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Macroeconomic determinants of stock market development in the Sultanate of Oman

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ABSTRACT

This study evaluates the effect of macroeconomic variables on the development of the Omani stock market using quarterly data from 2010 Q1–2022 Q4. Financial markets are vital to every economy, as they're the most important engines. Specifically, the impact of the inflation rate, the development of the banking sector, liquidity of the stock market, trade openness, economic growth, and oil prices on Muscat Stock Exchange development were investigated to help policymakers develop the stock market and reinforce sustainable economic growth. Insufficient data prevented the use of foreign direct investment (FDI). The literature showed significant variations in determining the essential macroeconomic factors that affect the stock market's development. There was a dearth of such studies conducted in Oman. The autoregressive distributed lag (ARDL) model was employed, and the macroeconomic variables and Omani financial market development were found to be cointegrated. The long-term determinants were the liquidity of the stock market, oil prices, and the development of the banking sector. In the short term, the drivers were economic growth, the stock market's liquidity, and the development of the banking sector. The researcher advises policymakers to increase stock market liquidity through expediting listing procedures and simplifying initial public offering (IPO) processes.

Contribution/ Originality: This research offers significant recommendations for policymakers in the Sultanate of Oman because the topic of capital market development is of increased interest to them to achieve Oman's Vision 2040 through two main directions, namely a diversified and sustainable economy and stable economic leadership, as there is no previous Omani study in this regard.

1. INTRODUCTION

Capital markets perform essential functions in the financial economy. They are critical in fostering economic growth as measured by gross domestic product growth (GDPG) through risk-sharing, liquidity, and fund mobilisation, which reduce the cost of capital and enhance corporate governance (Ben Naceur, Ghazouani, & Omran, 2007; Capasso, 2004; Garcia & Liu, 1999; Greenwood & Jovanovic, 1990; Hoque & Yakob, 2017; Kapaya, 2020; Levine, 1997; Pagano, 1993; Sinha, Viswanathan, & Narayanan, 2015). Emerging stock markets have expanded significantly in market capitalisation since the end of the last century (El-Wassal, 2005; Yartey, 2010). Fischer and Merton (1984) stated the importance of the stock market in supporting corporate finance choices and a favorable predictive indicator for business cycles and gross national product components.

The drivers of SMD are extremely important. Based on the significance of stock markets, numerous studies have looked into the factors driving SMD. Researchers Garcia and Liu (1999); Ho and Njindan Iyke (2017) and Omar, Ali,

Mouneer, Kouser, and Al-Faryan (2022) have classified these drivers into institutional and macroeconomic categories. The institutional drivers include the rule of law, financial market liberalisation, anti-director rights, corporate governance, legal protection, and stock market integration, while the macroeconomic drivers include variables such as economic growth, banking sector development (BSD), inflation rate as measured by consumer price index (CPI) changes, and interest rate (Garcia & Liu, 1999; Ho & Njindan Iyke, 2017). Most institutional factor literature generally agreed on the effects of the factors on SMD.

The results of studies on macroeconomic factors remain debatable (Ho, 2019a, 2019b; Ho & Njindan Iyke, 2017). As an illustration, some research revealed an association between BSD and SMD (Bayar, 2016; Garcia & Liu, 1999; Ho, 2019b; Ho & Odhiambo, 2018; Ho & Odhiambo, 2020; Matadeen, 2019; Omar et al., 2022; Tsaurai, 2018) while others reported a negative relationship (Ho, 2019a; Yartey, 2010). Furthermore, some studies reported a positive relationship between trade openness (TOP) and SMD (Bayar, 2016; Ho, 2019a; Tsaurai, 2018) whereas other researchers stated that the relationship is negative (Ho, 2019b; Ho & Odhiambo, 2018; Omar et al., 2022). Moreover, some studies reported no association between TOP and SMD (Aluko & Kolapo, 2020). Additionally, some studies (Ho, 2019a, 2019b) obscured country-specific information by using panel data approaches, which included data for multiple countries. Lastly, most studies overlooked oil prices (OP) as an SMD driver. Thus, conflicting findings are widely found in the literature on the association between the basic macroeconomic factors and SMD.

Established in 1989, the Muscat Securities Exchange (MSX) functioned as a government institution until 11 April 2021. Subsequently, the Omani capital market authority granted the MSX the official license to dissolve the MSX to promote economic diversification in Oman and attract domestic and global investments consistent with Oman Vision 2040 (MSX, 2021). Historically, MSX market capitalisation (Figure 1) generally experienced an upward trend after the world financial crisis, but it has been vulnerable to declining oil prices starting in 2014. Subsequently, the downward trend began and continued until the end of the COVID-19 pandemic emergency phase, after which the market capitalisation value began to increase again.

