Industrial Sickness in the Small Scale Industrial Sector of India with Special Reference to Financial Gap

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Abstract

The major thrust of the present paper is to examine the estimates of the working capital gap in the small scale industrial sector of India during the period from 1981-82 to 2006-07, that is, the pre-reform period (1981-1990) and the post- reform period (1991-2006). The paper also analyzes the cause and effect relationship between working capital gap (WCG) and sickness in the small scale industrial sector of India by using the Granger causality test. The two variable vector auto regressive (VAR) model was utilized to check the existence of Granger causality between the variables of working capital gap and number of sick units (SICK) under the small scale industrial sector. In India, the working capital gap has significantly caused sickness in the small scale industrial sector, and the government of India framed an elaborate financial infrastructure comprising of banking and non-banking financial institutions to meet the credit requirements of the small scale industrial sector, but over the years, the organizational framework has failed to render the desired financial services for the small scale industrial sector for it to meet the challenges of globalization.

Keywords : small scale industrial sector, working capital gap, sickness, Granger causality, globalization, financial institutions

JEL Classification : C22, G01, L11, L25, L69

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The changing global economic scenario has thrown up many opportunities and challenges in front of the small scale industrial sector. Capital availability and formation is a necessary concomitant to enhance productivity and look for new markets in other countries. Availability of sufficient funds is a pre-requisite for the mobilization of real resources for organizing production. It would be imprudent to plan for industrial development without ensuring the provision of adequate and timely finance and credit facilities. The issue of credit dispensation is especially important for the small scale industrial sector in India because of greater dependence on borrowed capital in their day to day operations. Small scale industrial units invariably rely on friends, relatives, or borrow from money lenders at exorbitant rate of interest for initiating the enterprise and later on try to obtain a loan from banks and other financial institutions. Though, the government of India has been laying emphasis on providing financial and technological support to the small scale industrial sector through the initiation of various measures, the most significant being the setting up and promotion of Small Industries Development Bank of India, yet, lack of adequate and timely financing on competitive terms remains the single most important constraint to the growth and development of this vital sector. The demand for finance, implicit as well as explicit, from the small scale industrial sector will be substantial, considering its size, structure, growth pattern, need for restructuring, and technology development (Bala Subrahmanya, Mathirajan, & Balachandra, 2002).

Although the small scale industrial sector of India experienced growth in terms of number of units over the period, yet, these units suffered from paucity of funds and heavy overhead burden leading to severe resource crunch. To fulfill the economy's warranted growth rate and to successfully bear upon both national and international competition in the wake of the current reformed era and accelerated pace of deregulation of the financial sector, it became imperative to examine the performance of the small scale industrial sector from the financial perspective. In this context, this paper endeavors to analyze the industrial sickness in the small-scale industrial sector of India along with the assessment of working capital requirements in the reformed era.

In the realm of comparative studies, The Vidarbha Industries Association (1976), Papola (1981), and Ganpathy (1986), asserted that most of the difficulties of the small scale sector arise from financial, administrative control,

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frequent interest changes, inadequate loans by commercial banks, and recession in demand, which tend to make the units sick. Chattopadhyay (1995) observed that sick industrial units have been suffering from managerial inefficiency, demand recession, obsolete plants, machinery, and labour problems. The small scale sector is being deprived of financial aid by the financial institutions, they lend them only when the security of their loan is guaranteed. Mishra (2006) in his regional study of Orissa highlighted that sickness and closure of small scale industries in the state were lack of demand, tax problem, competition in local markets, financial problems, and attitude of the entrepreneurs. Subrahmanian and Pillai (1994) found that the major problems encountered by this sector included low capacity utilization, low factor productivity, unfavourable usage productivity relationship and industrial sickness, which emerged due to severe financial and marketing problems. In a recent study, Singh (2011) and Chowdhary (2012) found that the root cause of sickness in the small scale industrial sector is poor management and lack of finance. The worsening liquidity position and deteriorating standards of maintenance accelerate the wear and tear of existing assets, leading the unit to a state of operational thrombosis.

Thus, a brief literature review reveals the complexity of the issue, as no consensus seems to be evolving regarding the sickness in small scale industrial sector with special reference to the financial gap. The present study is an endeavor in this direction and tries to enrich literature on measuring **(a)** the financial performance and working capital gap of small scale industrial sector in India and endeavored to ascertain the production structure in it, **(b)** to study the growth and magnitude of sickness in the small scale industrial sector of India in the pre and post reform period.

