Journal of
INTERNATIONAL ECONOMICS
Volume 15, No 2, July-December 2024
ISSN 0976-0792

INSTITUTE OF PUBLIC ENTERPRISE
Estd : 1964
(Under the aegis of ICSSR, MoE, GoI)
Hyderabad

AIMS AND SCOPE

Journal of International Economics is devoted to the publication of professional and academic research in all the areas of international economics. It is published in the months of January and July. The journal broadly covers areas such as cross country growth models, population and migration patterns, international trade, trade policy and relations, trade organizations and bodies, foreign investment flows, balance of payments and exchange rate mechanism, multinational corporations and cross border manufacturing, etc.

Indexed in:

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- Research Bible
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The publication of Journal of International Economics is supported by the grant received from Indian Council of Social Science Research (ICSSR), Ministry of Education, Government of India, New Delhi.

Published by: Satyam N Kandula on behalf of Institute of Public Enterprise

Owned by: Institute of Public Enterprise

Printed by: Satyam N Kandula on behalf of Institute of Public Enterprise

Printed at: Wide Reach Advertising Pvt Ltd, 21, Surya Enclave, Trimulgherry, Hyderabad - 500015

Place of Publication: Institute of Public Enterprise, OU Campus, Hyderabad - 500007

Journal of International Economics

Volume 15 No 2 July-December 2024 ISSN 0976-0792

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From the Editor's Desk...

It gives me immense pleasure to release the Volume 15, Issue 2, edition of Journal of International Economics. As the current edition goes into print, let us look forward from adopting sustainable practices to meet the demands of a rapidly changing world and industries across the globe are evolving to adhere to the same. In the landscape of global trade, the finance sector is experiencing a paradigm shift driven by technological advancements, geopolitical developments, regulatory changes, as well as changing consumer demands. New trends in global trade finance are emerging as businesses are aiming to adapt to these new-age conditions. They are redefining the way transactions are made, risks are managed, and opportunities are seized. Altering business strategies based on the latest global trade trends is the best way forward for organizations aspiring to align their goals with market realities. Being familiar with the trends can also help businesses identify new markets and expansion opportunities.

The digitization of trade documents is gaining momentum, replacing traditional paper-based processes with electronic alternatives. Digital platforms for letters of credit, bills of lading, and other essential trade documents are becoming increasingly popular. Invoice discounting, also known as invoice financing or receivables financing, is a financial arrangement where a business sells its accounts receivable (invoices) to a third party, often a specialized financial institution, at a discount.

Supply chain finance helps improve the financial health of businesses by unlocking liquidity, reducing working capital gaps, and enhancing collaboration between trading partners. This trend is particularly crucial in times of economic uncertainty, allowing businesses to maintain resilient supply chains. As supply chains become more complex and interconnected, supply chain finance is emerging as a vital component of global trade finance. This approach involves optimizing cash flow by providing financing options to suppliers and buyers at different stages of the supply chain.

Businesses must stay agile and adapt their trade finance strategies to navigate uncertainties arising from geopolitical developments. The ability to anticipate and respond to these shifts is crucial for maintaining resilient trade finance operations.

This issue consists of articles illuminating on notable issues such as "Examining The Marshall-Lerner Condition On Rupee-Dollar Exchange Rate; Leveraging Micro-Small and Medium Enterprises (MSMEs) for Sustainable Development: A Comparative Analysis of Their Economic Impact and Role in Achieving SDG 8 in India, Indonesia, and Thailand; Beyond the SDGs: Shaping the Future of Global Development; Economic Sustenance of Nuclear Energy and Case Studies on Russia's Gold Policy: How a Nation Outmanoeuvred Global Sanctions and Farmers' Perception and Awareness Towards Crop Insurance – A Case Study of Gajwel Mandal, District Siddipet, Telangana State". I am sure this issue will be a valuable addition for our readers. We request our subscribers and readers to contribute articles, case studies and book reviews.

Dr. K. Bhavana Raj

Journal of International Economics
ISSN 0976-0792 Volume 15, No 2, July-December 2024 pp: 1-14

Examining the Marshall-Lerner Condition on Rupee-Dollar Exchange Rate

Swapnil Sharma*

Abstract

A key concept of international economics is the Marshall-Lerner (M-L) condition, which holds that a country's trade balance will improve only if the sum of the absolute values of its import and export price elasticities is larger than one. The paper aims to study the M-L Condition concerning India and the United States Exchange Rate (ExR). First, the Ordinary Least Square (OLS) estimation was applied to analyse the basic exports and imports model. Then, the Auto-Regressive Distributed Lag (ARDL) cointegration Bound test method was applied, and the ARDL model was used to test the M-L condition. The ARDL Long-Run Multipliers model was also applied. The findings of the Bound test show that both the exports' and imports' ARDL models have long-run cointegration. The study found that from the OLS, ARDL-ECM and LRMs estimations, the condition was validated, while the Long-run ARDL coefficients showed the non-existence of the Condition.xxa

Keywords: Marshall-Lerner Hypothesis, Exchange Rate, Trade Balance, Auto-Regressive Distributed Lag, Bound Cointegration Test.

Introduction

Today, no economy is immune to the fluctuations in the business cycle, and due to this, all countries suffer from depression and recession, which result in a balance of Payment (BOP) deficit. It is Marshall(1923) – Lerner(1944) provided the most important insights regarding the growth of BOP through devaluation of the national currency. Therefore, the goal of this study is to evaluate Marshall – Lerner (M-L) conditionsin context of Indian economy:

$$\epsilon_x^d + \epsilon_m^d > 1 \quad ...(1)$$

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This condition states that Trade Balance (TB) will improve with depreciation only when the summation of the Price elasticity of Demand for Exports and Imports is greater than one.

- If this equation is satisfied ($\epsilon_x^d + \epsilon_m^d > 1$), the TB will improve with the depreciation of the currency.
- If this sum is less than 1 ($\epsilon_x^d + \epsilon_m^d < 1$), the TB will deteriorate with the depreciation of the currency.
- If the sum is equal to 1, then the TB will remain unchanged with the change in Exchange Rate (ExR). ($\epsilon_x^d + \epsilon_m^d = 1$)

Therefore, the effect of depreciation on the TB depends on the nature of imports and exports elasticity of demand of a country. The relationship between the ExR and TB is vital for any foreign policy in a country. The M-L Condition theory is based on the following assumptions:

- Ignorance of Capital flows.
- Only two goods are traded.
- BOP is equal to the TB.
- With full employment, we can overlook the impact of income on demand for domestic and foreign commodities, focusing solely on prices.
- Prices for goods are specified in the country's local currency.
- The supply of goods is constantly elastic.
- International trade policies remain consistent.

This study includes theoretical background on the Condition to know what the condition says and how it can be analysed, followed by the Empirical Literature Reviews to find the gap in the study. The study includes the methodology that this study uses with the data specification, followed by analysis done on the data according to the specified methodology used and the conclusion of the findings provided in this paper.

Theoretical Background

The modelling of the relationship between ExR and trade balance is discussed in many papers. Theoretically, the real ExR, E_t, is defined as the domestic price level, P_t multiplied by the nominal spot ExR, S_t and divided by the foreign price level, P_t^*.

$$E_t = (S_t P_t)/P_t^* \quad ...(2)$$

On the other hand, the trade balance is calculated as the ratio of total exports divided by total imports as shown in equation (3):

$$B_t = (P_t X_t)/(P_t^* S_t M_t) \quad ...(3)$$

total export is obtained by multiplying the domestic price level with the export volume while total import is calculated as the foreign price level

multiplied by the nominal spot ExR and the import volume. By expressing equation (3) into logarithms form (using lowercase letters),

$$b_t=x_t-m_t-(s_t-p_t+p_t^*)=x_t-m_t-e_t \quad ...(4)$$

We define the long-run demand functions for export and import as in equations (5) and (6):

$$x_t=\alpha_x+\beta^* y_t^*+_x e_t \quad ...(5)$$

$$m_t=\alpha_m+\beta y_t+\gamma_m e_t \quad ...(6)$$

where y_t^* and y_t are the real income for the foreign country and domestic country respectively; γ_x and γ_m are the elasticities of export and import respectively. Taking both equations into the trade balance equation in (4), we finally get the long-run trade balance equation as below:

$$b_t=(\alpha_x-\alpha_m)+\beta^* y_t^* \beta y_t+(\gamma_x+\gamma_m-1)e_t \quad ...(7)$$

For M-L condition to be held, we should fulfil the following condition:

$$(\gamma_x+\gamma_m-1)>0 \quad ...(8)$$

$$\gamma_x+\gamma_m>1 \quad ...(9)$$

In this problem, there is a rich amount of empirical testing results from which this study picked only the most relevant studies available. Table-1 provides literature concerning the elasticity approach.

Table-1: Empirical Literature Review

(Authors, Year)	Sample	Period	Frequency of Data	Methodology used	Result
(Rose, 1991)	5 OECD Countries	1974-1986	Monthly Seasonally Adjusted	Locally Weighted Regression, Benchmark Test.	ML condition holds in these countries.
(BOYD, et al., 2001)	8 OECD Countries	Canada, France, & Italy (1975Q1 – 1996Q4) Japan, UK, & USA (1975Q1 – 1994Q4) Germany (1978Q3 – 1996Q4) Netherlands (1977Q1 – 1994Q4)	Quarterly	Vector Auto-Regressive Distributed Lag model (VARDL)	ML condition holds for all 8 cases while 5 out of 8 cases has a significant negative coefficient.
(Pandey, 2013)	India	1993-2011	Annual	Vector Error Correction Model	ML condition holds in India.
(Bahmani, et al., 2013)		1979-2009 Exceptions: Brazil (1980-2009) China, Hong Kong (1981-2009) Finland (1971-1998) Morocco (1971-2007) Pakistan (1971-2008) Poland (1980-2009) Portugal (1983-2009) South Africa (1972-2005) Sri Lanka (1972-2002)	Annual	ARDL-ECM	ML condition was met for only half of the cases involved in the study.
(Chowdhury, et al., 2014)		1973-2011	Annual	OLS Regression	M-L is consistent in the long-run

(Authors, Year)	Sample	Period	Frequency of Data	Methodology used	Result
(Nwanosike, et al., 2017)		1970-2014	Annual	OLS Regression	M-L condition is not satisfied in the short run in Nigerian case
(Adhikari, 2018)		1992-2016	Annual	Vector Error Correction model (VECM)	ML condition was not met for U.S.-China Trade.
(Adams & Metwally, 2021)		1965-2017	Annual	Vector Error Correction model (VECM)	M-L condition is satisfied in Egypt.
(Amaral & Breitenbach, 2021)		1996Q1-2019Q4 Exception: India (1997Q1-2019Q4) Turkey (1998Q1-2019Q4)	Quarterly	ARDL Bound test	There is little evidence from the study to support the validity of the ML Condition.

Methodology and Data Specification

This study focuses more on the bilateral ExR of India and the US and for that, it is more important to focus on the nominal aspect of the ExR. India is highly dependent on the US dollar for the import and export of different commodities, especially, Crude oil. This dependency on US$ has made the focus of the study towards this. The model formulated in this study is shown as follows.

$$LN(EXP_t) = \alpha + \beta_1 LN(NEX_t) + \beta_2 LN(GDP\text{-}US_t) \quad ...(10)$$

$$LN(IMP_t) = \alpha + \beta_1 LN(NEX_t) + \beta_2 LN(GDP\text{-}I_t) \quad ...(11)$$

The variables used in these models are described in Table-1.

Table-2:Variables Description and Sources

Variables	Description	Unit of account	Source
Nominal Exports Nominal Imports	Exports (Imports) of goods and services represent the value of all goods and other market services provided to (received from) the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments.	Current US dollars	World Development Indicators

Variables	Description	Unit of account	Source
Nominal GDP United States of America Nominal GDP India	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.	Current US dollars	World Development Indicators
Indian Rupee/ US Dollar Spot Exchange Rate	Official ExR refers to the ExR determined by national authorities or to the rate determined in the legally sanctioned exchange market. It is calculated as an annual average based on monthly averages (Indian Rupee relative to the U.S. dollar).	IND Rupee per US Dollar, period average	World Development Indicators

Source: World Bank

The variable has annual frequency and starts from 1990 to 2022. The period of 1990 is selected due to economic reforms that led to the opening of the Indian Economy. India adopted the policy of managed flexible ExR in 1994 and this analysis makes its attempts to show how India managed to struggle around this policy. The variables are converted into logarithms. The analysis is performed on R Studio.

Results

In the previous section, the variables were defined and the data range was given. In this section, the analysis of the data will be done and different statistical tools will be applied in this section to prove the M-L Condition on the IND Rupee – US Dollar relationship. The analysis will follow a specific order. Firstly, the Ordinary Least Square (OLS) estimation will be done. Then, checking the stationarity of the variables will be concluded using different unit root tests. After analysing the stationarity of all the variables, the Auto-Regressive Distributed Lag (ARDL) Bound Test (Pesaran, et al., 2001) will be performed. After the result of the ARDL Bound test result, further analysis will be performed to validate the M-L Condition.

Table-3: Descriptive Statistics

Variables	LN(NEX_t)	LN(EXP_t)	LN(IMP_t)	LN(GDP-I_t)	LN(GDP-US_t)
N. Obs.	33.00	33.00	33.00	33.00	33.00
Min.	2.86	23.84	23.86	26.32	29.42

Variables	LN(NEX_t)	LN(EXP_t)	LN(IMP_t)	LN(GDP-I_t)	LN(GDP-US_t)
Max.	4.36	27.36	27.54	28.85	30.87
1st Quartile	3.72	24.56	24.70	26.77	29.84
3rd Quartile	4.11	26.83	26.99	28.34	30.50
Mean	3.82	25.72	25.84	27.57	30.17
Median	3.82	26.02	26.16	27.57	30.26
Sum	126.22	848.87	852.87	909.68	995.46
SE Mean	0.06	0.21	0.21	0.15	0.07
LCL Mean	3.70	25.30	25.41	27.26	30.02
UCL mean	3.95	26.15	26.28	27.87	30.31
Variance	0.12	1.42	1.50	0.73	0.18
St. Dev.	0.35	1.19	1.23	0.85	0.42
Skewness	-0.63	-0.22	-0.23	0.00	-0.22
Kurtosis	0.11	-1.61	-1.62	-1.62	-1.18

Source: Authors' Computation

Ordinary Least Square (OLS) Modelling

The OLS regression is performed on the Export and Import models. This modelling is done in the first step to examine the original result which can be extracted from the raw data or the data on which no test was performed. This helps to understand the original status of the variables if performed before any diagnosis. Before the regression analysis only the test for multicollinearity was operated and due to specification limitation of the models, no variable was removed and data was only converted into logarithms to reduce the problem. Table-4 shows the OLS result.

Table-4: Ordinary Least Squares Results

Variables	Export Model (1) (*LN(EXP_t)*)	Import Model (2) (*LN(IMP_t)*)
LN(NEX_t)	-1.33***	-0.02
	[0.26]	[0.22]
LN(GDP-I_t)	-	1.42***
		[0.09]
LN(GDP-US_t)	3.85***	-
	[0.22]	
Constant	-85.26***	-13.33***
	[5.71]	[1.79]
R-Squared	0.979	0.973
Adj. R-Squared	0.978	0.971
Durbin-Watson Test	0.29***	0.23***

Source: Authors' Computation

Table-4 shows that Export (*LN(EXP_t)*) has the significant relation with the Rupee-Dollar spot ExR (*LN(NEX_t)*), while Import (*LN(IMP_t)*) doesn't

have any significant relation with the ($LN(NEX_t)$). The models are showing that ExR are more than elastic with the export and with import it is highly inelastic. This result has to be verified in further analysis as the result can be spurious as it on the raw data available to the authors. The spuriousness of the result can be analysed by the Durbin and Watson (1971) test which showed that the residual of the models are auto correlated. So, in further analysis firstly the unit root testing will be performed to check the stationarity of the variables.

Unit Root Testing

In this section, the first step of analysis was performed on the time-series data. Only the Phillips-Perron test (1988) unit-root test was used in this study. The Phillips-Perron test was used in the study because of its property of non-parametric correction to the t-statistic.

Table-5: Phillips-Perron Test

Level		First Difference	
Variables	**Statistics**	**Variables**	**Statistics**
$LN(NEX_t)$	-4.18**	$LN(NEX_t)$	-
$LN(GDP\text{-}I_t)$	-3.04	$LN(GDP\text{-}I_t)$	-6.04***
$LN(GDP\text{-}US_t)$	-1.76	$LN(GDP\text{-}US_t)$	-4.07**
$LN(EXP_t)$	-1.23	$LN(EXP_t)$	-4.31***
$LN(IMP_t)$	-1.53	$LN(IMP_t)$	-4.74***

Source: Authors' Computation

Table-5, shows that the nominal ExR is stationary at the level while all other variables are stationary at 1st difference. Since, the ARDL(Pesaran & Shin, 1999) provides an option to analyse the data on any set of stationary (most appropriately all the variables should be at the level or at 1st difference or has the combination of the two, while it is less preferred to use on the 2nd or more differenced models). Therefore, because of its properties authors have specified to use this model before checking the stationarity of the variables. So, first, the cointegration test will be performed and after that, the result of ARDL will be analysed.

Auto-Regressive Distributed Lag Bound Test

In this section, the test for long-run cointegration was analyzed. The bound F test (Pesaran, et al., 2001) was used to check the cointegration in the model.

Table-6: Bounds Test for Cointegration

Bound Test	Export Model	Import Model
F	8.70	5.82

Bound Test	Export Model		Import Model
Critical Value I (0)	10%	5%	1%
	3.39	4.18	6.14
Critical Value I (1)	10%	5%	1%
	4.41	5.33	7.61

Source: Authors' Computation

Table-6 shows the result of the Bound F test (Pesaran, et al., 2001) for cointegration, and it validates the result based on 5% Critical Values for a significant long-run relationship. The result shows that both the models have long-run cointegration and further, there can be an analysis of the ARDL long-run model. There are other tests like (Johansen, 1988), and (Engle & Granger, 1987) test for estimating long-run cointegration in the model but as the data is confined more towards the Auto Regressive (AR) model it is been wise to incorporate the (Pesaran, et al., 2001) Bound test for the analysis.

