

Research Article

Determinants of Effective Economic Exposures Hedging Mechanisms: Evidence from Tanzania

Kaula Stephen*

Kyela Polytechnic College- Department of Business Studies and Management, Mbeya-Tanzania.

Corresponding Author: Kaula Stephen, Kyela Polytechnic College- Department of Business Studies and Management, Mbeya-Tanzania.

Received: 📅 2024 Feb 15

Accepted: 📅 2024 Mar 05

Published: 📅 2024 Apr 18

Abstract

The study aims at assessing the determinants of effective hedging mechanisms against economic foreign exchange exposure. Using a panel data in the time interval of 2012 to 2022, the data regarding the study under examination were obtained. Data pertaining foreign macroeconomic and control variables were retrieved from World Bank databank. Moreover, using regression and descriptive analysis methods the results were presented containing foreign macroeconomic and control variables. The results of analysis showed that positive net export (net capital); enhanced national output; and reduced unnecessary government spending significantly determined the effectiveness of hedging mechanisms of economic exposure. It was moreover revealed that for the revealed foreign macroeconomic variables report great and more significant determination in hedging economic exposure then the model relationship is to be intruded with industry/country specific factors (control variables) which also indicate to be positive and significant determinants of effective hedging mechanisms. Thus, it is from such impressing results the current study recommends that the exporting and importing firm/country has to be adequately strong internally. Once the multinational companies or firm /country is sustained internally, hedging external macroeconomic foreign exchange market exposure become not an issue.

Keywords: Foreign Exchange Exposure, Economic Exposure, Net Export/Capital, National Output (Gdp) and Government Expenditure.

1. Introduction

Hedging of foreign exchange market risks has been a remarkable managerial practice important in diversifying exchange rate movement. Normally exchange rate movement is an unavoidable circumstance because of transaction involving different currencies in fostering international trade. That means, where a need of using different currencies in transactions fluctuations cannot be avoided and this is what is called foreign exchange rate movement. A great spreading or floatation in exchange rate is harmful to economy of the host country i.e. a country in reference (importing or/and exporting country). Foreign exchange risks include translation, transaction and economic exposures [1]. Economic exposures are economic risks resulting due to change in demand and supply of foreign currencies [2]. Normally excessive demand of foreign currency over domestic currency increases exposures in which net exports, sustained economy of the country and net capital is distorted. Economic exposures as a result of the propounded consumer price index, great spreading /floatation, currency risk and interest rate lead into distortion of national output (GDP), fluctuated economic growth, rise in cost of living, low consumption and little or no investment thus to be hedged [3]. Holding foreign exchange risks therefore help to control the great floatation

or movement of exchange rates in which two strategies are employed i.e. internal and external methods [4].

Distortions of net export or capital are floatation over balance of trade and net factor income [5]. The distorted balance of trade implies insignificant current account balance (CAB) due the fact that at a time of high exchange rate movement the importing of goods become cheaper than exportation [6]. This creates the same to deficit on net factor income due to greater cash inflows resulted from great amount of money used for importations [7]. Thus, it through hedging says by applying future contract where payment is made today at a time when exchange rate is low for future deliveries. It is by so doing where the floatation or spreading on net export and net property income is overcome.

Inadequate gross domestic product (GDP) of the importing and or exporting country is scented during a great exchange rate movement due to dissatisfaction in balance of payments (BoP) [8]. The disturbed GDP, lower the host country output from the drained visible and indivisible trade [9]. Un-satisfactory GDP is a result of fluctuation of both aggregate demand and supply. While under aggregate demand the exports diminish causing the imports to be greater than

exports but with aggregate supply the payment to abroad called cash outflows outweigh cash inflows. It is through hedging mechanism for example through the use of currency options where either a seller or buyer has a right to enjoy the hedging reward but neither is obliged then this problem of lowered gross domestic product is solved.

Increasingly government spending (G) in the time of high exchange rate is due to high interest and inflation rates (consumer price index) imposed. During inflation the money supply in delicacy to compensate demand for money [10]. It is at this time where imports become cheaper than exports. Thus, for a country to import or buy, large amount is used which become a leakage to importing country [11]. The same effect happens during re-paying loan to a foreign country where a huge interest rate is imparted to the loan. It is this time a burrowing country might repay huge amount of money say three to four times of the burrowed which therefore become a leakage to the burrowing country [12]. Thus, by employing for instance the currency swap such over opting for floating interest rate, the exposures are reduced which then reduces the marginal government expenditure in servicing the international debt/loans. In Asia, Tiwary reported on external strategies of hedging economic risks of multinational companies in Asia including future, forward and currency swapping contracts [13]. Moreover, Iswarya and Preetha in India regarding importers and exporters reported on internal hedging mechanisms through adopting lagging/ leading; netting, matching and invoicing [14]. Either, the study by Fuchs in USA involving non-financial companies reported on macroeconomic determinants of foreign exchange rate movement such that distorted domestic product, distorted current account balance; perpetuate consumer price index spreading, increase in unit labor cost as well as government spending [15].

