INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, ECONOMICS & MANAGEMENT

IJRCM

A Monthly Double-Blind Peer Reviewed (Refereed/Juried) Open Access International e-Journal - Included in the International Serial Directories

Indexed & Listed at:

Ulrich's Periodicals Directory ©, ProQuest, U.S.A., EBSCO Publishing, U.S.A., Cabell's Directories of Publishing Opportunities, U.S.A.,

Open J-Gage, India [link of the same is duly available at Inflibnet of University Grants Commission (U.G.C.)],

Index Copernicus Publishers Panel, Poland with IC Value of 5.09 & number of libraries all around the world.

Circulated all over the world & Google has verified that scholars of more than 3130 Cities in 166 countries/territories are visiting our journal on regular basis.

Ground Floor, Building No. 1041-C-1, Devi Bhawan Bazar, JAGADHRI – 135 003, Yamunanagar, Haryana, INDIA

http://ijrcm.org.in/

CONTENTS

CALL FOR MANUSCRIPTS

We invite unpublished novel, original, empirical and high quality research work pertaining to recent developments & practices in the areas of Computer Science & Applications; Commerce; Business; Finance; Marketing; Human Resource Management; General Management; Banking; Economics; Tourism Administration & Management; Education; Law; Library & Information Science; Defence & Strategic Studies; Electronic Science; Corporate Governance; Industrial Relations; and emerging paradigms in allied subjects like Accounting; Accounting Information Systems; Accounting Theory & Practice; Auditing; Behavioral Accounting; Behavioral Economics; Corporate Finance; Cost Accounting; Econometrics; Economic Development; Economic History; Financial Institutions & Markets; Financial Services; Fiscal Policy; Government & Non Profit Accounting; Industrial Organization; International Economics & Trade; International Finance; Macro Economics; Micro Economics; Rural Economics; Co-operation; Demography: Development Planning; Development Studies; Applied Economics; Development Economics; Business Economics; Monetary Policy; Public Policy Economics; Real Estate; Regional Economics; Political Science; Continuing Education; Labour Welfare; Philosophy; Psychology; Sociology; Tax Accounting; Advertising & Promotion Management; Management Information Systems (MIS); Business Law; Public Responsibility & Ethics; Communication; Direct Marketing; E-Commerce; Global Business; Health Care Administration; Labour Relations & Human Resource Management; Marketing Research; Marketing Theory & Applications; Non-Profit Organizations; Office Administration/Management; Operations Research/Statistics; Organizational Behavior & Theory; Organizational Development; Production/Operations; International Relations; Human Rights & Duties; Public Administration; Population Studies; Purchasing/Materials Management; Retailing; Sales/Selling; Services; Small Business Entrepreneurship; Strategic Management Policy; Technology/Innovation; Tourism & Hospitality; Transportation Distribution; Algorithms; Artificial Intelligence; Compilers & Translation; Computer Aided Design (CAD); Computer Aided Manufacturing; Computer Graphics; Computer Organization & Architecture; Database Structures & Systems; Discrete Structures; Internet; Management Information Systems; Modeling & Simulation; Neural Systems/Neural Networks; Numerical Analysis/Scientific Computing; Object Oriented Programming; Operating Systems; Programming Languages; Robotics; Symbolic & Formal Logic; Web Design and emerging paradigms in allied subjects.

Anybody can submit the **soft copy** of unpublished novel; original; empirical and high quality **research work/manuscript** ***anytime*** in ***M.S. Word format*** after preparing the same as per our **GUIDELINES FOR SUBMISSION**; at our email address i.e. infoijrcm@gmail.com or online by clicking the link **online submission** as given on our website (***FOR ONLINE SUBMISSION, CLICK HERE***).

GUIDELINES FOR SUBMISSION OF MANUSCRIPT

1. **COVERING LETTER FOR SUBMISSION:**

DATED: _____

THE EDITOR
IJRCM

Subject: **SUBMISSION OF MANUSCRIPT IN THE AREA OF.**

(e.g. Finance/Marketing/HRM/General Management/Economics/Psychology/Law/Computer/IT/Engineering/Mathematics/other, please specify)

DEAR SIR/MADAM

Please find my submission of manuscript entitled '_____' for possible publication in your journals.

I hereby affirm that the contents of this manuscript are original. Furthermore, it has neither been published elsewhere in any language fully or partly, nor is it under review for publication elsewhere.

I affirm that all the author (s) have seen and agreed to the submitted version of the manuscript and their inclusion of name (s) as co-author (s).

Also, if my/our manuscript is accepted, I/We agree to comply with the formalities as given on the website of the journal & you are free to publish our contribution in any of your journals.

NAME OF CORRESPONDING AUTHOR:
Designation:
Affiliation with full address, contact numbers & Pin Code:
Residential address with Pin Code:
Mobile Number (s):
Landline Number (s):
E-mail Address:
Alternate E-mail Address:

NOTES:

a) The whole manuscript is required to be in ***ONE MS WORD FILE*** only (pdf. version is liable to be rejected without any consideration), which will start from the covering letter, inside the manuscript.
b) The sender is required to mentionthe following in the **SUBJECT COLUMN** of the mail:
New Manuscript for Review in the area of (Finance/Marketing/HRM/General Management/Economics/Psychology/Law/Computer/IT/ Engineering/Mathematics/other, please specify)
c) There is no need to give any text in the body of mail, except the cases where the author wishes to give any specific message w.r.t. to the manuscript.
d) The total size of the file containing the manuscript is required to be below **500 KB**.
e) Abstract alone will not be considered for review, and the author is required to submit the complete manuscript in the first instance.
f) The journal gives acknowledgement w.r.t. the receipt of every email and in case of non-receipt of acknowledgment from the journal, w.r.t. the submission of manuscript, within two days of submission, the corresponding author is required to demand for the same by sending separate mail to the journal.