Auto-Regressive Distributed Lag Error Correction Model

Since the export model has a significant relationship with $LN(NEX_t)$, while import has no significant relationship analysed in OLS modelling. So, after the unit root testing, this study shifts towards AR Techniques. Since there is a significant long-run relationship in the models as analyzed by the Bound F(Pesaran, et al., 2001) test. First, the ARDL error correction model was established in Table-7.

Table-7: Error-Correction ARDL Model Results

Variables	Export (1)	Import (2)
Ect(Export)(-1)	-0.16** [0.07]	-
Ect(Import)(-1)	-	-0.28*** [0.06]
$d(LN(NEX_t))$	-1.11*** [0.19]	-0.13 [0.43]
$d(LN(NEX_t))(-1)$	-0.31* [0.15]	-0.90*** [0.25]
$d(LN(GDP\text{-}US_t))$	2.41*** [0.43]	-
$d(LN(GDP\text{-}US_t))(-1)$	-1.67*** [0.48]	-
$LN(GDP\text{-}I_t)$	-	1.56*** [0.32]
Constant	-16.59*** [3.13]	-3.29*** [0.76]
R-Squared	0.82	0.74
Adj. R-Squared	0.79	0.70

Source: Authors' Computation

Table-7 shows that in both models ExR is distributed to lag 1 and has a significant impact on dependent variables. In the Export model, US-GDP lagged to 1 while the Import model showed Indian-GDP to have 0 lag. After the ECM model, the diagnostic test result will be shown in Table-8.

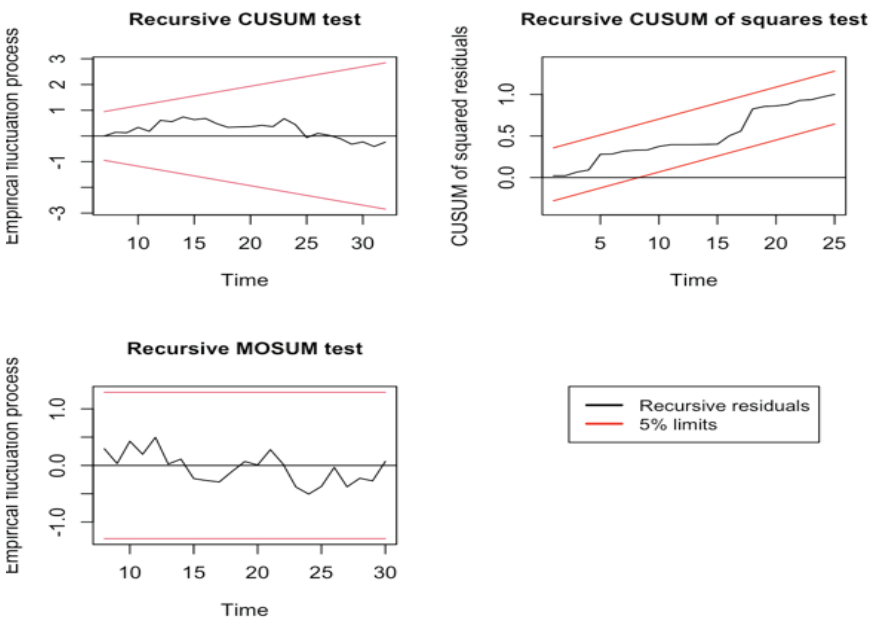
Table-8: Diagnostic Test of ARDL Model

Test	Exports	Imports
Breusch-Godfrey Test	0.28	0.07
Ljung-Box Test	0.28	0.07
Breusch-Pagan Test	6.29	2.95
Shapiro-Wilk test	0.99	0.98

Source: Authors' Computation

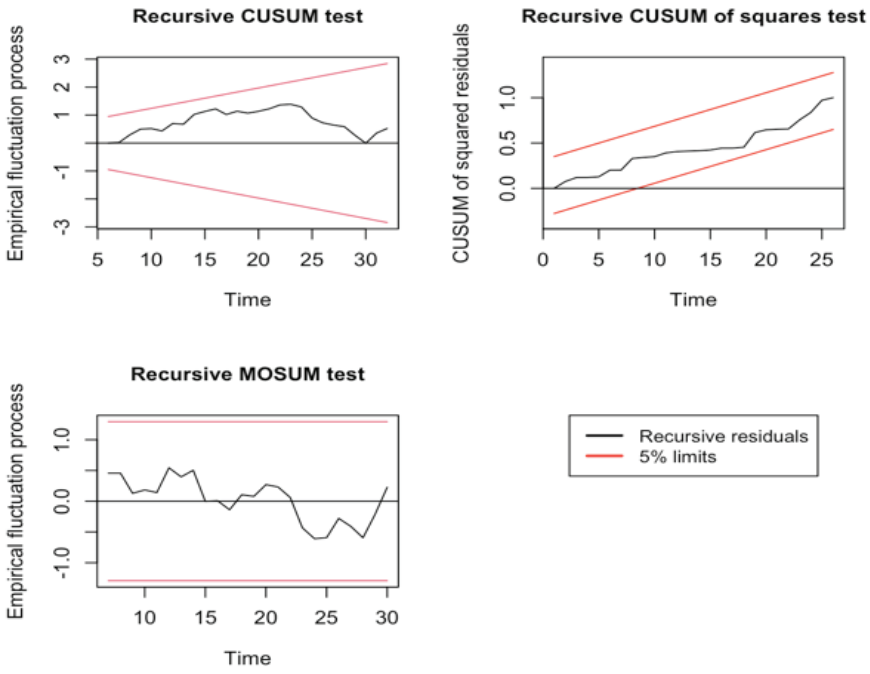
Table-8 shows that both models are statistically significant and robust as all the diagnostic tests are in favour of ARDL model robustness. Figure-1 & 2 shows the stability of both models.

Figure-1: Stability Test of Export Model



Authors' Compilation

Figure-2: Stability Test of Import Model



Auto-Regressive Distributed Lag Long-Run Model

Since both models have shown long-run cointegration, it is important to show the long-run coefficient of the ARDL model. Table 9 will provide insights into the long-run coefficient estimates.

Table-9: Long-Run ARDL Model Results

Variables	Export (1)	Import (2)
$LN(NEX_t)$	-0.53*** [0.16]	-0.25* [0.13]
$LN(GDP\text{-}US_t)$	0.76*** [0.29]	-
$LN(GDP\text{-}I_t)$	-	0.42*** [0.14]
Constant	-16.59** [6.73]	-3.29** [1.49]

Source: Authors' Computation

Table-9 shows that all the variables are significantly related to their respective dependent variables showing that long-run coefficients are good estimators of dependent variables. Till now Long-run model Coefficients of ARDL models are provided, so next this study talks about the Long-Run ARDL Multipliers theory and its estimates for the validation of M-L Condition.

Auto-Regressive Distributed Lag Multipliers

Consider the basic Auto-Regressive Distributed Lag model with an exogenous variable, which is of the form:

$$y_t = c_0 + \sum_{k=1}^{p} \beta_k y_{t-k} + \sum_{j=1}^{l} \alpha_j x_{t-j} + u_t \quad ...(12)$$

Where y represents the dependent variable, p represents the autoregressive order of the ARDL, where it is directly associated with the y (the dependent variable). X is an exogenous explanatory variable that has *l* lags (also a contemporaneous value of x can be included) and the residual term u.

The equation (10) of ARDL is not a long-run function it is more of a short-run model. Therefore, the actual impact of x through α must be done considering the size and orders associated with the dependent variable y through β. The above leads to a situation where the cumulative impact of α is weighed and this can be done by using a long-run multiplier. Blackburne and Frank (2007) indicated that an approximation to this long-run multiplier would involve a non-linear transformation to get a long-run coefficient, such transformation is given in the general form of:

$$\theta = \frac{\sum_{j=1}^{l} \alpha_j}{1 - \sum_{k=1}^{p} \beta_k} \quad ...(13)$$

This is the long-run multiplier of the variable X. It uses the sums of the coefficient α associated with the independent variable (and its lags) divided by 1 minus the sums of the autoregressive β coefficients. The upper part corresponds to the Long-Run Propensity of X towards y, which is simply the sums of the coefficients, and it's interpreted that given one permanent change of one unit in x, the sums would be the long-run propensity as the impact on y. The down part represents the weight associated with the response of the autoregressive structure.

Now, this paper uses a long-run multiplier to know the long-run propensity of NEX as an impact on Exports and Imports.

Table-10: Long Run Multipliers

Variables	Export Model (1)	Import Model (2)
LN(NEX_t)	-3.17*** [0.91]	-0.90*** [0.49]
LN($GDP\text{-}US_t$)	4.56*** [0.55]	-
LN($GDP\text{-}I_t$)	-	1.49*** [0.16]
Constant	-98.80*** [13.75]	-11.85*** [2.97]

Source: Authors' Computation

Findings

After the estimation of ExR elasticities of Export and Import through different methodologies in the study, this section will provide results of

these estimated elasticities to validate the M-L Condition. In Table 11 the summation of both the elasticity coefficient will be provided and it will help to tell from which methodology this condition is fulfilled in the prescribed scenario.

Table-11: Verification of Marshall-Lerner Hypothesis

Method of Modelling	Condition (|Exp| + |Imp| > 1)	Result
Ordinary Least Squares	1.33 + 0.02 > 1	True
ARDL-ECM	1.11 + 0.13 > 1	True
ARDL Long-Run Model	0.53 + 0.25 < 1	False
ARDL Long-Run Multipliers	3.17 + 0.90 > 1	True

Source: Authors' Computation

Conclusion

Most countries suffer from the problem of current account deficits and for that Export is the most important variable in international economics whichhelps to improve thetrade balance. There are various ways for countries to increase national competitiveness, such as through productivity improvement, innovation, product differentiation, marketing, etc. Aside from these criteria, the price of goods and services tends to be the most important element in determining a product's market share in the worldwide market. Depreciation or devaluation of the home currency against trading partners is the simplest and quickest approach to increase net exports(Cambazoglu & Sevcan, 2016). In case of India, international trade mostly happens in US$ where the Indian Rupee is exchanged with the US Dollar(Narang, 2014). In recent years, India has been trying to diversify its bilateral trade by diversifying its currency exchange with other currencies. But still today India is trading with many countries with US Dollars, to reduce its deficits this paper worked on the M-L Condition on the Rupee-Dollar trade. From the analysis done in the previous sections, it is clear that like (Amaral & Breitenbach, 2021), this study result can find the M-L Condition existence in the case of India. During the analysis, it was seen that three methods out of four favour M-L Condition. The OLSEstimation, ARDL ECM, and ARDL LRMs Method have shown that bilateral trade M-L Condition exists in favour of India. The study can be extended in future with the help of other methodologies used by different researchers like (Lucy, et al., 2015) who used the VECM model. In the end, with all the empirical study done in this paper on the topic it is right to conclude that for India M-L condition has no or low existence.

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ACKNOWLEDGEMENT

Author acknowledge ICSSR, New Delhi for the award of a Full-Term Doctoral Fellowship in providing financial support for carrying out research. The research paper forms part of the research work sponsored by ICSSR under the provision of a Full-Term Doctoral Fellowship for the Research Scholars.

ISSN 0976-0792 Volume 15, No 2, July-December 2024 pp: 15-32

Leveraging Micro-Small and Medium Enterprises (MSMEs) for Sustainable Development: A Comparative Analysis of their Economic Impact and Role in Achieving SDG-8 in India, Indonesia, and Thailand

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Abstract

Micro-Small and Medium Enterprises (MSMEs) is one of the major contributing sectors of the Indian economy. MSMEs are vastly producing huge varieties of differentiated products and expanding in the different sectors of the economy to fulfil the consumption demand of domestic and foreign markets across the globe. This research paper examines the critical role of Micro-Small and Medium Enterprises (MSMEs) in achieving Sustainable Development Goal 8 (SDG 8), which emphasizes decent work and economic growth, across three major Asian countries: India, Indonesia, and Thailand. Utilizing a comprehensive review of secondary data sourced from various national databases and reports from 2010 to 2018, the study delves into the economic contributions of MSMEs, assessing their impact on GDP and employment within these national economies. The paper highlights the substantial role MSMEs play in the Asian economic landscape, representing up to 97% of all businesses and employing a significant portion of the labor force. Despite their pervasive presence, MSMEs' contribution to national GDPs varies, with an average of 41% across the countries studied. The research identifies the strategic importance of integrating MSMEs into global value chains as a potential catalyst for increasing labor productivity and economic efficiency. Moreover, the findings reveal that while MSMEs in Indonesia and Thailand are well-integrated into their economic frameworks, Indian MSMEs face challenges such as limited access to finance, technological resources, and global markets, which hinder their

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performance relative to their regional counterparts. The paper argues for targeted policy measures to support MSMEs, especially in India, to enhance their capacity to contribute more effectively to economic growth and the attainment of SDG 8. Such measures include improving access to finance, fostering technology adoption, and facilitating infrastructure development. The study underscores the need for a multifaceted approach involving government, private sector, and international cooperation to harness the full potential of MSMEs in promoting sustainable economic development and achieving the broader Sustainable Development Goals.

Keywords: Asia, Decent Work and Economic Growth, Entrepreneurship, MSMEs, Sustainable Development Goals

Introduction

There are several visions and various approaches to sustainable development. Still, mainly two references define sustainable development: the World Commission on Environment and Development (WCED) and the Brundtland commission report in 1987 and the Plan of Agenda 21 endorsed by the UNCED (United Nations Conference on Environment and Development) in 1992.

The report of the Brundtland Commission is the basis for discussions and reflections, whereas Agenda 21 aims at enclosing the action and future deliberations at the global and local levels. Certainly, Agenda 21 is still considered the fundamental tool for executing sustainable development.

The 1987 report of the Brundtland Commission explained sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[3]

Agenda 21 is the solemn or the highest moral or legally non-binding commitment of the UNCED during 3rd to 14th June 1992, the 2nd Earth Summit held in Rio de Janeiro. The Agenda 21's task is to advocate for actions to battle the harmful effects of human activities on the environment.

Under Agenda 21, the ultimate goal of sustainable development is to meet basic human needs and raise living standards for all people while safeguarding and better managing ecosystems and ensuring a safer and more affluent future.

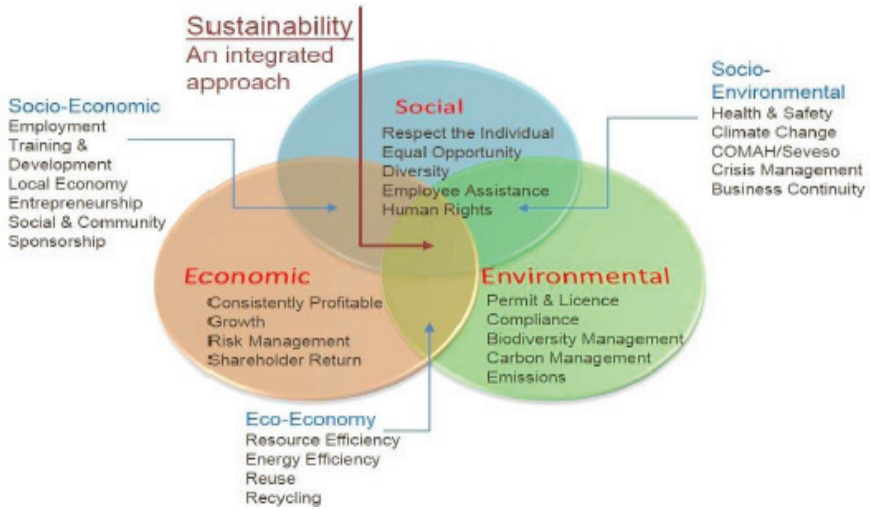
The Sustainable Development Goals (SDGs), also known as the Global Goals, were unanimously adopted by the member states of the United Nations in 2015. These goals represent a global pledge to end poverty, protect the environment, and ensure that all people enjoy peace and prosperity by the year 2030. Comprising 17 interlinked objectives, the

3 https://en.unesco.org/themes/education-sustainable-development/what-is-esd/sd

SDGs acknowledge the interconnected nature of global challenges and emphasize that efforts in one area can significantly influence outcomes in another. This holistic approach stresses the importance of balancing social equity, economic growth, and environmental sustainability. The SDGs aim to address the most pressing global issues – including poverty, hunger, health, education, gender equality, water sanitation, energy, economic growth, and climate change. Each goal has specific targets to be achieved over the next 15 years. Countries around the world have committed to mobilize efforts to end all forms of poverty, fight inequalities, and tackle climate change, while ensuring that no one is left behind. This commitment highlights a universal pursuit to enhance prosperity and protect the planet, recognizing the necessity of bringing together people, governments, civil society, and the private sector to achieve these ambitious goals.

Furthermore, achieving the SDGs requires harnessing various forms of capital – human, financial, and technological. Innovation and a deep understanding of local and global contexts will be crucial. By employing creativity, leveraging advanced technologies, and utilizing both existing and new financial resources, the international community can implement sustainable solutions that address the needs of the most vulnerable populations and create a resilient, inclusive, and sustainable future for all (UNDP, (2022)).

Figure-1: Sustainability an integrated approach



Source: (Environet Solutions, 2013)

In 2015, a blueprint for peace and prosperity for the present and future people and the planet i.e., the 2030 Agenda for Sustainable Development was adapted by all the UN member nations. There are 17 SDGs at their core, and they represent an urgent call to action for all countries - developing and developed - to work together in a global partnership. They understand that eradicating poverty and other forms of deprivation must be combined with efforts to enhance health and education, decrease inequality, and boost economic growth while combating climate change and protecting our oceans and forests.

Figure-2: Sustainable Development Goals

Source: United Nations Website.

