

The Role and Function of Derivatives in the Development of Financial Businesses: The Future Studies of Financial Markets

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Abstract

This study was conducted to investigate the effects of using derivatives on the development of financial businesses. The elements of the analysis were risk management, efficiency, price stabilization, and price discovery. The required data were collected from the financial officers using questionnaires. The collected data were analyzed using descriptive and inferential statistics. The qualitative responses were analyzed using partial least squares structural equation modeling (PLS-SEM). The analysis was carried out to determine the development of financial businesses before and after the adoption of derivatives by these companies. According to the findings, risk management, efficiency, price stabilization, and price discovery positively affect the development of financial businesses.

Keywords

financial derivatives, business risks, financial companies, development of financial businesses

1. Introduction

There are various risks facing many companies in their activities. As companies operating in the financial services sector become more complex, they are increasingly exposed to business risks, of which interest rate and currency fluctuations are only a part. These risks must be managed for the performance of companies in the financial services sector in Ghana. Risks are part of any business. However, financial institutions and companies operating in money markets are more vulnerable to business risks than other companies such as service and product-oriented companies (Gibson, 2017; Fadun, 2022).

Hedging is essential to pave the way for optimal profitability to avoid financial losses and bankruptcy. Derivatives are common instruments used by financial institutions and companies for managing and hedging business risks in the money market (Gibson, 2017; Hon, 2020). Cole (2019) argues that the use of derivatives is rapidly increasing due to financial deregulation on a global scale and the evolution of higher-weighted risks in the activities of financial firms during and after the global economic recession (Cole, 2019). Many financial companies around the world today use derivatives, and financial institutions should use them to enhance customer value and greater returns to shareholders (Krause, 2017). Financial services companies trade derivatives outside the stock exchange. Accordingly, there is a high default rate on the part of the participants in the country because the manufacturing companies are not currently trading in the stock exchange. Over-the-counter (OTC) transactions are inherently subject to high default risk. This makes the use of derivatives for risk management in Ghana risky. Some derivatives used by companies in the financial services sector include futures, options, swaps, forward rate agreements (FRA), and forwards.

In a study titled *The Relationship between Derivatives and the Financial Performance of Commercial Banks in Kenya*, Gitogo et al. (2013) found that there is a relationship between derivatives and the financial performance of commercial banks. However, there are very few studies in developing

countries especially Kenya on the effect of derivatives on the financial performance of NSE-listed companies.

So, this study seeks to show how pre- and post-derivative compliance affects the development and financial business of companies. The study covers financial and non-financial companies that are not covered by many studies.

According to Pandey (2005), a derivative is a financial instrument whose return is obtained from another asset, which is called the underlying asset. It refers to things that do not have an independent value but a derivative value. Thus, a derivative has a significant place in financial and risk management. Balwinder (1995) argued that the increasing globalization of business and industry exposes companies to various financial risks that do not concern their business lines. The results of a study by Pandey (2005) showed that derivatives have shifted very quickly from simple financial futures to a wide variety of exotic and complex securities worldwide. Financial risk management can be facilitated by derivatives markets as they enable investors to isolate and transfer financial risk. Such markets can contribute to the efficient allocation of capital and cross-border capital flows, providing more opportunities for portfolio diversification, facilitating risk transfer, price discovery, and more public information (Tesskos and Varengis, 1997; Illina, 2004).

There is no clear evidence of derivatives' contribution to financial business development. Although there is evidence to show the effect of derivatives on performance, especially the value of companies, most studies show its effect on financial or non-financial companies. The study covers financial and non-financial companies that are not covered by many studies. A review of the literature shows that previous researchers have focused on only some variables separately.