Contrarily, to empirical studies revealed above where the study by Tiwary and Iswarya & Preetha investigated on the operation mechanisms of external and internal hedging tools respectively over foreign exchange market risks while the study by Fuchs reported on determinants of foreign exchange rate movement therefore none of the reviewed studies has investigated on determinants of effective hedging mechanisms of economic exposures, one of the form of foreign exchange market risks under the operation of control (country/firm-internal) factors [13-15]. The three variables under investigation included reduced distortion on net export/capital (insignificant spreading), overcome decrease in gross domestic product of the host country and less government spending. Also, none of the empirical studies above has shown to have been conducted in Tanzania as the current study has done.

1.1. Literature Review

Theoretical Literature Review: The study adopted One factor and multi-factor models. The One factor model employed CAPM or APT model while the multi-factor model used Carhart four-factor Model [16, 17]. Capital Asset Pricing Model (CAPM) or Arbitrage Pricing Theory (APT) proposed one factor i.e. internal strength of investment firm assuming to

operate in a free risk financial environment. Carhart, CAPM and APT apply parametric approaches in analyzing the performance magnitude of investment scheme in creating free risk financial environment. Carhart four-factor Model proposes on four factors determining performance of investment funds in trading off the returns and risks parameters [17]. The four factors Carhart Model suggests are the internal strengths of the firm including the capital size, fund age, management effectiveness and turnover from investment; the domestic(internal) security market risks, external(foreign) stock market; and macro-economic variables. Thus, this shows that Carhart four factor model is an extension of Capital Asset Pricing Model (CAPM) or Arbitrage Pricing Theory (APT).

Through Carhart model, the main concentration is on risks both domestic (internal) and foreign (external) financial markets risks. In other way Carhart four factor Model captures for the factors the operational risks and macroeconomic financial environment (foreign) stock market risks but none is captured regarding determinants of effective hedging mechanisms (tools) of foreign exchange market risks under the control of country/firm internal factors for exporting and importing entity/country speculate or revenge the arbitration that could emerge from high exchange rate movements caused by economic exposures.

Empirical Literature Review: In Bangladesh it was that foreign exchange movement influences changes in macroeconomic variable such as consumer price index, interest rate and arbitrage risks [18]. It is under stagflation condition resulted due to high nominal inflation rate where the purchasing power parity was disturbed by observing more capital outflows than inflows. It is during inflation where foreign investment was discouraged. This is from the fact that firms hold huge amount of money for precautionary motive. It is at his time when exchange rate become high and therefore lending businesses is floated. Fluctuation is forming the fact that borrowers are required repay large amount of money as a refund of burrowed amount. Worsen situation over inflation and interest rate carries the same as that of great arbitrage observed during high exchange rate movement.

Berstembaeva, Rubenkova and Toyzhigitova postulated on the positive effect of adopting a single currency system by entrepreneurs in hedging foreign exchange risks in Nigeria [19]. Use of single currency system of hedging foreign exchange risks revealed to curb for translation and transaction foreign exchange exposure. Translation exposure normally occurs due to use of foreign currency in transaction. Transaction exposure occurs due to adoption of domestic currency in transaction. Translation and transaction exposures occur when demand for either foreign or domestic currency become higher than the other. Excessive demand say over domestic currency is that its supply is inadequate and therefore people cannot transact, produce or even not able to invest. The same harmful effect would be observed when demand for foreign currency is higher than domestic currency which implies that translation exposure is for business firms not able to purchase or transact. This is from the

fact that buying goods or services or simply importing goods would demand to have huge amount of money. This is what is known as conversion titled translation and thus the way a country like Tanzania quotes its currency is through direct method (quotation). It is at this time of great economic depression due to high translation and transaction exposures when import substitution policy cannot be sustained.

In Botswana it was revealed importing and exporting companies used to forward and future hedging methods which found to diversify the worsen situation of disequilibrium in balance of payment, negative current account balance and insignificant gross domestic product of the host country (place where exporters and importers are located) [20]. This is the fact as using future/forward contracts both with buyers (importing country) and suppliers (exporting country) is obliged to terms of and conditions of the contract regarding current settlement with future delivery. Future/forward contract is executed with a fear of stagflation that could result due to expected rise of prices in future.

In Kenya adoption of financial derivative and hedging mechanisms by firms listed in Nairobi Securities Exchange found to overcome the great currency spreading or fluctuation [21]. Currency fluctuation is the cause of the capital outflows and decline in investments. This is from the fact that a great currency floatation makes imports become cheaper than exports. Thus, it is from increasingly currency fluctuation where domestic production is lowered. Also lowering in production discourages export diversification. Moreover, the higher the currency spreading lowers consumption and capital inflows.