Literature Review

Micro-Small and Medium Enterprises (MSMEs) are pivotal in the economies of Asia, contributing significantly to employment and GDP in India, Indonesia, and Thailand. These enterprises are instrumental in achieving Sustainable Development Goals (SDGs), offering a unique blend of economic vitality and potential for sustainable development (Tambunan, 2019). Rubio-Mozos et al. (2019) discuss the transition of Fourth Sector SMEs towards sustainable models aligned with the SDGs, emphasizing the need for an economic paradigm shift from GDP-centric models to those prioritizing ecological and social metrics. They highlight the role of systemic thinking and multi-stakeholder engagement ecosystems in facilitating this transition. Pomare (2018) elaborates on the challenges and opportunities of integrating SDGs within SME operations, advocating for sustainable practices that extend beyond environmental concerns to broader societal well-being. This research stresses the importance of multi-stakeholder initiatives and a multiple framework approach for effective SDG integration. Biryukov et al. (2021) examine the participation of Russian

SMEs in achieving SDGs, identifying a gap in motivation and sufficient participation. They propose the need for innovative business models and governmental support to enhance SME contributions to sustainable development. Sonntag et al. (2022) assess the implementation of SDGs by SMEs in Germany and Poland, noting varying national approaches to sustainability. Financial constraints are highlighted as a primary barrier, suggesting that similar challenges likely exist for SMEs in Asia. Šebestová (2020) investigates the integration of SDGs within SME decision-making in the Czech Republic and Poland. The study reveals significant disparities in the commitment to SDGs between the two countries, with Czech businesses displaying greater knowledge and implementation of green methods. Jiménez et al. (2021) discuss the role of Cluster Management Organizations (CMOs) in promoting SME engagement with SDGs through collective approaches, suggesting that similar models could be effectively applied in other industries to enhance corporate sustainability. Ullah et al. (2023) focus on the influence of government incentives on the relationship between green innovation and SDGs in Pakistani SMEs. They find that government support significantly strengthens the impact of green innovation on environmental and community development practices. Verma (2019) highlights the role of MSMEs in India in achieving SDGs, particularly in poverty alleviation, economic growth, and industrial innovation. The study suggests measures to enhance their sustainability and impact on broader socio-economic benefits. Rehman et al. (2022) examine the effects of circular economy innovation and business model innovation on SME performance in Asia, noting the positive influence of government incentives on economic, environmental, and social performance. Naveed et al. (2022) delve into the challenges faced by SMEs in Pakistan concerning workers' rights in alignment with the SDGs. They suggest that enhancing SDG awareness, strategic planning, and access to expert guidance are critical for effective workplace practices. The Business and Sustainable Development Commission highlights the potential of sustainable business models to open economic opportunities worth up to $12 trillion and create 380 million jobs by 2030, predominantly in developing countries (United Nations Development Programme, 2022). This potential underscore the critical role of MSMEs in leveraging economic opportunities under each SDG, particularly in contexts where they form the backbone of job creation and innovation in the private sector.

The literature collectively underscores the essential role of MSMEs in promoting sustainable economic growth and achieving SDG 8. It calls for a rethinking of economic models, more supportive policies, and innovative approaches to integrate SDGs into the operational frameworks of MSMEs.

MSMEs and SDGs

In most countries, especially in developing countries, MSMEs play a critical role in job creation and global economic development. MSMEs make up the vast bulk of enterprises around the world. They comprise for almost 90% of all enterprises and more than half of all jobs in the world. In emerging economies, formal MSMEs account for up to 40% of total GDP. When informal MSMEs were included, the values were much higher.

Micro, Small, and Medium Enterprises (MSMEs) are foundational to Asia's economic landscape, not only stimulating domestic demand but also serving as vital contributors to job creation, innovation, and competitiveness at both national and regional levels. These enterprises represent an overwhelming majority, accounting for approximately 97% of all businesses and employing 69% of the labor force across Asian countries. Despite their extensive presence and critical economic roles, MSMEs contribute an average of just 41% to the Gross Domestic Product (GDP) of each country within the region. The role of MSMEs has become increasingly prominent following the global economic shifts post-2007-2008 financial crisis. The surge in foreign direct investments during this period has paved the way for large multinational corporations to penetrate developing Asian markets. This influx has spurred new demands for the diverse outputs of MSMEs, especially those engaged in supporting larger industries or acting as suppliers for parts and components. There is a clear opportunity for MSMEs to significantly enhance their labor productivity by integrating more deeply into global value chains. Such integration not only benefits the MSMEs themselves through access to broader markets and advanced technologies but also strengthens the overall economic fabric of their countries by boosting output and efficiency. Moreover, the strategic involvement of MSMEs in these global networks is crucial for advancing Sustainable Development Goals (SDGs) in the region. By participating in these value chains, MSMEs can contribute more effectively to sustainable economic growth, which is instrumental in achieving broader developmental targets set by international bodies like the United Nations. Asian Development Bank (2020) emphasizes the potential transformative impact of MSMEs in aligning economic growth with the sustainable development agenda, highlighting their indispensable role in the socio-economic advancement of Asia.

Role of MSMEs in achieving the SDG-8, i.e., Decent Work and Economic Growth

The SDG-8 has 12 targets. It covers promoting entrepreneurship, decent work, financial inclusion, accelerating national economic growth, a global strategy for youth employment, and international cooperation initiatives such as Aid for Trade, etc.

This study is focused on bringing out the importance of the MSMEs in achieving SDG-8, i.e., Decent Work and Economic Growth in the three selected nations of Asia, i.e., India, Indonesia and Thailand.

Objectives

- To Evaluate the Economic Contributions of MSMEs: Analyse the impact of MSMEs on the Gross Domestic Product (GDP) and employment in India, Indonesia, and Thailand, to understand their pivotal roles in these national economies.
- To Investigate MSMEs' Role in Achieving SDG 8: Explore how MSMEs contribute to promoting sustained, inclusive economic growth and decent work, as outlined in SDG 8, within the selected countries.
- To Provide Policy Recommendations: Based on the findings, propose policy measures to enhance the capacity of MSMEs to contribute more effectively to economic growth and the achievement of SDG 8 in these regions.

Research Methodology

The methodology employed in this research study involves an analytical research design that primarily focuses on evaluating the contributions of Micro-Small and Medium Enterprises (MSMEs) to the economies of selected Asian countries – India, Indonesia, and Thailand – and their role in achieving Sustainable Development Goal (SDG) 8, which pertains to promoting sustained, inclusive economic growth, full and productive employment, and decent work for all.

This study is conducted through the analysis of secondary data sourced from various reliable databases and reports published by recognized institutions such as the Ministry of MSMEs, the Asian Development Bank, and national statistical agencies among others. The data collected encompasses a range of economic indicators, including GDP contributions, employment rates, and sector-specific growth figures for MSMEs over a defined period, typically from 2010 to 2018.

The analytical approach integrates a descriptive analysis to quantify the direct contributions of MSMEs in terms of GDP and employment. Furthermore, the study utilizes comparative analysis techniques to contrast the performance and impact of MSMEs across the three countries, identifying patterns, trends, and discrepancies in their contributions to economic development and the attainment of SDG 8.

This research design allows for a critical evaluation of the existing relationships between MSMEs' operational dynamics and the broader economic goals, providing insights that are essential for policymakers to

enhance the efficacy of economic support and growth strategies aimed at MSMEs within these nations.

India

The Definitions of the MSMEs

The finance minister announced adjustments to the definition of MSMEs on May 13, 2020, while delivering the economic package as part of the Aatmanirbhar Bharat Abhiyaan. This was done in order to be realistic with time, provide an objective classification system, and make business easier. The new categorization will take effect on July 1, 2020. MSMEs were formerly classified based on plant and machinery/equipment investment under the MSMED Act of 2006. Manufacturing and service units had various definitions. In terms of financial constraints, it was likewise limited. The economy has seen substantial changes since then.

As a result, a new composite classification for manufacturing and service units was notified on 26th June 2020 to facilitate the present and prospective entrepreneurs. Now, there will be no difference between the manufacturing and service sectors. Also, a new turnover criterion has been added in the previous classification criterion based only on investment in plant and machinery. The new criteria are expected to bring about many benefits that will aid MSMEs to grow in size.

Table-1: Change in the Definition of MSMEs

Existing MSMEs Classification Criteria: Investment in Plant and Machinery or Equipment			
Classification	**Micro**	**Small**	**Medium**
Mfg. Enterprises	Investment < Rs. 25 Lac	Investment < Rs. 5 Cr	Investment < Rs. 10 Cr
Service Enterprise	Investment < Rs. 10 Lac	Investment < Rs. 2 Cr	Investment < Rs. 5 Cr

Revised MSMEs Classification			
Classification	**Micro**	**Small**	**Medium**
Manufacturing & Services	Investment < Rs. 1 Cr. Turnover < Rs. 5 Cr.	Investment < Rs. 10 Cr. Turnover < Rs. 50 Cr.	Investment < Rs. 50 Cr. Turnover < Rs. 250 Cr.

Source: M/o MSME, Govt. of India.

The MSMEs sector has arose as a lively and dynamic element of the economy of India, over the last fifty years. The MSMEs substantially contribute to the economic and social growth of the country, by encouraging entrepreneurship and creating enormous employment prospects at a low capital cost, after the agriculture sector. MSMEs contributes considerably

to inclusive industrial development of the nation and serve as ancillary units to large companies. Across the economy, the MSMEs were broadening their reach by creating a various range of goods and services to fulfil the requirements of both domestic and international markets.

MSMEs and their contribution

Over the last five decades MSMEs are emerging as one of the most dominating sectors of the economy and significantly contributing to the Indian economy in terms of innovations and technology development. MSMEs are vastly expanding in the different sectors of the economy and producing huge varieties of differentiated products to fulfil the consumption demand of foreign and domesticmarkets across the globe. MSMEs are playing a vital role in mitigating the regional imbalances and addressing the unemployment in urban and rural areas across different parts of the country.

According to the National Sample Survey (NSS) 73rd round, conducted during the period 2015-16 by National Sample Survey Office, Ministry of Statistics and Programme Implementation shows that 633.88 lakhs unincorporated non-agriculture MSMEs were functioning in the parts of the nation. The MSMEs contribution to the Gross Domestic Product (GDP) was 28.90 per centin 2016-17. The MSMEs were employing 1109.89 lakhs of people across the different areas in India.

Table-2: MSMEs contribution to the Indian Economy

Year	*Number of Working Enterprises (In lakhs)*	*Members Employed (in lakhs)*	*Contribution to GDP (In %)*
2011-12	447.64	1011.69	30.00
2012-13	447.54	1061.40	30.40
2013-14	488.46	1114.29	30.20
2014-15	510.57	1171.32	29.70
2015-16	532.78	1253.12	29.20
2016-17	633.88	1109.89	28.90

Source: Annual Report of 2018 – 19, M/o of MSMEs, Govt. of India.

The above table provides the information regarding the contributions of the MSMEs to the Indian economy during 2011-12 to 2016-17. It can be witnessed that the number of enterprises gradually grew from 447.64 lakhs in 2011-12 to 633.88 lakhs in 2016-17. Moreover, the number of workers employed also increased from 1011.69 lakhs in 2011-12 to 1109.89 lakhs in 2016-17 and its contribution to the Gross Domestic Product was slightly declined from 30.00% to 28.90%.

Indonesia

The Definitions of the MSMEs

There are various definitions for MSMEs in Indonesia. These definitions are given by the Law of the Republic of Indonesia, No. 20 of 2008, the Central Statistical Agency (BPS) and the Ministry of Cooperatives and Small and Medium enterprises (Menegkop and SMEs).

According to the Law of the Republic of Indonesia, No. 20 of 2008 of MSMEs, the definitions are based on the value of the Net Assets. A productive enterprise owned by individuals and/or business entity/ enterprise that has the Net Assets (excluding the land and building) of less than Rp[4] 50 million and the value of the annual sales less than 300 million is called as Micro Enterprise, an independent productive enterprise, which is run by individuals or a company which is not a branch companies owned, controlled, or becoming direct or indirect part of the Medium or Large Enterprises that has Net Assets (excluding the land and building) in between Rp 50 million – Rp 500 million and the value of the annual sales in between Rp 300 million – Rp 2.5 billion is called as a Small Enterprise and an independent productive economic enterprise, which is run by individuals or a company which is not a branch companies owned, run, or becoming direct or indirect part of the Small or Large Enterprises with the Net Assets (excluding the land and building) in between Rp 500 million – 10 billion and the value of the annual sales in between Rp 2.5 billion to Rp 50 billion is called as Medium Enterprise (Law of the Republic of Indonesia, No. 20 of 2008 on Micro, Small and Medium Enterprises, n.d.).

The definitions of the MSMEs as per the Central Statistical Agency (BPS) are based on the number of labours. An enterprise that employs 1 – 4 people is called a Micro enterprise, an enterprise that employs 5 – 19 people is called a small enterprise, and an enterprise that employs 20 – 99 people is called a medium enterprise.

Table-4: Definitions of MSMEs in Indonesia

Classification	*Medium*	*Small*	*Micro*
Employment	20 to 99	5 to 19	1 to 4
Net assets (building and land excluded)	Rp 500 million to Rp 10 billion	Rp 50 million to Rp 500 million	< Rp 50 million
Total annual sales value	Rp 2.5 billion to Rp 50.0 billion	Rp 300.0 million to Rp 2.5 billion	< Rp 300 million

Source: ADB Asia SME Monitor 2020 database and Law of the Republic of Indonesia No. 20 of 2008 on Micro, Small and Medium Enterprises.

MSMEs and their contributions

The MSMEs are making significant contributions to the Indonesian economy. As per the data of the Asian Development Bank MSMEs Monitor

4 Rp preceding the digits denotes the currency of Indonesia i.e., Rupiah

2020 database, the MSMEs sector of Indonesia employs 97 per cent of the total employees, and MSMEs share in the total GDP was around 61.1 per cent during the year 2018. The above contributions reflect the significance of the MSMEs sector in Indonesia. Table-5 given below will show the contributions of the MSMEs sector to the Indonesian economy during 2010-18 with regardto the quantity of enterprises, members employed in the MSMEs sector, and MSMEs employees to the total employees (%) and MSMEs contribution to the total GDP.

During 2010-18, the number of MSMEs increased to 6,41,94,057 from 5,27,64,750, the members employed in the MSMEs sector raised to 11,69,78,631 from 9,61,93,623, the percentage of the MSMEs employees to the total employees has decreased to 97 per cent from 97.3 per cent. The MSMEs contribution to the total GDP (in %) has increased to 61.1 per cent from 56.2 per cent.

Table-5: Contributions of MSMEs to the Indonesian Economy

Year	Number of MSMEs	Members Employed	MSME employees to Total (%)	MSMEs contribution to GDP (%)
2010*	5,27,64,750	9,61,93,623	97.3	56.2
2011	5,41,14,821	9,82,38,913	97.3	56.2
2012	5,52,06,444	10,17,22,458	97.2	58
2013	5,65,34,592	10,76,57,509	97.2	59.1
2014	5,78,95,721	11,41,44,082	97	60.3
2015	5,92,62,772	12,32,29,386	96.7	61.4
2016**	6,16,51,177	11,28,28,610	97	59.8
2017	6,29,22,617	11,64,31,224	96.8	60.9
2018	6,41,94,057	11,69,78,631	97	61.1

* The Ministry of Cooperatives and SMEs revamped data, tracked back to 2010. Annual sectoral data were also revamped but not available after 2013 as a survey of the business sector was stopped.

** Sectoral data in 2016 are based on the Economic Census 2016 (only for non-agriculture sectors).

Source: ADB Asia SME Monitor 2020 database

Thailand

According to the "Ministerial Regulations on Designation of the Characteristics of SME Promotion Act B.E. 2562 (2019) and Announcement of the Office of SME Promotion Subject Designation of Characteristics of Micro Enterprises, MSMEs have been redefined based on annual revenue and employment in order to be able to promote the targeted entrepreneurs effectively according to the current economic situation." (Office of Small and Medium Enterprises Promotion, 2022)[5]

According to the prior definitions, SMEs were classified into four major sectors in Thailand: Manufacturing (including the agriculture sector),

5 https://www.sme.go.th/en/page.php?modulekey=363

Service, Trading Wholesale, and Trading Retail. The prior definitions of the SMEs were constructed on the quantity of employees and fixed assets (apart from land).

- Among the manufacturing enterprises, the enterprises with fewer than 50 employees and less than B50 million[6] of the fixed assets (excluding land) are called small enterprises. The manufacturing enterprises, the enterprises with 51 – 200 employees and 50 million Bhat - B200 million Bhat of the fixed assets (excluding land) are called medium enterprises.
- The service enterprises are those enterprises with less than 50 employees. Less than 50 million Bhat of the fixed assets (excluding land) are called small enterprises. The service enterprises, the enterprises with 51 – 200 employees and with greater than B50 million and fewer than 200 million Bhat of the fixed assets (excluding land), are called medium enterprises.
- The Trading: wholesale enterprises are those enterprises with less than 25 employees and less than 50 million Bhat of the fixed assets (excluding land) are called small enterprises, and the Trading: wholesale enterprises are the enterprises with 26 – 50 employees and with greater than 50 million Bhat and fewer than 100 million Bhat of the fixed assets (excluding land) are called as medium enterprises.
- The Trading: Retail enterprises are those enterprises with less than 15 employees and less than 30 million Bhat of the fixed assets (excluding land) are called small enterprises, and the Trading: wholesale enterprises with 16 – 30 employees and with exceeding 30 million Bhat and fewer than 60 million Bhat of the fixed assets (excluding land) are called as medium enterprises.

The definitions of SMEs were revised in 2019, and these definitions were built on the number of employees and the revenue of the enterprise. The micro enterprises were included in the revised definitions of the MSMEs. The MSMEs were mainly categorized into two groups, namely

1. Manufacturing enterprises and
2. Services and trading enterprises

The manufacturing enterprise with less than 5 employees and less than B1.8 million of revenue is called a micro enterprise, the manufacturing enterprise with 6 – 50 employees and greater than B1.8 million and fewer than or equivalent to B100 million of revenue are called a small enterprise, manufacturing enterprise with 51 – 200 employees and more than B100 million and less than B500 million of revenue are called as medium enterprises[7].

The services and trading enterprise with less than 5 employees and less than B1.8 million of revenue is called micro-enterprises, a service and

6 B preceding the digits denotes the currency of the Thailand i.e., Bhat
7 ADB Asia SME Monitor 2020 database

trading enterprise with 6 – 30 employees and greater than B1.8 million and fewer than or equivalent to B50 million of revenue are called small enterprises, service and trading with 31 – 100 employees, and greater than B50 million and fewer than B300 million of revenue are called as medium enterprises.