In a study by Chavoshani (1), the role of disclosing instruments and derivatives based on Iranian accounting standards in the surplus return and the value of corporations was examined. The findings showed that the risk discount rate was reduced in companies that expose their financial instruments

based on domestic standard No. 15, meaning increased future returns and increased market prices. The finding also suggested that the risk discount rate increases in companies with earnings management by reducing the level of disclosure of instruments and derivatives. Besides, the third hypothesis that there is a significant direct relationship between the level of disclosure of financial instruments and the value of the company was confirmed. So, the high fluctuation of surplus returns for companies with lower disclosure levels indicates higher risk. In this way, corporate stakeholders should wait for risk depending on the level and quality of disclosure of instruments and derivatives.

In a study titled *Monitoring Mechanisms, Managerial Incentives, Investment Distortion Costs, and Derivatives Usage*, Huang et al. (2018) found that the level of corporate governance mechanisms, managerial incentives, and investment decisions of British companies concern the use of derivatives. Evidence indicated that the monitoring environment, such as the size of the board, affects the use of exchange rate derivatives and interest rates. Management programs affect the use of derivatives as well. They found evidence that British companies look to reduce the use of derivatives in a situation where they should be used further. Companies used warning alternatives to avoid monitoring foreign capital markets.

Gonzalez (1) conducted a study titled *Effects of IFRS-13 on the Release of Fair Value Adjusted by Credit Risk: Evidence from Europe* and examined the relationship between fair value adjusted and credit risk. In this study, the consequences of the adoption of IFRS-13 were reviewed. This study analyzed the effects on (risk) implied volatility alternative for non-financial companies with three variables of financial leverage, probability of personal default (adjusted debt value), and credit risk of financial institutions (adjusted credit value) before and after the adoption of fair value accounting standards. The experimental study focused on EU member corporations to prevent other market risk factors (such as exchange rates or risk-free rates) and easily identify market stocks.

According to the findings, the leverage effect does not change the surplus risk after the approval of the standards.

In a study titled *Longitudinal Analysis of Financial Instruments Disclosure in an Emerging Capital Market: The Case of Qatar*, Tahat (2018) examined the provision of information on financial instruments of sample companies under International Standards No. 30 and 33 of IFRS 7 between 2005 and 2012. According to the results, the implementation of IFRS 7 statistically improved the information on financial instruments.

Bahmani et al. (2017) studied the effect of financial corruption and derivative resources on the value of companies. The findings indicated a significant direct effect of financial corruption on the value of companies. The findings also suggested that the derivative sources resulting from the forward and futures contracts have a significant direct effect on the value of the company.

The effect of accrual-based profit and real earnings management (REM) on the risk of falling stock prices was investigated in a study by Setayesh et al. (2017). They measured accrual-based earnings management using Kothari's model and found that accrual-based earnings management and REM do not affect the risk of falling stock prices of companies (using the negative skewness of stock returns and maximum sigma). The findings also indicated that accrual-based earnings management and REM affect the risk of the company's stock price falling (using downward to upward fluctuations).

Keymasi and Ganji (2020) examined derivatives accounting and financial reporting quality. This review can be useful to standard setters, practitioners, and accounting academics for the effectiveness of current derivatives regulations by providing a synthesis of the practical literature. The Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) are trying to develop derivatives accounting rules. This review study can be useful to identify suitable areas for future studies.

The results of a study titled *The Impact of Financial Derivatives on the Enterprise Value of Chinese Listed Companies: Moderating Effects of Managerial Characteristics* by Yang (2022) showed that derivatives can significantly increase the enterprise value of Chinese listed companies, while exchange rate derivatives strongly affect enterprise value. Besides, the more managers who own shares and have a financial background, the more effective the companies that use financial derivatives will be.

According to some empirical studies, derivatives concern the control of business risks. Krause (2017) confirmed the reducing effect of derivatives on risks, arguing that companies use derivatives to maximize profitability and reduce investment uncertainties. According to some studies such as (Cole, 2019) and Bhagwat et al. (2022), derivatives affect financial performance. This evidence goes hand in hand with the fact that business risks are the main obstacles to financial performance.