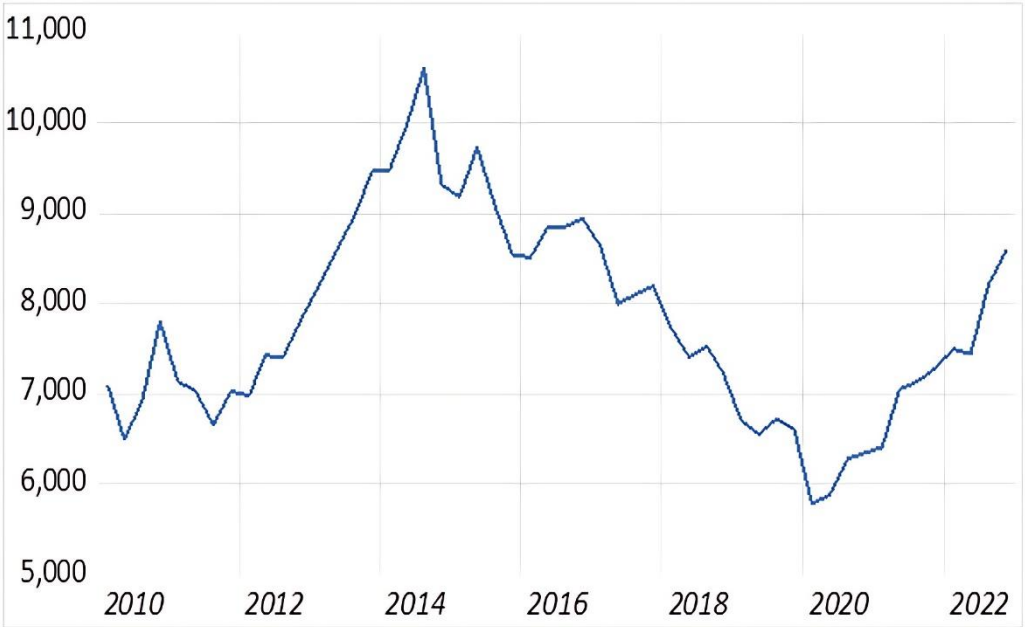

Figure 1. Market capitalization (Millions of Omani rial) of Muscat stock exchange 2010-2022.
Source: Data from world federation of exchanges (WFE) statistics was analyzed and presented by the researcher.

The declining oil prices contributed to the worsening of public debt and a decline in Oman's credit rating in subsequent years, so the government began developing Oman Vision 2040, which aims to diversify the economy, reduce dependence on oil, and achieve sustainable development. The Omani government started a group of financial market reforms to make it more capable of meeting financing and investment needs and promoting economic growth.

In 2021, the Muscat Securities Market was transferred to the Oman Investment Authority under the name Muscat Stock Exchange, to enhance governance and transparency, and the new securities law was issued to protect investors, enhance the regulatory environment, and provide innovative financial products. The government also started implementing a fiscal balance plan aimed at rationalizing spending, attracting investments, and achieving financial sustainability (CBO Report & Annual Report, 2020, 2021; Oman Vision 2040 Implementation Follow-up unit, 2019).

As a result, Omani policymakers are increasingly focusing on SMD as a means to achieve Oman Vision 2040. Specifically, attention has focused on the strategic direction toward a sustainable and diversified economy and creating a stable economic leadership that can establish and align fiscal, monetary, and investment policies.

Considering the above and given the special economic circumstances of Oman and the role of the Omani Stock Market in achieving the objectives of Oman Vision 2040, and in the absence of any previous study in this regard in the Omani context, the ignorance of oil prices in the related literature, and the contradictory results of SMD drivers in the literature, it is impossible to conclude the SMD drivers in Oman without thorough study. Accordingly, such research should be conducted to help decision-makers develop the financial market by answering the question of what are the most influential macroeconomic factors on SMD in Oman? to contribute to improving government policies and to enlighten future research in the Omani contest.

This study aims to advance current knowledge by examining the macroeconomic factors that influence Omani SMD. Specifically, the effects of BSD, CPI, GDPG, OP, TOP, and stock market liquidity (SML) on Omani SMD and to recommend for Omani policymakers.

The remaining sections of this paper are (2) the literature review, (3) the data and methodology, (4) the results, and (5) the conclusion.

2. LITERATURE REVIEW

The macroeconomic drivers of SMD have undergone many empirical investigations. The GDPG, INF, interest rate, exchange rate, BSD, TOP, and SML significantly affect the SMD in the long- and short-term in developed and developing economies (Asravor & Fonu, 2021; Bayar, 2016; Ben Naceur et al., 2007; Garcia & Liu, 1999; Levine & Zervos, 1996; Omar et al., 2022; Şükrüoğlu & Nalin, 2014; Yartey, 2010).

There are contradictions in the literature on the association between SMD and BSD. Many studies confirmed a positive relationship between BSD and SMD because the stock market and the banking industry have complimentary economic functions (Ben Naceur et al., 2007; Garcia & Liu, 1999; Ho & Odhiambo, 2018; Ho & Odhiambo, 2020; Omar et al., 2022; Tsaurai, 2018). Nonetheless, other studies reported a negative relationship between BSD and SMD as the banking sector performed better than the stock market (Ho, 2019a; Stiglitz, 1985) or because BSD and SMD resulted in competition between them as financing vehicles. Briefly, the high level of banking services in the economy substitutes debt for equity (Yartey, 2010). Additionally, Ho (2019a) empirically confirmed the long-term negative association between BSD and SMD in Malaysia.

