FORECASTING THE IMPACT OF SHARE MARKET DEVELOPMENT INDICATORS ON FIXED CAPITAL FORMATION AND TRADE

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ABSTRACT

This paper investigates the long-run impact of share market development in terms of size and activity on gross fixed capital formation and trade in Saudi Arabia. It also demonstrated the existence of the causality hypothesis for the period from 1985 to 2018. The study uses Auto-Regressive Distributed Lag ARDL analysis to demonstrate that the long-run share market activity development proxies (value of shares traded and stock transaction) are insignificantly linked to the economic growth indicators (GFCF and trade). Meanwhile, the share market size development proxies (market value and number of shares traded) are positively and significantly linked to the economic growth indicators. It is thus imperative for Saudi policymakers to establish policies that improve the financial stock market, particularly in terms of market activity development. We recommend that the entire stock trading market be transformed to achieve superior exchange performance.

Keywords: Share, Capital, Trade, Value, Causality, ARDL.

INTRODUCTION

The transformation of an underdeveloped economy to a developed one calls for a high proportion of the population to be inclined towards immaterial well-being, to look ahead and to be exposed to risks, to be interested in innovation, to persevere and collaborate with others, and to adhere to specific rules. Solow (1956) proposed a fundamental equation that identifies the time path of capital accumulation that must be adhered to if all the available labour is to be used. In this regard, Solow's growth model displayed diminishing returns to labour and capital. It also highlights how technological progress results from long-term growth and is exogenously determined (Todaro, 1997).

In addition to the supply side of the financial sector and its activities, the demand side and the economic units that may require financial services are covered under the financial system concept. Several economic units require these financial services. Households accumulating wealth or carrying earnings over from one period to the next along with firms needing capital for investment make up the majority of their clients. Hence, a nation's financial system can be understood by exploring real investment undertaken by households and how surplus units accumulate and transfer assets. This can be determined by answering how households and other surplus units finance firms and deficit units, and how households and firms ensure risk protection. Moreover, the state plays a part in the financial system not just regarding the supply and demand of financial services, but also the regulation and oversight of the financial sector.

Citation Information: Elhachemi, H.G. (2020). Forecasting the impact of share market development indicators on fixed capital formation and trade. *Journal of Entrepreneurship Education, 23*(4).

THEORETICAL FRAMEWORK

The more robust arguments promulgating the importance of finance in bringing about economic growth are encompassed within various growth models theories, namely the classical, neo-classical, and endogenous theory. More specifically, the Harrod-Domar classical growth model has been proposed for a closed economy and posits that the ratios of national savings and national capital-output facilitate the growth of the gross national product (GNP). Following this argument, the expansion of new capital stock via investments occurs when the economies save a part of their national income. The new income produced via savings will result in economic growth and development. The Harrod-Domar growth model was expanded by Kennedy (1966) to be applicable to open economies where savings were given similar implications.

The leading economic development strategies are industrialisation, rapid accumulation of capital, movement of underemployed workers, and economic planning. Moreover, the limitations of classical development economics stem from the lack of recognition that economic growth is just a means to other aims and that it focuses on national product, aggregate income and the total supply of specific goods as opposed to non-entitlements of individuals and the capabilities such entitlements produce (Sen, 1983). However, three economic development failure interpretations have been presented Mukherjee et al. (1994), which are; the failure to use output permitted by the current technical knowledge, outdated level and character of economic performance related to some country, and failure to achieve an acceptable level of living in a significant population proportion.

LITERATURE REVIEW

Financial markets and banking intermediation ensure superior savings mobilisation and sustainable economic growth. They also assist in the agglomeration of the financial resources of the economy. They enable risk diversification for individual investment projects and offer savers increased benefit investments which, in turn, leads to financial savings, as opposed to the retention of only a few profitable assets. Such an approach supports the development of the financial system (Goaied & Sassi, 2010).

Following a thorough review of the literature concerning finance and economy, Levine (1997) categorised several primary functions of a financial market. According to him, financial systems function to trade, hedge, diversify and pool risk, allocation resources, oversee managers and take complete corporate control, mobilise savings, and exchange goods and services.

