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The Staggering Indian Industry: Is Finance Responsible?

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Abstract – The paper is based on the work done under UGC sponsored major research project. It provides a sectoral analysis of the role of financial advancement in the growth of the real sectors of the economy. Using unit root testing, the techniques of Granger causality, and vector autoregressive model, it investigates the relationship between an increase in bank credit and industrial growth in India for the time period 2007-2013. It is found, using monthly data, that in recent years the increasing bank credit neither promotes the growth of the industrial sector, nor the service sector. The financial sector has been responding positively to the demands of the growing real sector. The growth of the Indian economy is thus not a case of finance-led growth any longer. This being so there should be no hesitation on the side of policymakers to pursue restrictive monetary policies to control inflation. The neglected informal sector of the economy needs to be brought into the ambient of bank finance. This could help promote growth.

Keywords – Industrial Growth, Financial Development, Vector Auto-Regression, Granger Causality.

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1. INTRODUCTION

It is generally presumed that the growth of the real economy is circumscribed by the level of financial advancement. The validity of this proposition however needs to be theoretically examined and empirically tested. In the economics literature, the relationship between financial development and economic growth has remained an important topic of debate. Several studies have reviewed different aspects of this relationship at both theoretical and empirical levels.

This paper begins with a review of the existing theoretical and empirical literature on the subject. The third section is devoted to studies relating to the Indian economy. The next section spells out the sources of data and explains the econometric methodology used. Section five gives detailed results of the empirical analyses and finally, the last section brings out the policy implications of results obtained and concludes.

2. LITERATURE REVIEW

Most of the early contributions to literature suggest a strong positive correlation between the development of the financial and the real sectors of an economy. Pattrick (1966) suggested that the pattern of the relationship depends on the stages of economic growth. In the early stages, financial expansion promotes economic growth, documenting a supply-leading role. As the economy develops, there is a demand for a greater variety of financial assets. This leads to the creation of a variety of financial institutions and a greater array of financial assets. This is the demand-following stage, wherein the financial system develops in response to the demand for financial services. The focus of Goldsmith (1969) was on the relationship between investment efficiency and financial development; McKinnon and Shaw (1973) stressed the growth-promoting role of financial liberalization in increasing savings and investment.

In the 1990s, the endogenous growth models that were becoming popular influenced the research on this topic too. Such a model to study the finance-growth relationship was developed by Bencivenga and Smith in 1991 with multiple assets. They provide conditions under which the introduction of financial intermediaries shift the composition of savings towards capital, thereby promoting growth. Further, these intermediaries reduce socially unnecessary capital liquidation, in-process working to speed up growth. King and Levine (1993), using panel data, showed that the advancement of the financial sector is robustly and significantly co-related with accelerated growth rates of the economy, efficiency improvements, and capital accumulation

Incorporating the stock market indicators is another notable development of the nineties. The stock market is a significant and expanding ingredient of the financial market, more so in developing countries. Levine and Zervos (1996) showed that increasing stock market capitalization improves an economy's ability to mobilize capital and diversity risk. Atje and Jovanovic (1993) established a significant correlation between economic growth and the stock market indicator for 40 countries over the period 1980-88.

Levine (1996) contended that stock markets increase liquidity, thereby reducing the risk associated with investment. This way growth gets a positive impetus. The corporate sector gets the advantage of permanent access to funds through equity issues. Saint Paul (1992) developed a model where financial markets affect technological choice favorably. In this context, Singh (1997) noted that their rapid growth might lead to speculative pressures. An undesirable implication of such pressures is that economies are often compelled to carry a higher amount of risk with financial liberalization.