2. **MANUSCRIPT TITLE:** The title of the paper should be in a 12 point Calibri Font. It should be bold typed, centered and fully capitalised.

3. **AUTHOR NAME (S) & AFFILIATIONS:** The author (s) **full name**, **designation**, **affiliation** (s), **address**, **mobile/landline numbers**, and **email/alternate email address** should be in italic & 11-point Calibri Font. It must be centered underneath the title.

4. **ABSTRACT:** Abstract should be in fully italicized text, not exceeding 250 words. The abstract must be informative and explain the background, aims, methods, results & conclusion in a single para. Abbreviations must be mentioned in full.

5. **KEYWORDS:** Abstract must be followed by a list of keywords, subject to the maximum of five. These should be arranged in alphabetic order separated by commas and full stops at the end.

6. **MANUSCRIPT:** Manuscript must be in ***BRITISH ENGLISH*** prepared on a standard A4 size ***PORTRAIT SETTING PAPER***. It must be prepared on a single space and single column with 1" margin set for top, bottom, left and right. It should be typed in 8 point Calibri Font with page numbers at the bottom and centre of every page. It should be free from grammatical, spelling and punctuation errors and must be thoroughly edited.

7. **HEADINGS:** All the headings should be in a 10 point Calibri Font. These must be bold-faced, aligned left and fully capitalised. Leave a blank line before each heading.

8. **SUB-HEADINGS:** All the sub-headings should be in a 8 point Calibri Font. These must be bold-faced, aligned left and fully capitalised.

9. **MAIN TEXT:** The main text should follow the following sequence:

INTRODUCTION

REVIEW OF LITERATURE

NEED/IMPORTANCE OF THE STUDY

STATEMENT OF THE PROBLEM

OBJECTIVES

HYPOTHESES

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

SCOPE FOR FURTHER RESEARCH

ACKNOWLEDGMENTS

REFERENCES

APPENDIX/ANNEXURE

It should be in a 8 point Calibri Font, single spaced and justified. The manuscript should preferably not exceed ***5000 WORDS***.

10. **FIGURES &TABLES:** These should be simple, crystal clear, centered, separately numbered & self explained, and **titles must be above the table/figure**. **Sources of data should be mentioned below the table/figure**. It should be ensured that the tables/figures are referred to from the main text.

11. **EQUATIONS:**These should be consecutively numbered in parentheses, horizontally centered with equation number placed at the right.

12. **REFERENCES:** The list of all references should be alphabetically arranged. The author (s) should mention only the actually utilised references in the preparation of manuscript and they are supposed to follow **Harvard Style of Referencing**. The author (s) are supposed to follow the references as per the following:

- All works cited in the text (including sources for tables and figures) should be listed alphabetically.
- Use (**ed.**) for one editor, and (**ed.s)** for multiple editors.
- When listing two or more works by one author, use --- (20xx), such as after Kohl (1997), use --- (2001), etc, in chronologically ascending order.
- Indicate (opening and closing) page numbers for articles in journals and for chapters in books.
- The title of books and journals should be in italics. Double quotation marks are used for titles of journal articles, book chapters, dissertations, reports, working papers, unpublished material, etc.
- For titles in a language other than English, provide an English translation in parentheses.
- The location of endnotes within the text should be indicated by superscript numbers.

PLEASE USE THE FOLLOWING FOR STYLE AND PUNCTUATION IN REFERENCES:

BOOKS

- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.
- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

UNPUBLISHED DISSERTATIONS AND THESES

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

ONLINE RESOURCES

- Always indicate the date that the source was accessed, as online resources are frequently updated or removed.

WEBSITES

- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

RISING FOOD PRICES AS THE BASE OF INFLATION IN INDIAN ECONOMY

CHITRA BHATIA ARORA
ASST. PROFESSOR
APEEJAY INSTITUTE OF TECHNOLOGY
GREATER NOIDA

ABSTRACT

This paper examines two aspects of inflation; first relation of food inflation index with non-food inflation index, which also affects WPI Index. Food inflation emerges as the significant determinant of WPI –Index and Nonfood Inflation Index. Second part of the study focuses on the behaviour of CPI Index. Results of Auto-regression show short lead and lag structure of CPI-IW and CPI-RL. PFCED explains change in CPI index. In most cases, regional CPI indexes differ from All India Index. Dynamic behaviour of inflation index suggests the need for continuous policy intervention by government. Long run drift may drag economy away from equilibrium.

KEYWORDS
Equilibrium, dynamic, behaviour.