To present the analysis in a lucid way the paper has been divided into five distinct sections. Section-I discusses the sources of the data and provides the methodology applied to obtain the working capital gap of the Indian small scale industrial sector. The Section II focuses on financial infrastructure along with various policy measures undertaken by the government for the development of the small scale industrial sector in India. The Section- III provides the magnitude of sickness in the small scale industrial sector of India. The Section IV examines the estimates of the working capital gap in the small scale industrial sector of India during the period from 1981-82 to 2006-07. The growth rate of the working capital gap was also calculated for the aggregate period (1981-82 to 2006-07) as well as for the two sub periods, that is, the pre-reform period (1981-82 to 1990-91) and the post reform period (1991-92 to 2006-07). Furthermore, for analyzing the cause and effect relationship between working capital gap (WCG) and sickness in the small scale industrial sector of India, the Granger causality test was applied. Two variable vector auto regressive (VAR) model was utilized to check the existence of Granger causality between the variables of working capital gap and the number of sick units (SICK) under the small scale industrial sector, and the last section concludes the discussion along with policy implications.

Section- I

The present paper is confined to the period from 1981-82 to 2006-07. The choice of the terminal year was governed by the availability of latest data. The required data were downloaded from the official website India Stat. Tabular analysis and growth rates have been used to explain the various characteristics of the small scale industrial sector of India. The average annual growth rates of the variables under consideration were estimated using the linear-spline function also known as piecewise semi-log trends. The application of linear-spline function helps to obtain the growth rates of more than one period in a single regression estimation. The use of such a regression model becomes relevant when a significant structural break exists in the time series under evaluation. To compute the working capital gap, the methodology suggested by the Nayak Committee (1992) was used. According to the assessment made by the Nayak Committee (1992), the working capital accounted for 78% of the total bank credit to the small scale industrial sector, while the remaining 22% was accounted for by the term loans. Therefore, the present study approximated actual working capital availability to small scale sector as:

Working Capital Availability (WCA) = 0.78 × Total SSIs Advances by Scheduled Commercial Banks

As per the recommendations of the Nayak Committee (1992), the minimum level of working capital credit to

the small scale industrial sector should be fixed at 20% of its annual turnover. Though, the credit requirement of different industries vary due to the nature of the industry, production cycle, and the availability of credit from other sources, yet, it may be used as a suitable benchmark for finding out an approximation of working capital requirements. Thus, the working capital requirements for small scale industrial sector have been worked out as:

Working Capital Requirements (WCR) = $0.20 \times$ Total Production of SSIs

After finding out the estimates of working capital availability (WCA) and working capital requirement (WCR), the working capital gap was computed for each year from 1981-82 to 2006-07 as follows:

Working Capital Gap = Working Capital Requirement - Working Capital Available

For analyzing the cause and effect relationship between working capital gap (WCG) and sickness in the small scale industrial sector of India, Granger causality test was applied. The following two variable vector auto regressive (VAR) model was utilized to check the existence of Granger causality between the variables of working capital gap (WCG) and number of sick units (SICK) under the small scale industrial sector :

$$WCG = f\,(WCG\,(\text{-}1)\;\;WCG\,(\text{-}2)\;\;SICK\,(\text{-}1)\;\;SICK\,(\text{-}2))$$
$$SICK = f\,(WCG\,(\text{-}1)\;\;WCG\,(\text{-}2)\;\;SICK\,(\text{-}1)\;\;SICK\,(\text{-}2))$$

The following possibilities are expected:

If the coefficients of SICK (-1) and SICK (-2) are significant in the first equation and the remaining coefficients of the system are insignificant, then unidirectional causality from sickness to WCG exists; if the coefficients of WCG (-1) and WCG (-2) are significant in the second equation and the remaining coefficients of the system are insignificant, then unidirectional causality from WCG to sickness exists. If the coefficients of SICK (-1) and SICK (-2) are significant in first equation and coefficients of WCG (-1) and WCG (-2) are significant in the second equation, then the bidirectional causality from WCG-sickness-WCG exists; if all coefficients of the above two equations are insignificant, then the WCG and sickness are independent. However, to check the combined significance, the f-statistics was utilized.

