STOCK MARKET DEVELOPMENT AND ECONOMIC GROWTH IN DEVELOPING COUNTRIES: EVIDENCE FROM SAUDI ARABIA

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Abstract

This study investigates the long-term and short-term relationships between stock market development and economic growth in the Kingdom of Saudi Arabia (KSA) for the period from January 1993 to December 2009. It employs a wide range of vector autoregression (VAR) models to evaluate the importance and impact of stock market development on economic growth.
We used real GDP growth rates as a proxy for economic growth and the stock market index (SMI) as a proxy for the stock market development.
The vector-error cointegration model (VECM) indicates a significant long-term causal relationship between economic growth and the stock market development. Granger causality tests show weak bidirectional causal relationship between stock market development and economic growth supporting the feedback view in the short run.
The study implications are as follows. Firstly, investment in real economic activities leads to economic growth. Secondly, the stock market might hinder economic growth due to its volatile and international risk sharing nature, low free-floating share ratio, number of listed companies and the domination of Saudi Individual Stock Trades (SIST) characteristics.
Thirdly, policymakers should seek to minimise stock market volatility and fluctuations, increase both the free-floating share ratio and number of listed companies and shift investment domination toward corporate investors by considering its effect on economic growth when formulating economic policies.

Keywords: Saudi Arabia, Stock Market Development, Economic Growth, VAR Model, Cointrgration, Unit Root, Granger Causality

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1. Introduction

Economic development and growth issues continue to capture the interests of academics and policy makers around the globe. In recent times, the shift in emphasis has been from the classical concepts of maximising production outputs and wealth distribution towards economic sustainability, as a reaction to globalisation. This has resulted in major economic reforms, especially among developing countries as they expand their markets. Economic sustainability is heavily tied to investment, which in turn relies on the capital market. Hence, development of a stable domestic capital market underpins sustainability. Within the financial market, development of the stock markets is an important part of any economic reform. Securities trading is the dominant financial market function that mobilises saving, allocates capital, exerts corporate control and eases financial risks (Levine & Zervos 1996, 1998).

As a developing economy and a member of the Group of Twenty (G-20), Saudi Arabia is not an exception in this international trend. In the last three Five-Year Saudi National Development Plans (2000-2014), major legal, economic and financial reforms were implemented to promote sustainable economic growth. Such reforms were made to diversify the oil-based economy towards greater sustainability in line with international economic practices (Ramady 2010).

Although industrialisation is relatively recent in Saudi Arabia, it has witnessed a steady development with distinguished accomplishments that are attributed to the manufacturing sector and the support it receives from the government owing to its important role in achieving strategic and economic goals of the country. The government's support has covered several spheres, including implementation of required infrastructure, construction of Jubail and *Yanbu* industrial cities, construction of industrial cities in various regions of Saudi Arabia, establishment of the Saudi Industrial Development Fund (SIDF), and continued provision of other industrial support and incentives. The private sector's response to and cooperation with the governmental plans and efforts have had an effect on the actualisation of industrial development.

In addition to the Saudi intention to move the

country's income from non-renewable resources, the conservative Islamic investment environment in Saudi prohibit usury-interest on loans, which means a bigger emphasis on raising capital through capital markets, such as initial public offerings (IPOs) and *sukuks* (Islamic bonds) than bank loans (Al-Bqami 2000).

To date, these reforms have not been replicated in securities exchange practices; further, there are no adequate stock market development and economic growth relationship studies to provide guidance for decision makers in the anticipated transformation. This research attempts to fill this empirical gap.

The aim of the research is to determine the relationship between stock market development and economic growth in Saudi Arabia. Such a study on the stock market developments is timely because Saudi Arabia is moving aggressively toward strengthening the private sector role in the economy via privatisation, establishment of the Capital Market Authority (CMA) in 2003, and the creation of the new seven economic cities.

It should be noted that there has been very little work carried out to determine how stock market development contributes to growth, specifically for Saudi economy. An examination of the contribution to economic growth is a potentially important aspect. in the meanwhile, in selecting an individual country (i.e. Saudi Arabia), the results of this study will be appropriate for policy makers in emerging economies in general and Saudi Arabia in particular. Additionally, the provision of empirical evidence on this significant issue in the case of a single country will add to the literature on the role of stock market development in economic growth and open an interesting research topic.

2. Stock Market Developments and Economic Growth

The study of the relationship between stock development and economic growth can be traced back to Schumpeter (1912) and Goldsmith (1969), both of whom investigated the effect of stock market development on economic growth (Demirhan, Aydemir & Inkaya 2011; Levine & Zervos 1998). Schumpeter's (1912) important early study proposed a causal link whereby stock markets promote economic growth by funding entrepreneurs and channelling capital to them with higher return investments (Ake & Ognaligui 2010; Demirhan, Aydemir & Inkaya 2011; Dritsaki & Dritsaki-Bargiota 2005; Levine & Zervos 1998). Schumpeter's (1912) view was that economic change could not simply be predicated on previous economic conditions alone, although prevailing economic conditions were a result of this. Similarly, Goldsmith (1969) emphasised the effect of the financial structure and development on economic growth.

According to modern growth theory, the financial sector may affect long-run growth through its impact on capital accumulation and the rate of technological progress. Financial sector development has a crucial impact on economic growth and poverty reduction, especially in developing countries; without it, economic development may be constrained, even if other necessary conditions are met (DFID 2004).

The causal relationship between the stock market development and economic growth was investigated by Jung (1986), who made comparisons between 19 developing and 37 less- developed economies and among the less-developed economies as a group. Jung (1986) found that the less developed countries have a 'supply-leading' causality - that is, there is a causal relationship from stock market development to economic growth - and developing economies had a 'demand-following' causality - that is, there is a causal relationship from economic growth to stock market development.

The literature review shows that the debate continues in both theoretical and empirical studies regarding the importance and causality directions of the relationship between stock market development and economic growth.

There is evidence of a direct relationship between stock market development and economic growth. Large stock markets can lower the cost of mobilising saving and thereby facilitate investment in productive technologies (Greenwood & Smith 1997). Bencivenga, Smith and Starr (1996) and Levine (1991) find that stock market liquidity is important for growth. Efficient stock markets may increase investment through enhancing the flow of information on firms, which also improves corporate governance (Holmstrom & Tirole 1993; Kyle 1984). International risk sharing through internationally integrated stock markets improves resource allocation and increases the economic growth rate (Obstfeld 1994).

There is also country-specific evidence of a strong relationship between stock market development and economic growth (Ghali 1999). Hondroyiannis, Lolos and Papapetrou (2005) used monthly data sets over the 1986-1999 period to empirically assess how the development of the banking system and the stock market relates to economic performance in

Greece. They used vector autoregression (VAR) models and showed that there was bidirectional causality between stock market development and economic growth in the long run. Error-correction models show that stock market promote economic growth in the long run: for example, Ghali's (1999) study on Tunisia, Khan Qayyum and Sheikh's (2005) study on Pakistan and Agrawalla and Tuteja's (2007) study on India.