INTRODUCTION

When onion prices rose in the last month, it became a political issue. Rising prices of onion pushed the inflation to a six-month record as food became costlier. Onion damped the hope of rate cut by new reserve bank governor. Intermediate traders became active. Increasing price of onion increased the inflationary expectation of traders and hoarding, buffer stocking created shortage of supply of onion in the market. This itself highlights that food article prices are based on Flex price theory. (Prakash, Shri and Goel Veena1986), (Sharma Shalini, 2005). This further pushed the prices on the higher side. Animal products like milk, fish, processed food (sugar, edible oils), fruits vegetables (onion, tomato) currently are the main drivers of food inflation. Food being an essential item, demand for food is, by and large, price inelastic. Hence, food inflation forces households to spend more on the same quantity, which reduces their purchasing power for non-food items, provided that their income does not increase proportionately or more than proportionately. However, high income groups may not reduce nonfood expenditure, though their savings may be reduced. In case of low income groups, expenditure on protective foods may be reduced or households may go for cheaper alternatives, which also affects quality of life.(Sharma.Shalini. 2005).Increase in price of food items, increases the raw material cost of agro based industries ,which pushes the price level and it is known as cost push inflation. Food inflation led general price inflation leads to rise in wages. Which also accentuates cost push inflation? Infact, wages accounted for 44% of overall cost of production (S.Prakash, 1981).To mitigate effect of inflation, Government increases the money supply by increasing dearness allowance and spends lot of money on new yojnas for rural and unemployed people. This increase money supply without increase in aggregate output depreciates the value of currency and adds to inflationary spiral. Depreciation of currency increases the cost of production, mainly raw materials, which affects inflation of nonfood items also. This study treats CPIas the parameter of inflation in regional frame-work. It is important to study the behaviour of CPI-IW Price Index as it indicates the changing purchasing power of the people. Incidentally, impact of price rise differs between rural and urban areas, between metropolitan areas and cities and towns, and among the states. Following increase in inflation leads to demand for higher wages, which is again the main factor of increase in the cost of production. (Prakash, Shri1981). The study considers following indices CPI-IW represents retail index of Industrial workers. CPI-RL represents index of consumption of rural labour. CPI-AL is the index of agriculture labour. Increase in CPI is an indication of Inflation in the nation/region. Keynes believed that economy needs prodding if it set to move in right direction. This means active intervention of government in a nation/region to maintain the adequacy of demand.

Each of the above groups of retail indexes are the important factors of inter and intra- regional differences in inflationary pressures: (i) tax, trade and transport margins vary sharply between and within states; (ii) degree of competition differs, and (iii) supply-demand configurations are different; and (iv) degree of competition is different: numerous studies have been done to identify relationship between WPI (weighted Price Index) and CPI (Consumer Price Index). Some researchers argue that both cannot be compared as both have different universe and parameters of comparison which relate different commodities. WPI is the key indicator of consequence of some macroeconomic policies of a country. It guides the policies related to interest rates and money supply and affects the differential impact of monetary and political policies and their inflation effect on states' economies have not received attention. Analyse the behaviour of CPI-Index of different regions of the country. This paper examines variation in regional CPI-Index and all India CPI-Index.*This paper seeks to evaluate Mathur-Prakash hypothesis that food prices hold the key to inflation in Indian economy.*

Price final consumption expenditure deflator (PFCED) is a chain –type price index prepared by Bureau of Economic analysis. Both indexes differ as CPI is based on modified Laspeyres formula, while PFCED is prepared on Fisher –Ideal formula. Movement of the consumption pattern of a country can be analyzed through its deflator generated by the private final consumption expenditure at current prices over constant prices. Price change may cause consumers switch over from the buying of one to other good. But the fixed basket CPI does not account for altered spending habits caused by price change. As against this PFCED incorporates all the changes. This dynamic aspect of price- final consumption expenditure deflator makes it a determinant of CPI Index.

Laspeyres formula assumes that the base year quantity of consumption remains constant. That is $Lt=\sum i(P^i_t q^i_{ot})/\sum i(P^i_o q^i_{ot})$.Increase in index indicates the increase in the price level. It shows the increased expenditure on the base year quantities due to price rise. It is defined as inflation and vice versa is the case of deflation.

Fisher effect is an economic hypothesis stating that the real interest rate is equal to the nominal rate minus expected rate of inflation. R Nominal= R Real - R Inflation. Paasche price index is defined as $P_{t,\,t+1}=\sum(P^i_{t+1}\, q^i_{t+1})/\sum(P^i_t q^i_{t+1})$.Fisher-Ideal price index is simply the geometric mean of the Laspeyres and Paasche price relatives, that is, $F_{t,t+1}= (L_{t,t+1}.\ P_{t,t+1})^{1/2}$. A Fisher –ideal chain –type price index is obtained by multiplicity "chaining" the Fisher –Ideal price relatives, that is Chained F_{t+1}=(Chained F_t) ($F_{t,\,t+1}$). Fisher –ideal Index includes the impact of current price relative to base price, and also the impact of rate of current consumption relative to rate of base year consumption. Thus, CPI index is the function of PFCED.

RESEARCH QUESTIONS

1) Does food inflation explain the change in nonfood inflation index?
2) Does food inflation explain the change in WPI Index?
3) Is food inflation Granger cause of nonfood inflation /WPI Index?
4) Can expected change in inflation be captured by lagged CPI Index?
5) Do regional CPI Indexes differ from All India Index?

RELATIONSHIP BETWEEN GDP AND INFLATION

GDP represents the total value of the output of the economy. The relationship between inflation and economic output (GDP) plays very high growth of GDP is often related to increase in inflation. Growth in GDP generally causes inflation, and inflation may converge to hyperinflation if it is not checked. Once this process is in place, it can quickly become self-reinforcing feedback loop.This is because where inflation is increasing people will spend more money, because they know it will have lower value in future. This causes further increases in GDP in short term, bringing about further price increases.