Section-II

Institutional credit also acts as a catalyst and lubricant in the process for vigorous growth of the small scale industrial sector so as to accelerate the country's economic growth. Availability of credit would contribute to the modernization of this sector and enhance its productivity and competitiveness. The Indian credit system, as it has emerged, is a product of evolution as well as intervention. The broad objectives of the various policy measures undertaken by the Government for the development of the small-scale industrial sector in India are to **(a)** institutionalize credit, **(b)** enlarge its coverage, and **(c)** ensure the provision of timely and adequate credit at reasonable interest rates to large segments of the population as far as possible. In order to give more impetus to the small scale industrial sector in India, a number of central and state level institutions have been set up to look after different aspects of the development programmes. The institutional support and availability of financial infrastructure for the promotion of the small scale industrial sector is summarized in the Tables 1 and 2.

Although the Government of India framed an elaborate financial infrastructure comprising of banking and non-banking financial institutions to meet the credit requirements of the small scale industrial sector, but over the years, the organizational framework failed to render the desired services to improve the efficiency of the small scale industrial sector. This is because of an overlapping in the functioning of several government organizations and virtual absence of inter-institutional coordination in the working of these agencies. Hence, the government organizations need to clearly earmark the areas of their functioning along with an improvement in coordination of activities for successful implementation of policies designed for the small scale industrial sector of India.

Table 1. Institutional Support for Promotion of the Small Scale Industrial Sector

	Institutions	Major Activity
A.	Central Level Small Industries Development Organization (SIDO)	Apex Body for SSI Promotion
1.	Small Industries Service Institutes (SISIs) (28), Branches (30), Extension Centres (38), Field Testing Centres (18), Production Centres (94), and Foot wear training centres (6) etc.	Training manpower resources for promotion of SSI
2.	National Small Industries Corporation (NSIC)	Marketing machinery on hire purchase, import of raw materials, exhibition, and so forth
3.	National Institute of Small Industries Extension Training (NISIET)	Research, Training, Consultancy, and so forth
4.	National Institute for Entrepreneurship and Small Business Development (NIESBUD)	Co-ordination of Entrepreneurship Development Programmes (EDP) organized by various EDP Institutions in the country
5.	Small Industries Development Bank of India (SIDBI)	Finance, direct, and indirect assistance
B.	State Level	
1.	Directorate of Industries	State level apex body for SSI promotion
2.	Small Industries Development Corporation (SIDC)	Promotion of SSI through industrial estate, and so forth
3.	Small Industries Marketing Corporation (SIMC)	Long term finance
C.	District Level District Industries Centres	Provision of multiple services and support under a single roof.

Source : Development Commissioner (Small Scale Industries). (2002). Development of small scale industries. New Delhi : Ministry of SSI.

Table 2. Availability of Financial Infrastructure for the Small Scale Industrial Sector

	Bank/Institution	Area of Assistance
1.	Commercial Banks-exclusive small industry branches	Finance-working capital + Term loans
2.	State Financial Corporations (SFCs)	Finance-Term Loans, soft loans for technology upgradation and modernization, rehabilitation and sick units
3.	National Bank for Agriculture and Rural Development (NABARD)	Refinance facilities for rural artisans, village, and cottage industries
4.	Regional Rural Banks and Co-operative Banks	Credit support to small industry, particularly village industries and tiny units
5.	National Small Industries Corporation (NSIC) and State Small Industries Development Corporations (SSIDCs)	Supply of machinery on hire purchase basis and provision of technical and consultancy services among others.
6.	Venture Capital Funds Companies	Risk capital to small Industries
7.	Small Industries Development Bank of India (SIDBI)-State Level Branches and Small Industry Cluster Branches	All round support: direct and indirect Finance, technology upgradation and modernization, quality improvement, marketing support through exhibitions, and so forth

Source: Reserve Bank of India. (1992). A report of the committee to examine the adequacy of institutional credit to the SSI sector and related aspects. Mumbai : Rural Planning and Credit Department.

