



Economic Growth Linkage Among Registered Units, Investment, And Exports Of Msme's In India: An Econometrics Analyses

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ABSTRACT

Micro, Small and Medium Enterprises (MSMEs) are the engine of promoting equitable development, which is very important for the country's economic growth. Admittedly, it has contributed to the overall increase in phrases of the Registered units, Investment and Export. The performance of MSMEs has an immediate effect on the development of India's entire economic system. This paper aims to examine the performance of registered units, investment, and export of the MSME sector towards the country's economic development. The paper correctly analyses the Indian MSME region and uses techniques such as Stationarity, Dicky-Fuller Test, and the VAR lag selection model. At last, it concludes.

Keywords: Economic growth, Investment, Export.

JEL Codes: C12, C22, E22, F63, L26.

Introduction

Micro, small, and medium enterprises (MSMEs) have performed an utter socio-economic improvement in India during the past few years. It significantly contributes to domestic and export production, low investment requirements, and new technology-oriented enterprises, providing employment opportunities to rural and urban people. The MSME sector is an essential pillar of the Indian economy as it significantly contributes to the growth of the Indian economy with a vast network of currently around 633.88 lakh registered operating units, generating employment of about 1109.89 lakhs and manufacturing more than 6000 products. This sector comprises 8 per cent of GDP and accounts for 45 per cent of manufacturing output and 40 per cent of exports directly and indirectly. Better planning and proper implementation are critical to the growth of MSMEs.

The present study is quite elongated, and the vector autoregression is employed to comprehensively understand the relationship between MSME registered units and exports and its impact on investment. The data are analyzed to determine the causality between investment and export in India and registered MSMEs and exports of India. Before exploring the causal relationship between investment and export, data were transformed into natural logarithms, and then the possible existence of unit roots in the data was examined. The Stationarity of each series is investigated by employing the Augmented Dickey-Fuller unit root test. The Schwarz Information Criterion and Akaike Information Criteria determine the number of lagged differences included.

Further, proceed with the VAR lag order selection criteria to choose the best lag length for the VAR time series model to examine the Granger Causality test for all the series performed. The primary empirical investigation has two purposes. The first investigates the long-run relationship between investment and export, while the second examines the short-run dynamic causal relationship between investment and export. The primary testing procedure requires three steps. The first step is to test whether the variables contain a unit root to confirm the Stationarity of each variable. This is done by using the Augmented Dickey-Fuller tests (ADF). In the second step, for the existence of a long-run co-integrating relationship among the variables. This is done by the use of the Johansen co-integration test. Finally, in the last step, if all variables

are integrated in the same order and co-integrated, then short-run and long-run causality tests can be computed using the Vector Error Correction Model (VECM) method suggested by Engle and Granger.

Review of Literature

Bidasari and Goso (2023), during the Covid-19 pandemic, the use of technology increased by 5% -10% and has the potential to increase by around 40% so that MSMEs follow the trend in current conditions and are supported by the financial literacy of MSME actors by increasing consumer knowledge, confidence and skills. Hence, they can manage finances well. The role of digitization for MSMEs is very supportive in understanding financial literacy; for this reason, this research was conducted to analyze scientific articles to map MSME digitization research and financial literacy by theme, location, research subject and research methods. The growing public awareness and need for understanding financial literacy is one of the factors in increasing financial literacy research.

Maria, Dahlia, and Desmintari (2023) suggest MSMEs are trading businesses managed by business entities or individuals that refer to productive economic business according to the criteria set by Law Number 20 of 2008. MSMEs play an essential role in the development of modern technology, but some MSMEs have trouble repaying loans due to soaring bank interest rates. There are difficulties in the production process due to soaring raw material prices.

Supari et al. (2022) Business and consumption when a pandemic requires MSMEs to make immediate adjustments. Digitalization Digitalization is one of the strategies MSMEs use to reduce the impact of the pandemic.

Bambang (2020) Developing digital-based MSMEs is an alternative to saving the MSME sector during the Covid-19 pandemic. However, the government and the Ministry of Cooperatives and SMEs have been trying to encourage digital transformation. In this way, the Covid-19 pandemic has made the digital entrepreneurship ecosystem grow.