Most theories suggest that increasing inflation rate (INF) negatively affects SMD as a high INF is typically associated with small, less liquid capital markets (Boyd, Levine, & Smith, 2001; Choi, Smith, & Boyd, 1996). Other studies reported that the negative relationship is due to high inflation depleting savings and reducing possible stock market investments (Boyd et al., 2001; Omar et al., 2022). Numerous empirical investigations substantiated the inverse association between INF and SMD (Bayar, 2016; Ben Naceur et al., 2007; Garcia & Liu, 1999; Ho & Odhiambo, 2020; Matadeen, 2019; Omar et al., 2022). Nevertheless, other studies reported that the INF may positively affect SMD when the INF is excessively high (Boyd et al., 2001; Ho & Odhiambo, 2018). For example, Asravor and Fonu (2021) reported a positive relationship between inflation and SMD in Ghana. Lastly, other studies reported an insignificant relationship between INF and SMD (Aluko & Kolapo, 2020; Azeez & Obalade, 2019; Tsaurai, 2018).

The significant role of stock markets in GDPG has prompted increasing SMD research. The positive association between GDPG and SMD is well acknowledged theoretically. For example, rapid financial market growth is observed

only in periods of GDPG, where increasing incomes and savings are channelled into financial markets, which include stock markets (Boyd & Smith, 1998; Omar et al., 2022). The majority of empirical investigations verified the positive association between gross domestic product (GDP) and the stock market (Bayar, 2016; El-Wassal, 2005; Levine & Zervos, 1998; Matadeen, 2019; Omar et al., 2022). Nonetheless, other studies reported no significant relationship between GDPG and the stock market (Aluko & Kolapo, 2020; Azeez & Obalade, 2019; Ho, 2019a; Ho & Odhiambo, 2018; Tsaurai, 2018; Yartey, 2010).

Most studies overlooked OP as an SMD macroeconomic driver. Rather, research has concentrated on the effects of OP on the return of the stock market index and reported contradictory findings even in oil-exporting economies. For instance, studies by Delgado, Delgado, and Saucedo (2018) and Muritala, Ijaiya, Adekunle, Nageri, and Yinus (2020) demonstrated a positive impact of OP on stock returns. Contrastingly, Raza, Shahzad, Tiwari, and Shahbaz (2016); Alqahtani, Klein, and Khalid (2019), Mokni (2020) and Sheikh, Asad, Ahmed, and Mukhtar (2020) reported a negative effect. Khan, Teng, Khan, Jadoon, and Khan (2021) is one of the rare pieces of literature that empirically studied the association between OP and SMD and revealed a positive association. Nevertheless, OP is expected to play a role in SMD in heavily oil-reliant economies, such as Oman. Few studies looked at how OP affected the Omani stock market. For example, Echchabi and Azouzi (2017) reported that OP significantly affected the Omani Stock Index without determining the effect direction. Additionally, reported a negative effect of OP on Omani Stock Index return (MSX30). Regardless of the direction, the significant effects of OP on the stock market index or return reflect increased market capitalisation and, consequently, the SMD. Accordingly, OP should be considered when studying SMD in an oil-exporting country such as Oman.

Several studies reported that from the finance supply side, trade liberalisation and openness enhance financial development by reducing the disruptive power of financial competition (Braun & Raddatz, 2005; Huang & Temple, 2005; Kim, Lin, & Suen, 2010; Rajan & Zingales, 2003). However, other studies focused on demand and stated that TOP affects price elasticity, increases uncertainty and income fluctuations, and exposes businesses to foreign competition and global risk, which creates the need for insurance (Newbery & Stiglitz, 1984) and risk management services (Svaleryd & Vlachos, 2002) that enhance financial development. Therefore, TOP has a positive impact on both the supply and demand. Nevertheless, Niroomand, Hajilee, and Al Nasser (2014) stated that the country's specific nature must be considered. Several recent empirical investigations have demonstrated a positive association between TOP and financial progress (Bayar, 2016; Ho, 2019a; Ho & Odhiambo, 2020; Tsaurai, 2018). Nonetheless, other research has found a negative association between TOP and financial progress (Baltagi, Demetriades, & Law, 2009; Ho, 2019b; Ho & Odhiambo, 2018; Omar et al., 2022).

There is a consensus that SML positively affects SMD. The positive effect is theoretically based on the idea that liquid stock markets allow investors to change portfolios at a low cost, which renders the investment less risky and more profitable. More liquid markets enable more savings to be channelled into the stock market (Bencivenga, Smith, & Starr, 1996; Levine, 1991). Garcia and Liu (1999); Ben Naceur et al. (2007); Yartey (2010); Bayar (2016); Azeez and Obalade (2019), Tsaurai (2018), and Matadeen (2019), empirically proved these positive effects, while Ho and Odhiambo (2018); Ho and Odhiambo (2020) and Omar et al. (2022) reported no significant relationship between SML and SMD. Other macroeconomic drivers [foreign direct investment (FDI), interest rates (IR), exchange rates (EXR)] are not covered in this study on the Sultanate of Oman given the interest rate stability, the fixed exchange rate, and insufficient FDI quarterly data.