Companies in emerging markets have recently increased the use of derivatives to protect their positions. So, the derivatives market has experienced rapid growth in recent years. Information on the use of corporate derivatives is widely available in the developed world. However, whether the use of derivatives increases the financial performance of a company is still controversial, especially in developing countries.

Methodology

This is an applied study in terms of presenting the model and descriptive survey in terms of objectives. The data was collected by a combination of quantitative and qualitative methods. The quantitative

data were collected using four standard questionnaires and analyzed using structural equation modeling (SEM) through PLS software. SEM is a particular causal construct between a set of observed and unobserved constructs. Thus, SEM in PLS software was used to answer the main question. The statistical population included manufacturing companies, of which 121 were selected as a sample using the Morgan table. Before distributing the questionnaires and analyzing the data, the validity and reliability of the questionnaires were checked. The content validity of the questionnaire components was first confirmed at the level of 93% through the experts' test. The face validity of the questions was then checked and corrected among some subjects. The reliability of the questionnaire questions was confirmed by Cronbach's alpha (0.82) among 30 respondents. The Cronbach alpha coefficients of the variables can be seen in Table 1. According to the table, all the coefficients are more than 0.7. So, it can be argued that the questionnaires are highly reliable.

The questions were designed on a 5-point Likert scale. Furthermore, the grouping questions were applied. The answers of the subjects were included in only one of the groups.

The hypotheses were tested using the descriptive-survey method through SEM to determine causal relationships between the variables. This study was conducted to investigate the effect of brand equity on customer loyalty in social networks. The brand was included in the model as an exogenous variable so that its effect on customer loyalty in social networks can be investigated in a descriptive-survey design. Accordingly, the variables were as follows:

Table 1. The results of Cronbach's alpha

Questionnaires	Risk management	Business efficiency	Price stabilization	Price discovery	Business development	The entire questionnaire
Cronbach's alpha coefficient	1/122	1/123	1/132	1/121	1/122	1/131

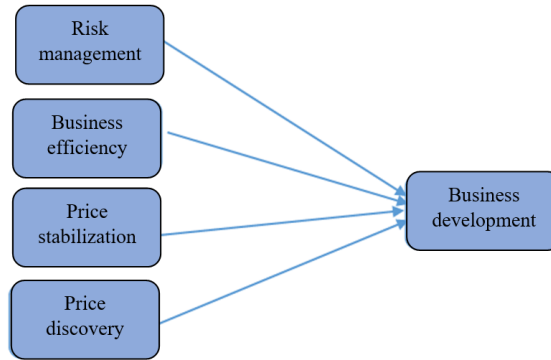


Figure 1. The conceptual model

Data Analysis

The demographic characteristics of the sample, including gender, education, and work experience are described in this section. 120 statistical samples were distributed and analyzed.

According to the findings of gender frequency distribution, 81 people (67.5%) are male and 39 people (32.5%) are female. Accordingly, most of the respondents were male. In terms of education frequency distribution, 56 people (46.6%) have a bachelor's degree, 49 people (40.9%) have a master's degree, and 15 people (12.5%) have a P.h.D. degree. So, it can be argued that people with a master's degree have the highest frequency in the studied sample.

The findings of the frequency distribution of the respondents' work experience show that 24 people (20%) have work experience between 1 and 5 years,

31 people (25.8%) between 6 and 10 years, 43 people (8.35%) between 11 and 20 years, and 22 people (18.4%) above 20 years. Therefore, the highest frequent distribution belongs to work experience between 11 and 20 years.

Descriptive Statistics

One should be familiar with the descriptive statistics of the variables to study the general and basic characteristics of the variables to estimate the model, analyze them in detail, and understand the statistical population. The data descriptive indices include measures of central tendency, measures of dispersion, and measures of distribution, which were calculated for each variable. This statistic provides an overview of each variable in the model. Table 2 shows the descriptive statistics of the variables.