There is a huge list of noted research economists who emphasize the significance of an effective financial system in promoting economic growth and also indicate the alternate routes of influence. Schumpeter (1911), Boyd and Prescott (1986), Greenwood and Jovanovic (1990), Fry (1988), Demirgüc-Kunt and Maksimovic (1996), Allen and Gale (1997, 2004), Levine and Zervos (1996), Levine Ross (1997, 2005), Singh (2008), Seetanah, et al (2009), to name a few.The theoretical structure of the earlier economists was based on the premise that the causation (positive) runs from financial advancement to economic growth and not vice-versa. Since the nineties, the endogenous models used have allowed for bi-directional causality.

On the opposite stance are the numerous economists who believe that finance is not significant in explaining economic progress. Robinson (1952) wrote– 'where enterprise leads, finance follows'. Nobel laureate Lucas (1988) vied that the role of financial factors in the growth process has been substantially overstressed. Goaied and Sassi (2009), N. Stern (1989), Meier and Sears (1984), all reiterate this view.

Rousseau and Wachtel (2009, 2005) showed with a cross-section study of several countries that over time the finance-growth relationship has weakened. Financial liberalization in the 1980s, according to them, possibly led to increasing the financial depth without concomitant legal or regulatory infrastructure needed to successfully exploit financial development. Allen and Gale (2000) have shown that both market-based and institution-based systems are prone to crises. Sensible regulation and credit policies are the only safeguards. They contend that the financial system is central to resource allocation in any contemporary economy and that an optimal financial system relies on both markets and institutions. Koetter and Wedow (2010) suggested that the quality of the financial system is positively related to economic growth while the credit volume representing quantity does not contribute to growth.

Ductor and Grechyna (2011) have investigated the possible negative influence of financial development on economic growth using panel data for 33 OECD countries. They showed that for economic development to take place equilibrated growth of both real and financial sectors is required. Cecchetti and Kharroubi (2012) also showed that too much or too rapidly growing finance tends to be detrimental to growth. Arcand et. al. (2012) study showed that in countries with a huge financial sector, the linkage between economic growth and financial depth dies out. The authors contribute this to high economic volatility and potential resource misallocation associated with high credit volumes in relation to the magnitude of real variables.

In totality, available literature brings out that the growth of economic variables is promoted by better functioning and well-developed financial systems. The country-specific studies, in particular, bring out crucial link ages between economic growth on one hand and government policies, financial markets, intermediaries, and financial sector reforms, on the other. While the financial system develops in response to the requirements of the real sector, sound financial systems have essentially triggered economic growth, in many cases. There is evidence of the finance-growth nexus beginning to weaken and taking a turnaround in the last two decades. Some of the latest studies warn against the dangers of excessive finance.

3. EMPIRICAL EVIDENCE ON THE INDIAN ECONOMY

Over time there has been a movement towards examining the relationship for individual countries. This allows the designing of country-specific measures of financial development. Another notable edge of concentrating entirely on one country is that the econometric finding can be related to the prevailing institutional structure.

Kar and Mandal (2012) have found the existence of a causal relationship from financial deepening to economic growth as measured by the index of industrial production for post-reform India using the vector error correction model for the time period 1994-2008 with variables for the banking sector as well as stock markets. No reverse causality was obtained. Pradhan (2009) also obtained similar results for 1993-2008 using a multivariate VAR model.Mishra, Das and Pradhan (2009) documented a bi-directional causality between economic growth and credit market development for the period 1980 to 2008.Similar results have also been obtained as part of the doctoral study by the author, Bansal (2009) for the period 1979-2005.The work of Tarlok Singh (2008) also indicates the presence of a bi-directional Granger-causality between the two variables.

Chakraborty (2007) has done sectoral analyses of the causal relationship between real and financial variables for the period 1996 to 2005using co-integration and Granger causality techniques. The direction of causality is from the economic growth to stock market capitalization for both industrial and service sectors. The growth rate of GDP is found to be positively affected by bank credit and negatively by the stock market capitalization. The magnitude of

coefficients is, however, small in both cases indicating a weak relation. Bi-directional causality is noted between bank credit and industrial growth.