From the reviews above it has shown that while study by Rahman stipulated on the operation mechanisms of hedging foreign exchange risks, other studies such that by Berstembaeva, Rubenkova and Toyzhigitova and that by Chidaushe investigated on the effects of foreign exchange risks [18-20]. More-over, the study by Walale, Omagwa & Muathe reported on the effect hedging in combating the problem of currency fluctuation, thus none of the studies has assessed on the determinants of effective hedging mechanisms of economic exposure as one type of foreign exchange risk under the control mechanisms of industry-country specific factors [21]. The effectiveness determinants investigated included net export/capital spreading; gross domestic product and reduced government expenditure of the host country.

2. Methodology

2.1. Data Source

Data regarding economic exposures, consumer price index and other macroeconomic variables under this study investigation were retrieved from World Bank database. The reference was made to Tanzania as exporting and importing country exposed to foreign exchange risk because of the effects of competition. Data involved in analysis were panel data in the time line of 2012 to 2022.

2.2. Data Analysis Model

The model applied in data analysis was fixed effects panel regression. This panel regression model was executed under

one factor and multi-factor model. Alder and Dumas were the first to establish a linear one-factor model that measures foreign exchange rate exposures from equity returns of companies and later reveal the effect of hedging i.e. how effectively heading mechanisms has been acted upon in diversifying foreign exchange risks now economic exposures [22]. By making assumptions that the present value of company's future cash flows corresponds to its market value, they define the exchange rate exposure γ_i of a company i as the sensitivity of its stock return to the hedged exchange rate returns in t :

$$R_{i,t} = \alpha + \gamma_i R_{FX,t} + \epsilon_{i,t} \quad (1)$$

$R_{i,t}$ is the total excess stock hedged return of company i over period t . $R_{FX,t}$ represents the return of a trade-weighted exchange rate index against the currencies of a large group of major trading partners over period t .

Under multi-factor model by Jorions (1990) the market factor is added to the exposure estimation of Alder and Dumas (1984) one-factor model [23, 22]. The residual γ_i now measure the impact of a change in the exchange rate return on company stocks after taking into account the market-wide impact was foreign exchange market certainty, thus reducing the estimated exposures standard error. The multi-four-factor model is also amended by Fama and French (1993) factors small minus big (SMB) and high minus low (HML) to avoid potential biases from return differences between small versus large (RSMB, t) and value versus growth stocks (RML, t) in period t (Huffman et al., 2010; Aggarwal & Harper, 2010; Chang et al., 2013) [24-27]. $R_{m,t}$ is the total excess return of the market index. Thus, the model with an included market factor looks as follows:

$$R_{i,t} = \alpha_i + \beta_{i,m} R_{m,t} + \beta_{i,SMB} R_{SMB,t} + \beta_{i,HML} R_{HML,t} + \gamma_{i,FX,t} + \epsilon_{i,t} \quad (2)$$

Next, using the estimated economic exposures $\gamma_{i,j}$ of company i and year j explaining the variations by as set of yearly foreign macroeconomic determinants and control variables, the model equation showing effectiveness of hedging in curbing the problem high exchange rate movement was shown in equation 3 below. In this model three explanatory variables were involved including net export/capital (NEC), gross domestic product (GDP) and government spending (G) and explained variable was hedged foreign exchange economic exposure (γ) measured interms of consumer price index (CPI). Industry/country specific factors called control variables were as shown in Table 1.

$$\gamma_{i,j} = w_i + \phi_1 NEC_{i,j} + \phi_2 GDP_{i,j} + \phi_3 G_{i,j} + \eta_{i,j} \quad (3)$$

$$\gamma_{i,j} = w_i + \phi_1 NEC_{i,j} + \phi_2 GDP_{i,j} + \phi_3 G_{i,j} + \phi_{12-22} Controls_{i,j} + \eta_{i,j} \quad (4)$$

Where;

w = constant

γ = Hedged economic exposure

NEC = Net export/capital

GDP = Gross domestic product

G = Government expenditures

η = stochastic error

Table 1: Variables and its Measures

Variables	Items	Source
Net export/Net capital (NEC)	i) Exports ratio	Patro et al., (2002)
	ii) Import ratio	
	iii) Current account balance (CAB)	
	iv) Balance of payments (BOP)	
	v) Cash inflows	
Gross domestic product (GDP)	i) Exports to GDP ratio	Chaieb & Mazotta (2013)
	ii) Import to GDP ratio	
	iii) Capital inflows	
	iv) Foreign direct investments (FDI)	
	v) Gross capital formation	
Government expenditures (G)	i) % of government expenditure	Boudt et al. (2017)
	ii) Gross national expenditures	
	iii) General government consumptions	
Control variables (Controls)	Company/Industry characteristics such as natural log of the total assets (size), the foreign assets to total assets ratio (F. Ass), the foreign sales to total sales ratio (F. Sal. or Net trade in goods and services), the ratio of international operating income to total income (Int. Inc.), the leverage ratio defined as total debt to common equity (Lev), the quick ratio (Quick), the dividends per earnings ratio (Div. p. E), the research and development expenditures to total sales (R&D) and the market to book ratio of the equity (M./B.)	Francis et al. (2008)
Hedged economic exposure (γ)	Consumer price index (CPI)	Ha, Stocker & Yilmazkuday, (2020)