However, large and well-developed stock markets are insignificant sources of corporate finance (Mayer 1988). Stock market liquidity will not enhance incentives for acquiring information about

firms or exerting corporate governance (Stiglitz 1985, 1993). Risk sharing through internationally integrated stock markets can actually reduce saving rates and slow economic growth (Devereux & Smith 1994). Stock market development can harm economic growth by easing counter-productive.

corporate takeovers (Morck, Shleifer & Vishny 1990a, 1990b; Shleifer & Summers 1988).

Demirhan, Aydemir and Inkaya (2011) resolved previous inconsistencies in empirical data on Turkey by providing evidence of bidirectional causality between stock market development and economic growth. There are similar inconsistencies in empirical data on Saudi Arabia: on one hand Darrat (1999) investigated empirically the relationship between financial deepening and economic growth for three developing Middle-Eastern countries (Saudi Arabia, Turkey and the UAE). His empirical results suggested that the economic stimulus of more sophisticated and efficient financial markets in Saudi Arabia become noticeable only gradually as the economies grow and mature in the long-run, and financial deepening may influence only some, but not all, sectors of the economy. On the other hand Naceur and Ghazouani's (2007) analysis of data from 1991 to 2003 found that developing financial structures is not as important to the economies in 11 Middle Eastern and North African (MENA) countries, including Saudi Arabia, due to their underdeveloped financial systems and unstable growth rates. Thus, there appears to be no existing research on the proposed topic of this study.

The empirical literature in the case of Saudi Arabia with the exception of Masih et. al. (2009) is limited to MENA and GCC regions (see table 1). These cross-country specific studies led to diverse results (Darrat 1999, Xu 2000, Al-Tamimi et al., 2002, Al-Yousif 2002, Omran and Bolbol 2003, Boulila & Trabelsi, 2004, Chuah & Thai 2004, Al-Awad & Harb, 2005, Naceur & Ghazouani 2007, Masih et. al. 2009, Goaied et. al. 2011, Kar et. al. 2011). These empirics used annual data that both old and short with low frequencies as low as 20 observations. These noticeable remarks motivated this study on Saudi Arabia to be country-specific, using long time period, and more frequent and updated data.

Some empirics indicated a significant long run relationship in the stock market-economic growth nexus. Al-Tamimi et. al. (2002) examined the relationship between financial development and economic growth by using VAR method for Arab countries including Saudi Arabia over the period 1964-1998. The results indicate that capital market development and real GDP growth are strongly linked in the long-run. However, Granger causality tests and the impulse response functions indicate that the linkage is weak in the short-run. In addition, Xu (2000) used a multivariate vector-autoregressive (VAR) method to examine the effects of financial market development on domestic investment and output in 41 countries over the period 1960-1993. The findings support the supply leading view. However, a negative long term relationship between financial development and economic growth is found in the case of Saudi Arabia using data from 1962-1992.

In addition, couple of empirics supports the independent view: Boulila and Trabelsi (2004) used a sample of sixteen MENA countries for the period 1960-2002. They applied the bivariate vector autoregressive (bVAR) model on these variables: Real GDP per capita. Ratio of M3 to GDP, ratio of credit allocated to the private sector, ratio of financial savings to GDP. Ratio of M3 to GDP, ratio of credit allocated to the private sector, ratio of financial savings to GDP. They found no link between capital market development and economic growth in the case of Saudi Arabia over the period 1960-1999. Similar results of no significant relationship between stock market development and growth is found in the study of Naceur and Ghazouani (2007) that applied a dynamic panel model with GMM estimators on the data of 11 MENA countries, hence data on Saudi Arabia for the period 1991-2003.

Moreover, empirics that support the supply leading view do exist. Omran and Bolbol (2003) construct a growth equation that captures the interaction between FDI and various indicators of stock market development in the context of Arab countries. They used averaged five years cross-sectional data for the period 1975-1999. The estimation model is based on the growth accounting framework of the Cobb-Douglas production function where y is the growth rate of GDP per capita in the Arab world, and x represents capital market development indicators of the banking sector and the stock market. z is a vector of control variables that are usually used in the estimation (initial per capita income, human capital, investment/GDP, inflation rate, government consumption/GDP, openness of trade/GDP, and exchange rate), and is the error term. They found that FDI has a positive impact on economic growth, which depends on local conditions and absorptive capacities, where stock market development is one of the important capacities.

Likewise, empirics within the MENA region of Al-Awad and Harb (2005) who used a sample of ten MENA countries for the period 1969-2000 and by using panel cointegration approach concluded that the long-run capital market development and economic growth may be related to some level. In addition, the evidence of unidirectional causality that runs from capital market development to economic growth can be seen in Saudi Arabia in the short-run. However, Kar et. al. (2011) researched a sample of fifteen MENA countries over the period 1980-2007. They used GMM method and found a unidirectional relationship runs from economic growth to capital market development when using the ratio of private sector credit to income as a proxy for capital market

development. Different results were found using a similar GMM method, Goaied et. al. (2011) investigated 16 MENA countries using annual data over the period 1962-2006. They found a negative and signification relationship in the long run when using bank based variables.

A recent country-specific study on Saudi Arabia concluded a supply leading view done by Masih et. al. (2009). They examined the relationship between capital market development and economic growth by applying VAR method and using annual data from 1985-2004 (20 observations). Note, they only used banking based measurement as proxies for the capital market development variable.

Furthermore, bidirectional relationship was found in the early study of Darrat (1999) who investigated the relationship between financial deepening and economic growth for three developing Middle-Eastern countries (Saudi Arabia, Turkey and the UAE). He applied Granger-Causality tests and VAR method over the period of 1964-1993 for Saudi Arabia. The study found long run bidirectional relationship between financial deepening and economic growth in the case of Saudi Arabia. Likewise, Al-Yousif (2002) examined the nature and direction of the relationship between financial development and economic growth employing a Granger-causality test within a VECM method. He used both time-series and panel data from 30 developing countries including Saudi Arabia for the period 1970-1999.

The study found bidirectional causality between capital market development and economic growth. Similar results found by Chuah and Thai (2004), they used real non-hydrocarbon GDP in order to capture the real impact of bank based development variables on economic growth for six GCC countries including Saudi Arabia. Chuah and Thai (2004) used annual data over the period 1962-1999 for Saudi Arabia. They applied a bivariate time series model and concluded that capital market development provides critical services to increase the efficiency of intermediation, leading to a more efficient allocation of resources, a more rapid accumulation of physical and human capital, and faster technological innovation.

3. The Saudi Stock Market: Tadawul

3.1 History

The history of the Saudi stock market can be traced back to 1935 when the Arab Automobile company's shares were made available to the public (SAMA Annual Report 1997). Since 1935, the Saudi stock market can be classified, for study purpose, into three development stages depending on its structure, operations, and regulation. The first stage, the initial stage, covers the period of time from 1935 to 1982. This stage started when the Arab Automobile company's shares were made available to the public for the first time in Saudi Arabia in 1935 and ended 1982 when the Ministerial Committee, which consists of the Ministry of Finance and National Economy, SAMA and the Ministry of Commerce, was formed to regulate and govern the Saudi stock market (SAMA Annual Report 1997). The second stage, the established stage, began when the Ministerial Committee started to formulate the Saudi Stock market in 1983 and ended in 2002 when the Capital Market Law (CML) was issued by Royal Decree No (M/30) on 31 July 2003. The present modernised stage started when the Capital Market Authority (CMA) began to enforce the CML in 2003.