Table-6.: Definitions of MSMEs in Thailand

Definitions before November 2019

Sector	Item	Small	Medium
Manufacturing	Employees	< 50	51 to 200
	Fixed Assets (excluding Land)	< B50 million	B50 million to B200 million
Service	Employees	< 50	51 to 200
	Fixed Assets (excluding Land)	< B50 million	B50 million to B200 million
Trading: Wholesale	Employees	< 25	26 to 50
	Fixed Assets (excluding Land)	< B50 million	B50 million to B100 million
Trading: Retail	Employees	< 15	16 to 30
	Fixed Assets (excluding Land)	< B30 million	B30 million to B60 million

Manufacturing includes the agricultural sector.

Definitions after November 2019

Sector	Item	Micro	Small	Medium
Manufacturing	Employees	1 to 5	6 to 50	51 to 200
	Revenue	< B1.8 million	B1.8 million to B100 million	B100 million to B500 million
Services and Trading	Employees	1 to 5	6 to 30	31 to 100
	Revenue	< B1.8 million	B1.8 million to B50 million	B50 million to B300 million

Manufacturing includes the agricultural sector.

Source: ADB Asia SME Monitor 2020 database

MSMEs and their contributions

The MSMEs sector is playing a crucial role in the Thailand economy. As per the data of the ADB (Asian Development Bank) MSMEs Monitor 2020 database, the MSMEs sector of Thailand employs 85.5 per cent of the total employees, and MSMEs' share in the total GDP (in %) was around 43 per cent during the year 2018. The above contributions reflect the significance of the MSMEs sector in Thailand. Table-7 given below will show the contributions of the MSMEs sector to the Thailand economy during 2010-18 in the terms of number of enterprises, members employed

in the MSMEs sector, and MSMEs employees to the total employees (in %) and MSMEs contribution to the total GDP.

Table-7: Contributions of MSMEs to the Thailand Economy

Year	Number of MSMEs	Members Employed	MSME employees to Total (%)	MSME's contribution to GDP (% share)
2010	29,13,167	1,05,07,507	77.9	39.4
2011	26,46,549	1,09,95,977	83.9	39.3
2012	27,39,142	1,17,83,143	81.0	39.1
2013	27,63,997	1,14,14,702	81.0	39.1
2014	27,36,744	1,05,01,166	80.3	39.8
2015	27,65,986	1,07,49,735	80.4	41.0
2016	30,04,679	1,17,47,093	78.5	41.9
2017	30,46,790	1,30,88,802	82.2	42.4
2018	30,77,822	1,39,50,241	85.5	43.0

Source: Asia SME Monitor 2020 database, ADB.

From the Table-7, we can observe that, during 2010-18, the number of MSMEs increased to 30,77,822 from 29,13,167, the members employed in the MSMEs sector raised to 1,39,50,241 from 1,05,07,507, the percentage of the MSMEs employees to the total employees has increased to 85.5 per cent from 77.9 per cent, and the MSMEs contribution to the total GDP (in %) has increased to 43 per cent from 39.4 per cent.

Findings and Discussion

In India, MSMEs contributed 28.9% to the GDP in 2016-17, with the number of MSMEs growing to 633.88 lakhs in the same year. This demonstrates their significant role in economic production and their potential for further growth.In Indonesia, MSMEs employed 97% of the workforce and accounted for 61.1% of GDP in 2018, indicating their pivotal role in both employment and GDP contributions. In Thailand, MSMEs comprised 85.5% of employment and 43% of GDP in 2018, highlighting their foundational role in the economy.

The analysis reveals that MSMEs are central to achieving SDG 8 in the studied nations by providing vast employment opportunities and contributing to sustained economic growth. This aligns with global objectives to enhance economic productivity and reduce unemployment rates.

Despite their substantial contributions, it was found that Indian MSMEs are underperforming relative to their counterparts in Indonesia and Thailand. This is attributed to challenges such as limited access to finance, technological resources, and integration into global value chains.

The findings of this study underscore the pivotal role Micro-Small and Medium Enterprises (MSMEs) play in fostering economic growth and achieving Sustainable Development Goal (SDG) 8 in India, Indonesia, and Thailand. The differences in the integration of MSMEs into the economic frameworks of these countries are significant, with Indonesia and Thailand showing more robust integration compared to India, where MSMEs face substantial barriers such as limited access to finance and technological resources (Asian Development Bank, 2020).

Indonesia's MSMEs, for example, contribute markedly to national GDP, accounting for 61.1% in 2018, which is a reflection of their successful integration into the economy and global value chains (ADB, 2020). This success can be attributed to supportive government policies that have facilitated access to markets and finance (Jiménez et al., 2021). On the other hand, despite the large number of MSMEs in India, their contribution to GDP has been declining, largely due to these enterprises' struggles with financial inclusion and technological adaptation (Ministry of Micro, Small and Medium Enterprises, 2019).

Furthermore, the study's findings align with global observations that MSMEs are significant job creators, particularly in emerging markets, and are essential for sustainable economic development (Naveed et al., 2022). However, the variability in the performance of MSMEs across the studied countries indicates a pressing need for policies that enhance their economic participation. Such policies should focus on improving MSMEs' access to new technologies and financial products, which are crucial for enhancing their productivity and integration into wider market systems (Ullah et al., 2023).

In conclusion, while MSMEs in Thailand and Indonesia show a promising integration into their economic systems, Indian MSMEs lag behind due to structural challenges. Addressing these challenges through targeted policy measures could unlock the potential of MSMEs to contribute more effectively to the SDGs, particularly SDG 8, which focuses on decent work and economic growth (Tambunan, 2020). This emphasizes the need for a multifaceted approach involving government support, financial access, and innovation to leverage the full potential of MSMEs in the sustainable development paradigm (Rubio-Mozos et al., 2019).

Policy Implications

The findings suggest an urgent need for targeted policies to support MSMEs, particularly in India, to help them realize their full potential. This includes improving access to finance, technology adoption, and infrastructure development to facilitate easier integration into global

markets. The comparison among the countries shows discrepancies in how MSMEs contribute to the national economies. For instance, while Indonesia and Thailand have successfully integrated MSMEs into their economic frameworks, India still faces significant barriers that prevent full utilization of this sector's capabilities.The integration into global value chains remains a significant opportunity for MSMEs in these regions. Enhanced integration can lead to increased market access, technological upgrades, and higher productivity, fostering more robust economic growth.MSMEs are increasingly recognized as innovative hubs within the economies. Encouraging innovation and sustainable practices among MSMEs can lead to more sustainable economic models and the achievement of other interconnected SDGs.

Conclusion

This study has extensively analyzed the crucial role of Micro-Small and Medium Enterprises (MSMEs) in the economies of India, Indonesia, and Thailand, highlighting their significant contributions towards achieving Sustainable Development Goal (SDG) 8, which focuses on promoting sustained, inclusive economic growth and decent work. The findings reveal that MSMEs are pivotal to the economic structures in these nations, providing substantial employment opportunities and contributing meaningfully to the Gross Domestic Product (GDP).Despite their critical roles, the study uncovers that the performance and integration of MSMEs into the broader economic and global frameworks vary significantly among the countries analyzed. While MSMEs in Indonesia and Thailand have shown robust integration into global value chains and high levels of contribution to national GDPs, Indian MSMEs lag in performance, primarily due to challenges in accessing finance, technology, and market opportunities.This disparity underscores the need for targeted policy interventions, particularly in India, to support MSMEs more effectively. Enhancing access to financial services, fostering technological adoption, and improving infrastructure are essential steps that can empower MSMEs to fully exploit their potential for economic growth and innovation. Moreover, the integration of MSMEs into global value chains should be prioritized to ensure they can compete effectively on the international stage, thus bolstering their contributions to the economy and SDG attainment.

As nations strive to meet the SDGs by 2030, recognizing and leveraging the potential of MSMEs will be critical. This research advocates for a more supportive ecosystem that promotes the growth and sustainability of MSMEs, facilitating not only economic development but also the broader agenda of sustainable development across the region.

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Journal of International Economics
ISSN 0976-0792 Volume 15, No 2, July-December 2024 pp: 33-45

Beyond the SDGs: Shaping the Future of Global Development

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Abstract

This article explores the evolution, successes, and shortcomings of the Sustainable Development Goals (SDGs), and offers insights into the future of global development frameworks. The SDGs, introduced in 2015 as a continuation of the Millennium Development Goals, have driven significant progress in areas such as poverty reduction, gender equality, and renewable energy. However, challenges persist, particularly in addressing inequality and climate change. The COVID-19 pandemic exacerbated these challenges, reversing gains in poverty reduction and healthcare. As the world approaches the 2030 deadline for the SDGs, the article emphasizes the need for a post-SDG framework that is more radical and inclusive, prioritizing justice, equity, and sustainability. Key areas of focus include addressing climate resilience, ensuring technological governance, and incorporating feminist and decolonial perspectives. The article advocates for a development paradigm that integrates resilience, social justice, and well-being into its core. It calls for stronger global accountability mechanisms and more inclusive governance, ensuring that marginalized voices, particularly from the Global South, are central to policy formulation. Ultimately, the future development agenda must transcend traditional economic measures, such as GDP, and focus on human flourishing, social cohesion, and environmental sustainability. The article highlights the importance of global collaboration, innovation, and justice in addressing the challenges that lie beyond 2030.

Keywords: Global Development, SDGs, Sustainability

Introduction

The Sustainable Development Goals (SDGs) were established in 2015 by the United Nations as part of a global agenda aimed at addressing

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pressing social, economic, and environmental challenges. They emerged as a successor to the Millennium Development Goals (MDGs), with a broader and more inclusive focus that spans 17 goals and 169 targets. The SDGs were designed to be universal, applying to all countries, and to foster collaboration among governments, private sectors, and civil society. The role of the private sector in achieving the SDGs, from investment in sustainable development to corporate social responsibility, is a key aspect of the goals. These goals emphasize poverty reduction, gender equality, quality education, climate action, and economic growth, reflecting a comprehensive understanding of development (UN, 2015). The timeline for achieving the SDGs was set for 2030, and they have since become a benchmark for international development efforts.

Since their inception, the SDGs have catalyzed significant progress in several areas, including reductions in extreme poverty, advancements in renewable energy, and improved access to education and healthcare (Sachs et al., 2021). These achievements should instill a sense of optimism about the potential for further progress. However, challenges remain, particularly in achieving equitable outcomes across different regions. The pandemic of COVID-19 highlighted vulnerabilities in global health systems and exacerbated inequalities, undermining some of the progress made towards these goals (United Nations, 2020). Climate change continues to pose an existential threat, and the pace of action on environmental sustainability has often lagged behind what is required to meet targets such as limiting global temperature rise (UNEP, 2019).

As we approach 2030, critical questions arise about what comes next. The SDGs have offered important lessons in creating ambitious and adaptable frameworks. One key insight is the need for stronger accountability and governance mechanisms. A crucial aspect of this is the need for more robust data systems to track progress. Looking ahead, a post-SDG framework must prioritize issues that have gained prominence, such as technological governance, deepening inequality, and the urgency of climate resilience. The next development agenda will also likely need to incorporate a more explicit focus on social justice, addressing structural inequalities with greater depth and ensuring that the voices of marginalized communities are integral to policy development (Escobar, 2018).

Successes and Shortcomings of the SDGs

The Sustainable Development Goals (SDGs) have led to notable achievements across various sectors since their adoption in 2015. One of the key successes has been the significant reduction in global poverty rates. According to World Bank data, the global extreme poverty rate fell from 10% in 2015 to 9.2% in 2017, driven by economic growth and targeted

poverty alleviation programs in many regions (World Bank, 2020). The UN's 2020 SDG progress report noted that more than one billion people have escaped poverty since 1990, though the pace of poverty reduction has slowed in recent years (UN, 2020). There have also been considerable advances in improving gender equality, particularly in the area of education. The gender gap in primary school enrolment has narrowed, with near parity achieved in many regions, and more women are occupying leadership roles in politics and business (UN Women, 2019). Globally, women's representation in parliaments has increased from 19% in 2010 to 25% in 2020 (IPU, 2020). The advancements in renewable energy have been substantial, with renewable energy capacity expanding by 178 gigawatts in 2019 alone, showing promising progress toward SDG 7 (IRENA, 2020). Health outcomes have also improved, as evidenced by reductions in maternal mortality rates, which have decreased by 38% from 2000 to 2017, and increased access to essential healthcare services in low-income countries (WHO, 2021). Child mortality has also significantly declined, with global under-five mortality rates falling by 59% from 1990 to 2019 (UNICEF, 2020).

However, the SDGs have faced significant challenges in achieving their ambitious targets. One major shortcoming has been the persistence of deep-rooted inequalities, particularly in income distribution and access to resources. Economic disparities between and within countries remain stark, with wealth concentrated in certain regions and among specific populations (UNDP, 2020). Extreme poverty rates have declined globally, regions such as Sub-Saharan Africa still face high levels of poverty, with over 40% of the population living in extreme poverty (World Bank, 2020). The climate action goal (SDG 13) has also seen limited progress, as global greenhouse gas emissions have continued to rise, putting the planet on track for a temperature increase well above the 1.5°C target outlined in the Paris Agreement (IPCC, 2021). According to the UNEP's Emissions Gap Report, global emissions would need to fall by 7.6% each year from 2020 to 2030 to meet this target, a challenge that seems increasingly unattainable without dramatic policy shifts (UNEP, 2020). In addition to this, the COVID-19 pandemic severely disrupted development gains, reversing progress in poverty reduction, education, and healthcare. The pandemic pushed an additional 124 million people into extreme poverty in 2020, undoing years of efforts to alleviate poverty and causing the first rise in global poverty in over 20 years (UN, 2021). Regional disparities in progress, particularly in Sub-Saharan Africa and South Asia, also highlight the uneven implementation of the SDGs across the globe, with these regions facing some of the largest challenges in achieving the goals by 2030 (UNDP, 2020).

Emerging Global Challenges

Climate Crisis

The growing urgency of the climate crisis is evident in the increasing frequency and intensity of extreme weather events, rising global temperatures, and the accelerated melting of polar ice. The Intergovernmental Panel on Climate Change (IPCC) has warned that the world is not on track to meet the Paris Agreement's goal of limiting global temperature increases to 1.5°C. The current course suggests that temperatures could rise by as much as 2.7°C by the end of the century if more transformative action is not taken (IPCC, 2021). The failure to act quickly on climate change threatens ecosystems, biodiversity, and human livelihoods, particularly in vulnerable regions where rising sea levels, droughts, and heatwaves are already displacing populations. Future frameworks must prioritize rapid decarbonization, large-scale adoption of renewable energy, and more aggressive greenhouse gas reduction strategies.

The concept of "climate justice" has emerged as a critical element of this discourse, emphasizing that climate impacts and responsibilities are not evenly distributed. Marginalized and impoverished communities, especially in the Global South, are often the least responsible for emissions yet bear the brunt of climate change's consequences. Climate justice demands that future policies ensure equity in climate mitigation and adaptation efforts, addressing the historical inequalities in resource use and environmental degradation. This means that developed countries, historically contributing the most to climate change, must lead in emission reductions and provide financial and technological assistance to developing nations to support their transition to greener economies (Schlosberg & Collins, 2014). Adaptation strategies must be tailored to local contexts, ensuring that vulnerable communities have the resources and support necessary to adapt to the realities of a warming planet.

Technological Transformation

Technological advances, including artificial intelligence (AI), robotics, and biotechnology, are rapidly transforming economies and societies, creating opportunities and challenges for global development. AI and automation promise to revolutionize healthcare, transportation, and manufacturing industries by increasing efficiency and enabling innovation. However, they also pose significant risks, particularly regarding job displacement and widening economic inequality. Research by the World Economic Forum (WEF) estimates that while AI could create 12 million new jobs by 2025, it could also displace 85 million jobs, particularly in low-skill sectors (WEF, 2020). The rapid pace of technological transformation risks exacerbating existing inequalities, as wealthier nations and individuals with access to advanced education and resources are better positioned to benefit from these innovations.

Future development frameworks must, therefore, consider both the opportunities and risks of emerging technologies. Strategies must focus on creating inclusive economies where the benefits of technological advancements are widely shared. This includes investing in education and reskilling programs to prepare workers for new types of employment, as well as implementing social safety nets for those displaced by automation (Brynjolfsson & McAfee, 2014). There must be ethical governance of technologies, particularly in areas like biotechnology and AI, where privacy, security, and human rights concerns are paramount. International cooperation will be essential in developing regulatory frameworks that ensure technology serves public good while minimizing harm.

Post-Pandemic Recovery

The COVID-19 pandemic exposed significant weaknesses in global health systems and highlighted the lack of preparedness for health crises. Countries around the world struggled to manage the outbreak, with healthcare systems being overwhelmed, supply chains disrupted, and vaccine distribution marred by inequality. The pandemic caused significant loss of life and also set back global development efforts by increasing poverty and deepening inequalities, particularly for vulnerable groups such as women, low-income workers, and the elderly (UN, 2021). The pandemic's socioeconomic impacts revealed the interconnectedness of health and development, as the global economy suffered massively due to public health failures.

Development goals must focus on strengthening global health governance and building resilience against future pandemics. This will require substantial investment in healthcare infrastructure, especially in low- and middle-income countries, to ensure that systems can respond effectively to health crises. Global health frameworks should promote equitable access to healthcare, vaccines, and other medical innovations, preventing the disparities in care seen during the COVID-19 pandemic. There is also a need for enhanced early warning systems and international cooperation to identify and respond to potential pandemics before they spiral out of control. Strengthening global institutions such as the World Health Organization (WHO) will be critical to coordinating international efforts to mitigate future health crises (Fisseha, et.al, 2021).