Atje & Jovanovic (1993) and Beck & Levine (2004) examined the impact of stock markets development on economic growth for 94 countries over the period from 1960-1985 and for 40 countries over a period from 1976-1998, respectively. Both studies found that stock markets have a positive and significant effect on economic growth. Whereas, Berthelemy & Varoudakis (1998) investigated the integration between the financial market and real economic sectors in 82 countries for the period from 1960-1990. They indicated three different levels of integration. First is an underdeveloped financial sector with a low equilibrium and weak growth performance. Second is an acceptable development of the financial market with higher equilibrium and normal growth. The third is an unstable equilibrium with no relationship between financial market development and economic development.

In addition, Ansari (2002) found a positive impact of national income, financial development and money supply on income growth for the Malaysian economy. Furthermore, Jalil et al. (2010) found that supply-leading causality exists between finance and growth in

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China. Here policymakers may have emphasised financial system development to support long-run economic growth and stability.

Naceur & Ghazouani (2007) and Mathenge & Nikolaidou (2018) support the theory that no relationship exists between growth and stock market development and that financial structure model is not significant in explaining economic growth. Furthermore, Naceur & Ghazouani (2007) examined the relationship in the MENA region using stock market capitalisation over GDP as a proxy of equity market development, and GDP as growth. While, Mathenge & Nikolaidou (2018) examined 14 SSA countries in Sub Saharan Africa over the period from 1980-2014. They concluded that the underdeveloped financial systems in the MENA region led to insufficient support for economic growth.

In addition, a significant body of literature dedicated to the financial market development and economic growth relationship found a lack of consensus on the nature of this relationship and the causality direction. Patrick & Reimer (1966) proposed three different hypotheses to this end; supply-leading, demand-following, and bidirectional causality. The fourth and final view contends the absence of the causality between the two (Graff, 1999; Lucas Jr, 1988).

FUTURE ECONOMIC AND INVESTMENT OBJECTIVES IN KSA BASED ON VISION 2030

In 2017, the Saudi government published a new economic strategy called Vision 2030. This strategy established several key objectives for national development consisting of deep and ambitious socio-economic change, long-term budgetary balance, develop a financial sector and supporting non-oil revenues, local content, and long-term spending strategy based on programmes and projects. Vision 2030 consisted of three economic objectives, namely decreasing the unemployment rate from 11.6% to 7%, supporting small and medium-sized enterprises (SMEs) to increase their contribution to GDP from 20% to 35%, and increasing female participation from 22% to 30% by 2030.

These objectives will be achieved by supporting small businesses and productive families. In addition, SMEs are among the main agents of economic growth as they support job creation, innovation and stimulate exports. The SMEs of the Kingdom are yet to contribute significantly to the GDP, especially compared to advanced economies. Therefore, the Kingdom decides to strive to create appropriate employment opportunities for citizens by supporting SME entrepreneurship, privatisation and investments in new industries.

The primary strategy is supporting the private sector in the Kingdom, especially SMEs to create more jobs and help them develop their business scale in local and international markets by promoting sound governance principles. There is a national focus on priority sectors, mobility and automotive parts, battery technology, industrial and electrical equipment, renewables, metalworking, industrial digital software and hardware, and robotics.

RESEARCH METHODOLOGY

This study adopted the Autoregressive Distributive Lag (ADRL) model to determine the long-run impact of share market indicators development on KSA economic growth in term of gross fixed capital formation and trade using yearly data from 1985 to 2018 gathered from the World Bank and Saudi Arabian Monetary Agency (SAMA) websites.