The available studies on India are indicative of a positive contribution of financial development to economic growth in the past few decades. Due caution is however required before any conclusion is reached. In some studies, the period before and after liberalization has been clubbed together. In others, the observations are small in number due to a short time span being covered. Moreover, the indicator used to represent the real sector growth is the index of industrial production. This is out of line as the industrial sector accounts for a small and changing proportion of the GDP. The conclusions obtained would therefore relate the impact of financial advancement to the industrial growth rather than the aggregate economic growth.

In all, while the available evidence largely supports the contribution of financial development to economic growth in post-independent India, there is no conclusive evidence specifically for the post-reform period. And there is nearly a total lack of sectoral analysis. An attempt to fill these gaps has been made in this paper.

4. DATA AND RESEARCH METHODOLOGY

The analysis is based on secondary data obtained from the RBI website, Data Base on Indian Economy (DBIE). Data on bank credit to the commercial sector is available as the amount outstanding monthly. The sectoral distribution of credit is available starting April 2007. Annual sectoral data is available for a much longer period but the number of observations would be limited. Moreover, the pre and post-liberalization data is not strictly comparable and would also be having structural breaks. Primary market data on new capital issues is not available in terms of issues related to the agricultural, industrial, and service sectors. Data on the real gross domestic product at factor cost is available quarterly. Therefore, sectoral analysis is conducted for the five years from April 2007 to June 2012 (63 observations). Output data on monthly basis is available only for the industrial sector i.e., the Index of Industrial Production. Analysis on monthly data is conducted for the industrial sector and for the other sectors the analysis is based on the quarterly GDP data. This makes for only 21 observations; so, the results need to be taken with due caution.

In this paper, VAR systems are constructed for empirical investigations with the variables as explained above. The order of VAR (the lag length) has been determined using the standard tests available. Since the goal here is to find important relationships among variables and not to make short-term forecasts, zero restrictions have not been imposed. As the analysis is based on time-series data, the variables are first of all checked for stationarity. Tests for the presence of unit root with constant mean and unit root with drift have been carried out. Multiple tests are used since these tests have low power; Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), and KPSS. Where these tests show the presence of unit root, the first difference is examined for Stationarity.

Granger causality tests have been conducted to examine causal patterns related to bank credit and real sector growth. The direction (positive or negative) of the causal effects is given by the sign of the algebraic sum of the regression coefficients of each of the lags of the concerned variable in the VAR/ VEC model. In the case of the VEC model the sign and size of the estimated coefficient on the error correction term in each equation give the direction and speed of adjustments in the dependent variable to temporary deviations from the long-run equilibrium relationship.

4.1 Finance and Growth of Industry

It has been examined whether the rate of growth of the industrial sector (as obtained from IIP) responds to the bank credit advanced to the industrial sector. The choice of the industrial sector has been made for two reasons. First, it accounts for the greatest share of bank credit going to the private sector. Secondly, several studies have used the IIP series with the total bank credit advanced to the private sector and obtained the result that finance supports economic growth or industrial growth in post-reform India. Since the proportion of credit going to the industrial sector has not remained the same over time, it is important to correct the methodological error to know the true status of the finance-growth nexus.

Data on both IIP and bank credit to the industrial sector is available on a monthly basis. No data is available on capital issues specifically in relation to the industrial sector. Bank credit data is available with effect from April 2007. The time period for this model is April 2007 to June 2012 (63 observations). Causality tests have been conducted to see whether the rate of growth of the industrial sector (as obtained from IIP) responds to the bank credit advanced to the industrial sector and also the reverse causality.