Section – III

The sickness in the small scale industrial sector of India has been defined differently by different organizations and agencies. Small Industries Development Organization (SIDO) defined a sick unit as one which operates below 20% of its installed capacity. Reserve Bank of India (RBI), in 1991, set up a committee under the chairmanship of Nayak, to examine the adequacy of institutional credit to the small-scale industrial sector. The committee recommended several measures to deal with sickness. So, based on the recommendations of the Nayak committee, RBI modified the definition of sick SSI units as : A SSI may be classified as sick if **(a)** any of its borrowal accounts has a doubtful advance, that is, principal or interest in respect of any of its borrowal accounts has remained

outstanding for a period exceeding 2 to 5 years, **(b)** there is erosion in the net worth due to the accumulated cash losses to the extent of 50% or more of its peak net worth during the preceding two accounting years. The latest definition of sickness given by the working group of rehabilitation of the sick units set up by the RBI (Kohli committee) is : A small enterprise should be considered sick if **(a)** any of the borrowal accounts of the unit remain substandard for more than six months, **(b)** there is erosion in the net worth due to accumulated cash losses to the extent of 50% of its net worth during the previous accounting year, and **(c)** the unit has been in commercial production for at least 2 years."

As per the third census, the following criteria were adopted to identify sick/ incipient sick units:

(i) Continuous decline in gross output compared to the previous two financial years;

(ii) Delay by more than 12 months in repayment of loan taken from institutional sources;

(iii) Erosion in the net worth to the extent of 50% of the net worth during the previous accounting year.

Combining the three yardsticks used to measure sickness, that is, **(i)** delay in repayment of institutional loan over one year, **(ii)** decline in net worth by 50%, and **(iii)** decline in output during the last three years, about 14.47% of the units in the registered small scale industrial sector were identified either as sick or incipient sick, while this

Table 3. Year Wise Performance of Sick Small Scale Industrial Units in India

(Amount in ₹ Crores at current Prices)

Year	Sick SSI Units	Amt O/S	Potentially viable Units	%age of Potentially viable Units	Amt O/S	Non- viable Units	%age of non- viable Units	Amt O/S	Viability not decided
1986-87	204259	1542	12256	6.00	406.19	185977	91.05	1269.97	6026
1987-88	217436	1980	12954	5.96	450.68	198635	91.35	1397.74	5847
1988-89	186441	2243	16042	8.60	568.27	168006	90.11	1576.54	2393
1989-90	218828	2427	16451	7.52	590.5	200092	91.44	1741.07	2285
1990-91	221472	2792	16140	7.29	693.12	202998	91.66	1997.16	2334
1991-92	245575	3101	19210	7.82	728.9	223336	90.94	2256.14	3029
1992-93	238176	3443	21649	9.09	798.79	213804	89.77	2506.94	2723
1993-94	256452	3680	16580	6.47	685.93	234265	91.35	2842.25	5607
1994-95	268815	3547	15539	5.78	597.93	249375	92.77	2842.40	3901
1995-96	262376	3722	16424	6.26	635.82	240168	91.54	2943.65	5784
1996-97	235032	3609	16220	6.90	479.31	213014	90.63	3031.59	5798
1997-98	221536	3857	18686	8.43	455.96	199634	90.11	3296.58	3216
1998-99	306221	4313	18692	6.10	376.96	271193	88.56	3746.07	16336
1999-00	304235	4608	14373	4.72	369.45	276643	90.93	4007.86	13219
2000-01	249630	4506	13076	5.24	399.17	225488	90.33	3943.2	11066
2001-02	177336	4819	4493	2.53	416.41	167574	94.50	4146.74	5269
2002-03	167980	5706	3626	2.16	624.71	162791	96.91	4868.62	1563
2003-04	143366	5773	2406	1.68	551	138081	96.31	4937.00	2938
2004-05	138041	5380	3922	2.84	435	132153	95.74	4884	1966
2005-06	126824	4981	4594	3.62	498.16	117148	92.37	4141.00	5082
2006-07	114132	5267	4287	3.76	427.46	109011	95.51	4757.00	834
GR (%)	(-) 2.41	5.50	(-) 8.15	(-)5.74	(-) 1.37	(-) 2.17	0.24	6.65	(-) 1.30
(*p* -Value)	(0.012)	(0.000)	(0.000)	(0.000)	(0.107)	(0.017)	(0.004)	(0.000)	(0.628)

Note: O/S stands for amount outstanding in ₹ crores; Figures in the parenthesis are the *p* - values; GR represents average annual growth rates.

Source: Reserve Bank of India. (2010). Handbook of statistics on Indian Economy. Mumbai: RBI.

percentage was only 8.25% in case of unregistered units (Third All India Census of Small Scale Industries, 2001-02).