Table 2. The descriptive statistics of the variables

Variable		Mean	Median	Min	Max	SD	The coefficient of skewness
The role and function of derivatives	Risk management	4.4000	4.5000	1	5	0.50876	-0.606
	Business efficiency	4.2050	4.2500	1	5	0.56673	0.026
	Price stabilization	4.2140	4.3000	1	5	0.54993	-0.372
	Price discovery	4.2700	4.3333	1	5	0.46482	-0.363
Development of financial businesses	Developing new industries	4.0086	4.1429	1	5	0.73036	-0.458
	Growth in financial performance	3.6233	3.6667	1	5	1.05159	-0.577
	Increasing employment by companies	4.0333	4.3333	1	5	0.95991	-1.138

Investigating the Assumptions of SEM

Data analysis using SEM has assumptions as follows:

Testing the Normal Distribution of the Variables

Before testing the assumptions, the state of the normal distribution of the data must be determined. The normal distribution of the data was checked using the Kolmogorov-Smirnov test.

H0: The data are normally distributed.

H1: The data are not normally distributed.

Table 3. The Kolmogorov-Smirnov test for the variables

Variable	The test statistic value	Sig.
Risk management	4.4000	0.038
Business efficiency	4.2050	0.040
Price stabilization	4.2140	0.04
Price discovery	4.2700	0.001
Business development	4.0023	0.012

Since the significance level of variables is less than 0.05, the data are normally distributed. So, the PLS method was used to check the model.

Divergent Validity

According to this criterion, the square root of the average variance extracted (AVE) of a construct must be greater than the correlation between that construct and other constructs, indicating that the correlation between that construct and its indicators is higher than the correlation between it and other constructs. The validity values were verified using the Fornell-Lacker criterion according to Table 4.

Table 4. The divergent validity values using the Fornell-Larker criterion

	1	2	3	4	5
Business development	1				
Price stabilization	0.761	1			
Business efficiency	0.975	0.757	1		
Risk management	0.775	0.586	0.711	1	
Price stabilization	0.715	0.733	0.650	0.512	1

According to the results of the correlation test in Table 4, there is a significant positive correlation between all variables at significance levels of 0.05 and 0.01. Besides, the AVE of the variables on the main

diameter in Table 6 to check the Fornell-Larcker criterion for each variable is greater than the largest value for that variable, and the divergent validity is confirmed. According to the above table, the constructs are completely separate, that is, the values of the main diameter (AVE) for each latent variable are higher than the correlation between the variable and other latent variables in the model.

Testing the Hypotheses Using Linear Structured Relationships

The hypotheses were tested using SEM to evaluate the conceptual model, ascertain the existence or non-existence of a causal relationship between the variables, and check the fit between the observed data and the conceptual model. The figure below shows the results of testing the hypotheses.