On the 19th of March 2007 the Saudi Council of Ministers approved the establishment of the Tadawul Company as a joint stock company (Tadawul 2011). Tadawul electronic system was implemented in 2001 and by contracting with OMX (Swedish stock market software company specialise in stock markets systems) in 2006, the new system enabled Tadawul to further expand with great flexibility in its services. The two main rules of Tadawul are depository and trading services along with its sharing role of surveillance with CMA.

Capital Market Authority of Saudi Arabia established a bond and sukuk market in the 13 June 2009 (Tadawul 2013). At present, Tadawul deals in Islamic bond issues, by offering only seven sukuks through only six listed companies - Saudi Electricity, Saudi Hollandi Bank, Sadara Basic Services Company, Saudi ORIX Leasing Company, Saudi International Petrochemical Company and Arabian Aramco Total Services Company. Hence, the Saudi government owns the majority of these companies' stakes (Karam 2009). Recently, Tadawul launched its new ETFs market in 28th March 2010 with only four ETF available to date (Tadawul 2013).

In July 2009 the Dow Jones Indexes of the USA became the first international index provider to offer indexes on the Saudi Tadawul. This encouraged other international companies such as Standard & Poor's and Bloomberg to consider Saudi indexes (Tadawul 2013).

3.2 Performance

Tadawul All Share Index (TASI) is the only general price index for the Saudi stock market. It is computed based on the calculation that takes into account traded securities or free-floating shares. According to Saudi capital law, shares owned by the following parties are excluded from TASI calculations: the Saudi government and its institutions; a foreign partner, if he or she is not permitted to sell without the prior approval of the supervision authority; a founding partner during the restriction period; and owners who hold 10% or more of a company's shares listed on the Saudi stock market (Tadawul website 2013).

Table 1. Empirics Included Saudi Arabia

Author(s)	Empirical study	Sample	Period	Method	Results
Darrat (1999)	Are financial deepening and economic growth causality related? Another look at the evidence	Saudi Arabia, Turkey & UAE,	1964-93	Granger-Causality tests within VAR model	Feedback view
Xu (2000)	Financial development, investment, and economic growth	41 Countries	1960-93	VAR	Supply-leading view, a negative long term relationship
Al-Tamimi et. al. (2002)	Finance and Growth: Evidence from Some Arab Countries	8 Arab countries	1964-98	VAR	Positive and signification relationship in the long run when using bank based variables
Omran & Bolbol (2003)	Foreign direct investment, financial development, and economic growth: evidence from the Arab countries	17 Arab countries	1975-99	OLS & Causality tests	Supply-leading view
Al-Awad & Harb (2005)	Financial development and economic growth in the Middle East	10 MENA countries	1969-2000	**J-J** & Granger panel cointegration tests	Supply-leading view in short term
Chuah & Thai (2004)	Financial Development and Economic Growth: Evidence from Causality Tests for the GCC countries	6 GCC countries	1962-1999	bVAR	Supply-leading view
Goaied et. al. (2011)	Financial Development, Islamic Banking and Economic Growth Evidence from MENA Region	16 MENA countries	1962-2006	GMM	Negative and signification relationship in the long run when using bank based variables
Kar et. al. (2011)	Financial development and economic growth nexus in the MENA countries: Bootstrap panel granger causality analysis	15 MENA countries	1980-2007	GMM	Demand-following view
Al-Yousif (2002)	Financial development and economic growth: another look at the evidence from developing countries	30 Developing countries	1970-99	VECM	Feedback view
Boulila & Trabelsi (2004)	The Causality Issue in the Finance and Growth Nexus: Empirical Evidence from Middle East and North African Countries	16 MENA countries	1960-2002	bVAR	Independent view
Naceur and Ghazouani (2007)	Stock markets, banks, and economic growth: empirical evidence from the MENA region	11 MENA countries	1991-2003	GMM	Independent view
Masih et. al. (2009)	Causality between financial development and economic growth: an application of vector error correction and variance decomposition methods to Saudi Arabia	Saudi Arabia	1985-2004	VAR	Supply-leading view

At the end of 2010, freefloating shares on the TASI index accounted for 41% of total issued shares. TASI reflects the performance of all the 146 listed companies within fifteen sectors in the Saudi stock market taking into account the free-floating shares.

3.2.1 Free Share Float

Being liquid is one matter. Having enough 'free float' shares available for trading is just as important to enable markets to operate efficiently without distorting prices based on trades in a few shares. Earlier studies on the Saudi stock market (Azzam 1997) had estimated the level of free float to be around 47.7 per cent for 1995. By the end of 2009, according to Tadawul, the level of free float had fallen to just under 38 per cent for the whole market (see Table 2), but with significant sectoral differences.

Table 2 indicates that the lowest free float was in the multi-investment sector at just 8.4 per cent, while the highest free float was in the retail services and transport sectors at around 71 per cent. The primary reason for the low float in the multi-investment sector was the fact that only five per cent or 315 million shares were available for trading out of 6,300 million issued by Kingdom Holding Company owned by Prince Al Waleed bin Tallal bin Abdulaziz. This skewed the sector average considerably, but the energy/utilities, telecommunications and insurance sectors had low free float shares. As noted earlier in the chapter, there is a need to list more Saudi companies on the exchange to enable a larger float of shares and avoid undue price movements affecting the overall market due to trades in a few shares of closely held sectors.

Table 2. Saudi Arabia Shares Outstanding and Those Held by the Public as Free Float (2003-2009)

Sector	2003[25]		
	Total outstanding shares (Millions)	Shares held by public free float (Millions)	Free float as % of total shares outstanding
1. Banking and financial services	378.9	226.8	60
2. Petrochemical industries sector	455.7	186.8	41
3. Cement	118.9	80.8	68
4. Retail Services	177.5	127.8	72
5. Energy and Utilities	765.7	290.9	38
6. Agriculture and Food	36.0	30.6	85
7.Telecommunicati on	300.0	249.0	83
8. Insurance Sector	N/A	N/A	N/A
9. Multi-investment	N/A	N/A	N/A
10. Building and construction	N/A	N/A	N/A
11. Real Estate Development	N/A	N/A	N/A
12. Transport	N/A	N/A	N/A
13. Media and Publishing	N/A	N/A	N/A
14. Hotel and Tourism	N/A	N/A	N/A
15. Industrial Investment Sector	N/A	N/A	N/A
Total Sectors	2, 232.7	1, 192.7	53.4

[25] The level of financial and technical knowledge among the SISTs were below average; 80 per cent had no formal training in stock trading.