The magnitude of sickness in the small scale industrial sector of India can be ascertained from the Table 3. The Table shows that out of the total sick small scale industrial units, the number of non-viable units are more than 90% in most of the years under study. Non-viable units are those units, which have no chance of revival and rehabilitation. Furthermore, the data shows that in the small scale industrial sector, the figures of sickness are quite alarming as 114132 units at the all India level were sick in 2006-07. Out of these sick units, 4287 units were potentially viable, 109011 units were potentially non viable, while 834 units were those whose viability was yet not decided. Moreover, the analysis shows a negative annual growth rate of sick small scale industrial units to the tune of (-) 2.41 % during the time span of 1986-87 to 2006-07, yet, the magnitude of sickness in the small scale industrial sector of India is quite high and is non-ignorable by all standards. Growth rates of potentially viable, non-viable, and viability not decided units was (-) 8.15% , (-) 2.17%, and (-) 1.30% respectively. Therefore, negative and highly significant growth rate of the potentially viable units is a matter of serious concern.

Furthermore, the growth rates of the amount outstanding for sick small scale industrial units was 5.50% per annum, while for potential viable and non-viable units, the growth rates were (-) 1.37 % and 6.65% , respectively. High indebtedness in the small scale industrial units and non-viable units hampers the expansion capacity and ability to generate employment in the Indian small scale industrial sector. Thus, the high percentage of sick units in the Indian small scale sector reiterates the necessity to reformulate the existing policies dealing with this sector in the reformed era.

Section-IV

Finance is the life-blood of business in any productive sphere, and its vital need is more realized where it is lacking, that is, in the small scale industrial sector of India. The importance of finance in this field is as fundamental as elsewhere and every problem of the small scale industrial sector concerning production, material, quality, or marketing is in the ultimate analysis a financial one. Adequate finance is a pre requisite for proper organization of production and the purchase of raw materials. Therefore, credit is the prime input for sustained growth of the small scale industrial sector, and its mobilization for meeting fixed and working capital needs poses the foremost problems. Credit provided for creation of fixed assets like land, building, plant and machinery is called long term credit, and credit provided for running the industry for its day-to-day requirement for purchasing raw material and other inputs like electricity and water, and so forth, and for the payment of wages and salaries is called short-term credit or working capital. The shortage of working capital has been found to be one of the prime reasons for the widespread sickness in the small scale industrial sector. In India, the government has made a strong commitment to assist small scale enterprises in obtaining financial resources, but still, the inadequacy of credit exists. One of the universal problems that hinders and unhinges the small scale industrial sector is the paucity and non-availability of adequate finance at the right time. In the small-scale industrial sector of India, this sector encompasses a diverse range from handicrafts to ancillaries, and their financial requirements also differ, and hence, their needs are to be met differently. Though many other elements such as technology, management, and so forth, are important, but adequate and timely finance is a necessary pre-condition for the promotion and development of the small scale industrial sector.

The small scale industrial sector also faces hurdles in getting support from government agencies because of lack of technical competence of the staff of these agencies to understand the industry specific problems. Thus, as a result, there exists a crucial gap between the requirements and availability of working capital to the small scale industrial sector. In this context, an attempt has been made to compute the working capital gap using the methodology suggested by the Nayak Committee (1992). According to the assessment made by the Nayak Committee (1992), the working capital accounted for 78% of the total bank credit to the small scale industrial sector, while the remaining 22% accounted for the term loans. Therefore, the present study approximated actual working capital availability to small scale sector as:

Table 4. Working Capital Gap in the Small Scale Industrial Sector of India

(₹ Crore)