The monthly growth rate has been obtained from IIP as $(IIP_t - IIP_{t-1}) / IIP_{t-1}$, taking increment monthly; and expressed as a percentage. Bank credit data to the industrial sector is available as the amount outstanding. This monthly stock has been converted to a flow variable by differencing. This gives the incremental credit going to the industrial sector on a monthly basis. Thus, there are two variables in the model: the monthly rate of growth of the industrial sector (ISG) and incremental bank credit going to the industry (BCI).Both the variables are as the first step examined for unit roots. Akaike (AC) and Schwarz information criteria (SIC) suggested different lags for ISG; so, the tests were conducted for both the lags. The ADF and PP tests have been used for unit root

testing. The null of unit root against difference stationary and also the null of unit root with drift against trend stationary have been tested. Wherever the results are conflicting KPSS test has been used. The results of unit root tests are summarized in Table 1.

Table 1: Summary Results of Unit Root Tests

Variable	p*(AC,SIC)	ADF	PP	KPSS
ISG	11 2	Unit root with drift unit root Trend Stationary	Trend Stationary Trend Stationary	Trend Stationary
BC	0,0	Unit root with drift unit root	Trend Stationary	Trend Stationary

It can be seen from the table that for the variable ISG for lag length 11, ADF and PP tests gives conflicting results; so, the KPSS test has also been conducted. ISG is found to be both difference stationary and trend stationary. The same result is obtained for a lag length of 2 using both ADF and PP tests so that KPSS is not conducted in this case. For BC again the ADF and PP tests gives conflicting results so KPSS is used and on a majority basis, it is found that BC is both difference stationary and trend stationary. Thus, the unit root tests show that both ISG and BC are stationary variables. Therefore, a VAR model has been estimated for testing Granger non-causality. The trend has been included as an explanatory variable to take care of the trending nature of the data series involved. The model with constant and seasonal dummies is estimated due to the use of monthly data.

Using the Schwarz information and Akaike criteria, the appropriate lags are obtained as 11 and 1 respectively. Theoretically lag length of one in a monthly data would relate to the immediate impact of credit disbursed on the growth rate and vice-versa. A lag length of 11 seems more realistic because in the case of the impact of finance on the real sector or vice versa some gap is expected. Also, it is found that R^2 is high for both the equations and standard error low in the model with a lag of 11 in comparison to the model with the lag length being one. Therefore, the VAR model with p = 11 is used for causality testing. The constant, trend and seasonal dummies are all found to be significant and are therefore retained in the model. The causality testing results are summarized below.

Table 2: Test of Granger Non-Causality for the Industrial Sector (from BC to ISG)

Null hypothesis: stated parameters are jointly zero

Variable	Parameter estimate	t-value
x(1,2) = LAG1[BC]	-96.00821E-05	-0.69
x(1,4) = LAG2[BC]	-20.29883E-04	-1.54
x(1,6) = LAG3[BC]	-20.06814E-04	-1.61
x(1,8) = LAG4[BC]	-26.41567E-04	-1.91
x(1,10) = LAG5[BC]	-59.40308E-04	-4.01
x(1,12) = LAG6[BC]	27.57056E-05	0.16
x(1,14) = LAG7[BC]	-52.48891E-05	-0.26
x(1,16) = LAG8[BC]	-50.34278E-04	-2.39
x(1,18) = LAG9[BC]	41.62776E-04	2.23
x(1,20) = LAG10[BC]	-57.68638E-04	-3.01
x(1,22) = LAG11[BC]	20.53737E-04	1.01
Wald test:	58.27	
Asymptotic null distribution: Chi-square(11)		
p-value = 0.00000		
Significance levels	10% 5%	
Critical values	17.27 19.67	
Conclusions	reject reject	

Table 3: Test of Granger Non-Causality for the Industrial Sector (from ISG to BC)