3. Results & Discussions

3.1. Foreign Macroeconomic Determinants of Effective Hedging Mechanisms

Under this subtitle the strength of association between foreign macroeconomic variables including net export/capital, gross domestic product and government spending and hedged economic exposure represented by consumer price index. Net export which is a balance regarding difference between exports and imports of goods and services when subjected to economic exposure spreading is counted. The same results capture on net capital which involves exports and imports of capital goods, therefore spreading occur when foreign exchange exposure act upon. Using the indicators on current account balance (CAB) and balance of payment (BOP). Under current account balance the negative sign shows a great spreading or simply lowered cur-

rent account balance than a sum of capital and financial accounts. From the Table 2 regarding descriptive statistics given mean=5025668389.2075 at a standard deviation=2900824510.03155 indicate that deviations over net export or net capital is minimum to influence the economy positively. The deviation is equated to coefficient of variation = 1.73. This minimal variation is the required insignificant deviation to cause minimum spreading regarding net exports and net capital showing current account balance and balance of payment to be sustained. This either indicates that implementing effective hedging tools over economic foreign exchange risks is vital towards such blessing results needed for economic stability of importing/exporting country [28]. The same results pertaining powerfulness of effective hedging mechanisms over foreign exchange macroeconomic exposures what economic exposure details [29].

Table 2: Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
NEC	1.46	8840188406.99	5025668389.2075	2900824510.03155
GDP	-1799999954.84	8337000032.76	3626116666.2922	4476223322.43796
G	21.74	33.30	26.3921	3.80080
CPI	130.7227	209.4755	172.095356	25.3384228

NEC= Net export/capital; **GDP**=Gross domestic product; **G**=Government expenditure; **CPI**= Consumer price index.

Source: Author's computations (2023)

Table 3: Correlations

	NEC	GDP	G	CPI
NEC	1	0.612*	0.271	-0.243
GDP		1	0.044	0.315
G			1	-0.627
CPI				1

NEC= Net export/capital; **GDP**=Gross domestic product; **G**=Government expenditure; **CPI**= Consumer price index

***. Correlation is significant at the 0.01 level (2-tailed).

** . Correlation is significant at the 0.05 level (2-tailed).

*. Correlation is significant at the 0.1 level (2-tailed)

Source: Author's computations (2023)

Sikarwar and Gupta reported on consistent results on the positive influence of effective hedging mechanisms on controlling economic exposure as it was also indicated by correlation responses given $r=0.612$ at a significance level of 10 percent (See Table 3) [30]. This moreover indicates that net export or net capital and hedged economic exposure are positively and significantly related. Significant responses on correlation coefficients are the enhanced divisible and indivisible trade of goods and services respectively what was also reported by Guest [31].

These details on positive association between effective hedging of foreign exchange risk and net capital indicate that international trade on resources sustain capital inflows important on creating investment multipliers both foreign direct and domestic investments [32]. Similar regression results were with $\beta=0.493$, $t=-1.652$ at $p=0.143$ (insignificant) (See Table 4) indicates the same positive results but insignificant effect that exist between the positive net export/net capital and diversified economic foreign exchange exposure. Revelation on insignificance between the variables stated above was due to the p-value being greater than $p=0.05$ that is $p=0.143 > 0.05$ while the recommended level is $p < 0.05$ [33]. These positive results between the variables net exports/net capital in relation to hedged consumer price index were consistent with what was reported by Afro, Calani and Varela that effective hedging of economic exposure help to remedy currency floatation which has further reported to bridge the greater exchange rate movement which is harmful to the economy of importing and exporting countries. Moreover, the study by Afro, Calani and Varela revealed that a positive net export/net capital is the result of protectionism of domestic industry economy [2]. This is from the fact that it is

with positive balance of payment implying greater current account balance (CAB) to less over sum of financial (FA) and capital account (CA) when net capital is sustained [34]. A net capital which is a difference between capital inflows and capital outflows implicate the difference to be positive. Net capital is insisted on a net factor income to be positive in sustaining a positive national output [35]. Simply net capital suggests on remittances (receipts from abroad) being greater than payment to abroad.