Incorporating Feminist and Decolonial Perspectives

Feminist thinking, particularly the concept of intersectionality, provides a critical framework for reimagining development in a post-SDG world. Kimberlé Crenshaw's (1989) concept of intersectionality emphasizes that individuals experience overlapping systems of oppression based on race, gender, class, sexuality, and other social categories. In the context

of global development, feminist scholars argue that gender equality cannot be achieved through mere inclusion or representation in economic, political, and educational spaces; instead, it requires a comprehensive approach that addresses the underlying structures of power and inequality that perpetuate marginalization. Feminist epistemology suggests that to understand development holistically, we must examine how power operates across different axes of identity, recognizing that the experiences of women – particularly those from marginalized groups – are shaped by the intersections of multiple forms of oppression (Mohanty, 2003).

One of the key critiques of the current SDG framework, especially SDG 5 (Gender Equality), is that it often focuses on symptoms of inequality – such as increasing women's political representation or access to education – without addressing the root causes of these disparities (True, 2016). There has been progress in women's representation in leadership roles, with women now constituting 25% of national parliaments globally. Still, these superficial gains do not adequately tackle deeper issues such as the gender pay gap or the global feminization of poverty (UN Women, 2021). Feminist scholars emphasize that policies addressing gender inequality must go beyond surface-level inclusion to dismantle the patriarchal, legal, and socio-economic structures that perpetuate these inequalities. These include discriminatory legal systems that limit women's land ownership and inheritance rights, the disproportionate burden of unpaid care work, and the pervasive issue of gender-based violence, all of which remain significant barriers to achieving true gender equality (Fraser, 2009).

From an intersectional feminist perspective, development frameworks must be tailored to the specific and intersecting needs of diverse groups of women. Rural women, women of colour, and indigenous women often experience compounded forms of oppression that differ from those faced by urban, middle-class women. In Latin America indigenous women have historically been excluded from decision-making processes that affect their land rights and livelihoods, despite efforts toward gender equality in broader policy discussions (Deere & León, 2001). Therefore, development policies must not adopt a one-size-fits-all approach but instead recognize and address the varying ways gender intersects with race, ethnicity, and class to produce inequality.

Incorporating intersectionality into development thinking is crucial for advancing gender equality and broader social justice. This approach challenges traditional development models often based on Western, patriarchal, and capitalist paradigms, advocating instead for transformative policies that redistribute power and resources more equitably (Bhavnani, Foran, & Kurian, 2016). For development to be truly equitable, it must address the symptoms of inequality as well as the structural mechanisms that sustain it, such as economic exploitation, racial discrimination, and

patriarchal norms. Intersectionality, thus, provides a powerful lens for understanding and reshaping global development, ensuring that the most marginalized voices are included and that justice is achieved across multiple dimensions.

Decolonial Approaches

Incorporating decolonial perspectives into post-SDG frameworks is crucial for addressing the enduring legacies of colonialism that shape global power dynamics and perpetuate development inequalities. Decolonial thought critiques colonial powers' historical and ongoing exploitation of resources, peoples, and knowledge systems in the Global South, pointing out how such legacies have been institutionalized within contemporary development models (Mignolo, 2011). A post-SDG framework must, therefore, prioritize the dismantling of these colonial structures by promoting local knowledge systems, self-determination, and autonomy, particularly for communities that have been historically marginalized. Decolonial scholars argue that the development frameworks must be reimagined through an anti-colonial lens, shifting away from top-down, Western-imposed models to approaches that honour the sovereignty of the Global South and its diverse ways of knowing (Escobar, 2018).

A major critique from decolonial scholars is that many global development paradigms, including the SDGs, impose Western-centric notions of progress that often fail to align with the cultural, social, and ecological realities of communities in the Global South (Quijano, 2000). The reliance on industrial growth and GDP as markers of success often overlooks alternative conceptions of well-being rooted in community, ecological balance, and sustainability, which are integral to many indigenous worldviews (Shiva, 2016). Traditional ecological knowledge, which emphasizes sustainable stewardship of the environment, is frequently sidelined in favour of extractivist economic models, which continue to exploit natural resources in ways that benefit the Global North while further marginalizing the South. Post-SDG frameworks should elevate these alternative models, shifting the focus from narrow economic metrics toward a more holistic vision of development that centers on ecological balance, community well-being, and social harmony.

The leadership of countries from the Global South is critical in shaping an equitable and just future development agenda. Global South countries have unique experiences with colonialism, resource extraction, and exploitation, and their leadership offers critical insights into how development can be reimagined to avoid repeating these cycles of dispossession. Countries like Costa Rica, which has become a global model for environmental sustainability through its dedication to renewable energy and forest conservation, demonstrate how localized, context-specific approaches

can succeed in creating sustainable development models that prioritize environmental and social justice (World Bank, 2020). Such examples highlight the importance of empowering Global South nations to take the lead in creating post-SDG frameworks.

Decolonial frameworks also emphasize the need for **reparative justice**, which involves not only the recognition of historical injustices but also the redistribution of wealth and resources to formerly colonized nations. This includes debt forgiveness, fairer trade agreements, and the return of stolen cultural and natural heritage (Santos, 2016). Reparative justice must be a core component of future global development frameworks if they are to genuinely address the unequal power relations that continue to disadvantage formerly colonized countries. Such measures are necessary to redress the harms caused by centuries of colonialism and to create a more just and equitable global order.

Towards a New Development Framework: Beyond 2030

Radical and Inclusive Goals

As the Sustainable Development Goals (SDGs) approach their 2030 deadline, it is increasingly clear that future development frameworks must be more radical and inclusive to meet the growing challenges of our time. One of the key areas that needs more emphasis is justice and equity. Global development efforts should focus not just on reducing poverty or improving living standards but on ensuring fairness in the distribution of resources and opportunities. This requires addressing historical and structural inequalities across multiple dimensions, including race, gender, and class. The future framework could include specific targets related to economic justice, ensuring that wealth and resources are redistributed to marginalized populations through progressive taxation, wealth redistribution programs, or reparative policies (UNDP, 2020).

Climate adaptation must also be prioritized, especially for vulnerable nations and communities. The next set of goals should focus on both mitigating climate change and helping countries adapt to the consequences of a warming planet. This would involve strengthening infrastructure to withstand extreme weather events, implementing climate-resilient agricultural practices, and investing in renewable energy sources. A radical approach would also involve focusing on climate justice, where the countries and populations most responsible for climate change are held accountable and bear the financial burden of adaptation and mitigation (IPCC, 2021).

Technological governance is another critical area for future development. The rapid advancement of artificial intelligence (AI), biotechnology, and automation presents opportunities and challenges. While these technologies can potentially transform economies and improve livelihoods, they also

pose risks of exacerbating inequalities and ethical dilemmas related to privacy, data security, and job displacement. Future development goals should focus on equitable access to technology, ensuring that marginalized communities are not left behind, and establishing international guidelines for the ethical use of technologies (Brynjolfsson & McAfee, 2014).

Accountability and Governance

A new development framework will require stronger global governance and accountability mechanisms to ensure that nations and international organizations fulfill their commitments. One of the criticisms of the SDGs has been the lack of enforceable accountability measures. Although countries report on their progress through voluntary national reviews, there are no binding consequences for failing to meet the targets (UN, 2021). Future frameworks must be more robust, with mechanisms that hold countries accountable for their development failures, such as international treaties that impose sanctions or penalties on nations that do not meet environmental or social justice benchmarks.

International organizations such as the United Nations or the World Bank must also be more inclusive and representative of Global South perspectives. Too often, development agendas are shaped by powerful nations and corporations, sidelining the voices of those who are most affected by development failures (Escobar, 2018). Meaningful participation from all sectors of society – especially marginalized communities, indigenous peoples, and civil society organizations – must be ensured through democratic decision-making processes. This could be achieved through global citizen assemblies or local-level consultations that directly inform policy and action plans. The future framework should incorporate data transparency and independent monitoring mechanisms, where civil society organizations can hold governments and corporations accountable for their actions. Tools such as blockchain could track resource allocations and ensure that funds are used appropriately, reducing corruption and inefficiencies (Tapscott & Tapscott, 2016).

Sustainability 2.0: Resilience, Justice, and Well-Being

The post-SDG development framework must transcend traditional notions of sustainability and embrace what can be termed as *Sustainability 2.0*, integrating resilience**,** justice**,** and well-being at its core. Sustainability has often been framed in terms of conserving resources for future generations. This new paradigm advocates for long-term systemic transformation that addresses environmental preservation and the structural causes of social and economic inequality (Folke et al., 2010). Resilience in this context refers to the capacity of communities, economies, and ecosystems to recover and adapt to shocks, such as climate disasters, pandemics, or

economic crises. However, building resilience requires more than just recovery; it involves creating robust, adaptable systems that can thrive in the face of future uncertainties. This shift in focus from mere sustainability to resilience involves investing in social infrastructure, local economies, and policies that protect vulnerable populations from the brunt of global disruptions (Adger, 2006).

Central to the Sustainability 2.0 model is justice, particularly reparative justice, which seeks to address historical wrongs related to colonialism, slavery, and resource exploitation. Decolonial scholars argue that development frameworks have historically benefited the Global North at the expense of the Global South, and any future development strategy must prioritize redress for these imbalances (Quijano, 2000). Reparative justice initiatives could include debt relief for developing nations, establishing international legal frameworks that allow indigenous communities to reclaim stolen land and resources, and wealth redistribution measures to close the North-South divide (Santos, 2016). A justice-centered approach recognizes that the impacts of climate change, economic crises, and other global challenges disproportionately affect marginalized communities, and policies must be designed to rectify these inequalities.

Well-being should also be a central measure of progress in a Sustainability 2.0 framework, moving beyond traditional economic metrics such as Gross Domestic Product (GDP). GDP has long been critiqued for failing to capture the true quality of life, particularly regarding health, education, social cohesion, and environmental well-being (Stiglitz, Sen, & Fitoussi, 2010). A well-being-centered approach would prioritize mental and physical health**,** social connections**,** and environmental quality over mere economic output. For instance, Bhutan's focus on Gross National Happiness (GNH) exemplifies an alternative model that balances economic growth with social and environmental well-being (Ura et al., 2012). This approach challenges the neoliberal focus on economic expansion and emphasizes human flourishing in all dimensions.

By integrating resilience, justice, and well-being into a new development paradigm, the post-SDG world can move towards creating equitable**,** sustainable**,** and thriving communities capable of adapting to an increasingly uncertain future. This requires a fundamental rethinking of global economic models, placing people and the planet at the heart of development efforts. For instance, the transition to a circular economy, which minimizes waste and promotes sustainable consumption, is one example of how economic models can be restructured to align with this vision (Murray et al., 2017). The implementation of social safety nets, green energy investments, and global wealth redistribution mechanisms would help ensure that progress is both inclusive and sustainable for all.

Conclusion: A Call for Collaborative Global Efforts and Innovation

The post-2030 development framework must be grounded in a shared global commitment to justice, equity, resilience, and well-being. The scale of the challenges ahead – ranging from climate change to deepening global inequality – requires collaborative, multilateral efforts that bring together diverse stakeholders, including governments, international organizations, the private sector, civil society, and local communities. Innovation, both technological and social, will be key to addressing these complex challenges. Green technologies, ethical AI, and climate-resilient infrastructures must be developed and deployed in ways that are equitable and inclusive, ensuring that the most vulnerable populations are not left behind (Wright, 2018).

New forms of governance and accountability are essential for ensuring that these innovations benefit all of humanity. This includes the establishment of stronger global regulatory frameworks to oversee the ethical use of technologies and the creation of mechanisms that ensure inclusive participation from all sectors of society (Pelling, 2010). Global cooperation must be anchored in **s**olidarity, with a particular focus on closing the gap between the Global North and Global South. Inclusive, participatory processes are the only way to foster a truly transformative development agenda that addresses both historical and current injustices (Béné et al., 2012).The urgency of the challenges ahead demands a shared global response, where innovative solutions are coupled with a deep commitment to justice and sustainability for all (Mazzucato, 2018). Collaborative efforts, grounded in principles of justice, innovation, and accountability, will be essential for navigating the profound challenges the world faces beyond 2030.

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Journal of International Economics
ISSN 0976-0792 Volume 15, No 2, July-December 2024 pp: 46-53

Economic Sustenance of Nuclear Energy

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Abstract

The 21st century is already a quarter spent. The sustainable development goals (SDGs) set up by the United Nations (UN) pose similar development indices as the earlier Millenium Development Goals (MDGs). It is a right saturation point where economic development and the need to maintain the sustainable development goals set by the UN can be examined effectively for the development of energy requirements. With this view on hand, the developmental agenda from across all the sectors of human development are looking for the introduction of sustainability. In the quest to maintain sustainable development, many countries are trying their hands at nuclear power development. Therefore, it is necessary to investigate some of the economic aspects of nuclear energy based on which different States are looking into nuclear energy sustainability.

Keywords: Development, Economics, Nuclear Energy, Sustainability, Sustenance, Technology

Introduction

Energy is central to all the causes of development. In the present times, Nuclear Science and Technology (NST) advancement is one of the sources of human development in different indices. It is not possible to see the development of human civilization *sans* rise of other indicators and simultaneously meeting the requirement of sustainability in the foreseeable future. The sustenance of all living and non-living resources is included in the sustainability. There are so many different metrics of sustainable development, however in general terms it is understood to be the development without compromising with the capacity and need of future generations to meet their own needs. Sustainability is long lasting

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without prejudice to equitable needs if the saga of the developmental process is not compromised in the hands of anthropocentrism. It becomes necessary therefore to look into ways to shatter the idea of supremacy of humans above all, and to find the long lasting solutions -that continuous flow of hundred year lives may better accommodate with mother earth. Sustainability is therefore central in India's case as being the third largest contributor of pollutants on the planet.

Reason for Nuclear Energy Requirement

NST is a dual used device requiring human control and monitoring. Increasing the supply of energy and access to energy facilities is inevitable for the multisectoral developmental process. In many States, therefore, there seems to be a need for major investment in new electricity production plants, both to increase capacity to cope with the constant development of newer technologies for industry and consumer use, and to replace old, environmentally unsustainable, and uneconomic power plants and the hydroelectric projects that both become unsustainable in the long term. In this context, differently aligned other strategic key elements fuel increased interest in nuclear energy, in particular, energy security and the environmental benefits attached with it. The period of technology denial is already over.

Having a look at it the growing global demand for energy is invariably linked to the development concerns of the large populace, particularly of those residing in developing States including, India. There are estimates that globally as many as "1.1 billion people have no access to electricity and the 2 billion others have no access to modern energy systems". Energy, therefore, is central to the development with all indicators in hand. It is also indicated in terms of demography that"one in every six people on the planet does not have access to electricity. Based on a business-as-usual scenario, some 780 million people are projected to remain without it by 2030. A radical new approach is needed if this trajectory is to be remedied".

As regards future projection is concerned, the World Energy Forum is stated to have predicted that the fossil-based oil, gaseous reserves and coal will be exhausted in less than another ninety years. Fossil fuels presently account for nearly 80 percent of the "primary energy consumed" in the world. This trend, unless reversed, is not going to have serious negative impacts for the developing fate of living beings.

The global "concerns about supply security, triggered by the oil price shocks" in the decade of 1970s, could be regarded as a primary catalyst for civil nuclear expansion in the several States. But later after Stockholm conference and Our Common Future report, when the world became aware of limitless potential in the nuclear power, the situation started changing. Today more than 30 nuclear power States are depending on nuclear energy.

Sustainability of Nuclear Power

Production and usage of all forms of energy must pass through environmental clearances like Environment Impact Assessments (EIA), and nuclear energy is not an exception to it. These environmental clearances have at times caused huge uproars in India, including questioning the very idea behind sustainability. Whether or not the world regards the capacity of nuclear turbines as capable of silencing mounting pressure of environmentalists is not the question. The question is what lies ahead.

The further developments around sustainability after 1986 is to be seen in the Earth Summit of 1992. Among the five documents signed, importantly the "Rio Declaration" lays down a "basis on which States are to cooperate and further develop international law in the field of sustainable development." The Rio Declaration, importantly, grows the awakening towards mandatory EIA by the States and embraces two of the well-known environmental law principles i.e. the polluter pays principle and the precautionary principle.

At the moment, the main emphasis of sustainable development in nuclear law is on protection of environment and to not impose undue burden on future generations because of its activities. It has certain far-reaching implications for civil nuclear energy. Nuclear reactor technology remains a risk "because some fissile material and sources of ionizing radiation can pose health, safety and environmental risks for very long periods of time". It is difficult to determine disposal measures due to the long-lived character of these spent materials. The evident approach in application of the "sustainable development principle" in the civil nuclear energy "has been to urge that the current generation does whatever is possible for long term safety, but without foreclosing options for future generations and without relying unduly on long term forecasts, which are unlikely to be accurate over the extended timescales involved". However, despite of many studies such as Brook and *et al* (2014), reflecting "maximum sustainability" with "zero-carbon energy", the principle still needs in terms, broader nuclear energy studies as geological deposition is in purview.

The existing technology on nuclear power is not just utilized to supply electricity to the power grid, but at the same time, it is increasingly utilized these days in a wide variety of other uses such as medicinal requirements, heating technologies and increasing space research by different States. Technologically available nuclear medicines use radiation to allow doctors to make a quick and accurate diagnosis of the functioning of specific organs of the eukaryotic bodies particularly human beings, or to treat them specifically. Radiotherapy, as is known currently can better be used to treat some medical conditions, especially cancer, using "radiation to weaken or destroy" particularly targeted cellular bodies. Globally, "millions of affected persons are treated with nuclear medicine" every year. The

existing "peaceful applications, of nuclear science and technology in medical, industrial, and agricultural areas have served human civilization" successfully for the past few decades. These "applications lead to the spread and use of nuclear and radioactive materials in the hospitals, factories, different research centers and universities". Those working "in nuclear fields recognized the importance of keeping their technologies reliable, clean, and improving their sustainability and safety" across all spectrums.

Nuclear molecules are also used in hospitals apart from being a source of energy. The fuel generated radioisotopes in medicines and other different pursuits have different specific uses. The World Nuclear Association generated data reveals that "the most common radioisotope used in diagnosis is technetium-99, with about 40 million procedures carried out" in a year, accounting for "almost 80% of all nuclear medicine" procedures worldwide. The "modern industry also uses radioisotopes in a variety of ways" for human development. Currently, "sealed radioactive sources are used in various ways in industrial radiography, gauging applications and mineral analysis" (IAEA: 2013). The heat, which is generated from the nuclear reactors, can be used directly or as is being used to generate electricity. Thus, there are number of beneficial uses of nuclear energy that make it potent on account of sustainability.