Table 2 continue

	2009		
Sector	Total outstanding shares (Millions)	Shares held by public free float (Millions)	Free float as % of total shares outstanding
1. Banking and financial services	8, 903.9	4, 711.5	52.9
2. Petrochemical industries sector	8664.7	3, 533.7	40.8
3. Cement	828.0	569.9	68.8
4. Retail Services	302.5	215.8	71.3
5. Energy and Utilities	4, 241.6	766.9	18.0
6. Agriculture and Food	939.4	666.2	70.9
7.Telecommunicati on	4, 200	1, 400	33.3
8. Insurance Sector	661.0	254.3	38.5
9. Multi-investment	6, 616.6	552.4	8.27
10. Building and construction	666.2	447.6	67.2
11. Real Estate Development	3, 136.2	1, 427.6	47.2
12. Transport	476.3	339.5	71.3
13. Media and Publishing	155.0	91.8	59.3
14. Hotel and Tourism	79.3	46.5	58.8
15. Industrial Investment Sector	1, 352.4	586.5	43.4
Total Sectors	41,223.1	15, 660.2	37.9

By 2007, the CMA had introduced 15 sub-sectors compared with seven N/A: Not available as not segregated

Source: SAMA (2011), CMA (2012)

3.2.2 Sectorial Performance

Like any other stock market in the world, the Saudi TASI composite stock market index masks sectorial differences. The Saudi stock market has 15 sectors and, in order of size, finance and basic materials are the dominant sectors, together accounting for just under 70 per cent of market capitalisation, with the two biggest companies Saudi Arabian Basic Industries (SABIC) and Al Rajhi Bank accounting for around 11 per cent of the market.

What is of some concern for the Saudi capital market is that while some of the smaller sectors have a larger number of companies, they only account for a smaller per cent of the market capitalisation. As such, a small movement in the highly capitalised sectors will unduly influence the whole market index.

3.2.3 Investor Behaviour

Anecdotal evidence suggests that the Saudi stock market is currently driven by irrational exuberance and herd-like mentality characterised by rumours and bouts of buying followed by panic selling (Al-Twaijry 2007, Ramady 2010),. Over time, with investor experience and CMA investor awareness programmes, such type of investment behaviour could change towards a long-term investment outlook and asset holding. It is important to highlight that there are differences in Saudi individual investors' behaviour based on education, gender and age. Field research results carried out by Khoshhal (2004) showed some interesting differences amongst Saudi individual stock traders (SISTs), indicating the following:

- The majority of SISTs were risk-takers who believed that they would continue to make high profits on the Saudi stock market, despite falls.
- In picking stocks, some 40 per cent of SISTs depended on technical analysis, some 32 per cent depended on financial analysis while 25 per cent depended on other people's opinions and Internet forums. Only 3 per cent went with their personal feelings.
- The 25-35 age group seemed to make the most profit on the Saudi stock market, which the research survey correlated to higher levels of education and formal course training.
- The lowest level of profits were found amongst those who depended on others' opinions, while the highest was achieved by those who depended on technical analysis.
- Respondents with the highest education levels

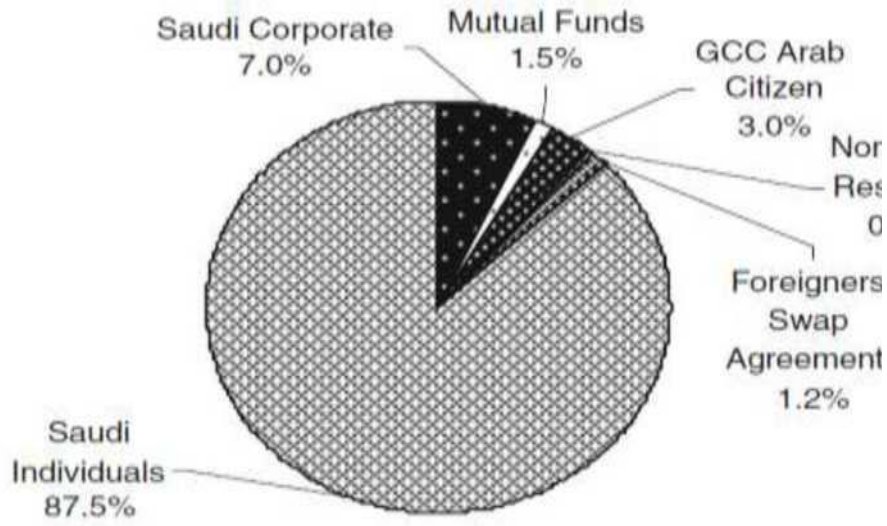
(masters and doctorates) depended on financial analysis and made medium to high profits. Those with lower levels of education depended on others' opinions and made the lowest profits.

- Respondents with lower risk aversion depended solely on financial information in their decision-making and realised medium profits.

Research conducted for other developed markets seemed to corroborate the above Saudi field research findings (Ackert et al. 2003), but such findings have important implications for the future development of the Saudi stock and capital market, concerning how to widen the number of players (foreign and domestic) and type (institutional or individual). Figure 1 illustrates that the SISTs represent an average of over 87 per cent of the monthly traded value. Hence, in larger European bourses such as London's, institutional investors tend to account for around 90% of the transactions value.

Analysis of net investment flows for each investor category indicates that the significantly smaller size of the Saudi corporate investors is the main driver. They seemed to do poorly when it came to forecasting market direction compared to SISTs, mutual funds and foreigners. Thus, the corporate investors in Saudi Arabia seem to play a significant balancing role when it comes to market movements.

Figure 1. Average Monthly Contribution to Saudi Stock Market Trades by Category of Investor and % of Value Traded (2009)



Source: Tadawul (2013)

3.2.4 The 2006 Bubble

Through the Gulf Cooperation Council and the Arab's world which includes other Middle Eastern countries that are mostly oil exporting states, together they all created actions in order to raise the quality of the economy (Abu-mustafa, 2007). Based on the study provided by Al- Twaijry (2007), the final five years of the 20th century, the stock market of Saudi Arabia stayed intact and immovable which presented a stabilised economy, while the major capital markets in the international community were developing to their highest peaks (Abdul-Hadi 1988). However, during the first few years of the 21st century, prices of the stocks in Saudi Arabia had shown drastic changes but it did not show major collapse (Al-Twaijry 2007).

Moreover, large proportion of the Saudi population have become interested in the stock market due to the stability and possibility of being much stronger and profitable to them, thus the increase of investment at the stock market reflected positively on the economy (Ramady 2010). The Saudi citizens were encouraged to trade at the stock market through the help of the Saudi government national privatisation scheme, the IPO's policy, the media and the private banks lending programs (Al-Twaijry 2007, Ramady 2010, Cordesman and Al- Rodman 2006). Consequently, SISTs' represented an average of 90 per cent of the stock market's monthly traded value.

In February 2006, the Tadawul All Share Index (TASI) had been increasing and reached a historical level of 20,000 mark. However, few weeks later, from February 21 until February

TASI fell very sharply and reached 7,000 mark

by November that year.

As a result, the immediate decrease in the movement of the stock market index within the span of three weeks had created severe conclusions to the investors especially to SISTs (Al- Twaijry 2007, Ramady 2010).

It could be analysed that there are four major parties had been involved which are the government, the traders, the media and the banks (Cordesman and Al-Rodman 2006, Al- Twaijry 2007, Ramady 2010).