Statement of the Problem

Performance analysis of MSMEs has different responses from different researchers in other studies, right from parameters like number of units, investment and export, which will help to understand its role in the country's economic development. A few literature reviews point out that small-scale industry development is dynamic, and a comprehensive one-time study, which explores the fundamental relationship among the variables that help judge the performance of small-scale industries at all times, is not possible.

Objectives of the study

1. To study the link among registered units, investment and exports in MSMEs
2. To analyze the performance of units, investment and exports of MSMEs towards economic development.

Methodology of the study

The present research paper is based on analytical. The data are retrieved from secondary sources collected from the World Bank data source, MSME Annual Report, RBI Bulletin, and website. The study period from 1972-73 to 2020-21. Methodology constitutes the steps generally adopted by studying a research problem and its logic. Appropriate mathematical and statistical tools are used to analyze the data. The techniques are the Vector Auto Regression (VAR) Lag model, Augmented Dickey-Fuller Unit root test, Granger Causality test and Johansen co-integration test.

Hypothesis of the Study

The following hypotheses were reformulated based on objectives for analysis and discussion to arrive at specific conclusions—Hypothesis on the linkage among Registered Units, investment and Exports: an econometric analysis of MSME.

H₀: There is no statistically significant relationship between investment and exports

H₁: There is a statistically significant relationship between investment and exports.

Data analysis and discussion

Table 1: Registered Units, Investment and Export of MSMEs in India

Year	Total Reg. MSMEs (lakh)	Investment (crore)	Export (crore)	Year	Total Reg. MSMEs (lakh)	Investment (crore)	Export (crore)
1972-73	0.19	0.13	0.18	1997-98	0.04	0.02	0.02
1973-74	0.13	0.18	-0.17	1998-99	0.12	0.03	0.02
1974-75	0.19	-0.17	0.11	1999-00	0.04	0.05	0.03
1975-76	0.10	0.11	-0.06	2000-01	0.15	0.05	0.05

1976-77	0.07	-0.06	0.06	2001-02	0.04	0.05	0.05
1977-78	0.14	0.06	-0.12	2002-03	0.19	0.05	0.05
1978-79	0.09	-0.12	0.16	2003-04	0.03	0.05	0.05
1979-80	0.11	0.16	-0.01	2004-05	0.06	0.61	0.05
1980-81	0.07	-0.01	-0.07	2005-06	0.17	0.28	0.61
1981-82	0.10	-0.07	-0.05	2006-07	0.42	0.13	0.28
1982-83	0.10	-0.05	0.24	2007-08	0.04	0.26	0.13
1983-84	0.09	0.24	0.02	2008-09	0.13	0.21	0.26
1984-85	0.07	0.02	-0.17	2009-10	0.13	0.20	0.21
1985-86	0.09	-0.17	-0.40	2010-11	0.17	0.08	0.20
1986-87	0.08	-0.40	0.57	2011-12	0.16	-0.07	0.08
1987-88	0.08	0.57	0.16	2012-13	0.17	-0.10	-0.07
1988-89	0.08	0.16	-0.15	2013-14	0.05	-0.16	-0.10
1989-90	0.06	-0.15	0.18	2014-15	0.05	-0.24	-0.16
1990-91	0.34	0.18	0.07	2015-16	0.24	-0.03	-0.24
1991-92	0.04	0.07	0.09	2016-17	0.09	-0.17	-0.03
1992-93	0.04	0.09	0.06	2017-18	0.07	-0.26	-0.17
1993-94	0.04	0.06	0.07	2018-19	0.04	-0.30	-0.26
1994-95	0.07	0.07	0.02	2019-20	0.06	0.04	-0.30
1995-96	0.12	0.02	0.04	2020-21	0.09	0.18	0.04
1996-97	0.14	0.04	0.02				

Source: World Bank Database

The actual number of the three variables, registered MSMEs, investment, and exports in India from 1972-73 to 2020-21, is depicted in Table 1. It is visible that all three variables are in increasing numbers.