In summary, the literature has yielded contradictory results regarding most of the macroeconomic drives of SMD in multiple countries and different economies. Besides, many previous studies did not rely on the ARDL methodology and were therefore unable to measure long-term effects, and their results were limited to short-term effects; for example, some studies applied the ordinary least squares regression (Garcia & Liu, 1999; Tsaurai, 2018). Other studies used panel data (Ben Naceur et al., 2007; Şükrüoğlu & Nalin, 2014) that cannot tell the country-specific characteristics among a group of countries. Literature has also ignored oil prices except for the study of Khan et al. (2021) but this

was applied in a non-oil-producing country. There are no such studies in Oman or even the Gulf region, which has specific economic conditions. Accordingly, this paper adds to the existing literature by shedding light on the stock market development drivers in the Omani contest.

3. DATA AND METHODOLOGY

3.1. Data

This study on the SMD macroeconomic drivers used data for 2010 Q1–2022 Q4, which was selected according to data availability. Data were obtained from the official site of the World Federation of Exchanges (WFE), International Financial Statistics (IFS), and the Omani National Centre for Statistics and Information (NCSI). To quantify SMD, the market capitalization to GDP ratio was calculated, as it was used widely in other studies (Arestis, Demetriades, & Luintel, 2001; Ho & Njindan Iyke, 2017; Omar et al., 2022; Yartey, 2010). Demirgüç-Kunt and Levine (1996) proposed a correlation between all SMD measures, including stock market size, stock market volatility, international integration level. The remaining variables (macroeconomic variables) were measured as described in most previous studies. Table 1 lists the sources, abbreviations, study variable calculations, and supporting studies.

Table 1. Variables of the study.

Variable	Abbreviation	Calculation	Source	Previous studies
Stock market development	SMD	Market capitalization divided by GDP	Author's calculation depending on WFE & NCSI	Garcia and Liu (1999) and Yartey (2010).
Banking sector development	BSD	Domestic credit divided by GDP	Author's calculation depending on IFS and NCSI	Beck and Levine (2004); Yartey (2010) and Ho and Odhiambo (2018)
Inflation	CPI	The consumer price index (2012=100) annual percentage change.	Author's calculation depending on NCSI	Ho (2019a) and Ho (2019b)
Economic growth	GDPG	Real gross domestic product annual percentage change	Author's calculation depending on NCSI	Ho (2019a) and Ho (2019b)
Oil prices	OP	The growth of the average monthly prices in each quarter	Author's calculation depending on NCSI	Jones and Kaul (1996); Narayan and Narayan (2010) and Khan et al. (2021)
Trade openness	TOP	The sum of imports and exports divided by GDP	Author's calculation depending on IFS	El-Wassal (2005); Ho and Odhiambo (2018) and Omar et al. (2022)
Stock market liquidity	SML	Trade value as a percentage of market capitalization	Author's calculation depending on WFE & NCSI	Yartey (2010) and Ho and Odhiambo (2018)

Table 1 illustrates that the data was acquired from several sources, then calculated by the author according to the methods of the related literature. For instance, BSD data was obtained from NCSI, and then the domestic credit divided by gross domestic product (GDP) in each quarter was calculated by the author. Seasonal data may affect the calculation of CPI and GDPG, posing a potential problem. To avoid this problem, CPI and GDPG were calculated based on year-to-year quarterly changes to neutralize the effect of seasonal variations.

3.2. Methodology

Previous studies measured cointegration between variables using the technique of Johansen (1991) maximum likelihood, Engle and Granger (1987) and the Pesaran, Shin, and Smith (2001) ARDL approach. This study measured

the cointegration between macroeconomic variables and Omani SMD using the ARDL approach, as it does not place the restricting assumption of other models that all variables should be stationary in the same order. The ARDL can be used even if some variables are stationary in the first level (0) and the rest are stationary in the first (I) or second difference (II) (Pesaran et al., 2001). Accordingly, this study tested the variables for stationarity, then conducted ARDL bounds testing using the following linear equation:

$$\Delta ln\ SMD_t = \beta_0 + \sum_{i=1}^{n1} \beta_{1i}\, \Delta ln\ SMD_{t-1} + \sum_{i=1}^{n2} \beta_{2i}\, \Delta ln\ BSD_{t-1} + \sum_{i=1}^{n3} \beta_{3i} \Delta\ CPI_{t-1} + \sum_{i=1}^{n4} \beta_{4i}\, \Delta\ GDPG_{t-1} + \sum_{i=1}^{n5} \beta_{5i}\, \Delta ln\ OP_{t-1} + \sum_{i=1}^{n6} \beta_{6i}\, \Delta ln\ TOP_{t-1} + \sum_{i=1}^{n7} \beta_{7i}\, \Delta ln\ SML_{t-1} + \vartheta_1\, ln\ SMD_{t-1} + \vartheta_2\, ln\ BSD_{t-1} + \vartheta_3\ CPI_{t-1} + \vartheta_4\ GDPG_{t-1} + \vartheta_5\, ln\ OP_{t-1} + \vartheta_6\, ln\ TOP_{t-1} + \vartheta_7\, ln\ SML_{t-1} + \varepsilon_t,$$

Where: *SMD* is the stock market development, *BSD* represents the banking sector development as determined by the domestic credit divided by GDP, *CPI* is the year-to-year quarterly change in the consumer price index, *GDPG* is the year-to-year quarterly change in real gross domestic product, *OP* represents oil prices, *TOP* is the summation of imports and exports to GDP, and *SML* is stock market liquidity as determined by the trade value as a percentage of market capitalization; *ln* represents the natural logarithm of macroeconomic variables (SMD, BSD, OP, TOP, SML),[1] β denotes the short-term coefficient, ϑ denotes the long-term coefficient, and ε denotes the white-noise error term. Finally, the Akaike information criterion (AIC) was selected to determine the maximum number of lags in the model.