Null hypothesis: stated parameters are jointly zero

Variable	Parameter estimate	t-value
x(2,1) = LAG1[ISG]	48.55007E+00	3.96
x(2,3) = LAG2[ISG]	-74.14985E-01	-0.59
x(2,5) = LAG3[ISG]	21.87903E+00	1.80
x(2,7) = LAG4[ISG]	25.91282E+00	2.29
x(2,9) = LAG5[ISG]	20.82123E+00	1.74
x(2,11) = LAG6[ISG]	20.93737E-01	0.19
x(2,13) = LAG7[ISG]	12.12174E-01	0.12
x(2,15) = LAG8[ISG]	-13.29208E+00	-1.30
x(2,17) = LAG9[ISG]	42.67760E+00	3.66
x(2,19) = LAG10[ISG]	36.85918E+00	2.96
x(2,21) = LAG11[ISG]	24.70466E+00	2.05
Wald test:	50.25	
Asymptotic null distribution: Chi-square(11)		
p-value = 0.00000		
Significance levels	10% 5%	
Critical values	17.27 19.67	
Conclusions	reject reject	

It can be seen from Tables 2 and 3 above that the null of granger non-causality is rejected in either direction. This implies that the rate of growth of the industrial sector as obtained from the index of industrial production is affected by the incremental credit going to the industrial sector and the quantum of credit itself is influenced by the rate of growth of the industrial sector. It is clear from the tables that while the increase in bank credit has a marginal negative effect on industrial growth the growth of industry leads to a substantial increase in the demand for credit by the industrial sector. Thus, it is a case of demand-led financial development rather than finance-led growth for the industrial sector. Similar results were obtained

when the credit variable was expressed in terms of percentage increase over time.

The results relating to the sectoral analyses with quarterly data are now presented. For the time period 2007Q2 to 2012Q3 (21 observations), Granger causality tests are applied to see if economic growth (as measured by the quarterly rate of growth of GDP) responds to credit advanced to the agricultural, industrial, and the service sector. The model for each sector thus has two variables: the rate of growth of national income (EG) and the incremental credit going to the respective sector expressed as a percentage of national income. All variables are tested for unit roots using multiple tests. It is found that the series for EG and credit going to the agricultural sector do not become stationary even after differencing. Since the number of observations is already small, further differencing has not been done and the causality testing has been carried out only with respect to the industrial and the service sector. The data series for the credit going to these sectors have been found to be stationary. So, a VAR model has been estimated for each sector.

4.2 Economic Growth and Credit to the Industrial Sector

A VAR model is set up in two variables: the quarterly rate of growth of GDP (EG) and the incremental bank credit to the industrial sector expressed as a percentage of GDP (BCRI). The data series for EG is non- stationary and for BCRI it is both difference stationary and trend stationary. Since it is possible to perform hypothesis tests on an individual equation when some of the repressors are stationary and others non-stationary, it would be feasible to conduct causality tests with respect to the credit variable that is itself stationary.

The VAR model with EG and BCRI has been estimated using appropriate lags of each variable; constant, trend, and seasonal dummies as deterministic components. The lag length has been chosen using the Akaike test as the Schwarz test is inappropriate due to the small size of the sample. The test suggests that the optimal lag is three. So, the model is estimated with three lags and the deterministic components as mentioned above. The coefficient of trend is found to be statistically insignificant; the model is, therefore, re-estimated without the trend. Since the data series, BCRI is stationary it is appropriate to conduct Granger non-causality tests on the coefficients of BCRI and its lagged values in the equation for EG. The results are presented in Table 4 below:

Table 4: Test of Granger non-causality from BCRI to EG

Null hypothesis: stated parameters are jointly zero		
Variable	**Parameter estimate**	**t-value**
x(1,2) = LAG1[BCRI]	-24.67013E-04	-0.03
x(1,4) = LAG2[BCRI]	-25.90622E-02	-2.81
x(1,6) = LAG3[BCRI]	-76.06239E-03	-0.70
Wald test:	8.20	
Asymptotic null distribution: Chi-square(3)		
p-value = 0.04214		
Significance levels:	10% 5%	
Critical values:	6.25 7.81	
Conclusions:	reject reject	

Table 4 shows that the null hypothesis of Granger non-causality is rejected at both 5% and 10% significance levels. From the p-value, we can infer that at a 1% level of significance, the null hypothesis gets accepted. The parameter estimates are all negative and the magnitude is extremely small. This shows that BCRI has a small negative influence on economic growth i.e., an increase in bank credit to the industrial sector acts as a drag on economic growth, though marginally. And if we talk at a more precise significance level of 1%, then developments in the financial sector do not affect economic growth. The test for reverse causality cannot be carried out as the data series on EG is non-stationary.