The results regarding gross domestic product (GDP) in relation to hedged economic exposure given by $R^2 = 0.647$ while Durbin-Watson = 1.245 in Table 5 shows a positive determination exerting between the variables under investigation. Enhancement in national output measured in terms of gross domestic product of importing and exporting firm/country was consistently reported to be due sustained capital formation [36]. Similar responses of positivism were with correlation testing results given $r=0.315$, insignificant (See Table 3). The blessing results of national output in relation to diversified economic foreign exchange risks of such nature were also reported by Berstembava, Rubenkova and Toyzhigitova [19]. Thus, the positive and significant results of correlation association are an indicator that hedging economic foreign exchange exposure leads into significant national income. The fact is that the reduced distortions on net export and net capital as significant results count for the growth of the gross national product [37]. The hedged economic exposure has reported to enhance investment such as foreign direct investments (FDI) [38]. It is from the promoted FDI which later enhances employment to indigenous or local labor forces. The enhanced employment gives out a great national output, the sort out predictor that economy has grown. Moreover,

blessing results about national output (GDP) was found to be due to more domestic savings resulting from controlled economic foreign exchange exposure where exports exceed imports [30]. This is export diversification which enables business firms/country earns foreign currency. Foreign exchange earnings function to create more foreign exchange reserve which later enables multipliers on capital inflows. The more capital inflows improve economic growth of host country and consumption [39]. That means consumptions, capital inflows, investment flows are an injection to economy, a result of revealed increase in national output.

Significant results shown pertaining the relation matrix of reduced government expenditure and the hedged economic foreign exchange exposure given by $\beta=0.521$, $t=2.207$ at $p=0.06$ (See Table 4) show the optimal covariance. With $p=0.06>0.05$ shows insignificant relationship between reduction in government spending and effective hedging mechanisms of economic exposure. But optimal covariance matrix is predictor that it is through effective hedging of economic exposure that reduces government spending. Normally government expenditure is an injection to economy but unnecessary spending crease unproductive domestic currency reserves. More spending creates idle currency which in turn discourages full employment [40]. This condition tends to disturb the equilibrium pattern of money market equilibrium which requires money supply to be equal to demand for money [23]. Opposite of that create excessive money not employment in production. The convergence of

the two variables that are hedged economic exposure and reduced government consumption expenditure and was also identified in Table 2 given mean=26.3921 and standard deviation=3.80080. This shows a little deviation from a mean acceptable government spending to occur regarding government budget when economic exposure is hedged. This is insignificant coefficient of variation equals to 14 percent not to cause economic leakage. Also, with $r=0.271$ (See Table 3) it shows reduction in unproductive government spending given effectively hedged economic foreign exchange risks indicates a positive relationship matrix between the two variables. Amendola, Di-Serio, Fragetta and Melina reported that reduction in government expenditure implies retarded currency floatation which is created following excess domestic currency reserve [42]. Hedging economic risk curb for inflation and excess exchange rate movement, the fact which resembles as that said by Hassan [43].

Moreover, the hedged economic risk found to promote exports, thus making it cheaper than imports. The overcome economic exposure has revealed to help in reducing high interest rate charged on borrowings asked especially from international financial institutions [44]. Hedging inflation, the cause of economic foreign exchange risk has reported to combat the problem of more payments executed on imports than exports [45]. Hedging economic exposure function to over way credit inflation, a causal of excessive money supply in the market [46].

Table 4: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1	(Constant)	272.315	40.108	-	6.790	0.000
	NEC	-4.304E-009	0.000	-0.493	-1.652	0.143
	GDP	3.617E-009	0.000	0.639	2.224	0.062
	G	-3.475	1.575	-0.521	-2.207	0.063

a. Dependent Variable: CPI

NEC= Net export/capital; GDP=Gross domestic product; G=Government expenditure; CPI= Consumer price index.

Source: Author's computations (2023)

Table 5: Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.805a	0.647	0.496	17.9837105	1.245

NEC= Net export/capital; GDP=Gross domestic product; G=Government expenditure; CPI= Consumer price index

a. Predictors: (Constant), G, GDP, NEC

b. Dependent Variable: CPI

Source: Author's computations (2023)

3.2. Analysis of Control Variables

Under this subtitle regarding analysis of control variables, the study aimed at determining the changes in strength of relationship between the three explanatory variables and one explained variable i.e. hedged economic exposure represented by consumer price index once moderated by control variables. Control variables are industry/country specific factors sustaining the model relationship under investigation. Control variables under investigation relationship of effective determinants of effective hedging mechanisms of economic foreign exchange exposure. From Table 6 the correlation matrix between variables has shown to be more significant than that in Table 4 given $\beta=0.410$, $t=1.661$ at $p=0.239$ for net export/net capital (NEC). Before associating control variables, the hedging effectiveness over economic exposure in enhancing net export/net capital was at $\beta = -0.493$, $t= -1.652$ and $p=0.143$ (Refer Table 4) which indicate before the two variables were negatively and insignificantly related but after intruding the control variables the strength of association to become positive though still insignificant scented. This either indicates that for effective hedging of foreign exchange risk a firm or country should be strong internally in terms of size (total assets), foreign assets ratio to be greater than 1, foreign sales ratio to be greater than 1, international income ratio to be greater than 1. Simply for hedging mechanisms to be effective the firm should be good liquidity, profitability, asset management, leverage wise. The facts are consistent with those by Hong that, it is by the exporting and importing business become strong internally where hedging foreign exchange risks by applying internal and/or external technique become effective [47].