The hypothesis (H_0: $\vartheta_1 = \vartheta_2 = \vartheta_3 = \vartheta_4 = \vartheta_5 = \vartheta_6 = \vartheta_7 = 0$) was examined in comparison with the alternative hypothesis (H_1: $\vartheta_1 \neq \vartheta_2 \neq \vartheta_3 \neq \vartheta_4 \neq \vartheta_5 \neq \vartheta_6 \neq \vartheta_7 \neq 0$). If one or more variables are distinct from zero and upper and lower values are lower than the value of F-statistics of the bounds test, this indicates that cointegration exists among variables (Pesaran et al., 2001). If cointegration was confirmed, then the following error correction model (ECM) was used to estimate the association in the short-term among the variables:

$$\Delta ln\ SMD_t = \beta_0 + \sum_{i=1}^{n1} \beta_{1i}\, \Delta ln\ SMD_{t-1} + \sum_{i=1}^{n2} \beta_{2i}\, \Delta ln\ BSD_{t-1} + \sum_{i=1}^{n3} \beta_{3i} \Delta\ CPI_{t-1} + \sum_{i=1}^{n4} \beta_{4i}\, \Delta\ GDPG_{t-1} + \sum_{i=1}^{n5} \beta_{5i}\, \Delta ln\ OP_{t-1} + \sum_{i=1}^{n6} \beta_{6i}\, \Delta ln\ TOP_{t-1} + \sum_{i=1}^{n7} \beta_{7i}\, \Delta ln\ SML_{t-1} + \delta ECM_{\ t-1} + \varepsilon_t,$$

Where δ represents the error correction term coefficient $ECM_{\ t-1}$. A significant and negatively assessed δ parameter indicated a correction mechanism for the equilibrium deviations. Finally, testing for stability and diagnosis were carried out.

4. RESULTS

4.1. Stationarity Test

Given that time series data were employed in this study, the stationarity test for the variables should be performed first, then the long- and short-term relationships can be verified using the ARDL bounds test. This study used two tests for unit root: the augmented Dicky–Fuller (ADF) test (Dickey & Fuller, 1979) and the Perron test (PP) (Perron, 1997). EViews 13 program was used to conduct the required analysis. The F-statistics values of the ADF unit root test and PP test, respectively, are presented in Table 2 panels A and B. The results revealed that most of the variables were not stationary in the level, and all variables were stationary at the first difference under both tests. Accordingly, the data is valid for the bounds test of the ARDL model.

[1] CPI and GDPG were not converted to the natural logarithmic form due to negative observations shown throughout the study period.

Table 2. Variables' unit root test results.

Variable	Panel A: ADF unit root test					
	In the level I (0)			At the first difference I (1)		
	With constant	With a constant & trend	Without a constant & trend	With constant	With a constant & trend	Without a constant & trend
Δln SMD	-1.350 no	-2.647 no	-0.999 no	-7.855 ***	-7.817 ***	-7.844 ***
Δln BSD	-1.647 no	-0.292 no	1.386 no	-3.131 **	-3.533 **	-2.704 ***
Δ CPI	-1.775 no	-1.255 no	-1.286 no	-4.683 ***	-4.849 ***	-4.737 ***
Δ GDPG	-2.635 no	-2.347 *	-2.424 **	-3.418 **	-3.806 **	-3.456 ***
Δln OP	-1.471 no	-1.362 no	0.055 no	-5.904 ***	-5.869 ***	-5.965 ***
Δln TOP	-2.331 no	-2.416 no	-0.268 no	-6.535 ***	-6.538 ***	-6.606 ***
Δln SML	-3.492 no	-4.496 **	-1.281 ***	-6.372 ***	-6.296 ***	-6.413 ***
Panel B: PP unit root test						
Variable	In the level I (0)			At the first difference I (1)		
	With constant	With a constant & trend	Without a constant & trend	With constant	With a constant & trend	Without a constant & trend
Δln SMD	-1.363 no	-1.781 no	-1.078 no	-7.839 ***	-7.805 ***	-7.802 ***
Δln BSD	-1.508 no	-0.830 no	0.93 no	-7.174 ***	-7.297 ***	-7.123 ***
Δ CPI	-2.017 no	-2.100 no	-1.410 no	-5.923 ***	-5.921 ***	-5.983 ***
Δ GDPG	-2.452 no	-2.108 no	-2.355 **	-7.555 ***	-7.876 ***	-7.609 ***
Δln OP	-1.728 no	-1.700 no	0.022 no	-5.881 ***	-5.843 ***	-5.944 ***
Δln TOP	-2.251 no	-2.416 no	-0.230 no	-8.907 ***	-8.959 ***	-9.018 ***
Δln SML	-3.492 **	-4.496 ***	-1.334 no	-27.678 ***	-27.56 ***	-16.326 ***

Note: No denotes insignificance, * indicates 10% significance, ** indicates 5% significance, and *** indicates 1% significance.