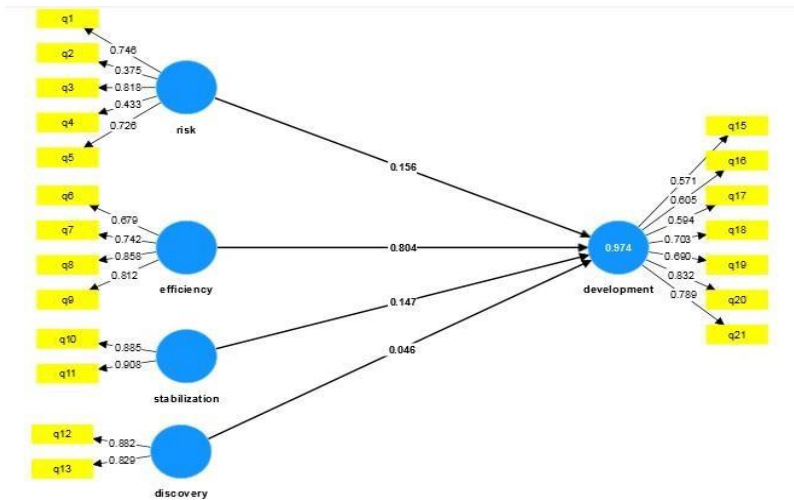


Figure 2. The tested model in standard mode

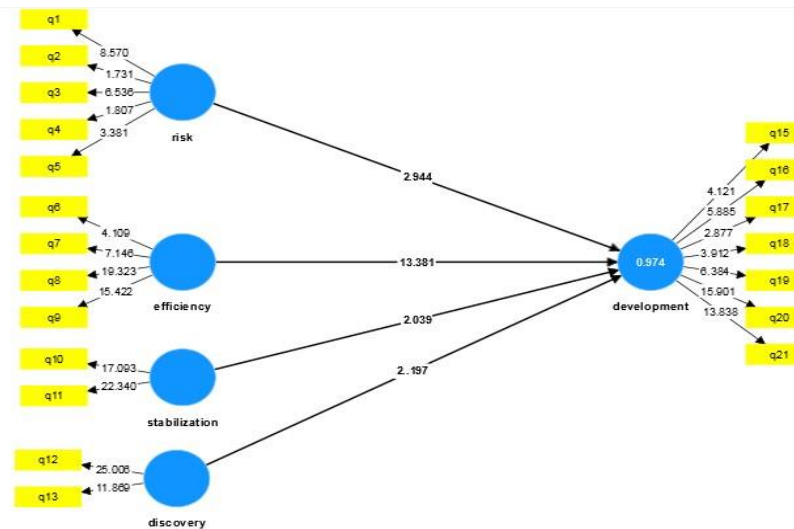


Figure 3. The t-values of the tested model

Reliability

The reliability of the index is measured by the following criteria:

1. Cronbach's alpha
2. Composite reliability

3. Convergent validity

The internal stability of measurement models is one of the criteria used to measure reliability in SEM. Internal stability indicates the degree of correlation between the construct and the relevant indices. The high variance between the construct and its indicators in

contrast to the measurement error of each indicator results in high internal stability. Cronbach's alpha higher than 0.7 indicates acceptable reliability (Cronbach, 1951). Some researchers have introduced the value of 0.6 as the limit of Cronbach's alpha coefficient for variables with a small number of questions (Davari and Rezazadeh, 2013). A CR value higher than 0.7 for each construct indicates the high internal stability of the measurement model, and a value lower than 0.5 indicates no reliability (Davari and Rezazadeh, 2013). An AVE value above 0.5 indicates acceptable convergent validity (Fornell and Larcker, 1981). According to some researchers, the minimum acceptable value is 0.4.

Table 5. Cronbach's alpha coefficients

Variable	Cronbach's alpha coefficient	CR	AVE
Business development	0.811	0.862	0.476
Price stabilization	0.636	0.845	0.732
Business efficiency	0.776	0.857	0.602
Risk management	0.635	0.767	0.416
Price stabilization	0.756	0.891	0.804

Overall Model Fit

GOF is about SEM. After examining the fit of the measurement part and the structural part of the overall model, the researcher can control the fit of the overall part by this criterion. Only one criterion called GOF is used to check the fit in a general model. The values of 0.01, 0.25, and 0.36 have been introduced as weak, medium, and strong values for GOF, respectively (Wetzles et al., 2009). This criterion is calculated through the following formula:

$$GOF = \sqrt{\text{communalities} \times \overline{R^2}}$$

(1)

Table 6. GOF

	Communality	R Square
Business development	0.576	0.974
Price stabilization	0.732	
Business efficiency	0.602	
Risk management	0.416	
Price stabilization	0.804	
Mean	0.606	0.974

Thus, $\overline{\text{communalities}}$ is 0.54. According to the R^2 values in the table above, $\overline{R^2}$ is 0.974. In this way, the calculated GOF value is as follows:

$$GOF = \sqrt{0.606 \times 0.974} = 0.768$$

(2)

According to the values of 0.01, 0.25, and 0.36 as weak, medium, and strong values for GOF, respectively, the value of 0.76 indicates a strong model fit. In this way, the hypotheses can be tested.