With Beta coefficients, $\beta= -0.321$, $t=-1.061$ at $p=0.400$ (See Table 6) for national output (GDP) after effecting with control variables compared to $\beta =0.639$, $t =2.224$ at $p=0.062$ (See Table 4) indicate no changes. Either this implicates that control variables have no such significant influence in modifying the results of association between the variable national output and hedging mechanisms of economic exposure. The revealed great insignificance relationship with $p=0.4>0.05$ by $p=0.35$ more is not impressing to suggest inclusion of control variables in the model relationship between hedging of economic foreign exchange exposure and sustainability of gross domestic product. Different from p -value $=0.062>0.05$ before inclusion of control variables where the p -value was greater by little $p=0.012$. More good results before intrud-

ing control variables were with $\beta =0.639$ at $t =2.224$ the responses which is greater by $\beta=0.96$ and $t=0.163$ as compared to the same results after intruding industry/country specific variables. Though controversial results were revealed but it the fact that inclusion of control variables has a great influence towards creating positive and impressing results, thus un-expected results might be due to abnormality in loadings. To show this certainty the overall R squared and Durbin Watson results came after associating control variables were more impressing than those before (See Table 7-after and Table 5-before). The positive and significant results regarding moderation effect of control variables on the model relationship between growth in gross domestic product and hedged economic exposure was also reported by Hadian and Adaoglu [48].

The results over β coefficients $=0.494$, $t=2.648$ at $p=0.1189$ (-See Table 6) implies positive but insignificant relationship between the variable reduced government expenditure and effective hedging of economic exposure represented by consumer price index. Apart from indicating positivist relationship but again the positive influence of control variables as moderators has been shown. The $\beta = 0.494$ after inclusion of control variables is more by $\beta =1.015$ than $\beta = -0.521$ (See Table 4) before inclusion of control variables. More impressing results were with t -value $= 2.648$ which exceed by $t = 4.855$ that before accommodating control variables. Moreover, consistent results were shown with degree of regression determinant $R^2=0.987$ while Durbin Watson $=2.567$ (See Table 7) modified as compared to R squared and Durbin Watson results in Table 5 before intrusion of control variables. As it has revealed above, the essence of including control-internal/industry factors are to modify the model relationship. Thus, it is from more significant results revealed after intruding control variables as compared to those results before which entails that firm/country's strength is vital towards effective hedging foreign exchange exposure [49]. Industry/industry-specific factors include firm strength in possession of assets called firm size; >1 foreign assets ratio; foreign sales ratio; and international income ratio [50]. Further, industrial strength entails on the liquidity, profitability and leverage capacity of the firm or country. They are commonly industry-internal strengths for effective hedging of foreign exchange market risks what economic exposure entails [51-55].

Table 6: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1	(Constant)	136.465	28.572	-	4.776	0.041
	NEC	3.581E-009	0.000	0.410	1.661	0.239
	GDP	-1.820E-009	0.000	-0.321	-1.061	0.400
	G	3.290	1.243	0.494	2.648	0.118
1	Size	-0.180	0.227	-0.124	-.793	0.511
	F. Sal.	5.007E-009	0.000	0.525	2.267	0.152
	Int.Inc.	-2.471	0.477	-1.279	-5.182	0.035
	Lev	-4.690E-006	0.000	-0.454	-2.552	0.125
	R&D	40.363	17.461	0.247	2.312	0.147

a. Dependent Variable: CPI

R&D =Research and development expenditure; Lev=Country/industry leverage; G=Government expenditure; F. Sal= Foreign sales ratio; Size=Firm total assets (Firm size); NEC= Net export/capital; Int.Inc = International income ratio; GDP=Gross domestic product.

Source: Author's computations (2023)

Table 7: Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.994 ^a	.987	.936	6.4315800	2.567

a. Predictors: (Constant), R&D, Lev, G, F. Sal., Size, NEC, Int. Inc., GDP

b. Dependent Variable: CPI

R&D =Research and development expenditure; Lev=Country/industry leverage; G=Government expenditure; F. Sal= Foreign sales ratio; Size=Firm total assets (Firm size); NEC= Net export/capital; Int.Inc = International income ratio; GDP=Gross domestic product

Source: Author's computations (2023)

4. Conclusion

Economic exposure is a foreign exchange risk due to currency floatation is a liquid preference resulted due to use of different types of currencies and that is why it is called currency risks. Different from transaction and translation foreign exchange risks (exposures), economic exposure affect country exposed to international competition. It is from disequilibrium of this economic pattern where the results showed that net export/net capital is distorted but hedging the system revenge the pattern. Moreover, hedged economic exposure significantly lead into increase in increase in national output, the result which was consistent as that pertaining reduction in unproductive government expenditures. It is from significant results revealed; thus, the study recommends to the government of Tanzania forecast for foreign exchange risks and develop ways to mitigate them one they happen. Either, for the government of Tanzania effectively hedge economic foreign exchange risks, internally it should be sustained in terms of efficiency, liquidity, and profitability and leveraging. This study therefore, has been a platform for importing and exporting firms that because a foreign trade involves foreign currencies help to certify their economics and economies of their host countries. This settlement of economies is from

the revealed positive net export and net capital; increase of national output and reduced unproductive government expenditures.