4.2. The ARDL Bound Testing Model Results

First, multiple criteria were used to determine the optimal length of lag for the model. Table 3 demonstrates that most of the criteria suggested four lags. The bound test outputs revealed cointegration between the macroeconomic variables and the SMD, with the F-statistics value of 6.967 (Table 4) surpassing the upper bound critical value of 4.931 reported by Pesaran et al. (2001). After proving that SMD and the macroeconomic variables are cointegrated, the long- and short-term model for the effects of macroeconomic variables on SMD was estimated. The AIC was used as the model selection criterion with four lags to determine that the optimal model was ARDL (2, 4, 0, 4, 0, 0, 3).

Table 3. VAR lag order selection criteria.

Lag	Log L	LR	FPE	AIC	SC	HQ
0	309.582	NA	7.89E-15	-12.607	-12.335	-12.504
1	524.228	357.744	8.12E-18	-19.509	-17.326*	-18.685
2	572.669	66.606	9.46E-18	-19.486	-15.393	-17.939
3	629.831	61.926	9.69E-18	-19.826	-13.823	-17.558
4	736.662	84.574*	1.98e-18*	-22.236*	-14.322	-19.245*

Note: * Indicates the suggested number of lags by each criterion.
LR: Likelihood test statistic.
HQ: Hannan- Quinn information criterion.
FPE: Final prediction error.
SC: Schwarz information criterion.
AIC: Akaike information criterion.

Table 5 presents the results of the short- and long-term effects of the selected macroeconomic drivers on SMD. The long-term regression results (Table 5, Panel A) indicate that SML, BSD, and OP were the main drivers of the Omani SMD. The SML coefficient was significant and positive, which indicated a positive effect of SML on SMD. The BSD and OP coefficients were significant and negative, which suggested that they negatively affected the SMD. The positive effects of SML were consistent with most of the literature (Azeez & Obalade, 2019; Bayar, 2016; Ben

Naceur et al., 2007; Garcia & Liu, 1999; Yartey, 2010), where markets that are more liquid result in more savings being channelled into the stock market.

Table 4. Results of ARDL bounds test.

Dependent variable	Independent variables	Significance level	F-statistics	Lower value I (0)	Higher value I (1)	Decision
Δln SMD	*Δln BSD, Δ CPI, Δ GDPG, Δln OP, Δln TOP, Δln SML*	1%	6.967	3.540	4.931	Cointegrated

The negative effects of the BSD on SMD aligned with Stiglitz (1985) and Ho (2019a). The negative effects demonstrate the competition between the Omani banking sector and the stock exchange, where the banking sector is performing better than the stock market in the Omani economy and the government needs to reinforce the investors' faith and trust in the stock market. The negative effects of OP were consistent with and inconsistent with Khan et al. (2021). The possible reason is that several corporations listed in the Muscat Stock Market, such as transportation and tourism corporations, benefit from a decreased OP given the cost reduction and profit maximisation and subsequent increased investor demand for such stocks.

Table 5. ARDL model long-run and short-run estimations.

Panel A. long run estimations[2]				
Independent variable	**Coefficient**	**Standard error**	**t-statistics**	**Probability**
Ln BSD(-1)	-0.761	0.189	-4.032	0.000
INF	-3.587	2.708	-1.324	0.193
GDPG(-1)	-0.461	0.618	-0.746	0.460
Ln OP	-0.594	0.133	-4.477	0.000
Ln TOP	0.133	0.195	0.681	0.500
Ln SML(-1)	0.249	0.0674	3.691	0.000
Panel B. short run estimations[3]				
Independent. variable	Coefficient	Standard error	t-statistics	Probability
D (Ln SMD(-1))	-0.187	0.100	-1.831	0.076
D (Ln BSD)	-0.153	0.101	-1.519	0.138
D (Ln BSD(-1))	0.292	0.099	2.941	0.006
D (Ln BSD(-2))	0.017	0.101	0.171	0.866
D (BSD(-3))	-0.227	0.082	-2.763	0.009
D (GDPG)	-0.025	0.077	-0.319	0.751
D (GDPG(-1))	0.226	0.080	2.840	0.008
D (GDPG(-2))	0.231	0.081	2.866	0.007
D (GDPG(-3))	0.319	0.078	4.107	0.000
D (Ln SML)	0.040	0.016	2.496	0.017
D (Ln SML(-1))	-0.007	0.021	-0.350	0.729
D (SML(-2))	-0.036	0.018	-2.041	0.049
ECMt-1	-0.444	0.053	-8.347	0.000

Note: R^2 = 0.811, adjusted R^2 = 0.747, and F-statistics = 12.547, Prob (0.000).

Table 5 panel B, presents the short-term regression results. The key short-term macroeconomic drivers of the Omani SMD are BSD, GDPG, and SML, which all had significant coefficients. This result indicates that BSD and SML affect SMD even in the short-term but differently, as their significant coefficients demonstrate multiple positive and negative signs. This result indicates the non-linear effects of SMD and SML on SMD. The GDPG showed a positive sign, indicating that it had a positive impact on SMD in Oman. This result was consistent with most of the literature (Bayar, 2016; El-Wassal, 2005; Levine & Zervos, 1998; Matadeen, 2019; Omar et al., 2022). The results

[2] Long run estimations can be obtained from the long run coefficients section of ARDL output.