THEORETICAL POSTULATION

Classical view of Inflation was quantity theory of money which revolves around Fisher Equation of Exchange that is MV=PT. MV/T=P, that is, greater the money supply relative to volume of trade/ quantity of goods and services, higher is the general price level. That is why inflation was popularly defined as too much money chasing too few goods. Where M is the amount of money in circulation, Vis the velocity of the circulation of that money, P is the average price level and T is the number of transaction taking place. This theory is based on the concept that increase in money supply leads to inflation.

KEYNESIAN VIEW OF INFLATION

Keynes commented on the above theory and rejected the assumption of V being constant in the above equation. He said increase in money supply will decrease the velocity of circulation of money. Alternatively, increase in money supply will increase the number of transactions that is T in the above equation. Economy can settle at any equilibrium level of price which is the function of aggregate demand and aggregate supply of output. If aggregate demand of output is low government may intervene with reflationary policies to boost it. Reflationary policies like increase in government expenditure, cutting taxation and interest rate and allowing some money supply growth. As aggregate demand grows level of output increases and as it approaches near to full employment inflation emerges and price level increases. This is demand pull inflation. Further as output increases, demand of labour increases ,which further increases the wage level and situation is cost pull inflation.

Liquidity preference theory states that three motives lead to demand for money that is (i) transaction motive (ii) precautionary motive and speculative motive. Demand for money is $Q=L_1+L_2$. Where L_1 is demand for money under transaction and precautionary motive. It is income determined and interest inelastic. L_2 is demand for money for speculative motive and is interest elastic and income determining/generating.

REVIEW OF LITERATURE

James P. Walsh and Jiangyan Yu (2012) found that food inflation affects income inequality differently from nonfood inflation. In a sample of China's province, they found that nonfood inflation exacerbates income inequality, whereas the role of food inflation is mixed. In a sample of India, they found that nonfood inflation add to income inequality in both urban and rural areas, whereas, food inflation has neutral to positive impact on income inequality in rural areas.

Prachi Mishra and Devesh Roy (2011) found that low inflation has been the rare occurrence in Indian economy in last two decade. Long term trend in food inflation has followed a pattern similar to overall inflation. Domestic and international food prices are moderately correlated.Their paper focuses on long term trend in inflation.

Shalini Sharma (2005) has analysedfood grain prices which confirm to Flex price behaviour. Traders stock holding behaviour is found as the main determinant of food grain prices.

Prakash,Shri and VeenaGoel(1986) investigated the price behavior of 136 manufacturing industries for a period of 20 years. In her Ph.D. thesis VeenaGoel found that the flex prices are governed by demand and revolve around stocking behavior of traders, who transmit the rising price phenomenon over to agro based industries . She has transformed the price theory from Aristotle onwards up to J.R Hicks 1976 in input output models.In both these investigations, the economy wide repercussions of rising flex prices in the form of inflation and its interrelation with interest rate, growth and employment have not been explored.

ShriPrakash (1981) found that the prices of manufactures are cost-based. Costs due to payment of interest on capital are found to exercise a non-significant and negligible influence over prices; wage costs are significant but much less important than the costs due to raw materials. But the results do not support the hypothesis that prices are adjusted to increases in costs only if there is a general price rise or only if the cost increase substantially.

In a seminal paper, (Mathur ,P.N and Prakash ,Shri 1981) developed an econometric model to determine the inter-relations between marketed surplus, prices of food-grains and their effect on inventory holding of food-grains. They applied the model to the data of Indian economy from 1951 to 1975-76 and showed that there exists overwhelming empirical evidence to support their thesis that (i) farmers sell less and consume more at higher prices of food-grains; and (ii) inventory holdings by public agencies and intermediate traders influence the market prices of food-grains; (iii) prices of food-grains follow the path of Flex Price markets; and (iv) food-grain prices are the main source of inflation in Indian economy. The demand pull in due course becomes cost push and encompasses the entire economy.

RESEARCH METHODOLOGY

SOURCE OF DATA

Data of Consumer Price Index numbers for industrial workers- all India and selected centers (Base:2001=100) for six months that is March-September 2011 is taken to analyze the difference between Indexes. Annual trend in price Indices of seven years from 2004- 2012, constant base price (2004-2005) taken from Economic Survey 2011-2012 (published annually by Department of Industrial Policy & Promotion, CSO and Labour Bureau).data of Wholesale Price Indexes of Food and Non-Food articles of 15 years taken from Economic Survey

METHODS AND MODELS

(a) GRANGER CAUSALITY TEST

Granger (1969) and Sim (1972) were the ones who first developed Granger Causality test to examine the application of causality in economics. It is a technique for determining whether one time series is significant in forecasting another. The standard Granger causality test seeks to determine whether past values of the variable helps to predict changes in another variable. Granger causality techniques measure the information given by on variable in explaining the latest value of another variable. In addition, it also says that variable Y is Granger caused by variable X ,if variable X assists in predicting the value of variable Y. If this is the case , it means that the lagged values of variable X are statistically significant in explaining variable Y. The null hypothesis (Ho) that we test in this case is that the X variable does not Granger cause variable Y and variable Y does not Granger cause variable X. In summary, one variable X_t is said to Granger cause another variable (Y_t) ,if lagged values of X_t can predict Y_t and vise-versa.

$Yt = \beta o + \sum_{K-1}^{M} \beta k\, Yt - k + \sum_{l-1}^{N} \alpha t Xt - l + \mu t$----------(I)

$Xt = a_0 + \sum_{k-1}^{M} \Upsilon k Xt - 1 + \sum_{l-1}^{N} \delta t Yt - l + vt$----------(II)

Where Y_t and X_t are variables to be tested andμt and Vt are mutually uncorrelated errors, and t denotes time period and k and l are number of lags.