References

- Zhang, Y. (2022, December). Research on Market Risk Measurement of Foreign Exchange in the International Trade Based on Deep Learning. In 2022 6th Asian Conference on Artificial Intelligence Technology (ACAIT) (pp. 1-5). IEEE.
- Alfaro, L., Calani, M., Varela, L. (2021). Currency hedging: Managing cash flow exposure.
- Liu, L. (2022). Economic uncertainty and exchange market pressure: Evidence from China. *SAGE Open*, 12(1), 21582440211068485.
- Zhang, X. (2021). Multinational companies' hedging effectiveness of foreign exchange risk: A quantitative comparison study. *Fudan Journal of the Humanities and Social Sciences*, 14(2), 285-302.
- Chen, Z., Nadeem, M., Peiris, M. S. J. (2021). Bank Balance Sheets and External Shocks in Asia: The Role of FXI, MPMs and CFMs. *International Monetary Fund*.
- Goldberg, L. S., Krogstrup, S. (2023). *International capi-*

- tal flow pressures and global factors. *Journal of International Economics*, 146, 103749.
7. Pinshi, C. P. (2021). Dollarization and foreign exchange reserve: debate on the effectiveness of monetary policy in Democratic Republic of Congo. *Journal of Applied Economic Sciences (JAES)*, 16(72), 222-227.
 8. Artis, M. J., Bayoumi, T. (1989). Saving, investment, financial integration, and the balance of payments.
 9. Kindleberger, C. P. (2019). Balance-of-payments deficits and the international market for liquidity. In *The International Monetary System* (pp. 25-48). Routledge.
 10. Iyke, B. N. (2021). The disease outbreak channel of exchange rate return predictability: Evidence from COVID-19. In *Research on Pandemics* (pp. 145-165). Routledge.
 11. Dieter, M., Weimar, H., Iost, S., Englert, H., Fischer, R., et al. (2020). Assessment of possible leakage effects of implementing EU COM proposals for the EU biodiversity strategy on forestry and forests in non-EU countries (No. 159). Thünen Working Paper.
 12. Acharya, V. V., Vij, S. (2022). Regulating Carry Trades: Evidence from Foreign Currency Borrowing of Corporations in India. Working Paper, April.
 13. Tiwary, A. R. (2019). Study of currency risk and the hedging strategies. *Journal of Advanced Studies In Finance (JASF)*, 10(19), 45-55.
 14. Pande, A. (Ed.). (2022). *Routledge Handbook on South Asian Foreign Policy*. Routledge.
 15. Fuchs, F. U. (2022). Macroeconomic determinants of foreign exchange rate exposure. *The Quarterly Review of Economics and Finance*, 85, 77-102.
 16. Jensen, M. C. (1968). The performance of mutual funds in the period 1945-1964. *The Journal of finance*, 23(2), 389-416.
 17. Carhart, M. M. (1997). On persistence in mutual fund performance. *The Journal of finance*, 52(1), 57-82.
 18. Rahman, M. M. (2019). The relationship between macro-economic variables and stock exchange prices: A case study in Dhaka Stock Exchange (DSE) in Bangladesh.
 19. Berstembaeva, R. K., Rubenkova, N. B., Toyzhigitova, Z. A. (2019). Financial mechanism for supporting entrepreneurs and hedging their risks. *Научный журнал «Доклады НАН РК»*, (2), 80-85.
 20. Chidaushe, W. K. (2020). The Impediments and Best Practice use of Derivatives in Zimbabwe, Botswana and South Africa.
 21. Walela, E., Omagwa, J., Muathe, S. (2022). Financial Risk and Financial Distress: What we Learn from firms listed at the Nairobi Securities Exchange, Kenya. *International Journal of Business and Management Review*, 10(6), 77-101.
 22. Adler, M., Dumas, B. (1984). Exposure to currency risk: definition and measurement. *Financial management*, 41-50.
 23. Jorion, P. (1990). The exchange-rate exposure of US multinationals. *Journal of business*, 331-345.
 24. Fama, E. F., French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of financial economics*, 33(1), 3-56.
 25. Huffman, S. P., Makar, S. D., Beyer, S. B. (2010). A three-factor model investigation of foreign exchange-rate exposure. *Global Finance Journal*, 21(1), 1-12.
 26. Aggarwal, R., Harper, J. T. (2010). Foreign exchange exposure of "domestic" corporations. *Journal of International Money and Finance*, 29(8), 1619-1636.
 27. Chang, F. Y., Hsin, C. W., Shiah-Hou, S. R. (2013). A re-examination of exposure to exchange rate risk: The impact of earnings management and currency derivative usage. *Journal of Banking Finance*, 37(8), 3243-3257.
 28. Deng, Z. (2020). Foreign exchange risk, hedging, and tax-motivated outbound income shifting. *Journal of Accounting Research*, 58(4), 953-987.
 29. Adekoya, O. B., Oliyide, J. A. (2020). The hedging effectiveness of industrial metals against different oil shocks: evidence from the four newly developed oil shocks datasets. *Resources Policy*, 69, 101831.
 30. Sikarwar, E., Gupta, R. (2019). Economic exposure to exchange rate risk and financial hedging: Influence of ownership as a governance mechanism. *Journal of Economic Studies*, 46(4), 965-984.
 31. Guest, P. M. (2021). Risk management in financial institutions: A replication. *The journal of finance*, 76(5), 2689-2707.
 32. Otiemo, C. O. (2014). The effect of foreign exchange risk management strategies on the financial performance of forex bureaus in Nairobi County (Doctoral dissertation, University of Nairobi).
 33. Gomila, R. (2021). Logistic or linear? Estimating causal effects of experimental treatments on binary outcomes using regression analysis. *Journal of Experimental Psychology: General*, 150(4), 700.
 34. Médiçi, F. (2020). Financial instability in peripheral economies: an approach from the balance-of-payments constraint. *Journal of Post Keynesian Economics*, 43(4), 515-539.
 35. Shousha, S. (2019). The dollar and emerging market economies: Financial vulnerabilities meet the international trade system. *International Finance Discussion Paper*, (1258).
 36. Serena, J. M., Sousa, R. (2017). Does exchange rate depreciation have contractionary effects on firm-level investment?
 37. Koutmos, D. (2020). Market risk and Bitcoin returns. *Annals of Operations Research*, 294(1), 453-477.
 38. Karadağ, H. (2021). The uncertainty index and foreign direct real estate investments in developing economies.
 39. Udi, J., Bekun, F. V., Adedoyin, F. F. (2020). Modeling the nexus between coal consumption, FDI inflow and economic expansion: does industrialization matter in South Africa? *Environmental Science and Pollution Research*, 27(10), 10553-10564.
 40. TORIOLA, A. K., ADEBOSIN, W. G., OYEWOLE, A. S., ABERU, F. (2022). Monetary Inflation and Fiscal Spending in Nigeria. *Journal of Public Administration, Finance and Law*, 23, 242-253.
 41. Ko, D., Cho, W. (2023). Financial Experts on the Outside Boards, Financial Stress in Foreign Exchange Markets, and Firm Employment. *Emerging Markets Finance and Trade*, 59(12), 3741-3756.
 42. Amendola, A., Di Serio, M., Fragetta, M., Melina, G. (2020).