However, as is known that all energy processes required in energy production leave some or the other kinds of "adverse impact on the environment". One of such examples of this questions that are still not answered clearly regarding the nuclear energy. One of these questions is whether nuclear power is an economically and environmentally sustainable energy source or not. An apt answer to such a question is unavailable, but a number of States provide answers to such questions in different ways. For example, the United States promotes nuclear energy as a sustainable source, even after suffering from nuclear meltdown incidents such as the one at Three Mile Island. [4]

Looking from the past, the public credence and credentials towards nuclear energy had become more laden with positive sentiments in the first two decades of the twentieth century, due not least to improvements in safety and "growing concern about climate change," but more so can be attributed to a number of factors that relate to civil nuclear cooperation tide among states, including India. [5] Also, the "International Thermonuclear Experimental Reactor" (ITER) which is the culmination of ongoing more than three decades of research in the area of fusion energy is an effort in this direction. The ongoing development of this energy source has the dual objective of not only providing sustainable power but also fighting against global warming. But, at the same time, it ensures that the "nuclear industry ought to remain open and transparent" in order to maintain and further generate the public trust towards it future growth.

When the question of sustainability asks about "some of the essential components" of NST, any answer to such kinds of questions must involve the factors like the input of nuclear fuel and potential environmental effects from the whole fuel cycle (including its number of phases).

such as plant operation and decommissioning etc.), overall power "production economy" involved, "security measures" that are taken to ensure the safety of the nuclear power plants, management of generated nuclear waste, and that the nuclear byproducts are not use for the purpose of nuclear weapons or used in order to threaten the world peace.

Among other things, taking recourse to "nuclear energy" emanates from the serious concerns relating to depletion of existing natural resources like oil and gas and the consequent damage resulting to environment from the use of these polluting resources in the new developmental paradigm. Concerns over the increasing "environmental degradation and increasing pollution" levels have led to "increased investment in green technologies". The "Montreal Protocol on Ozone Depleting Substance, 1987" has been successful in "phasing out the ozone-depleting substances; and atmospheric concentrations of these substances have either leveled off or decreased" since the protocol came into effect in the year 1989. On the energy point of view as regards investment is concerned, UNEP's "Global Trends in Sustainable Energy Investment 2019" reports that in year 2018, the global investment in renewable energy resource capacity has 'outstripped' the investment in new conventional resources. However, like in the present, nuclear energy is recognized to contribute in the future to the "energy mix policy" of States as an important source of energy.

As is seen world over, unsuitable and unsustainable energy "production and consumption" have led to ever more increasing environmental law issues and concerns. For a longer duration, laws largely overlooked the relevance of energy production and consumption in the discipline of environmental law. The energy related issues were *hitherto* seen with lesser significance in the cause of "sustainable development". This seemed to change significantly before the end of twentieth century, as a result of "increasing global concern about climate change", and in particular with the publications by the UN of the "World Energy Assessment Report" It is currently being followed by the "detailed consideration" of it, at the "World Summit on Sustainable Development" in Johannesburg in 2002 (Lyster and Adrian: 2006) and its subsequent development later with the growth in different assertions of demand.

Conclusive Remarks

The ongoing relationship of energy consumption with human development is clear. Nevertheless, we are here in tumultuous times wherein even

the legal and academic warfare is condescending. Taking on the nuclear weapons proliferation in "1996, in its *Advisory Opinion* on the Legality and Threat and Use of Nuclear Weapons", the ICJ recognized "for the first time that there existed the rules of general international law" on environment, though Court did not lay down anything of semblance on nuclear energy or its requirements. However, the subsequent developments recognized their need, as well as the requirements for EIAs. It is to note that warfare is inherently destructive of sustainable development, and nuclear nuclear warfare has the capacity to end life on this planet as we know it. States therefore must respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary.

Therefore, it can be said that viewing nuclear energy as sustainable energy source in the light of energy mix policies is fundamentally robust due to not only its innate energy density but also its capacity to internalize health and environmental costs at the given time.

Currently, after the Fukushima (Japan) nuclear accident, States like Germany and Japan have indicated they will no longer use this means of energy in future. But their reversal of policy is clearly based on the developmental goals that they have set in, and it is already having impacts in their economies. It manifests in legal and policy issues behind some of such reasons too, that avowedly tend to spark debate on the future utility of this power. Having these arguments at times thwarts the purpose and utility of nuclear power.

The ongoing development of NST and this energy source has the dual objective of not only providing for sustainable power, but also fighting against global warming. But, at the same time, it requires that the "nuclear industry ought to remain open and transparent" in order to maintain and further generate the public trust towards its future growth.

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In the national and international environmental law these days they are at the heart of environmental protection. It is for polluter to bear the costs of causing pollution, in a simplistic way it seeks to internalize the environmental costs through polluter (Principle 16); while the latter assumes (Principle 15) 'where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing such measures', that action should be taken to avoid the risk of damage to environment. See Shaw (2008).

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Anthropocentrism in literal sense means human-centered, but in its most pertinent philosophical form it is the ethical belief by humans that humans alone possess intrinsic value and are overpowering above all. see [Online: web] Accessed on 20 April 2024 URL : https://www.sciencedirect.com/topics/social-sciences/anthropocentrism#:~:text=Anthropocentrism%20literally%20means%20human%2Dcentered,or%20in%20their%20instrumental%20value

Nine States have so far built the nuclear warheads apart from Five NWSs "India, Pakistan, North Korea and South Africa" have built such warheads. South Africa relinquished her programme and is a NNWS now. It has also become a party to "Pelindaba Treaty on Nuclear Weapons Free Zone". See India-US Nuclear Agreement: Lex Examen (2016) Gupta

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The concept of technology denial carries clear meaning in this sentence. Further, these bodies are the informal bodies and thus do not enjoy any legal Status except in the matter of policies for States, however they affect the law making, e.g. India- United States Agreement on civil nuclear cooperation could only become possible after NSG's waiver approval. See IDSA Task Force Report the Nuclear Disarmament: The Way Forward (2010)

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Journal of International Economics
ISSN 0976-0792 Volume 15, No 2, July-December 2024 pp: 54-58

CASE STUDY

Russia's Gold Policy: How a Nation Outmaneuvered Global Sanctions

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Abstract

The case study identifies the critical role of risk hedging policies employed by nations during periods of crisis and uncertainty. It highlights the strategic measures adopted by countries to safeguard their economies and financial stability amidst global disruptions. Specifically, the case study examines the risk hedging strategies implemented by Russia in response to the extensive economic sanctions imposed by Western nations during the ongoing conflict with Ukraine.

The analysis sheds light on Russia's use of gold reserves tools to mitigate financial risks, stabilize its currency, and sustain trade under restrictive conditions. It explores how such policies are crafted, their effectiveness, and their broader implications for global economic resilience and policy-making.

Through this case study, participants will:

- Discuss the intricacies of risk management and hedging mechanisms at a national level.
- Analyze the geopolitical and economic factors influencing a country's choice of hedging tools during emergencies.
- Evaluate the effectiveness of Russia's response to sanctions and its reliance on gold as a buffer against external shocks.
- Develop critical thinking skills to propose alternative hedging strategies in similar scenarios.
- Assess the broader implications of such policies for global trade, financial markets, and international relations.

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This case study offers valuable insights into the intersection of economic policy, geopolitics, and financial strategy, providing participants with the analytical tools to navigate and address complex economic challenges in a global context.

Introduction

The Russia-Ukraine war officially commenced on February 24, 2022, when Russia launched a full-scale invasion of Ukraine. This significant escalation drew widespread international condemnation and resulted in the imposition of over 16,000 sanctions by global powers aiming to cripple Russia's economy. Despite these unprecedented measures, Russia's economy defied expectations, growing by 3.6% in 2023 and projected to expand another 2.6% in 2024.

A notable 6% of Russia's GDP is allocated to military spending, underscoring its commitment to sustaining its war efforts. While Ukrainian President Volodymyr Zelenskyy faces challenges in securing arms, funding, and manpower to defend his nation, Russian President Vladimir Putin appears steadfast and self-assured in pursuing his long-term ambitions.

The question arises: how have 16,000 meticulously crafted sanctions by the world's most powerful economies failed to destabilize Putin's regime and disrupt Russia's war machine?

Russia – Ukraine War

The Russia-Ukraine war, which began on February 24, 2022, stems from long-standing tensions over Ukraine's sovereignty and its pivot towards Western alliances like NATO and the European Union. Russia views Ukraine's Western alignment as a direct threat to its sphere of influence, compounded by historical ties and disputes over territories like Crimea and the Donbas region. Ukraine seeks to assert its independence and territorial integrity while pursuing integration with the West.

The human cost of the conflict has been devastating. Estimates suggest that over 9,600 Ukrainian civilians have lost their lives, with thousands more injured, according to United Nations data. Military casualties are staggering on both sides, with reports indicating that Ukraine has suffered over 70,000 soldier deaths, while Russian losses may exceed 100,000 personnel. These figures reflect the grim reality of a prolonged and attritional conflict.

As the war grinds on, both nations face significant economic and social challenges. Ukraine's economy has contracted by over 30% since the start of the invasion, reliant heavily on Western aid for survival and reconstruction. Meanwhile, Russia's war spending, accounting for nearly

6% of GDP, continues to strain resources, with long-term economic consequences becoming increasingly apparent amidst global isolation. Currently in November 2024, the conflict remains ongoing, marked by intense fighting in Eastern Ukraine. Ukrainian forces, with Western support, strive to reclaim occupied territories, while Russia consolidates its gains and continues its offensive. With no clear resolution in sight, the war continues to exact an immense toll on both nations and the global economy.

Gold – World Market

Gold remains a cornerstone of the global economy, valued for its intrinsic worth, universality, and historical significance. It plays a critical role in national reserves, investment portfolios, and industrial applications. China leads as the world's largest producer of gold and the second-largest buyer, importing approximately US$67.6 billion worth of gold in 2022. This strategy aligns with China's goals of stabilizing its currency and diversifying reserves. The significance of gold in Chinese culture is further illustrated by unique promotions in real estate, such as offering gold bars as incentives for purchasing condos in cities like Shanghai. Switzerland, however, surpasses China as the largest importer, recording US$94.9 billion in gold imports in 2022. It serves as a major hub for Russian gold despite Western sanctions, sourcing supplies directly and indirectly through countries like the UAE and Uzbekistan.

Gold reserves are a vital component of national wealth and financial stability. Leading the world in reserves is the United States, with 8,133.5 tonnes, followed by Germany (3,352 tonnes), Italy (2,451.8 tonnes), and France (2,437.8 tonnes). China and Russia also hold significant reserves, with 2,113 tonnes and 2,298.5 tonnes, respectively, reflecting their strategic emphasis on gold amid economic and geopolitical shifts. Nations maintain gold reserves to hedge against inflation, currency devaluation, and economic crises. Gold also bolsters foreign exchange reserves, supports monetary policies, and provides a safety net during financial and geopolitical turbulence.

While the World Gold Council emphasizes gold's value as a stable investment, its price is not immune to market dynamics. Geopolitical crises, for instance, often drive demand and prices upward.

Russia and Gold

The Russia-Ukraine war and subsequent sanctions have propelled Russia to rely heavily on gold as a cornerstone of its economic strategy. These sanctions, aimed at crippling key sectors such as energy exports and financial transactions, largely overlooked the gold market, offering Russia

an opportunity to use its significant reserves to stabilize its economy. As the world's second-largest gold producer with an output of 324.7 tonnes in 2023, Russia leveraged its production capabilities and reserves, which rank fifth globally at over 2,298.5 tonnes. Since 2013, anticipating the possibility of Western sanctions, Russia worked to reduce its reliance on U.S. dollar transactions. This effort culminated in early 2022 with the Russian central bank pegging the ruble to gold, setting a fixed price of 5,000 rubles per gram. The move was intended to stabilize the ruble, which had sharply devalued following the invasion of Ukraine, and to increase its demand by requiring payments for key exports, such as natural gas, in rubles.

Despite the refusal of Western nations like the U.S., the U.K., and Canada to import Russian gold, other markets such as the United Arab Emirates and Switzerland stepped in. In 2022, the U.A.E. imported 96.4 tonnes of Russian gold, valued at $6.2 billion, a dramatic 15-fold increase from 2021. Similarly, Switzerland imported 75 tonnes of Russian gold, ensuring a steady flow of foreign currency to Russia. These transactions allowed Russia to bypass some of the sanctions' effects, sustaining its export revenues. Pegging the ruble to gold initially helped stabilize its exchange rate, which rebounded from a low of 138.93 rubles per dollar in March 2022 to approximately 83 rubles per dollar. This stability was further supported by domestic gold production, central bank purchases, and high global demand for energy exports denominated in rubles.

However, tying the ruble to gold carries significant risks. To maintain the peg, Russia must exchange gold for rubles upon demand, potentially depleting its reserves if confidence in the currency weakens. This risk echoes the U.S. experience during the Bretton Woods era when concerns over gold shortages led to the system's collapse in 1971 Furthermore, the sustainability of this strategy hinges on continued demand for Russian energy exports and the global value of gold. Should energy revenues decline or the ruble lose credibility, Russia's economic stability could be jeopardized. Despite these challenges, Russia's reliance on gold has proven an effective short-term measure to mitigate the immediate impact of sanctions. It underscores the enduring importance of gold as a hedge against economic uncertainty and geopolitical instability, even as it highlights the vulnerabilities of over-reliance on this strategy in a volatile global landscape.

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Journal of International Economics
ISSN 0976-0792 Volume 15, No 2, July-December 2024 pp: 59-77

Farmers' Perception and Awareness Towards Crop Insurance

A Case Study of Gajwel Mandal, District Siddipet, Telangana State

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Abstract

India, as an agriculture-oriented nation, relies heavily on farming as a primary occupation, which inherently involves significant operational risks due to factors such as climatic variability and natural calamities. These risks can severely impact crop yields, necessitating protective measures to safeguard farmers' livelihoods. Crop insurance emerges as a critical mechanism to mitigate production risks in agriculture, yet its adoption remains limited among farmers. This study analyzes the various crop insurance schemes implemented by the Government of India, aimed at reducing agricultural risk and providing financial security to farmers. Specifically, it focuses on the perceptions, awareness, and adoptability of these schemes among farmers in Gajwel Mandal, Siddipet District, Telangana State. The research reveals that despite the existence of multiple crop insurance initiatives, their performance is suboptimal, characterized by low coverage in terms of both the number of hectares insured and the number of participating farmers.

Through a mixed-methods approach, the study gathered quantitative data from surveys and qualitative insights from interviews with local farmers. In conclusion, the study offers targeted recommendations for enhancing the implementation of crop insurance schemes, emphasizing the need for improved outreach, education, and trust-building measures. By addressing these challenges, the research aims to facilitate greater adoption of crop insurance, ultimately benefiting farmers and promoting agricultural resilience in the region.

Keywords: Mitigating, Perception and Yield, Risk

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Introduction

India is an agrarian country, with nearly two-thirds of its population – around one billion people – depending on agriculture for their livelihood. The agricultural sector contributes approximately 18% to the nation's Gross Domestic Product (GDP). However, the production process in agriculture is vastly different from that of other industries, as it is inherently tied to natural factors and exposed to significant risks and uncertainties. These uncertainties stem from variables such as irrigation availability, weather conditions, seed quality, use of fertilizers and pesticides, and a lack of awareness about risk mitigation measures. Furthermore, government inefficiencies in disseminating information about crop insurance schemes exacerbate these challenges.

The average small farmer, particularly in semi-arid regions, has a very limited capacity to bear risks. This project focuses on the level of awareness and perception of crop insurance schemes among farmers in the Gajwel district of Telangana State. To address the inherent risks and uncertainties in agriculture, the Government of India, along with state governments, has introduced various schemes, such as the **National Agriculture Insurance Scheme (NAIS) and the Weather Index-Based Crop Insurance Scheme (WBCIS)**. Despite their potential benefits, the adoption and utilization of these programs remain limited among farmers, primarily due to insufficient awareness and inadequate information dissemination.

The Importance of Agriculture in India

Agriculture is the backbone of India's economy and the primary occupation for most of its people. Approximately two-thirds of the population depends directly on farming for their livelihood, making it a dominant aspect of Indian society. Agriculture contributes about 18% to the country's GDP, and India ranks second globally in terms of agricultural production and farm products.

However, farming in India is far from easy. Agriculture in the country is fraught with challenges and uncertainties, largely due to its dependence on natural factors. Adverse weather conditions, such as erratic rainfall, floods, droughts, and other calamities, significantly impact farming outcomes. These uncertainties often lead to low productivity, reduced income, and mounting debts, placing immense stress on farmers.

The Grim Reality: Farmer Suicides

The challenges faced by farmers are not just economic but also psychological. Low productivity, inadequate income, and the burden of high agricultural loans have forced many farmers across India, including those in Telangana, to take extreme steps such as suicide. Despite their critical role in ensuring food security and providing essential farm products, farmers themselves often live under immense stress.

The Role of Crop Insurance

Agriculture or crop insurance plays a crucial role in mitigating the risks associated with farming. It provides financial support to farmers in cases of crop failure due to natural calamities, pest attacks, or crop diseases. The objective of crop insurance schemes is to safeguard farmers by offering insurance coverage and financial assistance in times of distress. These schemes can serve as a safety net for farmers, ensuring financial security and reducing the risks associated with agriculture.

Crop insurance is especially effective in reducing risks both horizontally (across different states) and vertically (across farmers of varying economic status). In states like Telangana, crop insurance is often mandatory for farmers availing of loans from financial institutions. However, despite these mandates, the uptake of crop insurance remains low. Statistics indicate that only 4% of Rabi (winter) crop holdings and 11% of Kharif (monsoon) crop holdings are insured, highlighting the limited reach and impact of these schemes.