4.3 Economic Growth and Credit to the Service Sector

The model for the service sector just as in the case of the industry has been set up in two variables: the quarterly rate of growth of GDP (EG) and the incremental bank credit to the service sector expressed as a percentage of GDP (BCRS). The data series for EG is non- stationary and for BCRS it is both difference stationary and trend stationary. So here too it would be feasible to conduct causality tests with respect to the credit variable that is stationary.

The VAR model with EG and BCRS has been estimated using appropriate lags of each variable; constant, trend, and seasonal dummies as deterministic components. The Akaike test suggests that the optimal lag is three. The coefficient of trend is found to be statistically insignificant; so the model is re-estimated without the trend. Since the data series, BCRS is stationary it is appropriate to conduct Granger non-causality tests on the coefficients of BCRI and its lagged values in the equation for EG. The results are presented in Table 5 below:

Table 5: Test of Granger non-causality from BCRS to EG

Null hypothesis: stated parameters are jointly zero:		
Variable	**Parameter estimate**	**t-value**
x(1,2) = LAG1[BCRS]	17.16039E-02	1.34
x(1,4) = LAG2[BCRS]	-26.07378E-02	-1.84
x(1,6) = LAG3[BCRS]	-28.22986E-02	-1.87
Wald test:	8.93	
Asymptotic null distribution: Chi-square(3)		
p-value = 0.03022		
Significance levels:	10% 5%	
Critical values:	6.25 7.81	
Conclusions:	reject reject	

It can be seen in the table above that in the case of the service sector too increase in bank credit acts as a drag on economic growth though the adverse impact is of a small magnitude. At a 1% significance level, no effect is noted. Thus, we find that in recent years increased bank credit to both the service and industrial sectors have been marginally pulling down the growth of the economy, at best not affecting it in any way; rather than acting as a catalytic factor. This is in line with the result of the aggregative model that shows financial development does not promote economic growth in post-reform India (Singh and Bansal (2013)).

All the models that have been estimated clearly bring out that increase in bank credit has not contributed to the growth of the Indian economy in the post-reform period. The results rather show a marginal negative impact of increased credit to the service and industrial sectors on the economic growth in recent years. There is some ambiguity of the results in the reverse direction. The sectoral analyses using the data on IIP bring out that the growth of industries has led to an increase in bank credit going to the industrial sector. Thus, it is a case of growth leading to increased demand for credit.

Infrastructure is one of the crucial sectors in any economy and the growth of various other sectors is critically dependent on the availability of infrastructural facilities. Very limited data is however available on the extent of finance that goes to infrastructure. So, a simple correlation was obtained between the ratio of incremental credit to GDP and the rate of growth of real GDP i.e., economic growth. The correlation of economic growth with finance to other sectors was also obtained for comparison. The following table shows these magnitudes.

Table 6: Simple Correlation of Selected Variables

Variables as a ratio to GDP	Simple correlation of the variable with economic growth
New capital issues	-0.04993
Credit to service sector	0.673462
Credit to priority sector	0.549855
Credit to medium and large industries	0.472261
Credit to infrastructure	0.705636

It is clearly seen in the table above that correlation with economic growth is highest in the case of credit going to the infrastructural sector. This does not necessarily imply causation in either direction but there are reasons to believe that increase in credit going to infrastructural industries could possibly promote growth in the economy. The econometric analysis, therefore, concludes that the Indian economy in the post-reform period for sure is not a case of finance-led growth. Growth of the industrial sector rather has led to an increased demand for finance i.e., a demand following pattern of financial development.