- The euro-area government spending multiplier at the effective lower bound. *European Economic Review*, 127, 103480.
43. Hassan, Z. (2023). Multinational Corporations Use of Operational and Financial Hedging for Foreign Exchange Risk—Walmart Global Treasury.
 44. Bernoth, K., Herwartz, H. (2021). Exchange rates, foreign currency exposure and sovereign risk. *Journal of International Money and Finance*, 117, 102454.
 45. Richmond, R. J. (2019). Trade network centrality and currency risk premia. *The Journal of Finance*, 74(3), 1315-1361.
 46. Yeap, X. W., Lean, H. H., Sampid, M. G., Mohamad Hasim, H. (2021). The dependence structure and portfolio risk of Malaysia's foreign exchange rates: the Bayesian GARCH-EVT-copula model. *International Journal of Emerging Markets*, 16(5), 952-974.
 47. Hong, L. (2019). *Essays on Corporate Finance and Interstate Risk Sharing*. University of Arkansas.
 48. Hadian, A., Adaoglu, C. (2020). The effects of financial and operational hedging on company value: The case of Malaysian multinationals. *Journal of Asian Economics*, 70, 101232.
 49. Kogan, L., Li, J., Zhang, H. H. (2023). Operating hedge and gross profitability premium. *The Journal of Finance*, 78(6), 3387-3422.
 50. Zubairu, I., Iddrisu, A. J. (2019). Foreign exchange exposure: An investigation of the determinants in the UK multinationals.
 51. Boudt, K., Neely, C. J., Sercu, P., Wauters, M. (2017). The response of multinationals' foreign exchange rate. *Federal Reserve Bank of St. Louis Working Paper Series*, (2017-020).
 52. Chaieb, I., Mazzotta, S. (2013). Unconditional and conditional exchange rate exposure. *Journal of International Money and Finance*, 32, 781-808.
 53. Francis, B. B., Hasan, I., Hunter, D. M. (2008). Can hedging tell the full story? Reconciling differences in United States aggregate-and industry-level exchange rate risk premium. *Journal of Financial Economics*, 90(2), 169-196.
 54. Ha, J., Stocker, M. M., Yilmazkuday, H. (2020). Inflation and exchange rate pass-through. *Journal of International Money and Finance*, 105, 102187.
 55. Patro, D. K., Wald, J. K., Wu, Y. (2002). Explaining exchange rate risk in world stock markets: A panel approach. *Journal of Banking Finance*, 26(10), 1951-1972.