1. The decision for market correction interference, which have been done by CMA, was either late or was not enough. Nevertheless, the Saudi policy makers should give attention to the lack of investment banks, independent brokerage firms, and asset management firms as well as the inadequate amount of venture capital.

2. SISTs are mainly lack of financial and investment education and usually base their trading decisions upon rumours, family and friend.

3. The media made it self as a negative mediator to the people and the government. Media practitioners such as writers have indirectly encouraged common Saudi citizens in stock market trading in the while readers, those who are mostly uneducated. Later on, it was stated that, 'Saudi media kept stressing on this extraordinary event in the stock market and probably participate on creating fear in the investor's mind' (Al-Twaijry 2007; 9).

4. The banks encouraged SISTs to take on higher personal debt levels in forms of loans designed from shares instead of cash. This has been advertised as an Islamic loan which was very appealing and popular among common Saudis. Thus, gave easy access for common Saudis to the stock market.

4. Methodology

4.1 Data

This study investigates the relationship between stock market development and economic growth of the Saudi economy over the period January 1993 to December 2009. The secondary monthly data (204 observations) of the eleven variables selected for the VAR models are collected from the IMF, SAMA and the Saudi stock exchange Tadawul. The VAR model and VECM offers a feasible approach for this investigation due to the robustness and rigour of the data.

4.2 Model

This study investigates nine macroeconomic variables that all have a significant impact on the real growth rate GDP of the Saudi economy over the period January 1993 to December 2009. These macroeconomic variables include: Stock market development (SMD) proxied by the Tadawul All share index (TASI); Controlled by (1) a short term interest rate (IR), the Saudi Arabia Interbank Offered Rate (Isa3); (2) inflation (INF) in the Saudi economy measured by the consumer price index (CPI); (3) world oil price (OP) proxied by the UK- Brent crude price oil; and (4) The influence of international stock markets (ISM) proxied by Standard and Poor's 500 stock price index (S&P 500).

In this study the method of vector autoregressive model (VAR) is adopted to estimate the effects of stock and credit market development on economic growth. In order to test the causal relationships, the following multivariate model is to be estimated

$$Y = f (SMD, CV)$$

Where:

Y= Economic Growth is the Growth Rate GDP.

SMD = Stock Market Development proxied by the Saudi stock market index.

CV = Control Variables [interest rate (IR), inflation (INF), international stock market (ISM), oil price (OP)].

All variables are in logarithm except interest rate and GDP because of some negative values. GDP = f(SMD, INF, IR, ISM, OP)

4.3 Variables

4.3.1 Real GDP Growth Rates

Economic growth is defined as the increase in a nation's ability to produce goods and services over time as is shown by increased production levels in the economy. This thesis employs real GDP growth rates as a proxy for economic growth as it focuses on actual domestic production per person, which has a bearing on the general welfare of a country's citizens. Following the empirical study of King and Levine (1993), the variable of economic growth (GDP) is measured by the rate of change of real GDP. Due to the unavailability of monthly data for GDP in Saudi Arabia, monthly figures are obtained from annual data through geometric interpolation, following Darrat and Al-Sowaidi's (2010) empirical study.

4.3.2 Stock Market Index (SMI)

The All-Share Index and the number of listed companies have a positive significant effect on economic growth (Asiegbu & Akujuobi 2010, Athanasios & Antonios 2010). This is supported by Olweny and Kimani's (2011) findings that imply that the causality between economic growth and the stock market runs unilaterally from the NSE 20-share index to the GDP. From their results, it was inferred that the movement of stock prices in the Nairobi stock exchange reflect the macroeconomic condition of the country and can therefore be used to predict the future path of economic growth. Similarly, the study by Kirankabes and Ba§arir (2012) found that there is a long-term relationship between economic growth and

the ISE 100 Index, and a one-way causality relationship with the ISE 100 towards economic growth.

TASI reflects the performance of all the 146 listed companies within fifteen sectors in the Saudi stock market taking into account the free-floating shares. Thus, it is expected to provide better insight into the overall performance of the Saudi stock market in response to fundamental changes within the Saudi economy.

4.3.3 Inflation (INF)

In line with, Bekaert and Harvey (1997), Darrat (1999), Al-Tamimi et. al. (2002), Omran and Bolbol (2003), Naceur and Ghazouani (2007) and Goaied et. al. (2011) they used inflation rate as an important variable on the economy. Fisher (1930) believes that the real and monetary sectors of the economy are independent, and claims that the nominal interest rate fully reflects the available information concerning the possible futures values of the rate of inflation. Thus, he hypothesises that the real return on interest rates is determined by real factors such as the productivity of capital and time preference of savers, hence, the real return on interest rates and the expected inflation rate are independent.

Thus, investors may benefit from this study to learn how to allocate their recourses more efficiently to protect the purchasing power of their investments, especially during inflationary periods.

4.3.4 Interest Rate (IR)

In line with the literature review most empirics used real interest rate to measure financial repression. For example, Khan Qayyum and Sheikh (2005) found that changes in real interest rate exerted positive (negative) impact on economic growth. However, the response of real interest rate is very small in the short run investigating the relationship between a short-term interest rate such as Isa3 and the Saudi economy is of particular interest to researchers for at least two reasons. First, the Saudi Monetary Authority works in a unique institutional environment in which charging interest is prohibited by Islamic law. That is, Islamic law does not consider money as an asset, and thus, money is viewed only as a measurement of value. For that reason, SAMA, the central bank in Saudi Arabia, has no direct control over the interest rate (Ramady 2010). Second, the Saudi currency has been pegged to the US dollar at a fixed exchange rate since 1986. This restriction makes local monetary policy conditional on the monetary policy of the US. In such an environment, interest rate based assets are not the primary alternative for the majority of investors in the Saudi economy. Money and capital markets in the Saudi economy are not substitutes but rather are independent.

This study uses a proxy for the local interest rate, Isa3, to account for fundamental changes in the local economy. Most empirical studies related to the Saudi economy use a short or a long term interest rate of the US market as a proxy for the Saudi market due to the Saudi exchange rate policy.

4.3.5 Prices (OP)

Oil price was used in empirics associated with oil producing countries such as Mosesov and Sahawneh (2005) on the UAE and Naceur and Ghazouani (2007) on the MENA region.

The Saudi economy is a small oil-based economy that possesses nearly 20 per cent of the world's known petroleum reserves and is ranked as the largest exporter of petroleum (OPEC 2013). The oil sector in the Saudi economy contributes more than 85 per cent of the country's exports and government revenues (SAMA 2013). As a result, oil revenue plays a vital role in all major economic activities in Saudi Arabia. Hence, the Saudi economy also imports almost all manufactured and raw goods except for oil from developed and emerging countries.

Even though high oil prices impose a positive impact on the economy this may indirectly harm the economy through its influence on the prices of imported products. In other words, a high oil price may be fed back to the local economy as imported inflation, which increases future interest rates.

4.3.6 International Stock markets (ISM)

Understanding how international stock markets affect each other and the economy became critical for investors and policymakers after the stock market crash in 2008 that affected global markets Understanding how international stock markets affect each other and the economy became critical for investors and policymakers after the stock market crash in 2008 that affected global markets. While policymakers want to diminish the negative effects of international crises on the local economy, investors are interested in taking advantage of international diversification. The benefit of international diversification, however, is limited when capital markets are cointegrated because of the presence of common factors that limit the amount of independent variation (Wong et al. 2004).