This study used Number of Shares Traded (NST) and Market Value of Shares (MVS) as share market size development. It considered Value of Shares Traded (VST) and Number of

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Transactions (NT) as share market activity development. The specific equation, within which each variable follows the dependent variable, is presented as follows.

$$\Delta(GFCF)_{t-1} = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i}\, \Delta\, \ln(GFCF)_{t-1} + \sum_{i=0}^{p} \alpha_{2i}\, \Delta \ln(NST)_{t-1} + \sum_{i=0}^{p} \alpha_{3i}\, \Delta \ln(NT)_{t-1} + \sum_{i=0}^{p} \alpha_{4i}\, \Delta(VST)_{t-1} + \sum_{i=0}^{p} \alpha_{5i}\, \Delta \ln(MVS)_{t-1} + \sum_{i=0}^{p} \alpha_{6i}\, \Delta(trade)_{t-1} + \beta_1(GFCF)_{t-1} + \beta_2 \ln(NST)_{t-1} + \beta_3 \ln(NT)_{t-1} + \beta_4(VST)_{t-1} + \beta_5 \ln(MVS)_{t-1} + \beta_6(trade)_{t-1} + \mu_i \quad \ldots(01)$$

$$\Delta(TRADE)_{t-1} = \beta_0 + \sum_{i=1}^{p} \beta_{1i}\, \Delta\, \ln(TRADE)_{t-1} + \sum_{i=0}^{p} \beta_{2i}\, \Delta \ln(NST)_{t-1} + \sum_{i=0}^{p} \beta_{3i}\, \Delta \ln(NT)_{t-1} + \sum_{i=0}^{p} \beta_{4i}\, \Delta(VST)_{t-1} + \sum_{i=0}^{p} \beta_{5i}\, \Delta \ln(MVS)_{t-1} + \sum_{i=0}^{p} \beta_{6i}\, \Delta(gfcf)_{t-1} + \theta_1(TRADE)_{t-1} + \theta_2 \ln(NST)_{t-1} + \theta_3 \ln(NT)_{t-1} + \theta_4(VST)_{t-1} + \theta_5 \ln(MVS)_{t-1} + \theta_6(gfcf)_{t-1} + \epsilon_i \quad \ldots(02)$$

Upon completing the equation, the Granger-causality test is conducted to calculate the long- and short-run estimation and the relationships between variables. The corresponding equation is a composite of short-run and error correction estimation presented as follows.

$$\Delta(GFCF)_{t-1} = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i}\, \Delta\, \ln(GFCF)_{t-1} + \sum_{i=0}^{p} \alpha_{2i}\, \Delta \ln(NST)_{t-1} + \sum_{i=0}^{p} \alpha_{3i}\, \Delta \ln(NT)_{t-1} + \sum_{i=0}^{p} \alpha_{4i}\, \Delta(VST)_{t-1} + \sum_{i=0}^{p} \alpha_{5i}\, \Delta \ln(MVS)_{t-1} + \delta\, ECT_{t-1} \quad \ldots..(03)$$

$$\Delta(TRADE)_{t-1} = \beta_0 + \sum_{i=1}^{p} \beta_{1i}\, \Delta\, \ln(TRADE)_{t-1} + \sum_{i=0}^{p} \beta_{2i}\, \Delta \ln(NST)_{t-1} + \sum_{i=0}^{p} \beta_{3i}\, \Delta \ln(NT)_{t-1} + \sum_{i=0}^{p} \beta_{4i}\, \Delta(VST)_{t-1} + \sum_{i=0}^{p} \beta_{5i}\, \Delta \ln(MVS)_{t-1} + \sum_{i=0}^{p} \beta_{6i}\, \Delta(gfcf)_{t-1} + \gamma\, ECT_{t-1} \quad \ldots(04)$$

In this study, the ARDL model analysis involved three phases adopted from Kouakou (2011). First, the variables are determined and calculated using unit root test, then the co-integration relationship among the variables was tested through the bounds test. Lastly, the causality test of Ganger was determined to examine and determine the relationship between variables.

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Table 1 UNIT ROOT TESTS		
Variables	ADF	
	L	FD
LNST	-	-5.96***
LVST	-	-3.89**
LMVS	-	-6.74***
LNT	-	-3.34**
GFCF	-	-5.66***
TRADE	-	-4.44***
Note: The null hypothesis represents no stationarity, and the significance levels of *** represent stationarity at 1% and ** and represent stationarity at 5%.		