Dependence on Monsoon and Weather Risks

Indian agriculture is heavily dependent on monsoonal rainfall, which typically occurs over a short span of two and a half months. The unpredictable nature of monsoons often leads to natural disasters such as droughts, floods, and cyclones. Nearly two-thirds of the cropped acreage in India is vulnerable to varying degrees of drought, with an average of 12 million hectares of crop area being affected by natural calamities annually.

The lack of irrigation facilities compounds these challenges. Around two-thirds of the cultivated area in India remains rainfed, with no access to irrigation. Even in regions with irrigation infrastructure, water supply is often inadequate for intensive cropping. Additionally, erratic rainfall patterns can adversely affect irrigated crops. For instance:

- Rainfall during the flowering period can wash away pollen, reducing crop yields.
- Excess rainfall can lead to waterlogging and submersion of crops in their early stages, while at later stages, heavy rains can cause lodging (collapse of crops).

Statement of the Problem

Despite the introduction of various innovative crop insurance schemes by the Government of India, these initiatives have not achieved their intended outcomes, particularly in regions like Telangana, where the agricultural community is grappling with significant challenges. The existing schemes, designed to provide financial support and mitigate risks associated with agricultural production, are plagued by several critical issues that hinder their effectiveness and accessibility.

Firstly, there is a substantial gap in policy implications and execution. Many farmers remain unaware of the details and benefits of these insurance schemes, which leads to low enrollment rates and limited utilization. This lack of awareness can be attributed to inadequate communication strategies and ineffective outreach efforts by implementing agencies, resulting in farmers not fully understanding the importance of crop insurance as a risk management tool.

Secondly, the performance of the agencies responsible for implementing these schemes is often unsatisfactory. Farmers frequently report challenges in accessing insurance products, navigating the application processes, and receiving timely compensation for losses. Delays and bureaucratic hurdles in claim settlements further exacerbate the situation, leading to frustration and distrust among farmers toward the insurance system.

Moreover, the recurring tragedy of farmer suicides in Telangana highlights the urgent need for effective intervention. The psychological and economic pressures faced by farmers, driven by low productivity, high debts, and crop failures due to natural calamities, have reached alarming levels. The inadequacy of existing crop insurance schemes in providing adequate financial protection contributes to this distress, as farmers feel unsupported during critical periods of loss.

Given these complexities, it is imperative to evaluate the performance of crop insurance schemes comprehensively. Such an evaluation should focus on identifying the barriers to effective implementation, understanding farmers' perceptions and experiences, and exploring ways to enhance the schemes' accessibility and reliability. By addressing these issues, we can better protect small and marginal farmers from the adverse impacts of natural calamities and contribute to the overall sustainability of agriculture in Telangana. This evaluation not only aims to improve the immediate benefits of crop insurance for farmers but also seeks to foster long-term resilience in the agricultural sector, ultimately reducing the tragic incidents of farmer suicides and ensuring the livelihoods of those who form the backbone of the Indian economy.

Objective of the Study

- To analyze the historical development, policy framework, and key milestones in the evolution of crop insurance schemes in India.
- To examine the level of awareness, perception, and willingness of farmers in Gajwel Mandal of Siddipet District to adopt crop insurance schemes
- To suggest possible remedies for enhancing the effectiveness of crop insurance schemes.

Need of the Study

Traditional agriculture, once a way of life deeply rooted in cultural practices and local knowledge, is increasingly being viewed as a business proposition. This transformation is driven by the adoption of modern technologies and innovative farming practices, which aim to enhance productivity and profitability. However, alongside these advancements, farmers are encountering a range of new challenges that complicate their transition into agribusiness. Among the significant problems faced by farmers today are issues related to soil and water management, which are critical for sustainable agricultural practices. The degradation of soil quality, along with water scarcity and inefficient irrigation practices, poses serious threats to crop yields. Additionally, farmers must navigate the complexities of natural hazards, such as extreme weather events and climate change, which can lead to devastating losses.

Technical know-how is another barrier that many farmers face. As farming becomes more technology-driven, the need for education and training in modern agricultural practices has never been more crucial. Farmers often struggle with limited access to information and resources that can help them adapt to new methods and tools. Moreover, marketing and finance remain persistent challenges. Farmers frequently lack access to adequate financial resources and market information, which are essential for making informed decisions and maximizing profits. The risk of pests and diseases further complicates the scenario, threatening both crop health and financial stability. In this complex landscape, agricultural insurance emerges as a vital solution. By providing a safety net against various risks, insurance can help farmers manage uncertainties and protect their investments. This mechanism not only promotes stability in agricultural income but also encourages farmers to adopt innovative practices without the fear of catastrophic losses.

Encouragingly, the new generation of farmers – often more educated and tech-savvy – brings energy and enthusiasm to the agribusiness sector. Their willingness to embrace modern practices and engage in entrepreneurial ventures presents a promising future for agriculture. With approximately 75% of the Indian population relying on agriculture for their livelihoods, this sector is not only crucial for domestic food security but also serves as an important contributor to the country's foreign exchange earnings.

In many countries, agricultural insurance is integrated into a comprehensive risk management framework that involves both public and private enterprises. This integrated approach enables better coordination and support for farmers, ensuring that risk management strategies are effective and accessible. Looking ahead, agricultural insurance is poised to play an increasingly vital role in India's agricultural sector, particularly as it continues to evolve into a significant economic driver. The potential

for agricultural insurance companies to contribute to rural and economic development is substantial. By fostering resilience among farmers and enhancing their ability to manage risks, agricultural insurance can support sustainable growth in the sector.

This paper aims to explore the potential of agricultural insurance in India, highlighting its importance for both the agricultural industry and rural development. Through an analysis of existing practices and future prospects, the study seeks to underscore the critical role that agricultural insurance will play in securing the livelihoods of farmers and bolstering the economy as a whole.

Research Methodology

Research methodology refers to the systematic theoretical analysis of the methods appropriate to a specific field of study. It encompasses the body of methods and principles that are particular to a branch of knowledge, guiding researchers in the collection, analysis, and interpretation of data.

Data Sources

The present study utilizes both primary and secondary data sources to achieve its objectives:

- **Primary Data**: This data was collected directly from the field through a structured questionnaire designed specifically for this research. A total of 50 farmers from Gajwel Mandal in Siddipet District participated in the study. The questionnaire was structured to gather comprehensive information regarding farmers' perceptions, awareness, and experiences related to crop insurance.
- **Secondary Data**: This data was obtained from a variety of sources, including academic articles, government reports, and reputable websites. The secondary data helped contextualize the primary findings and provided a broader understanding of the agricultural insurance landscape in India.

Sample Size

Given the constraints of the study's timeframe, a sample size of 50 farmers was chosen. This number was considered sufficient to gain insights into the attitudes and behaviors of farmers within Gajwel Mandal, while also allowing for manageable data collection and analysis.

Method of Sampling

The study employed a **Random Sampling Method** to select the sample units. This approach ensures that each farmer in the population has an equal chance of being included in the study, thereby minimizing selection bias and enhancing the reliability of the findings.

Limitations of the Study

- **Limited Sample Size**: The study is based on a sample of only 50 farmers, which restricts the ability to generalize the findings to the broader agricultural population in Telangana or India. The insights gained may not fully represent the diverse experiences and perceptions of all farmers.
- **Geographical Restriction**: The research is confined to Gajwel Mandal only. This geographic limitation means that the findings may not be applicable to farmers in other regions, which may have different agricultural practices, challenges, and levels of awareness regarding crop insurance.

In summary, the research methodology employed in this study provides a structured framework for understanding farmers' perceptions and awareness of crop insurance in Gajwel Mandal. While the findings offer valuable insights, the limitations must be acknowledged to contextualize the results appropriately.

Review of Literature

There are various studies related to Crop Insurance. It was found that the numerous numbers of literatures is available on agriculture insurance and its various aspects. Few reviews are discussed here under:

Amrita Ashok Kulkarni (2017): This study investigates the level of awareness among farmers in a drought-prone area regarding crop insurance. The results reveal a concerning lack of awareness, with only 1.51% of farmers in the Maantelhi region and 2.58% of the overall population acknowledging knowledge of insurance options. Despite the availability of these schemes, very few farmers are taking advantage of them, highlighting a critical gap in awareness and understanding of crop insurance benefits.

Geetha (2015): This article explores farmers' awareness, the benefits of purchasing crop insurance, and overall satisfaction with the schemes. The findings indicate that over 25% of respondents were unaware of available crop insurance schemes. Additionally, more than 15% of participants expressed a belief that insurance was unnecessary, citing factors such as the educational level of farmers and delays in receiving compensation payments as significant concerns.

Bindiya Kunal Soni and Jigna Trivedi (2013) "Crop Insurance: An Empirical Study on Awareness and Perceptions" The National Agricultural Insurance Scheme represents a significant initiative to mitigate the risks faced by millions of farmers in India, particularly those reliant on monsoon patterns for their livelihoods. Despite this, the study highlights that crop insurance penetration remains low. Focusing on Gujarat, specifically Anand

district, the research investigates farmers' awareness levels regarding crop insurance. It also explores the perceptions of both insured and uninsured farmers across various villages in the district. The study concludes with recommendations aimed at enhancing awareness among farmers, which is essential for improving the adoption and effectiveness of crop insurance in the region.

Goudappa, S.B. Reddy, B.S., and Chandrashekhar, S.M. (2012) explored farmers' perceptions and awareness of crop insurance in northeastern Karnataka, a region prone to low rainfall and drought. Their study revealed that the average family size was seven, with 44% of farmers being illiterate and 25% having only completed primary education. While there were no significant differences in education or farming experience among districts, Gulbarga district had higher farm sizes and crop incomes. Despite the National Agricultural Insurance Scheme (NAIS) being active since 2002-03, over 80% of respondents were unaware of its management and compensation processes, often mistakenly believing that banks handled these aspects. Many farmers opted for insurance due to bank pressure and a desire for financial security. The research highlighted that more than 80% of farmers lacked knowledge about key elements of crop insurance, such as coverage and claim procedures. They expressed a need for quicker claim settlements and suggested considering adverse weather during critical crop growth stages. The authors concluded that while the NAIS should continue, it requires modifications to enhance its effectiveness.

Suresh Kumara, Barahb, Ranganathana, Venkatrama, Gurunathana and Thirumoorthya, (2011) conducted a study titled ""An Analysis of Farmers' Perception and Awareness of Crop Insurance as a Risk Management Tool in Tamil Nadu" explored farmers' understanding and acceptance of crop insurance schemes. The study evaluated the effectiveness of government initiatives, such as the National Agricultural Insurance Scheme (NAIS) and Weather Index-Based Crop Insurance (WIBCI), in mitigating agricultural risks. However, the findings revealed that the adoption of these schemes remains low among farmers, primarily due to insufficient dissemination of information and awareness about their benefits.

A survey of 600 farmers revealed that while 65% were aware of government risk mitigation measures, only half knew about specific crop insurance products. This highlights the need for better dissemination of information. The study utilized Probit and Tobit models to analyze factors influencing awareness, finding that factors such as farm size, non-agricultural income, perceived risk, family workforce, satisfaction with premium rates, and affordability positively impacted insurance adoption. The authors emphasized the urgent need for more innovative insurance products with minimal human intervention.

Narayanan H. (2006) emphasizes that agricultural insurance is crucial for managing risks within the agriculture sector, which significantly contributes to economic growth in India. He argues that the importance of agricultural insurance cannot be overstated in the country's development.

Parchure Rajesh (2009) emphasizes that the primary objective of crop insurance schemes is not profit generation but rather providing financial security to farmers facing agricultural risks. The study highlights that any profits derived from these schemes should be utilized to offer indemnities that cover principal repayments for farmers, thus safeguarding their financial stability in adverse situations. Furthermore, Parchure suggests that these funds can be strategically directed towards enhancing agricultural infrastructure, such as irrigation systems and storage facilities. This dual approach not only supports immediate farmer needs but also fosters long-term improvements in agricultural productivity and sustainability. By framing crop insurance as a tool for both risk management and infrastructure development, Parchure underscores its critical role in bolstering the agricultural sector and promoting rural economic resilience.

Sinha Sidharth (2005) highlights that the effectiveness of agricultural insurance can be significantly enhanced by improving the accuracy and timeliness of crop estimation methods, particularly through the adoption of new technologies. This technological advancement is crucial for providing reliable data that can inform insurance policies and pricing. Additionally, Sinha emphasizes the need for institutional frameworks and operational procedures that facilitate the involvement of the private sector in delivering agricultural insurance. By creating a supportive environment for private insurance providers, the agricultural sector can benefit from increased competition, innovation, and better service delivery, ultimately leading to a more robust insurance system that meets the needs of farmers.

After a thorough review of the literature and examination of various secondary data sources, it can be confidently stated that agricultural insurance schemes provide significant benefits to farmers. These schemes help ensure high farm production, generate regular income, facilitate savings and investments, and allow farmers to secure loans against their assets. Furthermore, agricultural insurance plays a crucial role in driving the rapid economic development of the country.

Role of Agriculture Insurance

India is one of the largest exporters of food grains, crops, and various agricultural products, making farmers an integral part of the nation's economic growth. Despite their critical contributions to the economy, a large number of farmers continue to struggle with poverty and hardship. Agricultural production and farm incomes in India are heavily influenced

by unpredictable weather and climatic events such as droughts, floods, cyclones, frost, storms, and landslides. Furthermore, other challenges like epidemics, fires, and volatile market conditions significantly threaten their livelihoods, creating uncertainties that are largely beyond the farmers' control.

As agriculture becomes increasingly commercialized, the impact of these adverse events has intensified, underscoring the urgent need to safeguard farmers against potential production and income losses. Agricultural insurance emerges as a vital mechanism for managing risks associated with both natural and man-made events, effectively addressing the uncertainties that farmers face. It plays a significant role in distributing risks in a manageable way, allowing farmers to recover swiftly from damages and losses.

Furthermore, agricultural insurance encourages savings and investments since farmers regularly pay premiums. This financial support enables farmers to secure loans against their insurance policies from banks and insurance companies, providing additional layers of protection against losses. The relevance of insurance in farming cannot be overstated; the unpredictability of rainfall and its impact on crop yields create persistent challenges for farmers nationwide.

To address these concerns, the Agriculture Insurance Company of India Ltd. has developed comprehensive insurance coverage options for farmers. Various policies have been introduced, including the Weather Based Crop Insurance Scheme, Rainfall Insurance Scheme for Coffee Growers, and Varsha Beema, among others. These initiatives aim to offer farmers the necessary protection and support, fostering greater stability in agricultural production and livelihoods.

Agriculture Insurance Company of India (AIC)

The Agriculture Insurance Company of India Limited (AIC) is a premier public sector organization based in New Delhi. It plays a vital role in providing crop insurance solutions through area-based and weather-based schemes, covering nearly 500 districts across India. As one of the largest crop insurers globally, AIC protects the livelihoods of approximately 20 million farmers, making a significant impact on the agricultural sector.

AIC was founded with the backing of the General Insurance Corporation of India (GIC), NABARD, and four public sector general insurance companies. It operates under the administrative jurisdiction of the Ministry of Finance and functions with the operational support of the Ministry of Agriculture. The Insurance Regulatory and Development Authority (IRDA), headquartered in Hyderabad, governs and oversees AIC's regulatory compliance within India's insurance framework.

With 17 regional offices strategically located throughout India, AIC offers a wide range of agricultural and allied insurance products and schemes. A significant portion of its business derives from the National Agriculture Insurance Scheme (NAIS), which has shown substantial growth over the years. For instance, the number of insured farmers rose from 16.22 million in the 2004-05 fiscal year to 21.93 million by 2015-16. More recently, this trend has continued, with increasing awareness and participation among farmers.

The total sum insured under NAIS has also experienced rapid growth, increasing from 169.45 billion rupees in 2004-05 to 319.89 billion rupees in 2015-16. As of the latest available data, these figures have continued to rise, reflecting the effectiveness and acceptance of the scheme among the farming community. This consistent growth indicates that the performance of NAIS and AIC's overall contribution to agricultural risk management is satisfactory and continues to improve, further supporting India's agricultural resilience.

Background Evaluation of Crop Insurance in India

Comprehensive Crop Insurance Scheme (CCIS)

The Comprehensive Crop Insurance Scheme (CCIS) was launched in Kharif 1985 to provide financial support to farmers in case of crop failures due to natural calamities. Participation in this scheme was voluntary, allowing states to choose whether to opt in. The scheme covered farmers who took crop loans from commercial banks, regional rural banks, and cooperative banks for specific crops, including wheat, paddy, millets (such as maize), oilseeds, and pulses. CCIS was operational until Kharif 1999.

National Agricultural Insurance Scheme (NAIS)

To expand coverage to a broader range of farmers – both loanee and non-loanee – and to include more crops and risks, the National Agricultural Insurance Scheme (NAIS) was introduced in the Rabi season of 1999-2000. This scheme is available to all farmers, regardless of their land holdings. Implemented across 29 states and 6 Union Territories, NAIS has covered approximately 26.91 million farmers over an area of 38.87 million hectares, insuring a total sum of ₹461,238 crore. Over the years, claims amounting to about ₹50,610 crore have been disbursed against premiums collected of ₹14,009 crore, benefiting around 77.9 million farmers.

Modified National Agricultural Insurance Scheme (MNAIS)

To enhance and simplify existing crop insurance, the government formed a Joint Group to evaluate improvements. The Modified NAIS (MNAIS) was launched on a pilot basis in 50 districts during the 11th Plan period starting from Rabi 2010-11. Key improvements included actuarial premium rates

with subsidies up to 75% for farmers, reducing the unit area of insurance to village levels, and providing immediate relief through on-account payments. The scheme also offered coverage for prevented sowing and post-harvest losses due to cyclones, with minimum indemnity levels set at 80% and 90%.

Pilot Weather Based Crop Insurance Scheme (WBCIS)

Launched in 2007 in 20 states, the Pilot Weather Based Crop Insurance Scheme (WBCIS) aims to protect farmers against adverse weather events like irregular rainfall and temperature fluctuations that could impact crop production. Initially implemented on a pilot basis, WBCIS transitioned to a full-fledged scheme from Rabi 2013-14, providing premium subsidies of up to 50%. Since its inception until the Rabi 2015-16 season, WBCIS covered around 72.4 million farmers over 9.37 million hectares, with insured amounts totaling ₹124,240 crore and claims of approximately ₹9,817 crore.