Testing the Hypotheses

After the standard estimation, the causal relationship between the constructs was measured using SmartPLS software. According to Figure 7 (implementation of the model in the standard estimation mode), there is a significant direct relationship between the main constructs. Moreover, the indirect effect of the relationship with the presence of the mediator variable can be calculated. The significance of the mediating effect of a variable on the relationship between two variables is checked using the Sobel test. The Sobel test value greater than 1.96 with a confidence level of 95% indicates the significance of the mediating effect of the corresponding variable. The value of the path coefficient in the indirect effect is obtained by multiplying its two direct effects.

Table 7. The results of testing the hypotheses

Hypothesis	Standard	Sig.	Result
Risk management has a significant direct effect on the development of financial businesses.	0.156	2.944	Confirmed
Business efficiency has a significant direct effect on the development of financial businesses.	0.804	13.381	Confirmed
Price stabilization has a significant direct effect on the development of financial businesses.	0.147	2.039	Confirmed
Price discovery has a significant direct effect on the development of financial businesses.	0.046	2.197	Confirmed

*Reference: the findings

Conclusion and Recommendations

This study was conducted to investigate the effects of using derivatives on the development of financial businesses using the descriptive-survey method and questionnaires. The statistical population included manufacturing companies, of which 121 were selected as a sample using the Cochran formula.

The reliability and validity of the questionnaires were examined using Cronbach's alpha coefficient, composite reliability, and confirmatory factor analysis (CFA). The results showed that the reliability and validity of the questionnaires were acceptable. The data were analyzed at the descriptive and inferential levels. At the descriptive level, the data were analyzed using mean and standard deviation, and at the inferential level, correlation and SEM with PLS software were used. The study question is what is the effect of derivatives on the development of financial business?

The four main findings are as follows: 1. Risk management positively affects the development of financial businesses, 2. Business efficiency positively affects the development of financial businesses, 3. Price stabilization positively affects the development of financial businesses, and 4. Price discovery positively affects the development of financial businesses.

Non-financial and financial companies do not hedge using derivatives because they feel that risk exposure is more effectively managed through other (non-derivative) instruments, and some feel that they are not sufficiently exposed to financial risks. Firms' motivation to hedge directly concerns their exposure to

financial risks, which affect interest rates, currency, stock and bond yields, and commodity prices.

The use of derivatives is affected by the pessimism of managers to use them as hedging instruments. Due to the political environment, knowledge of derivatives, the attitude of participants, financial infrastructure, and foreign competition, the derivatives market and instruments used in the country are not fully developed. In this way, the companies find that they have to use derivatives against the necessary market microstructure. These companies face problems in the pricing and valuation of derivatives and derivative accounting behavior even if this is a relatively cheap and effective way to reduce risk. Conversely, non-financial firms see the costs of establishing and maintaining a derivative program as outweighing the expected benefits.

In the second model, the relationship between the performance of companies and the independent variables (risk management, transaction efficiency, price stabilization, and price discovery) was investigated. According to the findings, all the independent variables were positively correlated with the dependent variable higher than the mean. Furthermore, all correlation coefficients were highly significant. The independent variables were positively correlated, and all correlations were highly significant.

The study advocates the rapid establishment of a derivatives market in the country along with its collateral regulatory framework that protects market participants. Derivatives training programs should be held in the country to address derivative exchanges and accounting and valuation methods. This will reduce the pessimism of managers about such uses.

CFOs will understand the pros and cons of each hedging method. Most companies do not have a deliberate policy of using derivatives, and financial risk management depends solely on the whims of managers. This imposes agency costs on investors. So, a comprehensive corporate policy on the use of derivatives is needed to serve as an operational guide for company managers and agents.

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