The results of the unit root stationarity for the variables are tabulated in Table 1. The table shows that all variables are stationary at first using the ADF test. As such, the suitable analytical technique to be utilised is the ARDL model.

The previous step is followed by the examination of the bounds test (refer to Table 2). From the table, F-statistics values of GFCF and TRADE exceeded the upper bound of 1% in significance, indicating a significant co-integration relationship between variables at the significance level of 1%.

Table 2 Bound Test Result							
Dependent Variable	**F-statistics**	**I(0)(10%)**	**I(1)(10%)**	**I(0) (5%)**	**I(1)(5%)**	**I(0) (1%)**	**I(1) (1%)**
GFCF	**6.01*** **	2.26	3.35	2.62	3.79	3.41	4.68
TRADE	**7.37*** **	2.75	3.79	3.12	4.25	3.93	5.23
Note: * denotes 10%, ** denotes 5% and *** denotes 1% significance levels. The null hypothesis represents no co-integration. Critical values were adopted form Pesaran et al. (2001).							

The bound test results indicated a significant long-run relationship between share market development and gross fixed capital formation in term of size and activity and sum of exports and imports of goods and services (TRADE) represented by the following equation.

GFCF=+11.55 LMVS*+0.21LNST-8.48 LNT**+3.35 LVST+0.34 TRADE ** …(05)**

TRADE=+29.37LMVS*+4.78 LNST***+2.13 LNT-17.1 LVST***-2.5 GFCF*** …(06)**

The diagnostic test results for long-run equilibrium model are presented in Table 3.

Table 3 DIAGNOSTIC TEST RESULTS		
Test Statistic	**GFCF Model**	**TRADE Model**
	Prob	Prob
Serial Correlation	0.62	0.71
Heteroscedasticity	0.92	0.13
Normality	0.4	0.78

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The diagnostic test results show that the model does not suffer from serial correlation, normality and heteroscedasticity problems. The lag order for GFCF and TRADE models are (1.2.1.2.0.2) and (1.1.1.1.1.1), respectively, on the basis of the Akaike information criterion.

The ECM coefficients for both of GFCF and TRADE models are negative and significant at 1% significant level (-0.69) and (-0.74), respectively. This reinforces the idea of the existence of the long-run relationship among the variables. For both models, the R2 is approximately 75% which provides accepted explanatory power.

Table 4 shows the Granger-causality test, providing that share market development indicators in terms of size and activity (MVS, NST, NT and VST) Granger cause gross fixed capital formation, while, GFCF does not Granger cause share market development indicators. In other words, the supply-leading causality hypothesis exists between share market development indicators and fixed capital formation in KSA.

Furthermore, the table shows that no Granger-causality exists between share market development indicators in terms of size and activity (MVS, NST, NT and VST) and trade indicator as a proxy of growth. Moreover, only trade granger causes fixed capital formation in KSA. As such, a unidirectional hypothesis exists between the indicators.

Table 4
GRANGER-CAUSALITY HYPOTHESIS RESULTS

Variables	GFCF	TRADE
GFCF	-	Uni-directional (TRADE cause GFCF)
TRADE	Uni-directional (TRADE cause GFCF)	-
LMVS	Supply Leading	Bi-Directional
LNST	Supply Leading	Bi-Directional
LNT	Supply Leading	Bi-Directional

The results in equations 05 and 06 show that share market activity development indicators have an insignificant impact on fixed capital formation and trade, which is contrary to the theory. Vaithilingam et al. (2006) argued that the financial system forms a crucial part of the economy. A weak financial system would jeopardise long-term economic sustainability and ultimately lead to a financial crisis. Furthermore, Romer (1986) believes that the financial system functions influence steady-state growth through the changes in the technology innovation rate. Levine (1997) stated that an increasing volume of the body of literature had urged sceptics to consider the notion that the development of financial markets and institutions is a critical and interconnected part of the process of growth, as opposed to limiting their beliefs to the view that the financial system merely reacts passively to economic growth and industrialisation. Whereas, the results in equations 05 and 06 show that share market size development indicators have a significant positive impact on fixed capital formation and trade, which aligns with theory.