Ho:$\alpha_t=\delta_t=0$ for all i (X does not Granger cause Yt)

Ha: $\alpha_t\neq0$ and $\delta_t\neq0$ (X Granger causes Y)

If the coefficient α_t is statistically significant, but δ_t not, then X causes Y. in reverse case , Y causes X. But if both δ_t andα_t are significant, then causality runs both ways.

(b) DISTRIBUTED LAG MODELS AND PARTIAL ADJUSTMENT SPECIFICATION MODEL

Auto-regression and distributed lag models are parts of dynamic econometric modeling. These models play pivotal role in economic analysis. Distributed lag models (DLM) are derivable as an extension of auto-regression model (ARM), though DLM represents an advance version of econometric modeling in current literature. This model is used to identify the impact of technical or institutional rigidities. This model is used in the study to identify the impact of lagged value of dependent on current value of dependent variable. Koyck's DLM with Partial Adjustment hypothesis is outlined hereunder:

Let Y_t* denote the desired value of the variable under consideration at time t; which is postulated to be the function of explanatory/pre-determined variable, X_t. This is represented by the following regression function of these two variables:

$Y_t^*=\beta_0+\beta_1 X_t+U_t$.....(1)

But due to ignorance, inertia and bottlenecks in the process of adjustment of actual to desired change in the value of the variable from preceding to current period, adjustment actually realized is only a fraction of desired adjustment. Since the desired level of Y_t is not directly observable ,Nerlove postulate of the following hypothesis, known as the partial adjustment hypothesis.

$(Y_t - Y_{t-1}) = \Lambda(Y_t^* - Y_{t-1})$----------(2)

Where Λ, such that $0 < \Lambda \leq 1$, is known as the coefficient of adjustment and where $(Y_t - Y_{t-1})$=actual change and $(Y_t^* - Y_{t-1})$= desired change.

Above function may also be written as follows:

$Y_t = \Lambda Y_t^* + (1-\Lambda)Y_{t-1}$ .....(3)

Substitution of value of Y_t^* (1) in above equation (3) gives following relation:

$Y_t = \Lambda\beta_0 + \Lambda\beta_1 X_t + (1-\Lambda)Y_{t-1} + \Lambda U_t$(4)

Or

$Y_t = II_0 + II_1 X_t + II_2 Y_{t-1} + II_3$..... (5)

Once we estimate short run function (5) and obtain the estimate of adjustment coefficient Λ (from $II_2$the coefficient of Y_{t-1}), we can easily derive the long run function by simply dividing $\Lambda\beta_0$ and $\Lambda\beta_1$ by Λ and by omitting the lagged Y term.

(c) MEDIAN TEST

The test has been developed to evaluate the significance of the difference between the medians of two samples which may or may not have the same number of observations. The null hypothesis, Ho is that the population(s) from which the two samples/groups have been drawn have the same median: $M^1e=M^2e$, where Me is the Median and the superscripts 1 and 2 denote sample/population one and two respectively.

For applying the median test, first both the sampled scores/values are combined together to determine the median of the joint groups. Then the individual scores of each sample are rearranged according to as an individual score/value is higher or lower than the median of the combined samples. For each group, the frequency/tallies of scores above or below median is determined. These tallies are presented in 2*2 contingency table. If both the samples have been drawn from the population(s), having the same median value, the expectation of greater than median scores and less than median scores for each sample shall be the same.χ2 test with correction for continuity may be used.

$\chi^2 = (n1+n2)\{|AD-BC| - n1+n2/2\}^2/(A+B)(C+D)(A+C)(B+D)$----------(6)

Fishers probability test shall, however, be valid for all samples of size of less than 20, that is if n1+n2<20, which is true in the given sample.

$P = (A+B)!(C+D)!(A+C)!(B+D)!/\sqrt{(n1+n2)!A!B!C!D!}$----------(7)

EMPIRICAL ANALYSIS

Result of Regression Model

Regression is applied on two sets of data that is last week of the year index and average of week index with base year (1993-94=100)

Regression of Nonfood Article Index with total Food Article index has 1993-94 as the base year

$NFAI = \alpha_0 + \alpha_1 FAI + U$ (Last Week)

TABLE 1

Intercept	(t)	α_1	(t)	R^2	F
13.306	0.669	0.891	7.887	0.827	62.212

Model fits the data well. Model explains 82.7% change in nonfood articles index. Coefficient of food article index is also significant. (i) One unit change in food article index will bring about 0.89 unit change in nonfood article; (ii) inflation in food article inflates nonfood articles also. Interestingly the intercept of the function is not significant .It means that fixed influences of excluded variables do not exercise significant influence on nonfood inflation. The significant influence of food inflation on non-food inflation also encompasses the inflationary expectation of independent intermediate traders, including organized retailers. Organized retailers have entered the whole sale agriculture markets in a big way. They corner much greater proportion of marketed surplus than the unorganized small traders of food grains. In recent times, the organized retailers are the main arbiters of food grain prices.