5. CONCLUSION

The quantum of credit going to the industrial sector seems to have had a marginal negative impact on its growth. For the economy as a whole, neither increase in bank credit nor the new capital issues have been found to contribute to the growth rate. There is thus no evidence of supply-leading financial development in India in the post-liberalization period. On reverse causality, both the models demonstrate strong positive repercussions of progress in the real sector. Higher growth rates of the economy and the industrial sector, in particular, create substantially increased demand for services of the financial sector and it, therefore, experiences rapid growth. High growth momentum in the economy also makes it easier for non-governmental enterprises to raise fresh capital in the economy.

The above analysis shows that in the case of India financial development no longer promotes the growth of the real sector, but the reverse causality holds. India has come a long way from a bi-directional finance growth relationship to one of passive development of the financial sector in response to increasing demand from the growing real sector. Similar results of changing patterns of relationship with time have also been noted for some other countries for example, by Rousseau and Wachtel (2005, 2009). These results are also in line with Pattrick's hypotheses that in the initial stages of growth, finance plays a catalytic role. With economic progress, the relationship sees a turnaround and the financial sector develops in response to increased demand for its services from the growing economy. The section on the literature survey also has reference to many cases where finance is unimportant and cases where it acts as a drag on growth. Excess finance i.e., finance beyond a certain limit has also been found to be dampening growth.

The reasons for the results obtained in the present study can be many and varied. India represents a case of gross misallocation of available credit. In aggregate terms, there is no shortage of credit. The bank credit to the private sector has been growing at a much faster pace in relation to the growth of national income ever since the early nineties; as calculated from the annual time series of GDP and outstanding bank credit. From the same series, it has been noted that during the past one and half decades outstanding credit as a

percentage of gross domestic product has nearly doubled from 30% to 60%. It has however not yet reached a level where it could start acting as a drag on growth. The problem lies in inefficient use of the available credit.

The financial system in India is biased towards the big corporate borrower while the growth of the Indian economy is driven by the informal sector. According to the Report of the Committee on Unorganized Sector Statistics, National Statistical Commission, Government of India, February 2012, the unorganized or informal sector constitutes more than 90 percent of the workforce and about half of the GDP. The high levels of growth of the Indian economy during the past two decades have been accompanied by increasing informalisation. The non-corporate sector is largely dependent on owned funds or those obtained from the informal segment including friends and moneylenders. Since a major part of the growth comes from those segments which are barely using institutional credit or capital market to raise funds, any increase or decrease of these magnitudes would not be expected to affect growth.

Another important point is that where a major chunk of the formal finance is going, it is also not showing commensurate growth. This implies that finance is largely not used in high productivity projects and ventures and the ones with positive spillover effects for the economy. Borrowed funds are used for speculative activities also. Studies on black income have shown that huge volumes are also siphoned out of the country by the corporates in form of bogus expenditures. A proportion of output produced in both formal and informal sectors is not declared to avoid tax and this proportion is fluctuating with an upward trend. This means that the observed growth rates of the real sector are understated in an unstable pattern and the possibility of the true rates being affected by finance cannot be ruled out altogether.

The results obtained are significant with important policy implications especially to deal with persistent inflation and opens up a whole new arena for research. Since the quantum of bank credit does not affect the growth of industry where a major proportion of finance is going, any restrictive policies pursued by the authorities to tackle inflation would not adversely affect the growth prospects of the economy. This result is of great significance for a country like India where inflation is rampant. Another important policy implication is that appropriate policies need to be formulated to encourage formal credit to cater to the needs of the unincorporated sector that presently borrows at very high rates from the indigenous bankers and other informal sources. At one level it would require substantial simplification and speed up of the loan giving procedures and rethinking on the nature of security that may be acceptable. Creating awareness and reaching out to the neglected sector is also called for. A check on the black economy is also essential.

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