Lucas Jr (1988) and Rebelo (1992) state that there are two streams through which every financial function may affect growth in the economy. These streams are capital accumulation and technological innovation. In other words, steady-state growth is influenced by the financial system functions via the rate of capital formation. Capital formation is influenced by the financial system through changes in the rate of savings or the reallocation of savings among differing capital generating technologies.

In addition, according to Harrod et al. (1966), the expansion of new capital stock via investments occurs when the economies save a part of their national income. The new income produced via savings will result in economic growth and development. Moreover, Goaied &

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Sassi (2010) state that financial markets ensure superior savings mobilisation and sustainable economic growth, as well as assists in the agglomeration of the financial resources of the economy. It also enables the conduct of risk diversification to individual investment projects and offers savers increased benefit investments which, in turn, lead to financial savings, as opposed to the retention of only a few profitable assets.

It is noticeable from the above long-run estimated results that KSA financial market is suffering from high speculations capital volume. This led to a negative and insignificant impact on capital accumulation and technological innovation. Moreover, the results show that financial market development in terms of size based on supporting foreigner consumption product rather than domestic products, which led to a decrease in the value of the Saudi riyal. Moreover, KSA share market indicators show that Saudi's economy is dependent on external markets for its consumption as opposed to producing products for its consumption.

CONCLUSION

Based on the findings, it is thus imperative for Saudi policymakers to establish policies that bring improvements to the share market, particularly in terms of secondary market development. We recommend that the entire stock trading market be transformed to achieve superior exchange performance.

Several measures need to be established to boost share market development in terms of capital and liquidity. Such measures may include the enhancement of second-tier stock markets, the launching of online trading, minimising the period of settlement, adding more branches, stock market integration in other markets (particularly in the context of emerging nations) and the introduction of more instruments into stock exchanges which are aligned with the people's demands and needs such as Islamic financial products which are aligned with shariah compliance. These will gradually cultivate economic growth, prevent internal financial crisis, and contribute towards the management of the global financial crisis.

Further, serious local investors should be given the opportunity to participate in the market and take part in formulating policy. Policies that contribute to active participation, specifically by local real investors, will enhance liquidity and attract foreign investors. Such policies may include tax holidays, relaxation of tax withholding, capital gain tax, and the establishment of a high degree of transparency in order to attract investors. Such transparency may be in the form of integrating periodic review of listed companies' reports and the sanctioning of firms that commit errors. Policymakers should also review the legal and institutional arrangements which contribute towards financial repression in order to hinder financial sector's efficiency and restrict speculation.

When the Saudi financial sector was badly affected in the past few years, rather than dealing with the situation via the international financial system, it dealt with international brokers, black market traders, brokers and currency traders. The impact of such activities affected not only the government of KSA but also its private sector owing to the country's weak financial institutions. This weakness resulted in the bankruptcy of such institutions, the shutting down of some and the merging of others.

Another justification for the outcome of the study is that one of the major functions of the stock market is risk management as implemented by the facilitation of risk pooling and risk allocation by households and firms (Merton & Bodie, 1995). In this regard, financial malpractices lead to the financial crisis. Ahmed (2009) shed light that the mismanagement of risks at institutional, organisational and production levels precipitated the 2008 financial crisis.

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Risk can be categorised into inherent and residual risk, where the former refers to risks that exist prior to taking controls, and the latter refers to the exposure following the implementation of certain corrective measures/effective controls. Risk management tools would be to minimise inherent risks and keep them at manageable levels in order to satisfy stakeholders' risk appetite. This will, in turn, boost their engagement in growth-developing and wealth-generating economic activities.

Several approached can be adopted by policymakers to bring about such developments. These include the creation of real business, a supportive economic environment and review of the application of the financial market regulation that adheres to the aim of realising discipline in applying governance, to enhance and develop understanding and to manage risks.

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