Regression of total WPI index with total Food Article index

$WPI = \alpha_0 + \alpha_1 FAI + U$

TABLE 2

Intercept	(t)	α_1	(t)	R^2	F
-16.68	-1.519	1.10	17.629	0.959	310.79

Regression function fits the data well.95.9% Proportion of total change in total WPI Index, is explained by the function. Coefficient of Food Article Index is significant and a unit change in food articles index bring 1.10 time change in total index. Thus, WPI shows greater sensitivity to change in food grain prices than the index of non-food article prices index. But, intercept of the function is not significant. It means that fixed excluded variables do not exercise significant influence on inflation. The notable observation is that impact of excluded variables is negative on WPI.

Regression of Nonfood Article Index with total Food Article index of average of week base year (1993-94=100) are examined now.

$NFAI = \alpha_0 + \alpha_1 FAI + U$ (Average of Week)

TABLE 3

Intercept	(t)	α_1	(t)	R^2	F
19.272	1.294	0.843	9.99	0.884	99.99

Model fits the data well. Model explains 88.4% change in nonfood article index. (i) R^2 has improved in this case in comparison of index to last week index.(ii) t value of slope the difference of the two slope coefficient of food Inflation Index is 0.48 , which is not significant. Thus, the two coefficients are statistically equal. It does not matter price of which week is taken into account. It indicates the persistence of similar inflationary pressure over the weeks.

Regression of total WPI index with total Food Article index

TABLE 4

Intercept	(t)	α_1	(t)	R^2	F
-5.176	-0.885	1.023	30.897	0.986	954.63

Regression function fits the data well. There is improvement in R^2 in comparison to inflation index based on last week. t value of slope of coefficients of food Inflation Index is 1.67 , which is not significant. Interestingly, impact of excluded variable is negative on WPI. May be excluded factors pull WPI back towards equilibrium. This result validates Mathur-Prakash hypothesis that food inflation is the main source of inflation in Indian economy.

Result of Granger Causality Test

$$TFI = \beta o + \sum_{K-1}^{M} \beta k\, TFIt - 1 + \sum_{l-1}^{N} \alpha t NFIt - 1 + \mu t$$

TABLE 5

Intercept	βk	(t)	αt	(t)	R^2	F
17.111	0.980	7.522	-0.037	-0.266	0.958	128.63

$$NFIt = a_0 + \sum_{k-1}^{M} \Upsilon k NFIt - 1 + \sum_{l-1}^{N} \delta t TFIt - 1 + vt$$

TABLE 6

Intercept	Yt	(t)	δt	(t)	R^2	F
-5.258	0.415	1.830	0.632	2.991	0.906	53.470

Above results indicate that coefficient α_t is not significant but coefficient δ_t is significant which indicates that non- food inflation is affected by food inflation. Food inflation is a Granger cause of Non-food inflation. This finding further strengthens our hypothesis.

$$TFIt = \beta o + \sum_{K-1}^{M} \beta k\, TFIt - 1 + \sum_{l-1}^{N} \alpha t WPIt - 1 + \mu t$$

TABLE 7

Intercept	βk	(t)	αt	(t)	R^2	F
16.240	0.955	2.482	-0.005	-0.013	0.958	127.77

$$WPIt = \beta o + \sum_{K-1}^{M} \beta k WPIt - 1 + \sum_{l-1}^{N} \alpha t TFIt - 1 + \mu t$$

TABLE 8

Intercept	βk	(t)	αt	(t)	R^2	F
-6.778	1.031	3.114	0.062	0.183	0.976	227.78

In the above results, α_t and δ_t both are not significant, indicating that neither food inflation is Granger cause of WPI and vice versa. This result supports above regression result where excluded factors create negative impact on WPI. These factors reduce the influence of Food Inflation.

CPI-IW is further regressed on PFCED and the results are as follows:

CPI-IW=$\alpha_1+\alpha_2$PFCED+U_t

TABLE 9

Intercept	(t)	α_2	(t)	R^2	F
-42.079	-5.54	1.409	27.214	0.991	740.630

Model fits the data well. It explains 99% of total change in CPI-IW. Coefficient of PFCED is highly significant; indicating unit change in PFCED will bring about 1.40 times change in CPI-IW. The coefficient of intercept is significant and negative, this means that fixed factors excluded variables exercise significant influence on CPI-IW.

CPI-RL= $\alpha_1+\alpha_2$PFCED+U_t

TABLE 10

Intercept	α_2	(t)	R^2	F
0.990	1.537	24.624	0.990	606.387

Model fits the data well. Price expenditure deflator explains significant proportion of change in CPI-RL.

As GDP represents total output of the economy and excess of output also leads towards inflation. This relationship is examined by following model.

Ln CPI (%change in Price)= $\alpha_1+\alpha_2$LnGDP+U_t

TABLE 11

Intercept	α_2	(t)	R^2	F
1.228	-0.245	-0.235	0.013	0.055

As expected above model does not fit the data well. It may be due to following reasons (i) percentage change in GDP is directly related to percentage change in investment, which further reduces liquidity in the market;(ii) increase in inflation actually leads towards increase in GDP in short run.

Auto-Regression of CPI-IW

CPI-IW=$\alpha_0+\alpha_1$CPI-IW $_{(t-1)}+\alpha_2$ CPI-IW $_{(t-2)}$

TABLE 12

Intercept	(t)	α_1	(t)	α_2	(t)	R^2	F
-8.01	-1.075	1.147	19.36*			0.98	375.17
15.587	0.799	2.005	2.51	-1.127	-1.12	0.98	139.39

Auto-Regression function with lagged CPI-IW explains CPI-IW satisfactorily. (i) Coefficient of first lag is significant, this shows that change in previous years CPI-IW will bring proportionate change in CPI-IW; (ii) coefficient of second lag of CPI-IW is not significant. This shows that CPI-IW has short lead and lag structure. This also highlights the fact that inflation is cumulative but once the initial and subsequent periods inflation get cumulated , these become the base for cumulation of next period's inflation.