[3] Short run estimations can be obtained from the error correction model of ARDL outputs.

emphasize that part of the increased savings during GDPG periods will be directed toward stock market investment, that is, economic growth increases confidence in the economy, which encourages investors to buy stocks, leading to higher stock prices. Additionally, the error correction term (ECM_{t-1}) coefficient was significant and had a negative sign. The result indicated that variables that deviate from equilibrium in the short-term would return to adjustment by 44.4% per year. Moreover, the high R^2 of 81% suggested that the chosen ARDL model fits well.

Table 6. Diagnostic test results.

Test	Statistics	Probability
Jarque-Bera normality	0.143	0.931
Ramsey RESET F (1, 27)	0.898	0.352
Breusch- Godfrey serial correlation LM F (2, 26)	0.929	0.408
Heteroscedasticity F (19, 28)	0.993	0.496

The diagnostic test results (Table 6) demonstrated that model inputs were following the normal distribution and were free of misspecification, serial correlation, and heteroskedasticity issues. Finally, the short-term coefficient stability was tested employing the test of cumulative sum of recursive residuals (CUSUM) and the test of cumulative sum of squares recursive residuals (CUSUMQ). (Appendix Figures A1 and A2, respectively). The two figures validated the stability test of the model estimates, demonstrating the accuracy of the model specification.

In summary, the study results regarding the stock market liquidity's positive effect are consistent with all the previous literature. However, the situation was different for the other variables. Inflation, for example, proved not to affect the development of the Omani stock market even though most of the literature proved a negative effect (Bayar, 2016; Ho & Odhiambo, 2020; Matadeen, 2019; Omar et al., 2022). It was also found that trade openness does not affect SMD in Oman, despite the fact that many previous studies had proven those effects even though there were conflicting results. But this supports the idea of Niroomand et al. (2014) about each country-specific nature. This study revealed that the most important drivers of SMD in Oman are oil prices, banking sector development, stock market liquidity, and economic growth. This shows the importance of studying oil prices as a driver of capital market development in the Omani economy, unlike previous studies.

5. CONCLUSION

This study considered the contradictory results in the literature, the fact that many studies used panel data that hides the specific characteristics of each economy, and the increasing attention on Oman Vision 2040, which targets a sustainable and diversified economy and the creation of empowered economic leadership. Accordingly, this study aimed to bridge the knowledge gap and study the long- and short-term effects of banking sector development, economic growth, inflation, oil prices, stock market's liquidity, and trade openness on the Omani stock market's development. This study examined the macroeconomic drivers of the Omani stock market development during the period 2010–2022. The study used quarterly data and the ARDL bounds testing approach. The results demonstrated that banking sector development and oil prices negatively affected the Omani stock market in the long run, but stock market liquidity had positive effects. The short-run ARDL results indicated a positive effect of economic growth on the Omani stock market development, while banking sector development and stock market liquidity had significant but differential effects.

The gap in the literature has been addressed by the different results of the Omani economy in the current study, especially the effect of oil prices, and by the fact that using panel data hides the country-specific characteristics since this study has reassured that each economy has its own features and its own unique stock market drivers, especially oil-dependent economies.

This study contributes to the existing knowledge by shedding light on the dynamic effects of macroeconomic factors on the stock market progress in a developing and oil-dependent country like Oman. Policymakers can benefit

from the study results and recommendations to expedite the development of the stock market. Omani policymakers should strive to improve the stock market liquidity by expediting listing procedures and requirements, educating investors, and simplifying the initial public offering (IPO) process. They should reinforce the trust of investors in the stock market by enhancing governance and transparency, protecting investors, and developing creative securities. They should also maintain interest rates at reasonable levels to prevent the transfer of savings from the stock market to the banking sector. This approach would aid in reducing the long-term negative effects of banking sector development on stock market development by increasing the competitive power of the stock market as a finance source. Furthermore, policymakers should stimulate economic growth by enhancing transportation and communication infrastructure to facilitate business work and attract investment, fund and regulate small and medium enterprises (SMEs), and enhance workforce skills. Furthermore, policymakers should carefully monitor oil prices to facilitate increasing government spending during the rise of oil prices to stimulate economic growth and improve business profits. This approach would lead to more savings to invest and maintain interest rates without rising to direct investment in the stock market. If oil prices fall, policymakers should continue seeking efficiency and economic diversification efforts. Finally, the short-term contradictory effects of banking sector development and stock market liquidity on the Omani stock market development require studying the non-linear drivers of stock market development in Oman and other countries in future research.