Year	SSI Production SSI	Advances by SCBs	Advances as percentage of Production	Actual Working Capital*	Minimum Credit Requirement**	Working Capital Gap
1981-82	32600	4464	13.69	3481.92	6520.00	3038.08
1982-83	35000	5389	15.40	4203.42	7000.00	2796.58
1983-84	41600	6537	15.71	5098.86	8320.00	3221.14
1984-85	50500	7829	15.50	6106.62	10100.00	3993.38
1985-86	61200	9127	14.91	7119.06	12240.00	5120.94
1986-87	72300	10659	14.74	8314.02	14460.00	6145.98
1987-88	87300	12968	14.85	10115.04	17460.00	7344.96
1988-89	106400	14635	13.75	11415.30	21280.00	9864.70
1989-90	132300	15969	12.07	12455.82	26460.00	14004.18
1990-91	78802	17938	22.76	13991.64	15760.40	1768.76
1991-92	80615	18939	23.49	14772.42	16123.00	1350.58
1992-93	84413	20975	24.85	16360.50	16882.60	522.10
1993-94	98796	23978	24.27	18702.84	19759.20	1056.36
1994-95	122154	29175	23.88	22756.50	24430.80	1674.30
1995-96	147712	34246	23.18	26711.88	29542.40	2830.52
1996-97	167805	38196	22.76	29792.88	33561.00	3768.12
1997-98	187217	45771	24.45	35701.38	37443.40	1742.02
1998-99	210454	51679	24.56	40309.62	42090.80	1781.18
1999-00	233760	57035	24.40	44487.30	46752.00	2264.70
2000-01	261297	60141	23.02	46909.98	52259.40	5349.42
2001-02	282270	67107	23.77	52343.46	56454.00	4110.54
2002-03	314850	64707	20.55	50471.46	62970.00	12498.54
2003-04	364547	71209	19.53	55543.02	72909.40	17366.38
2004-05	429796	83498	19.43	65128.44	85959.20	20830.76
2005-06	497842	101285	20.34	79002.30	99568.40	20566.10
2006-07	709398	127323	17.95	99311.94	141879.60	42567.66

Note:* 78% of Total Bank Credit to SSIs as per Nayak Committee (1992) ** 20% of SSIs Production

Source: 1) Reserve Bank of India. (2011). Statistical tables related to banks in India. Mumbai: RBI.

2) Development Commissioner (Small Scale Industries). (2007). Small scale industries in India: An engine of growth. New Delhi :

Table 5. Growth of Working Capital Gap in the Small Scale Industrial Sector of India

Parameters	Entire Period (1981-82 to 2006-07)	Pre-Liberalization Period (1981-82 to !990-91)	Post-Liberalization period (1991-92 to 2006-07)
A	7.65*** (0.000)	8.00*** (0.000)	3.77*** (0.000)
B	0.055** (0.045)	0.085 (0.244)	0.247*** (0.000)
R^2	16%	16.5%	86%
F	4.46 (0.045)	1.58 (0.244)	83.91 (0.000)

Note: Figures in the parenthesis are the p - values; A = intercept (constant in regression) , B = average annual growth rate of working capital gap

** Indicates that the coefficient is significant at the 5% level of significance.

*** Indicates that the coefficient is significant at the 1% level of significance.

Working Capital Availability (WCA) $= 0.78 \times$ Total SSIs Advances by Scheduled Commercial Banks

As per the recommendations of the Nayak Committee (1992), the minimum level of working capital credit to the small scale industrial sector should be fixed at 20% of its annual turnover. Though, the credit requirement of different industries vary due to the nature of the industry, production cycle, and the availability of credit from other sources, yet, it may be used as a suitable benchmark for finding out an approximation of working capital requirements. Thus, the working capital requirements for the small scale industrial sector have been worked out as:

Working Capital Requirements (WCR) $= 0.20 \times$ Total Production of SSIs

Table 6. Table Estimated Var Results

	SICKNESS IN SSI	WORKING CAPITAL GAP in SSI
SICKNESS_IN_SSI(-1)	0.708278*	-0.071906*
	(0.24067)	(0.05448)
	[2.94289]	[-1.31976]
SICKNESS_IN_SSI(-2)	-0.586199*	0.026121*
	(0.25458)	(0.05763)
	[-2.30261]	[0.45324]
WORKING_CAPITAL_GAP(-1)	-6.344348*	0.778050*
	(2.00939)	(0.45488)
	[-3.15736]	[1.71044]
WORKING_CAPITAL_GAP(-2)	0.882677*	0.285890*
	(2.04159)	(0.46217)
	[0.43235]	[0.61858]
C	228600.2*	11610.98*
	(81392.2)	(18425.5)
	[2.80862]	[0.63016]

* Values are coefficients of independent variable:
• Values in ( ) brackets are standard errors:
• Values in [   ] brackets are *t* values.