Auto-Regression of CPI-RL

TABLE 13

Intercept	(t)	α_1	(t)	α_2	(t)	R^2	F
-6.516	-0.796	1.139	17.82			0.984	317.65
10.447	0.710	1.652	2.806	-0.696	-0.947	0.988	126.968

Auto-Regression function with lagged CPI-RL explains CPI-RL satisfactorily. (i) Coefficient of first lag is significant, this shows that change in previous years CPI-RL will bring proportionate change in CPI-RL; (ii) coefficient of second lag of CPI-RL is not significant. This shows that CPI-RL also has short lead and lag structure.

Result of Granger Causality Test

$$CPI - IWt = \beta o + \sum_{K-1}^{M} \beta k\, CPI - IWt - k + \sum_{l-1}^{N} \alpha t PFCEDt - l + \mu t$$

TABLE 14

Intercept	βk	(t)	αt	(t)	R^2	F
-49.95	0.332	0.575	1.210	1.414	0.991	226.10

$$PFCEDt = a_0 + \sum_{k-1}^{M} \Upsilon k PFCEDt - 1 + \sum_{l-1}^{N} \delta t CPI - IWt - l + vt$$

TABLE 15

Intercept	Yt	(t)	δt	(t)	R^2	F
-6.24	0.920	3.090	0.187	0.934	0.997	926.43

In the above α_t and δ_t both are not significant. This indicates that neither PFCED is the Granger Cause of CPI-IW nor CPI-IW is the Granger Cause of the PFCED. Since we have a pair of regressions for any given series of X and Y and tangent of the angle made by the point of intersection of these regression defines correlation coefficient between X and Y, X and Y are specified as independent alternatively in the above specification a correction is needed in order to identify PFCED as dependent on CPI. This further justifies that inclusion of lagged PFCED values in regression of CPI-IW will not improve the results. This further strengthens the results of auto regression where past values of CPI-IW explain the change in current CPI-IW. CPI-IW is independent from the impact of lagged PFCED. This result leads us to apply Distributed Lag Model to explain the change in CPI-IW.

RESULT OF DISTRIBUTED LAG MODEL

CPI-IW= $\alpha_1+\alpha_2$PFCED+ α_3 CPI-IW$_{t-1}$+ U_t

TABLE 16

Intercept	α_2	(t)	α_3	(t)	R^2	F
-34.913	1.053	1.312	0.300	0.463	0.990	215.603

CPI-RL= $\alpha_1+\alpha_2$PFCED+ α_3 CPI-RL$_{t-1}$+ U_t

TABLE 17

Intercept	α_2	(t)	α_3	(t)	R^2	F
-43.782	0.853	1.309	0.323	0.517	0.989	182.387

Following inferences can be drawn from the above Regression (i) Regression function with lagged CPI-IW and PFCED explains the change in CPI-IW;(ii) Neither coefficient of PFCED is significant ,nor the coefficient of lagged CPI-IW is significant. Inclusion of PFCED in the model absorbed the influence of lagged CPI-IW, it may be due to multicollinearity; (iii) Value of λ=1-.30=.70 , this indicates quick revision of CPI-IW, that is within a span of 2-3 years. These quick adaptions of expectation are repercussions of reflationary policies of the government to control inflation. As explained by Keynes government increases aggregate output to fulfill the gap demand. These increases in production also boost up the demand for wages leading to cost inflation. This further guides the policy makers to bring dynamic economic policies to maintain balance. Continuous intervention of government is required to achieve equilibrium state of the economy in a dynamic state of inflation.

Same results are obtained when regression is applied to explain change in CPI-RL. This strengthens the theory that we are sustaining in dynamic state of the market where change in aggregate output or money supply will change equilibrium level of less than full employment.

REGIONAL DIVERSITY

Results of regression of CPI-IW of different states with time:

CPI-IW = $\alpha_1+\alpha_2$T

TABLE 18

States	Intercept	α_2	R^2	F
Ahemdabad	173.14	2.78	0.92	59.88
(t)	107.54	7.73		
Alwaye	177.14	1.85	0.96	153.60
(t)	264.36	12.39		
All India	181.85	2.07	0.96	127.42
(t)	221.60	11.28		
Asansol	200.57	2.32	0.96	126.49
(t)	217.28	11.24		
Banglore	187.14	1.32	0.95	86.64
(t)	294.77	9.31		
Bhopal	192.85	2.57	0.86	31.15
(t)	93.60	5.58		

The above table reflects the differential impact of inflation on different states where a city is taken as the index of inflation in the state as a whole.

Following conclusions flow from above results (1) regression function with time explains monthly CPI-IW of different states satisfactorily; (2) coefficient attached to time is statistically significant in all functions;(3) it validates the concept of time value of money that is with change in time, value of money depletes and reduces the purchasing power of money, which is also known as inflation and Gujarat, West Bengal and Madhya Pradesh bear greater inflationary burden than India.