This study aims to examine whether the international stock market (ISM) contributed to the Saudi economy as measured by real growth rate GDP during the sample time period 1993 – 2009.

To accomplish this goal, the S&P 500 price index is included as a proxy international stock market effects. The S&P 500 is one of the most popular international benchmark indexes used to capture the overall US stock market. In fact the Saudi Riyal has been pegged to the US dollar at a fixed exchange rate, this study argues that the US stock

market is the optimal alternative market for Saudi investors to take advantage of the exchange rate policy mentioned above, as it reduces exchange rate risks usually associated with foreign investments using something other than the US dollar due to the exchange rate peg arrangements between the Saudi Riyal and US dollars.

4.4 Method

This study uses the Brent oil price rather than other oil benchmarks - and Dubai-Oman oil prices - mainly because it is used to price two-thirds of the crude oil internationally traded. The analytical framework of this study can be modelled in VAR form for the proposed empirical investigation:

$$Yt = a + O\ Yt\text{-}1 + St\ st\ IID\ (0, Q)$$

Where: O = a matrix of AR (1) coefficients
Q = a covariance matrix of the error terms
Yt = a vector, which contains GDP, CMD and CV

Many researchers use Vector Autoregression (VAR) modelling (Agrawalla & Tuteja 2007; Ake & Ognaligui 2010; Demirhan, Aydemir & Inkaya 2011; Khan, Qayyum & Sheikh 2005). The VAR model, according to Juselius (2006), is a flexible model for the analysis of multivariate time series. It is a natural extension of the univariate autoregressive model for dynamic multivariate time series. The VAR model is especially useful for describing the dynamic behaviour of economic and financial time series. Due to these advantages, VAR and vector error correction models (VECM) were generally used in previous studies. However, VAR models may require a large lag length to adequately describe a series; thus, there is a loss of precision due to the extent of the parameters estimated.

5. Results

5.1 Descriptive Analysis

Table 2. Descriptive Stats

	GDP	SMD	INF	IR	OP	ISM
Mean	2.619588	8.063578	4.627353	4.216176	3.385539	6.862304
Median	2.645867	7.770000	4.610000	4.845000	3.240000	7.000000
Maximum	7.946421	9.880000	4.830000	7.070000	4.900000	7.350000
Minimum	-1.102634	7.040000	4.550000	0.200000	2.280000	6.080000
Std. Dev.	2.177265	0.788975	0.064226	1.891467	0.620846	0.375474
Skewness	0.356721	0.599580	1.833241	-0.394305	0.515522	-0.850961
Kurtosis	2.490407	2.001050	5.566163	1.923684	2.221565	2.481098
Jarque-Bera	6.533817	20.70503	170.2404	15.13307	14.18659	26.90929
Probability	0.038124	0.000032	0.000000	0.000517	0.000831	0.000001
Sum	534.3960	1644.970	943.9800	860.1000	690.6500	1399.910
Sum Sq. Dev.	962.3182	126.3639	0.837371	726.2626	78.24624	28.61902
Observations	204	204	204	204	204	204

The correlation analysis in table 3 presents these findings, which indicate, in general, that all variables included in the system are statistically significantly contributing to the long run relationships between GDP and the rest of macroeconomic variables in the system with only one exception, which is inflation (INF).

5.1 Long-Run Analysis

5.2.1 Unit Root Test

The results from the augmented Dickey-Fuller (1979) (ADF) unit root test, and PhillipsPerron (1988) (PP) tests provide additional support for treating all the individual series as non-stationary in their levels but stationary in their first differences.

5.2.2 Long-run Covariance

The cantered long-run covariance analysis in table 5.3 presents these findings, which indicate, in general, that all variables included in the system are statistically significantly contributing to the long run relationships between GDP and the rest of macroeconomic variables in the system with only one exception, which is inflation (INF).

Table 3. Correlation Analysis (Included observations: 204)

Covariance t-Statistic Probability	GDP	SMD	INF	IR	OP	ISM
GDP	4.717246					
SMD	0.943498 9.407491 0.0000	0.619431				
INF	0.011204 1.148073 0.2523	0.020658 6.382936 0.0000	0.004105			
IR	-0.994295 -3.554593 0.0005	-0.676355 -7.271208 0.0000	-0.041264 -5.161396 0.0000	3.560111		
OP	0.508429 5.802587 0.0000	0.438266 29.19788 0.0000	0.024437 11.10994 0.0000	-0.514571 -6.970766 0.0000	0.383560	
ISM	0.296620 5.565406 0.0000	0.167716 9.832641 0.0000	0.006441 3.960387 0.0001	-0.026588 -0.535093 0.5932	0.125810 9.175037 0.0000	0.140289

Table 4. Cantered Long-run Covariance

	GDP	SMD	INF	IR	OP	ISM
GDP	22.58776	4.747924	0.066272	-5.179483	2.603765	1.510256
SMD	4.747924	3.056718	0.100011	-3.337333	2.161176	0.824425
INF	0.066272	0.100011	0.019451	-0.191499	0.117709	0.030608
IR	-5.179483	-3.337333	-0.191499	16.90433	-2.510634	-0.141863
OP	2.603765	2.161176	0.117709	-2.510634	1.856137	0.615386
ISM	1.510256	0.824425	0.030608	-0.141863	0.615386	0.680347

5.2.3 Optimal Lag Selection

We precede our analysis using four lags suggested by the sequential modified LR test statistic (each test at 5% level).

5.2.4 Cointegration Test

Following the rough guide in the EViews 7 User's Guide II (2012), and since we believe that all of the data series have stochastic trends, the analysis proceeds to examine the long run and short run relationships between GDP and the rest of the macroeconomic variables in the system assuming a linear trend in the VAR and the cointegrating relationship only has an intercept. The trace tests support one cointegrating vector at the 5% significance level. The major implications derived from this test are:

1) The macroeconomic variables in the system share a long run relationship. Hence each variable in the system tends to adjust proportionally to remove short run deviations from the long run equilibrium.

2) There is at least one direction of causality among the variables in the system as expected by the Granger representation theorem.

Finding a long run relationship between GDP and a set of macroeconomic variables in the Saudi economy is consistent with a large body of empirical studies including Levine (1991); King and Levine (1993); Atje and Jovanovic (1993), Levine and Zervos (1996,1998); Demirguc-Kunt and Levine (1996); Arestis et al (2001); Al-Yousif (2002); Thangavelu and James (2004); Mosesov and Sahawneh (2005); Abu-Sharia (2005); Abu-Bader and

Abu- Oarn (2006); Athanasios and Antonios (2010); Mishal (2011); Demirhan, Aydemir and Inkaya (2011); and Al-Malkawi et al. (2012).

Given that there is at least one cointegration vector among the variables in the system, the analysis normalises the cointegrating vector on (GDP). Equation 5.1 presents these findings, which indicate, in general, that all variables included in the system are statistically significantly contributing to the long run relationships between GDP and the rest of macroeconomic variables in the system.