Table 7. Least Square Estimates of Var Model

	Coefficient	Std. Error	*t*- Statistic	Prob.
C (1)	0.708278	0.240674	2.942890	0.0065
C (2)	-6.344348	2.009386	-3.157356	0.0038
C (3)	-0.586199	0.254581	-2.302607	0.0289
C (4)	0.882677	2.041591	0.432347	0.6688
C (5)	228600.2	81392.23	2.808624	0.0090
C (6)	-0.071906	0.054484	-1.319765	0.1976
C (7)	0.778050	0.454883	1.710441	0.0982
C (8)	0.026121	0.057632	0.453244	0.6539
C (9)	0.285890	0.462173	0.618578	0.5412
C (10)	11610.98	18425.48	0.630159	0.5337

Note : C1- C10 stand for coefficients of independent variable

Equation 1: SICKNESS_IN_SSI = *C* (1)*SICKNESS_IN_SSI(-1) + *C* (2) *WORKING_CAPITAL_GAP(-1) + *C*(3)*SICKNESS_IN_SSI(-2) + *C* (4)*WORKING_CAPITA_GAP(-2) + *C* (5)

R-squared	0.823357	Mean dependent var	214866.7
Adjusted R-squared	0.772887	S.D. dependent var	57620.85
S.E. of regression	27460.01	Sum squared resid	1.06E+10
Durbin-Watson stat		1.827429	

Equation II: WORKING_CAPITAL_GAP = *C* (6)*SICKNESS_IN_SSI(-1) + *C* (7)*WORKING_CAPITAL_GAP(-1) + *C* (8)*SICKNESS_IN_SSI(-2) + *C* (9)*WORKING_CAPITAL_GAP(-2) + *C* (10)

R - squared	0.737308	Mean dependent var	8732.470
Adjusted *R* - squared	0.662253	S.D. dependent var	10696.48
S.E. of regression	6216.365	Sum squared resid	5.41E+08
Durbin-Watson stat		1.606697	

Table 8. Wald Test

Null Hypothesis	Wald Statistics	*P*-Value	Decision
H0 : C(1) = C(3) =0	11.29	0.0035	Reject Null Hypothesis
H0 : C(2) = C(4) =0	10.51	0.0052	Reject Null Hypothesis

After finding out the estimates of working capital availability (WCA) and working capital requirement (WCR), the working capital gap was computed for each year from 1981-82 to 2006-07 as follows:

Working Capital Gap (WCG) = Working Capital Requirement (WCR) × Working Capital Available (WCA)

The Table 4 provides the estimates of the working capital gap in the Indian small scale industrial sector during the period from 1981-82 to 2006-07. If we compare the minimum working capital requirement of the small-scale industrial sector, as prescribed by the Nayak Committee, this figure stood at ₹ 141879.60 crore (20% of SSIs production) in the year 2006-07. The actual working capital credit given in the year 2006-07 was ₹ 99311.94 crore (78% of bank credit to the small scale sector) and there was a short fall of working capital to the tune of ₹ 42567.66 crore in the small-scale industrial sector of India. Hence, there exists a huge gap between the minimum credit requirement and the actual credit given to the small scale industrial sector. This reflects that there is a considerable shortfall in the availability of credit to this sector from the scheduled commercial banks.

Furthermore, it is essential to examine the growth rate of the working capital gap over a period of time. To find out the growth rates of the working capital gap, the whole data was divided into the entire period (1981-82 to 2006-07), the pre-reform period (1981-82 to 1990-91), and the post reform period (1991-92 to 2006-07). The following regression was estimated to get the annual growth rate :

Table 9. Pairwise Granger Causality Tests

Sample: 1 21

Lags: 2

Null Hypothesis	F-value	P-value
SICK does not Granger Cause WCG	2.68476	0.1031
WCG does not Granger Cause SICK	4.22470**	0.0367

Note : **stands for significance at 5 % level of significance.

$$LogWCG_t = \alpha + \beta t + \varepsilon_t$$

It is evident from the Table 5 that working capital gap (WCG) for the entire period increased at a statistically significant average annual growth rate of 5.5% per annum. The comparison of growth rates of WCG over the two sub periods, namely, the pre reform and the post reform period showed that the growth rate of WCG accelerated from 8.5% during the period from 1981-82 to 1990-91 and a statistically highly significant growth of 24.7% was observed in the period from 1991-92 to 2006-07. Thus, during the post reform period, the gap of working capital has been observed to be rising at a faster rate relative to the pre reform period, thereby reflecting a considerable shortfall in the availability of credit to the small scale industrial sector from the banks in the reformed era. For analyzing the cause and effect relationship between working capital gap and sickness in the small scale industrial sector of India, the Granger causality test was applied. The following two variable vector auto regressive (VAR) model was utilized to check the existence of Granger causality between the variables of working capital gap (WCG) and number of sick units (SICK) under the small scale industrial sector :

$$WCG = f\,(WCG\,(\text{-}1) \quad WCG\,(\text{-}2) \quad SICK\,(\text{-}1) \quad SICK\,(\text{-}2))$$
$$SICK = f\,(WCG\,(\text{-}1) \quad WCG\,(\text{-}2) \quad SICK\,(\text{-}1) \quad SICK\,(\text{-}2))$$

