement interval increases. Consistent with that, Table 16 shows that the positive correlation between earnings and cash flows improves as the measurement interval increases. Spearman rank correlation statistics yield similar findings.

The impact of the magnitude of accruals on the relationship between earnings and security returns (H₄δ)
Table 17 provides the empirical results of tests that aim to determine whether net cash flows will be a relatively poor measure of firm performance when absolute aggregate accruals are large (that is, when earnings and cash flows differ by the greatest magnitude). Spearman rank correlations are presented rather than regression coefficients due to small sample size at the quintile level, especially for longer measurement intervals.

Table 17

Spearman Rank Correlations of Earnings (E) and of Net Cash Flows (NCF) with Security Returns over 1, 2, and 5 Year Intervals Across Two Quintiles, where Quintiles are Formed Based on the Absolute Value of Aggregate Accruals

[Quintile 1 (2) contains firm-observations where the absolute value of aggregate accruals is below (above or equal to) the median of the absolute value of aggregate accruals for the total sample]

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Panel A: Annual pooled data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>0.464***</td>
<td>0.290**</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>0.499***</td>
<td>0.017</td>
</tr>
<tr>
<td><strong>Panel B: Two-year pooled data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>0.620***</td>
<td>0.264</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>0.747***</td>
<td>0.024</td>
</tr>
<tr>
<td><strong>Panel C: Five-year pooled data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>0.471**</td>
<td>0.289</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>0.717***</td>
<td>0.059</td>
</tr>
</tbody>
</table>

*** significant at the 1% level
** significant at the 5% level
* significant at the 10% level
E Earnings per share scaled by beginning-of-period price
NCF Net cash flows scaled by beginning-of-period price
Ret Security returns

As can be seen in Panel A of Table 17, for the subset of annual observations where absolute accruals is below the median (Quintile 1) and earnings and net cash flows are most similar, the spearman rank correlation between earnings and security returns is
0.46 and between net cash flows and security returns is 0.29. While these statistics are not exactly similar, they are still quite convincing, especially since Quintile 1 includes all observations that fall below the median of the absolute aggregate accruals for the total sample. When absolute aggregate accruals is equal to or above the median (Quintile 2), the spearman rank correlation between earnings and security returns is 0.50 and between net cash flows and security returns is –0.02. These findings confirm the prediction that when earnings and cash flows differ by the greatest magnitude, earnings has a higher association with security returns. The results in Panel B and Panel C for the two-year and five-year intervals, respectively convey a similar message.

These results do not demonstrate that cash flows are a poor measure of firm performance per se. Rather, as Dechow (1994, p. 27) states, “they simply show that when the magnitude of accruals increases, indicating that the firm has large changes in its operating, investment, and financing activities, cash flows suffer more severely from timing and matching problems.”
Chapter Eight

Conclusion

This thesis provides the first empirical evidence on the value relevance of earnings and earnings components in the leading Islamic-code country, Saudi Arabia. Saudi Arabia’s political, social, legal, economic and financial systems are formally based on Islamic teachings. However, the accounting principles that are generally accepted in Saudi are based on those that have developed in common-law or code-law countries, and which are inconsistent with Islamic teachings. Saudi market participants are devout Muslims and are known for their adherence to Islamic principles in conducting their financial transactions. The thesis argues that the uniqueness of Saudi institutions, including the predominance of Islam, places demands on accounting information that are distinct from those of code-law or common-law countries. This, in turn, affects the value relevance of accounting information in Saudi.

The focus of the thesis is on an examination of the Saudi market reaction to the release of accounting reports, and the association between reported earnings and earnings components with the security returns of Saudi firms. Using a sample from the period 1995-1999, the empirical evidence suggests that inconsistencies between Islamic principles and the adopted accounting principles in Saudi do not affect the value relevance of accounting information in Saudi.
Most of the empirical tests provide evidence consistent with, and comparable to, those reported in common-law and code-law countries in general, and with those in the United States in particular. In combination the results indicate that: (1) earnings provide a good summary of the information that affected security prices in Saudi during the period in which earnings were measured; (2) Saudi investors recognise the differential valuation implications of earnings components; (3) Saudi investors appreciate the differential valuation implications of losses and profits. Interestingly, most of the reported statistics (association coefficients, adjusted R-Squared) are comparable to those reported in many American studies. This similarity can be attributed to the huge influence of the United States on economic activities in Saudi; the United States is the first trade-partner with Saudi Arabia. This can also be linked to the role of the United States in developing accounting education in Saudi. Indeed, many Saudi professionals are educated and trained in the States.

The results indicate that Saudi investors do not discount the value relevance of accounting information in Saudi, in spite of its inconsistency with Islamic principles and in spite of the multiple reporting systems in Saudi. One explanation for this unexpected result is found in the role of outside expertise; Saudi investors are benefiting from outside expertise in making financial decisions. In turn, foreign experts usually ignore or pay little attention to Islamic rules. Another explanation is in the influence of those Saudi investors who pay little or no attention to Islamic doctrines in their investment decisions.

In the motivation section of this thesis I discuss the ways that Saudi market participants might be considered, on average, inexperienced. However, the empirical
evidence indicates that there are a number of sophisticated investors who function on the margins, even though the level of sophistication appears to be generally low in Saudi.

Future studies might want to consider an examination of the efficiency of the Saudi market. For example, the thesis shows that there is strong evidence of a post-earnings announcement drift in the Saudi market. While many other international studies report such a drift, in Saudi this appears to be mostly associated with profitable firms. For losing firms it appears that the drift is either immaterial, or that the market goes through a period of correction for potential over-reaction during the pre-earnings announcement period.
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