Pilot Coconut Palm Insurance Scheme (CPIS)

The Coconut Palm Insurance Scheme (CPIS) was initiated in 2009-10 in coconut-growing regions such as Andhra Pradesh, Kerala, and Tamil Nadu. The premium structure involves contributions of 50% from the Coconut Development Board, 25% from state governments, and 25% from farmers. The Agriculture Insurance Company of India (AIC) administers the scheme, which is integrated into the National Crop Insurance Programme (NCIP) since Rabi 2013-14.

National Crop Insurance Programme (NCIP)

In 2012-13, the Planning Commission approved a restructuring of existing crop insurance schemes based on evaluations. The National Crop Insurance Programme (NCIP) was established, merging MNAIS, WBCIS, and CPIS into a single framework with enhancements. While NAIS was initially discontinued, some states were allowed to implement it during the 2013-14 season, with the option to choose between NAIS and MNAIS for subsequent years.

New Crop Insurance Scheme – Pradhan Mantri Fasal Bima Yojana (PMFBY)

To address concerns about premium rates and coverage, the Pradhan Mantri Fasal Bima Yojana (PMFBY) was introduced in place of MNAIS and NAIS, effective from the Kharif 2016 season. This scheme aims to provide more affordable coverage with a rationalized premium structure, aligning it with the restructured WBCIS. Additionally, the Unified Package Insurance Scheme (UPIS) was approved to cover a broader range of risks, including life and accident insurance for farmers, implemented on a pilot basis in select districts.

These schemes collectively aim to enhance the resilience of Indian farmers against various risks, promoting agricultural stability and supporting the livelihoods of millions.

Analysis and Interpretation

The data for the study were analyzed using tabular analysis, ranking techniques, and functional analysis. The key findings and inferences drawn from the study are as follows:

Socio-Economic Characteristics of Sample Farmers

The study was conducted on a sample of 50 farmers. According to Table-1, over 65% of the respondents were in the age group of 35 years or older, with 35% being above 50 years of age. In terms of educational attainment, 67% of the farmers were illiterate, 27% had completed primary education, and only 6% had attended higher secondary school. This indicates that farming in the study area is predominantly carried out by older and less educated individuals.

Out of the 100 farmers surveyed, approximately 54% were small and medium-scale farmers, owning between 1 and 5 acres of land. The survey also revealed that 90% of the families consisted of fewer than six members, reflecting the absence of the traditional joint family system.

The study further observed that 40% of the families had at least one earning member engaged in non-agricultural activities. Families with additional income sources and those associated with self-help groups (SHGs), Ideal Farmers' groups, farmer cooperatives, and banks demonstrated higher levels of awareness regarding agricultural risk management strategies and crop insurance schemes.

Crop Diversification: A Tool of Risk Minimisation

Table-1: Awareness about Crop Insurance and other Agriculture Risk Mitigating measures implemented by Government

Farmer Category(Acres)	No. of Farmers	Awareness		Insurance	
		Aware	Not Aware	Insured	Not Insured
1 – 2	13 (26%)	1(7.70%)	12(92.31)	1(3.84)	12(96.15)
2 – 4	22 (44%)	5(22.72%)	17(77.27)	4(18.18)	18(81.81)
4 – 6	8 (16%)	2(25%)	6(75%)	2 (20)	6(75)
Above 6	7 (14%)	2(28.57%)	5(71.42)	2(28.57)	5 (71.42)
Total	50(100%)	10 (20%)	40(80%)	9 (17)	41(83)

In the selected study area, it was observed that 80% of the farmers were unaware of crop insurance, and 83% had not utilized it as a means to mitigate agricultural risks. When asked about risk minimization strategies, 73% of the respondents indicated that they relied on their own resources to manage farm-related risks. In terms of alternative risk management

mechanisms, many farmers opted for crop diversification as a strategy rather than reducing input usage. An additional finding from the study revealed that approximately 1.5% of the farmers chose not to cultivate any crops on their land as a way to avoid agricultural risks altogether.

Distribution of Annual Income among Sample Farmers

Table-2: Distribution of annual income among sample farmers

Income Category(Rs.)	No. of Farmers	Percentage
Below 25000	6	12
25001 – 50000	7	14
50001 – 75000	8	16
75001 – 100000	13	26
100001 – 150000	11	22
Above 150000	5	10

The distribution of average annual agricultural income among the respondents reveals that 26% of the farmers earned Rs. 50,000 or less, placing them in the lower income category. Approximately 42% of farmers fell into the income group of Rs. 1 lakh or less. The majority of the farmers belonged to the medium-income category. This highlights the significant income disparity within the rural or village population. The income distribution among farmers was notably skewed, but it did not appear to have a major impact on the adoption of agricultural risk mitigation strategies in the selected area.

Awareness of Crop Insurance and Other Agricultural Risk Mitigation Measures Implemented by the Government

Table-1 further highlights that the awareness among farmers regarding crop insurance and government-implemented risk management measures is generally low across different types of crops in the study area. It was found that 80% of the farmers were unaware of crop insurance schemes, and 83% had not purchased any crop insurance policies. Larger farmers tended to have better awareness, with 28.57% of them out of 14% of the total respondents opting for crop insurance. In contrast, small farmers exhibited very low awareness, with only 7.70% aware of the schemes, and just 3.84% having purchased crop insurance policies. Medium-sized farmers fared somewhat better, with 25% showing a moderate level of awareness about crop insurance and other agricultural risk mitigation measures.

Sources of Information on Crop Insurance

Farmers obtain information about crop insurance from a variety of sources. The most common source is government departments, which provide information to 55% of the respondents. Neighbors and fellow farmers account for 26% of the information flow, while agriculture universities and research institutes contribute 11%. NGOs play a role in informing 6%

of farmers. Other sources, such as websites, newspapers, and television, also play an important role in disseminating information about various insurance products and schemes implemented by both public and private insurance companies.

Perception of Farmers about Risk Reduction

Table-3: Perception of farmers about risk reduction

Perception of farmers	Number of farmers	Percentage
Providing Crop Insurance	10	20
Providing Relief fund at disaster times	35	70
No idea about risk	05	10

The perception of farmers regarding risk reduction in agriculture was expressed by 20% of the respondents. Among those who were aware of the government's risk mitigation measures, only half were familiar with the available crop insurance schemes. The majority of farmers (70%) believed that providing relief funds during times of disaster was the most effective form of risk reduction. Additionally, approximately 10% of the farmers had no perception or awareness regarding risk reduction strategies in agriculture.

Findings

Low Popularity of Crop Insurance

- The study found that crop insurance is not widely adopted among farmers in Gajwel Mandal, with **80% of respondents unaware of crop insurance** options.
- A significant **83% of farmers have not enrolled in any crop insurance product**. This suggests a need for increased awareness and education about available schemes.

Importance of Credit Availability

- Easy access to credit is crucial for promoting and adopting insurance products.
- Most short-term credit is provided to small farmers by cooperative banks, while medium-term loans are given by commercial banks, indicating a **well-established institutional credit system** in the region.

Impact of Social Participation and Education:

- The study revealed that **social participation** among farmers significantly affects their awareness of crop insurance and other risk management strategies.

- Higher **levels of education** also play a vital role in enhancing awareness about innovative crop insurance products. Encouraging social interactions and educational initiatives can help improve understanding and uptake.

Influence of Non-Farm Income

- Farmers who earn income from non-farm sources are more likely to invest in crop insurance. This indicates that diversified income streams can motivate farmers to consider insurance as a viable risk management tool.

Key Influencing Factors

- Several factors significantly influence the adoption of crop insurance, including:
  - **Gross cropped area**: Larger areas may increase the likelihood of insurance uptake.
  - **Education level of farmers**: More educated farmers tend to be more aware and willing to adopt insurance.
  - **Social participation**: Active engagement in community activities boosts awareness.
  - **Income from non-agricultural sources**: Farmers with additional income sources are more inclined to invest in insurance.
  - **Number of workers in the farm family**: More family members working on the farm can lead to better risk management strategies.
  - **Satisfaction with premium rates**: Farmers are more likely to adopt insurance if they find the premium rates acceptable.
  - **Availability and affordability of insurance**: Easy access to affordable insurance options is crucial for encouraging uptake.

Need for Innovative Insurance Products

- The study underscores the urgent need for developing more **innovative crop insurance products** that require minimal human intervention.
- Encouraging the private sector to offer crop insurance could also enhance accessibility and options for farmers, thereby increasing overall adoption rates.

These findings highlight critical areas for intervention to improve the uptake of crop insurance among farmers in Gajwel Mandal, suggesting that awareness, credit availability, and education are key factors in fostering a supportive environment for risk management through insurance.

Suggestions & Conclusions

Restructure the Insurance Program

- A comprehensive restructuring of the existing agricultural insurance programs is essential to make them viable. This includes re-evaluating the current area-based indemnity approach to ensure that it adequately compensates affected farmers, even if they are outside the primary compensated areas.

Expand Coverage

- To increase the number of farmers covered, it is vital to broaden the scope of insurance schemes. This should include more crops, regions, and types of risks, ensuring that a greater proportion of the agricultural output is protected.

Implement Targeted Financial Support

- The government should design financial support mechanisms that specifically cater to agricultural insurance. This could involve subsidies for premiums or financial incentives for both public and private insurers to expand coverage.

Enhance Private Sector Participation

- Encouraging private sector involvement in agricultural insurance can lead to innovation and improved services. The government could provide similar financial assistance to private insurers as it does for public schemes, helping to improve viability and coverage.

Adopt a Village Panchayat-Level Approach

- Utilizing the improved integration of rural areas and better communication networks, the unit area for insurance could be reduced to the village panchayat level. This would make insurance products more relevant and accessible to local farmers.

Focus on Awareness and Education

- Launch targeted awareness campaigns to educate farmers about the benefits and mechanisms of crop insurance. Increased understanding can lead to higher adoption rates and better risk management practices.

Utilize Technology for Better Assessment

- Implement technology-based solutions, such as satellite imagery and data analytics, to assess crop health and losses more accurately. This can facilitate quicker and fairer claims processing.

Strengthen Support Systems for Farmers

- Addressing underlying issues, such as financial literacy and access to credit, can empower farmers to make informed decisions about insurance. Providing training programs and workshops can enhance their understanding of risk management.

Create a Safety Net for Suicidal Prevention

- Given the alarming rates of farmer suicides, the insurance schemes must be designed to act as a safety net for farmers under financial distress. This includes timely and adequate compensation for crop losses due to natural calamities.

Regular Review and Feedback Mechanisms

- Establish regular evaluation and feedback systems to monitor the effectiveness of insurance schemes. Engaging with farmers and stakeholders will help identify challenges and areas for improvement, ensuring that programs remain responsive to their needs.

By implementing these suggestions, the agricultural insurance framework in India can be strengthened, providing better protection for farmers and contributing to their financial stability and overall well-being.

In conclusion, the design and presentation of agricultural insurance products for rural areas must prioritize simplicity to ensure they are easily understood by farmers. Given the growing interest from the private sector in the general insurance market, there is a valuable opportunity to establish specific targets for these companies to focus on agricultural coverage. Setting such targets in alignment with agriculture's contribution to national income would enhance participation and protection for farmers. Furthermore, good governance is essential not only for the successful implementation of agricultural insurance schemes but also for the overall effectiveness of developmental programs. Poor governance can undermine these efforts, leading to inefficiencies and reduced trust among farmers. By enhancing governance frameworks, the government can significantly improve the operation and performance of agricultural insurance initiatives, ultimately leading to greater financial security for farmers and a more resilient agricultural sector. This comprehensive approach is crucial for fostering a sustainable rural economy and ensuring that farmers are adequately protected against the risks they face.

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S No	Title of Programme	Programme Date	Programme Director(s)
1	Supervisory Development Programme [for the Executives of MSN Labs]	Apr 15-16, 2024	Dr Sinju Sankar
2	Leadership Excellence Accelerator Programme (LEAP) [for the Executives of Ramky Estates]	Apr 22-24, 2024	Dr Sinju Sankar & Dr Swati Mathur
3	Supervisory Development Programme [for the Executives of MSN Labs]	May 6-7, 2024	Dr Sinju Sankar
4	ESG Reporting and Sustainability	May 8-10, 2024	Prof Ch Lakshmi Kumari
5	Workshop on "Customer Acquisition and Retention"	May 17-18, 2024	Prof Padmaker Jadhav
6	Supervisory Development Programme [for the Executives of MSN Labs]	June 10-11, 2024	Dr Sinju Sankar
7	Happiness and Wellbeing for Managers	June 10-12, 2024	Prof Ujjal Mukherjee & Dr K Bhavana Raj
8	Leadership and Change Management	June 25-27, 2024	Prof A Sridhar Raj & Dr Anupama Dubey Mohanty
9	CSR for High Impact Corporate Performance	July 8-9, 2024	Ms J Kiranmai
10	Supervisory Development Programme [for the Executives of MSN Labs]	July 8-9, 2024	Dr Sinju Sankar
11	Financial Models for Sustainable Excellence	July 9-11, 2024	Dr M Chandra Sekhar
12	New Labour Codes and Industrial Relations	July 24-26, 2024	Dr Vasanti & Dr Anuradha
13	Operations and Supply Chain Analytics for Competitive Advantage	July 24-26, 2024	Dr Abhay Srivastava & Prof S Satish Kumar
14	Supervisory Development Programme [for the Executives of MSN Labs]	Aug 5-6, 2024	Dr Sinju Sankar
15	Project Appraisal, Financing and Management	Aug 7-9, 2024	Prof S Sreenivasa Murthy, Dr M Chandra Shekhar & Dr P Kalyani
16	Analytics for Industry 4.0: Insights of Disruptive Technologies	Aug 12-14, 2024	Dr Shaheen & Dr Rajkumar Pillay
17	Finance for Non-Finance Executives	Aug 20-22, 2024	Dr K V Ramesh & Dr Maschender Goud
18	Emotional Intelligence: The Language of Leadership	Aug 28-30, 2024	Dr Swati Mathur & Prof Y Rama Krishna

S No	Title of Programme	Programme Date	Programme Director(s)
19	Strategic Marketing for Achieving Organization Goals	Sept 4-6, 2024	Dr V Srikanth
20	Supervisory Development Programme [for the Executives of MSN Labs]	Sept 9-10, 2024	Dr Sinju Sankar
21	Employee Engagement and Wellbeing	Sept 11-13, 2024	Dr Vasanthi Donthi & Dr Mohsin Khan
22	The Prevention of Sexual Harassment (PoSH) Act 2013 at Workplace	Sept 17-18, 2024	Ms J Kiranmai
23	Cyber Crime and Safety Measures	Sept 18-20, 2024	Dr A S Kalyana Kumar
24	Restructuring and Turnaround of Public Enterprises for Sustainable Business	Sept 24-26, 2024	Prof S Sreenivasa Murthy & Prof Ch Lakshmi Kumari
25	Diversity Inclusion and PoSH	Oct 3-4, 2024	Prof A Sridhar Raj & Dr Sinju Sankar
26	Supervisory Development Programme [for the Executives of MSN Labs]	Oct 7-8, 2024	Dr Sinju Sankar
27	Digital & Social Media Marketing – A Hands-on Approach	Oct 8-10, 2024	Mr M J Rama Krishna & Dr A Rakesh Phanindra
28	Business Analytics for Decision Making	Oct 8-10, 2024	Dr Rajkumar Pillay & Dr Shaheen
29	Financial Models for Sustainable Excellence	Oct 15-17, 2024	Dr M Chandra Sekhar
30	Women in Public Sector [for middle level management executives]	Oct 21-25, 2024	Ms J Kiranmai & Prof A Sridhar Raj
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34	Digital & Social Media Marketing – A Hands-on Approach	Nov 6-8, 2024	Mr M J Rama Krishna & Dr A Rakesh Phanindra
35	Happiness and Wellbeing for Managers	Nov 11-14, 2024	Dr Ujjal Mukherjee Dr K Bhavana Raj
36	Transformational Leadership	Nov 12-14, 2024	Prof Y Rama Krishna & Dr Swati Mathur
37	Valuation of Central Public Sector Enterprises	Nov 19-21, 2024	Prof Pawan Kumar Avadhanam
38	Managing Foreign Currencies Risk and Understanding Global Finance	Nov 19-21, 2024	Dr M Karthik & Dr G Rajesh
39	Consumer Behaviour in Digital Age	Nov 19-21, 2024	Dr Syed Azhar & Dr Swati Mathur

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41	Supervisory Development Programme [for the Executives of MSN Labs]	Dec 2-3, 2024	Dr Sinju Sankar
42	Data Visualisation Using Power BI	Dec 2-4, 2024	Mr K Srinivas
43	Digital Content Creation	Dec 4-5, 2024	Dr P V Vijay Kumar Reddy & Dr Muzamil Ahmad Baba
44	Cyber Attacks and Cyber Security	Dec 4-6, 2024	Dr Rakesh Phanindra
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51	CSR for High Impact Corporate Performance	Jan 22-24, 2025	Ms J Kiranmai
52	Personal Branding and Content Creation	Jan 24-25, 2025	Dr P V Vijay Kumar Reddy & Dr Muzamil Ahmad Baba
53	Sustainable Financial Management	Jan 24-25, 2025	Dr Shweta Mehrotra
54	Financial Planning and Wealth Management	Jan 24-25, 2025	Dr Mousumi Singha Mahapatra & Dr Harishankar Vidyarthi
55	Strategic Finance for Leaders in Public Sector Enterprises	Jan 28-30, 2025	Prof Y Rama Krishna
56	Diversity Inclusion and PoSH	Jan 30-31, 2025	Prof A Sridhar Raj & Dr Swati Mathur
57	ESG Reporting and Sustainability	Feb 11-13, 2025	Prof Ch Lakshmi Kumari
58	Sustainable Finance and Risk Management	Feb 21-22, 2025	Dr Shweta Mehrotra
59	Economic Freedom and Happiness	Feb 25-27, 2025	Dr Samarendra Kumar Mohanty & Dr Usha Nori
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