Normalised cointegrating coefficients (standard error in parentheses) Equation (5.1)

GDP = 477.1 - 22.7 SMD - 104.99 INF - 2.115 IR + 32.74 OP + 13.47 ISM

(4.815) (31.04) (0.85) (7.0) (4.61)

[4.714] [3.38] [2.48] [-4.675] [-2.9]

Note: Standard Errors in parentheses and t-statistics in square brackets.

That is, the normalised cointegrating vector given in Equation 5.1, suggest the following results.

5.2.4.1 Stock Market Development (SMD) and GDP

A significant negative long-run relationship between GDP and SMD is found in this study. The significance of this relationship is not surprising due to the lack of transparency and illiquidity that limit the effectiveness of these markets in the economy (Chuah & Thai 2004). This lack of relationship must be linked to underdeveloped stock markets in the MENA region that hamper economic growth (Boulila & Trabelsi 2004, Mosesov & Sahawneh (2005), Abu-Bader & Abu-Qarn 2006, Naceur & Ghazouani 2007). Ake and Ognaligui (2010) used the Granger-causality test to examine causality relationships between stock markets and economic growth in Cameroon, findings suggest that the Douala Stock Exchange still does not affect Cameroonian economic growth. Results also indicate that there is no significant relationship between the equity markets and the early stages of economic development (Boyd & Smith 1998).

These results are in alignment with the 'independent' view that argues that capital market and economic growth is not causally related (e.g. Stiglitz 1985, Mayer 1988, Boyd and Smith 1998, Boulila & Trabelsi 2004, Mosesov & Sahawneh 2005, Abu-Bader & Abu-Qarn 2006, Naceur & Ghazouani 2007). These empirics were mostly conducted in the developing Middle East and North Africa (MENA) countries.

Moreover, Singh (1997) argue that stock markets do more harm than good, and that certain features of mature stock markets, such as volatility, deterrence of risk-averse savers and the demands of speculative investors for short-term profits at the expense of long-term growth, would pose far greater problems in developing countries and have an adverse effect on their economies. Nonetheless, Mayer (1988) demonstrates that stock markets, no matter their size, are not significant sources of corporate finance, while Stiglitz (1985) maintains that liquid stock markets will not increase motivation to obtain information about companies and improve corporate governance. Morck et al., (1990b), among others, stress that economic growth can be hindered by stock markets through facilitating the mechanisms for corporate takeover.

This is in-line with empirical studies by Athanasios and Antonios (2010) and Olweny and Kimani's (2011) findings imply that the causality between economic growth and stock market runs unilaterally from the NSE 20-share index to the GDP. From the results, it was inferred that the movement of stock prices in the Nairobi stock exchange reflect the macroeconomic condition of the country and can therefore be used to predict the future path of economic growth; Kirankabes and Ba§arir (2012) found that there is a long-term relationship between economic growth and the ISE 100 Index, and a one-way causality relationship with the ISE 100 towards economic growth. Asiegbu and Akujuobi (2010) found that the All-Share Index and number of listed companies have a positive significant effect on economic growth.

The results do make sense because:

1) At the end of 2009, free-floating shares on the TASI index accounted for 37.9 per cent of total issued shares.

2) The number of listed companies is very little compare to the size of the market as the Arab, Middle East and North Africa biggest stock market. Kolapo and Adaramola (2012)

3) Recommended that the regulatory authority should initiate policies that would encourage more companies to access the market and also be more proactive in their surveillance role in order to check sharp practices which undermine market integrity and erode investors' confidence.

4) The stock market is still characterised by a high degree of sectoral concentration and the dominance of banking, electricity and telecommunications, with six companies accounting for nearly 70 per cent of the total market capitalisation.

5) 90 per cent of investors are Saudi individuals who are characterised by irrational exuberance and herd mentality (Al-Twaijry 2007; Ramady 2010).

As a young and rapidly developing stock market, a positive relationship with the economic growth might exist once it has matured as observed in the literature. The establishment of the CMA has helped to overcome some of the previous obstacles in expanding the capital market, namely an increase in the number of listed companies, increase in the number of shareholders, expansion of brokerage and investment advisory services and licensing of non-bank financial institutions. The benefits of the CMA could be felt in several areas: potential to draw back

Saudi resources invested abroad, growth of non-oil financial services sector, improvement in risk management practices and response to the infrastructure services demand. The Saudi stock market has made some progress in opening up to foreign investors through swap facilities and there are some developments in expanding the use of ETFs and index funds.

5.2.4.2 Inflation (INF) and GDP

Equation 5.5 also indicates a statistically significantly negative relationship between GDP and the inflation rate (INF). This result is in line with the economic theory that states inflation reduces the value of money thus GDP (Omran & Bolbol 2003).

5.2.4.3 Interest Rate (IR) and GDP

This study used real interest rate to measure financial repression. Luintel and Khan (1999) argue that a positive real interest rate increases financial depth through the increased volume of financial savings mobilisation, and promotes growth through increasing the volume and productivity of capital. However, the cointegration tests revealed a significant negative relationship between GDP and IR. One possible explanation for this negative relationship is that investors would not consider investing and raising capital when the interest rate is high. This is consistent with Khan Qayyum and Sheikh's (2005) study, which found changes in real interest rate exerted positive (negative) impact on growth. However, the response of real interest rate is very small in the short run.

In addition, in the case of increasing a negative real interest rate, the risks and required rate of return of a particular investment increase and profits of a firm tend to decrease, due to the increased cost of capital (Bjornland & Leitemo 2009).

Investigating the relationship between a short-term interest rate such as Isa3 and the Saudi economy is of particular interest to researchers for at least two reasons. First, the Saudi Monetary Authority works in a unique institutional environment in which charging interest is prohibited by Islamic law. That is, Islamic law does not consider money as an asset, and thus, money is viewed only as a measurement of value. For that reason, SAMA, the central bank in Saudi Arabia, has no direct control over the interest rate (Ramady 2010). Second, the Saudi currency has been pegged to the US dollar at a fixed exchange rate since 1986. This restriction makes local monetary policy conditional on the monetary policy of the US. In such an environment, interest rate based assets are not the primary alternative for the majority of investors in the Saudi economy. Money and capital markets in the Saudi economy are not substitutes but rather are independent.

5.2.4.4 Oil Price (OP) and GDP

In conjunction with the fact that Saudi Arabia is an oil-based economy, Equation 5.1 suggests a positive long-run relationship between GDP and the price of oil (OP) (Mosesov & Sahawneh 2005, Naceur & Ghazouani 2007). This is consistent with the history of the Saudi economy in regards to the 'oil booms'.

5.2.4.5 International Stock Markets (ISM) and GDP

The cointegration tests revealed a significant positive relationship between GDP and International Stock Markets (ISM). This relationship can be found previously in the case of the global financial crises in 2008 that affected the Saudi economy. This finding is supported by Devereux and Smith (1994) and Wong et al. (2004). They emphasise that greater risk sharing through internationally integrated capital markets can actually reduce the saving rate and slow down economic growth. In contrast, Obstfeld (1995) shows that resource allocation is improved by the international risk-sharing resulting from stock market integration and that therefore increases economic growth.