Table - 2: Result of Stationarity of X_1 Variable (in Level) (in *Intercept*)

Null Hypothesis: Investment has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*		
Augmented Dickey-Fuller test statistic	0.81	0.99		
Test critical values:				
1% level	-3.70			
5% level	-2.98			
10% level	-2.63			
Dependent Variable: D(Investment)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Investment (-1)	0.02	0.03	0.81	0.43
D(Investment (-1))	0.41	0.21	2.02	0.06
C	0.21	0.25	0.87	0.39
R-squared	0.28	Mean dependent var		0.69
Adjusted R-squared	0.22	S.D. dependent var		0.80
S.E. of regression	0.71	Akaike info criterion		2.25
Sum squared resid	11.99	Schwarz criterion		2.39
Log-likelihood	-27.35	Hannan-Quinn criter.		2.29
F-statistic	4.60	Durbin-Watson stat		1.79
Prob(F-statistic)	0.02			

Source: Computed by Author by Using E-Views software

Table 2 shows the above result. The Augmented Dickey-Fuller Test Statistics of the X_1 variable, an investment of 99%, is more than the critical value 5% level and leads to accepting the null Hypothesis. Since H_0 is the series that has a unit root so, after taking this, the series is non-stationary. However, this should be stationary, so it has been tested further towards static in the following tables.

Table 3: Result of Stationarity of X_1 Variable (in Level) (*Trend and Intercept*)

Null Hypothesis: Investment has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 1 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.91	0.62
Test critical values:		
1% level	-4.34	
5% level	-3.59	
10% level	-3.22	

Source: Computed by Author by Using E-Views software

Table 3 indicates the series is non-stationary in level with trend and Intercept because the p-value is 62%.

Table 4: Result of Stationarity of X_1 Variable (1st Difference) (Intercept)

Null Hypothesis: D (Investment,2) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.59	0.00
Test critical values:		
1% level	-3.71	
5% level	-2.98	
10% level	-2.63	

Dependent Variable: D(Investment,3)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Investment (-1),2)	-1.13	0.20	-5.589769	0.00
C	0.02	0.16	0.155433	0.88
R-squared	0.56	Mean dependent var		0.00
Adjusted R-squared	0.55	S.D. dependent var		1.22
S.E. of regression	0.82	Akaike info criterion		2.51
Sum squared resid	16.09	Schwarz criterion		2.61
Log-likelihood	-30.66	Hannan-Quinn criter.		2.54
F-statistic	31.24	Durbin-Watson stat		2.06
Prob(F-statistic)	0.00			

Source: Computed by Author by Using E-Views software

Table 4 result shows the p-value in 1st differences with the Intercept, which is 0.00%, which is less than 5%, which signifies the series is stationary due to rejecting the null Hypothesis.

Table 5: Result of Stationarity of X_1 Variable (1st Difference) (*Trend and Intercept*)

Null Hypothesis: D(Investment,2) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.48	0.00
Test critical values:		
	1% level	-4.36
	5% level	-3.59
	10% level	-3.23

Source: Computed by Author by Using E-Views software

With trend and Intercept also, this is stationary, which is depicted in the above result Table 5.

Table 6: Result of Stationarity of X_2 Variable (in Level) (*in Intercept*)

Null Hypothesis: registered MSMEs have a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	0.23	0.97
Test critical values:		
	1% level	-3.69
	5% level	-2.97
	10% level	-2.62

Dependent Variable: D(registered MSMEs)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Registered MSMEs(-1)	0.01	0.03	0.23	0.82
C	1.02	0.83	1.22	0.23
R-squared	0.00	Mean dependent var		1.19
Adjusted R-squared	-0.04	S.D. dependent var		1.86
S.E. of regression	1.89	Akaike info criterion		4.18
Sum squared resid	93.35	Schwarz criterion		4.28
Log-likelihood	-56.59	Hannan-Quinn criter.		4.21
F-statistic	0.05	Durbin-Watson stat		2.15
Prob(F-statistic)	0.82			

Source: Computed by Author by Using E-Views software

The above result Table 6 shows the Augmented Dickey-Fuller Test Statistics of the X_2 variable that is registered MSMEs, which is 96.95 %, which is more the critical value 5% level leads to accepting the null Hypothesis. Since H_0 is the series that has a unit root so, after taking this, the series is non-stationary. However, this should be stationary, so it has been tested further towards static in the following tables.

Table 7: Result of Stationarity of X_2 Variable (in Level) (in *Trend and Intercept*)

Null Hypothesis: registered MSMEs have a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.14	0.50
Test critical values:		
1% level	-4.32	
5% level	-3.58	
10% level	-3.22	

Source: Computed by Author by Using E-Views software

Table 7 indicates the series is non-stationary in level with trend and Intercept because the p-value is 50.16%.