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Appendix 1

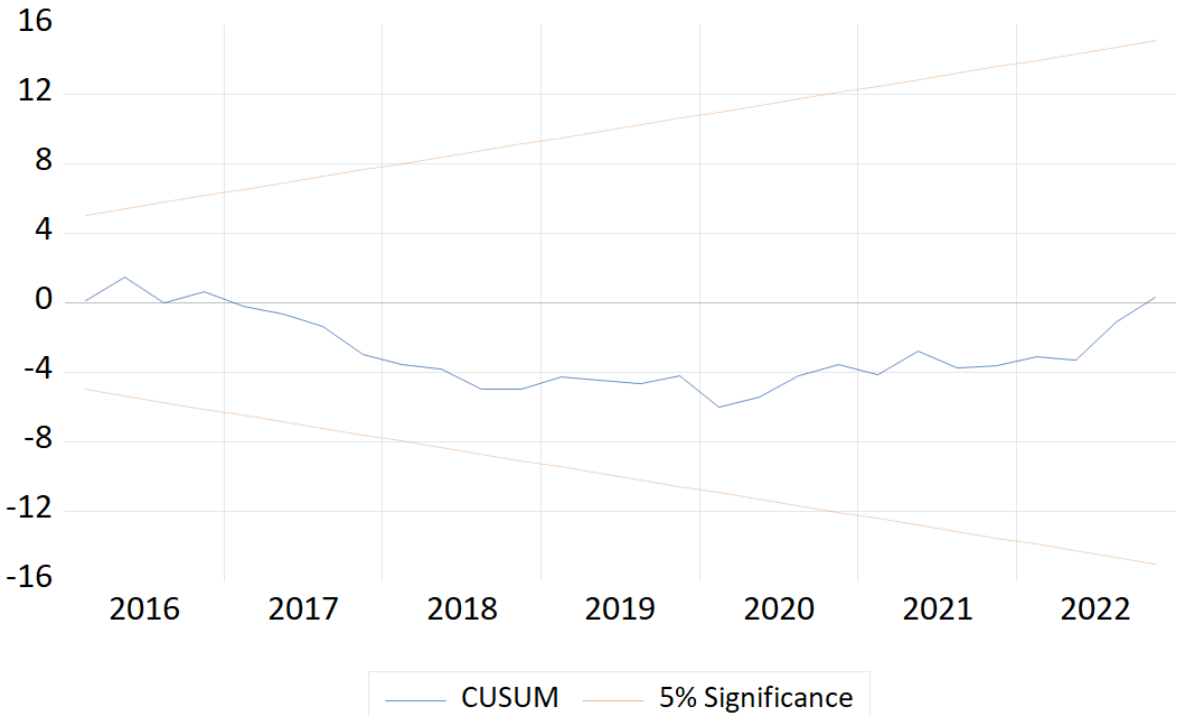

Figure A1. The cumulative sum of recursive residuals (CUSUM) of the model.

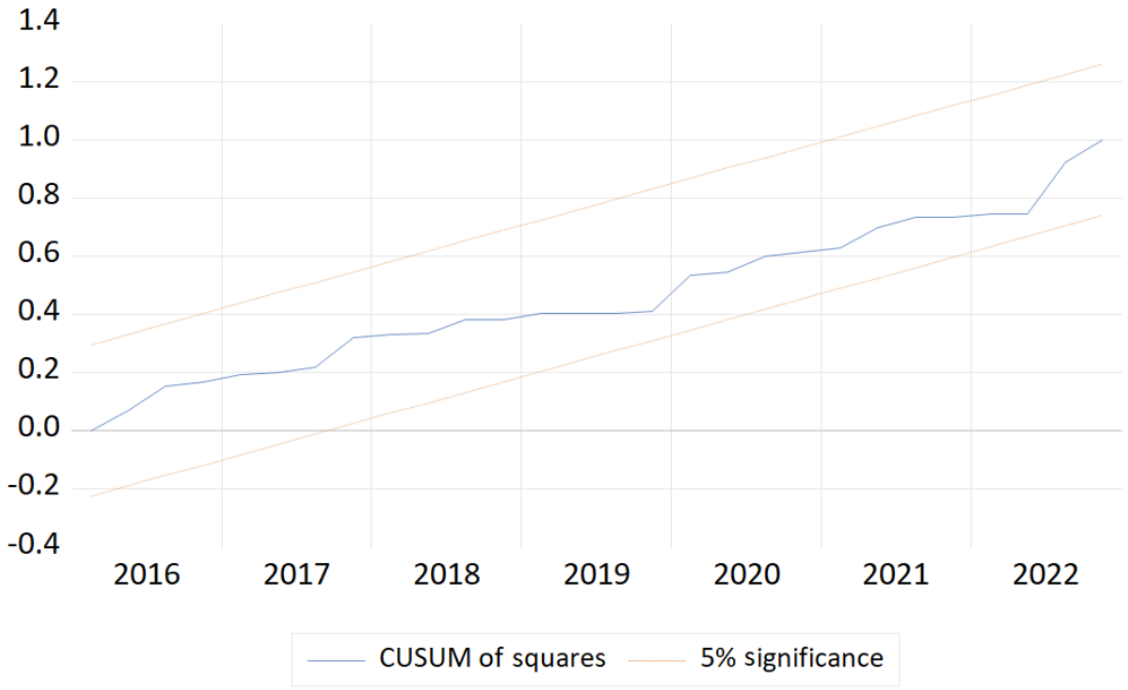

Figure A2. The cumulative sum of squares of recursive residuals (CUSUMQ) of the model.