5.3 Short-Run Analysis

Having established that all variables are cointegrated, the fundamental question that needs to be asked is: what is the nature of the dynamic relationship between the variables in the short run? This question can be answered using the causality tests. The following sub sections present the results for these methodologies.

5.3.1 Causality Tests

This section presents Granger causality test results for the short run relationship between all the variables in the system. As we concluded earlier, the short run analysis for these variables is performed using a vector error correction model as developed by Engle and Granger (1987). Granger (1988) states that using a VECM rather than a VAR in differences will not result in any loss in long run information, as is the case for the Granger (1969) causality test.

The Granger causality test is used to examine the short run dynamic relationships between all variables in the system. The following two sections present the results of both the VECM and Granger causality tests.

5.3.1.1. VECM Causality Tests

In this section, a VECM is estimated to investigate the short and long run dynamic adjustment of a system of cointegrated variables. The estimation equation (5.2) is:

$$\Delta Xt = \delta + \sum_{t=1} p\ \Gamma \Delta \mathrm{X}\, t - i + \Pi Xt - i + Vt \qquad (5.2)$$

where AXt is an nx1 vector of variables and 5 is an (nxl) vector of constants. n is the error- correction mechanism, which has two components: n=afi' where a is an (nxl) column vector representing the speed of the short run adjustment to the long-run equilibrium, and P' is a (Ixn) cointegrating vector with the matrix of long run coefficients. r is an (nxn) matrix representing the coefficients of the short run dynamics. Finally, vt is an (nxl) vector of white noise error terms, and p is the order of the auto-regression. Interestingly, Equation 5.2 has two channels of causation. The first channel is through the lagged exogenous variables' coefficients. The second channel of causation is through the error correction term. The ECT captures adjustment of the system towards its long run equilibrium. Since the VECM technique is a more general case of the standard VAR model, the analysis proceeds to determine the lag length, , for the dynamic terms, i.e., the lagged variables in first difference form, the number of cointegrating vectors, and the structural cointegrating vector of the VECM. The optimal lag is p = 4 based on the previous equation (5.1).

Table 5 presents the results of the short and long run causality tests for the VECM. The first row in Table 5 presents the short run and long run relationship between GDP and the rest of the system's independent variables. The first column indicates the short run contribution of GDP as an independent variable to other models in the system. The VECM short run results show no relationship between GDP and the rest of the variables. These results are consistent with the independent view that argues that stock market and economic growth are not causally related in the short run (Stiglitz 1985, Lucas 1988, Mayer 1988, Boyd and Smith 1998, Boulila & Trabelsi 2004, Mosesov & Sahawneh 2005, Abu-Bader & Abu-Qarn 2006, Naceur & Ghazouani 2007). These results are supported by the empirics were mostly conducted in the developing Middle East and North Africa (MENA) countries (Boulila & Trabelsi 2004, Naceur).

Table 5. The VECM short run results

Dependent/Independent							ECT
Variable	AGDP	ASMD	AINF	AIR	AOP	AISM	
AGDP		0.25	0.98	0.81	0.93	0.65	-0.00 [-178]
ASMD	0.99		0.15	0.53	0.08	0.23	-0.00 [-158]
AINF	0.96	0.01		0.09**	0.88	0.71	-0.00 [-1.38]
AIR	0.34	0.85	0.21		0.13	0.00*	0.00 [1.00]
AOP	0.23	0.60	0.97	0.04*		0.40	0.00 [1.61]
AISM	.011	0.43	0.02*	0.08**	0.02*		0.00 [3.64]

The table contains both t-statistics associated with the error-correction term (ECT), and the p-values that that associated with the x^2-statistic, which represents test the joint significance of the lagged values of the independent variables.
**Indicates 5 % level of significance.*
*** Indicates 10% level of significance.*

5.3.1.2 Granger Causality Tests

This section presents Granger causality test results for the short run relationships between all macroeconomic variables and GDP. The Granger causality test is appropriate to examine the short run dynamic relationships between these variables. Table 6 shows that the stock market development cause economic growth and vice versa supporting the feedback view, however this relationship is weak. The feedback view contends that there is bi-directional causality between stock market development and economic growth (Patrick 1966, Jung 1986). A country with a well-developed stock

market could promote high economic expansion through technological changes, products and services innovation, which in turn creates a high demand for the financial institutions. As the financial institutions effectively respond to this demand, these changes will stimulate higher economic achievement. Both stock market and economic developments are therefore positively interdependent (Majid 2007). These results are supported by Darrat (1999), Al-Yousif (2002), Chuah and Thai (2004), Hondroyiannis, Lolos and Papapetrou (2005), Majid (2007), Demirhan, Aydemir & Inkaya (2011). The reported results of the Granger causality test (1969) are based on a (4) lag models that was chosen previously.

Table 6. Pairwise Granger Causality Tests
Lags: 4

Null Hypothesis:	Obs	F-Statistic	Prob.
SMD does not Granger Cause GDP GDP does not Granger Cause SMD	200	2.31356 1.92635	0.0590 0.1077
INF does not Granger Cause GDP GDP does not Granger Cause INF	200	0.58309 0.25398	0.6752 0.9070
IR does not Granger Cause GDP GDP does not Granger Cause IR	200	0.66823 1.22430	0.6148 0.3019
OP does not Granger Cause GDP GDP does not Granger Cause OP	200	0.47294 0.79922	0.7556 0.5270
ISM does not Granger Cause GDP GDP does not Granger Cause ISM	200	0.95168 0.46962	0.4353 0.7580

Conclusion

This study aimed to determine the relationship between capital market development and economic growth in Saudi Arabia. The study is particularly significant because Saudi Arabia is moving aggressively towards strengthening the private sector role in the economy via privatisation, its establishment of the CMA in 2003, and the creation of seven new economic cities.

This study provided a comprehensive theoretical consideration of how the financial system and stock market development could affect real economic growth. In finance theory, there are four basic functions and channels in which the stock market may influence economic growth:

the stock market provides investors and entrepreneurs with a potential exit mechanism;

capital inflows in both foreign direct investment and portfolio are potentially important sources of investment funds; (3) the provision of liquidity through an organised stock market encourages both international and domestic investors to transfer their surplus from short-run assets to the long-run capital market; and (4) the stock market provides important information that improves the efficiency of financial intermediation generally.

In contrast, the endogenous growth model in economic theory illustrates that stock market development may affect economic growth through an increase in the saving rate, the channelling of more savings to investment, and the improvement of capital productivity with better resource allocation towards their most productive use. Thus, savings channelled through the stock market is allocated more efficiently, and the higher capital productivity leads to higher economic growth.

This study investigated the relationship between stock market development and the real GDP growth rate per capita of the Saudi economy from January 1993 to December 2009. The secondary data was collected from the IMF, SAMA and TadawuL. The VAR model was used to estimate the effects of stock market development on economic growth.

The results show a long run relationship between stock market development and economic growth. Meanwhile, a we found a bidirectional causal relation between the two variables, supporting the feedback view.

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