Table 8: Result of Stationarity of X_2 Variable (in 1st Difference) (in *Intercept*)

Null Hypothesis: D(registered MSMEs) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.38	0.00
Test critical values:		
1% level	-3.70	
5% level	-2.98	
10% level	-2.63	

Dependent Variable: D(registered MSMEs,2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(registered MSMEs (-1))	-1.07	0.20	-5.38	0.00
C	1.31	0.44	2.95	0.05
R-squared	0.54	Mean dependent var		-0.01
Adjusted R-squared	0.52	S.D. dependent var		2.77
S.E. of regression	1.92	Akaike info criterion		4.21
Sum squared resid	92.36	Schwarz criterion		4.31
Log-likelihood	-54.91	Hannan-Quinn criter.		4.24
F-statistic	28.96	Durbin-Watson stat		2.00
Prob(F-statistic)	0.00			

Source: Computed by Author by Using E-Views software

Result table 8 shows the p-value in 1st differences with Intercept, which is 0.00% and less than 5%, which signifies the series is stationary due to rejecting the null Hypothesis.

Table 9: Result of Stationarity of X_2 Variable (in 1st Difference) (in *Trend and Intercept*)

Null Hypothesis: D(registered MSMEs) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.38	0.00
Test critical values:		
1% level	-4.34	
5% level	-3.59	
10% level	-3.23	

Source: Computed by Author by Using E-Views software
With trend and Intercept also, this is stationary, which is depicted in the above result Table 9.

Table 10: Panel Unit Root Test Result:

Variables	Level Value (Probability)		1st Difference (Probability)	
	Intercept	Trend & Intercept	Intercept	Trend & Intercept
Investment	0.99	0.62	0.00*	0.00*
registered MSMEs	0.97	0.50	0.00*	0.00*

Source: Computed by Author by Using E-Views software, note: * indicates stationary.

Table 10 provides transparent information about the level probability values of the two independent variables, which are higher than 0.05 in both Intercept and Trend & Intercept. It shows that these variables have unit roots. Since the Null Hypothesis is the series, it has unit roots. Therefore, the first-order Difference of these variables is taken into consideration. It is clearly seen that both variables are stationary at the 1st Difference.

Moreover, it shows the Augmented Dicky-Fuller Test Statistics of the X_1 variable, an investment of 99.23 %, which is more the critical value at the 5% level, leading to accepting the null Hypothesis. Since H_0 is the series that has a unit root so, after taking this, the series is non-stationary.

While considering these aspects, it is summarized that the unit root test result satisfies the precondition of co-integration analysis. After stationary analysis, the co-integration test is performed to find the relationship among these variables. Before taking the co-integration test, we need to have proper lags of each variable. So, we will use VAR lag selection criteria to check the proper lags.

Lag Selection

Table 11: Result of Lag Selection Criteria

VAR Lag Order Selection Criteria

Endogenous variables: X_1 X_2 Y

Exogenous variables: C

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-272.92	NA	774454.80	22.07	22.22	22.11
1	-193.95	132.66	2895.05	16.48	17.06	16.64
2	-183.82	14.59	2745.71	16.38	17.41	16.67
3	-165.29	22.23	1410.66	15.62	17.09	16.03
4	-133.97	30.07*	287.70*	13.84*	15.73*	14.36*

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Source: Computed by Author by Using E-Views software

Table 11 Seen out of all lag selection criteria, all show four lags. Hence, the majority of cases are showing 4 lags. So here, 4 lags are selected. In each criterion except LR, the lower the value, the better the lag selection principle.

Conclusion

Micro, Small and Medium Enterprises have played a crucial role in the growth of the Indian economy. It is recorded that the growth rate of Registered units, investments and Exports of MSMEs increased from time to time. The Augmented Dicky-Fuller test X_1 variable, that is, investment is 99%, which is more than the critical value 5% level, leading to accepting the null Hypothesis. The result of the Stationarity of the X_1 variable

investment unit root test indicates that the p-value is less than 0.00%, which is less than 5%, which signifies the series is rejecting the null Hypothesis. Variable X_2 Registered units Augmented Dicky-Fuller test result, which is 96.95%, is more than the critical value 5% level and leads to accepting the null Hypothesis. The non-stationarity result of the p-value is 50.16%. It is clear that the linkage among the Registered units, Investment and Export of MSMEs plays a significant role in the growth of the Indian economy.

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