The Table 6 shows the estimated vector auto regressive result of sickness and working capital gap in the small scale industrial sector. Whereas, the Table 7 demonstrates the estimates of the VAR model, which examines that the coefficients $C1$, $C2$, and $C3$ have a significant impact on sickness in the small scale industrial sector of India. Furthermore, coefficient of determination is lesser than the value of the Durbin Watson test in both cases (sickness in the small scale industrial sector as well as in the working capital gap), which proves that the given two equations are non-spurious regression. The Table 8 displays that the Wald statistic for equation (1) is 11.29, which is statistically significant at the 5% level. The indication is that the null hypothesis - sickness in the small scale industrial sector does not Granger-cause working capital gap can be rejected. Whereas, for equation (2),the Wald statistic is 10.51, which is significant at the 5% level. This means that the null hypothesis - working capital gap does not Granger cause sickness in the small scale industrial sector can be rejected. Therefore, bidirectional causality from WCG-sickness-WCG exists.

The Table 9 shows the results of pairwise Granger causality test for the small scale industrial sector in India, which was used to test the hypothesis of the cause and effect relationship between the two aforementioned variables. The analysis of the Table 9 reveals that the hypothesis - sickness in the small-scale industrial sector does not Granger Cause WCG has not been rejected, whereas the hypothesis - WCG does not Granger cause sick has been completely rejected. It inferred from the analysis that the rising WCG is a significant driver of sickness in the small scale industrial sector of India.

On another site, causality from sickness to WCG is missing. Thus, a unidirectional causality has been observed. Therefore, on the basis of the actual availability and projected requirements of credit and the gap between the two, the situation is critical and banks have still a long way to travel to meet genuine credit requirements of the small scale industrial sector in the post reformed era. Hence, considering the needs of this sector, the volume and sources of industrial finance are quite inadequate and unsatisfactory in India. The undergoing metamorphic changes in the Indian financial system must ensure less burdensome and continuous flow of financial resources, especially the working capital, for sustainable growth of the small scale industrial sector in India.

Section – V

The analysis of the financial performance of the small-scale industrial sector in India has revealed that a large number of small scale industrial units are afflicted with the problem of sickness, and the prime reason for this phenomenon is the shortage of working capital in this sector. The results have showed that the figures of sickness are quite alarming, which is a cause of serious concern for planners and policy makers to meet the challenges of globalization in the reformed era. Furthermore, it was also observed that the annual growth rate of the amount outstanding against the small scale industrial sector in India was 5.50% per annum, while for potentially viable

units and potentially non-viable units, it were (-)1.37% and 6.65% respectively. Therefore, high indebtedness of the small scale industrial units and potentially non-viable units hampers the development of this sector and increases the non performing assets of the financial institutions. A shortfall of the working capital has been observed in the small-scale industrial sector of India. It was also observed that the growth rate of working capital gap in India grew at the rate of 5.5% per annum in the entire period. Furthermore, in the pre reform period, it grew by 8.5%. However, in the post reform period, the working capital gap increased to 24.7% in India. Hence, during the post reform period, the working capital gap has risen, thereby reflecting a shortfall in the availability of working capital to the small scale industrial sector from the financial institutions. Furthermore, the application of VAR model, Wald Test, Granger causality Test, and *F*-statistics have proved that in India, the working capital gap has significantly caused sickness in the small scale industrial sector.

The Government of India has framed an elaborate financial infrastructure comprising of banking and non-banking financial institutions to meet the credit requirements of the small scale industrial sector, but over the years, the organizational framework failed to render the desired financial services for the small scale industrial sector to meet the challenges of globalization. Hence, on the basis of the actual availability and projected requirements of credit, the situation is critical as the financial institutions have still a long way to travel to meet the genuine credit requirements of the small scale industrial sector. Therefore, the Indian financial system must ensure cheap availability and continuous flow of credit to ensure the sustainable growth of the small scale industrial sector in India.

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