RESULTS OF MEDIAN TEST

H0: there is no difference in proportion of CPI Index of state and All India

TABLE 19

Name of state	p one tail test	p two tail test
Ahemdabad - All India	0.296*	0.592*
Asansole -All India	0.00029	0.00058
Banglore - All India	0.296*	0.592*
Alwaye - All India	0.296*	0.592*
Bhopal - All India	0.0163	0.0362

In the above table the p value of Asansole and All India and Bhopal and All India are less than 0.05, therefore, in this case there would be a statistically significant association between the CPI index of states and all India CPI Index. Whereas , p value of Ahemdabad -All India,Banglore - All India and Alwaye –All India are greater than 0.05, therefore, in this case there is a significant difference between both CPI Index. Following inferences may be drawn (i) out of 5 cases CPI Index of three states significantly differ from All India CPI-Index; (ii) this indicates that inflation vary from state to state, hence policy makers should be careful while designing policies for center as well as state; (iii) the variation may be due to variation in consumption of products and purchasing power of people in different states.

RESULT OF t TEST

Another method of evaluating difference between two samples that is All India CPI and states CPI t value of slope of Coefficient t= $\alpha_1$of AICPI-α_1 RCPI/average of SE, AICPI is All India CPI and RCPI is regional Consumer price Index. Average of SE that is standard error of time coefficient both state and India.

TABLE 20

Name of state	(t) value
Ahemdabad - All India	-2.62*
Asansole -All India	-1.28
Banglore - All India	4.61*
Alwaye - All India	1.28
Bhopal - All India	-1.55

Above table t values indicate difference between the slope coefficient of Time is significant in two cases that is Ahemdabad- All India and Banglore-All India as t is greater than 1.96 . It can be inferred as follows (i) Regional CPI Index differ from All India Index which shows that central government policies may not be effective in these states; (ii) variation is due to change in consumption pattern of different states. In three cases that is Asansole-All India ,Alwaye- All India and Bhopal-All India t is not significant. This indicates All India CPI Index is mainly affected by small cities CPI Index.

MAIN FINDINGS

a) Food Inflation explains the change in Non-food inflation and overall WPI Index.

b) Food Inflation is the granger cause of Non-food inflation, whereas it is not a Granger cause of WPI.
c) Neither Non-food inflation nor WPI Index is the Granger cause of food inflation.
d) CPI-IW Index represents short lead and lag structure. Auto-regression Results showing significant results.
e) Quick revision of expectation of labours due to increase in output and inflation adds on cost inflation.
f) In most cases regional CPI-IW index differ from All India CPI-IW Index, indicating need of different policies for different regions. Central economic policies may fail at regional level.

REFERENCES

1. James.P., Walsh and Jiangyan .Yu .2012. Inflation and Income Inequality: Is Food Inflation Different? IMF working paper, Asia and Pacific Department.
2. Mathur .P.N. and Prakash. Shri.1981. Inventory Behaviour of Indian Agriculture and its Effect on General Price Level. Published in AltilaChikan (Editor) Economics and Management of Inventories, Volume I, Elseviere and Hungarian Academy of Science, Budhapest.
3. Prachi .Mishra and Devesh. Roy.2011. Explaining Inflation in India- The Role of Food Prices. IMF working paper, JEL Classification number E31, Q18.
4. Prakash .S .1981. Cost based Prices in Indian Economy. Malayan Economic Review, the Journal of Economic Society of Singapore.
5. Prakash, S and Goel.V. 1986.Traders Stocks and Prices of Food-grains in Indian Economy- A Study of 32 Trading Companies of Patiala Mandies in Chikan. Attilia (Editor) Recent Advances in Inventory Research", Elsevier and Hungaraina Academy of Sciences, Budhapest.
6. Sharma. Shalini.2004. Empirical Study of Agricultural Prices in Indian Economy. Ph.D. Thesis, Economics Department, Aligarh Muslim University, Aligarh.

REQUEST FOR FEEDBACK

Dear Readers

At the very outset, International Journal of Research in Commerce, Economics & Management (IJRCM) acknowledges & appreciates your efforts in showing interest in our present issue under your kind perusal.

I would like to request you tosupply your critical comments and suggestions about the material published in this issue as well as on the journal as a whole, on our E-mail**infoijrcm@gmail.com** for further improvements in the interest of research.

If youhave any queries please feel free to contact us on our E-mail infoijrcm@gmail.com.

I am sure that your feedback and deliberations would make future issues better – a result of our joint effort.

Looking forward an appropriate consideration.

With sincere regards

Thanking you profoundly

Academically yours

Sd/-
Co-ordinator

DISCLAIMER

The information and opinions presented in the Journal reflect the views of the authors and not of the Journal or its Editorial Board or the Publishers/Editors. Publication does not constitute endorsement by the journal. Neither the Journal nor its publishers/Editors/Editorial Board nor anyone else involved in creating, producing or delivering the journal or the materials contained therein, assumes any liability or responsibility for the accuracy, completeness, or usefulness of any information provided in the journal, nor shall they be liable for any direct, indirect, incidental, special, consequential or punitive damages arising out of the use of information/material contained in the journal. The journal, nor its publishers/Editors/ Editorial Board, nor any other party involved in the preparation of material contained in the journal represents or warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from the use of such material. Readers are encouraged to confirm the information contained herein with other sources. The responsibility of the contents and the opinions expressed in this journal is exclusively of the author (s) concerned.

ABOUT THE JOURNAL

In this age of Commerce, Economics, Computer, I.T. & Management and cut throat competition, a group of intellectuals felt the need to have some platform, where young and budding managers and academicians could express their views and discuss the problems among their peers. This journal was conceived with this noble intention in view. This journal has been introduced to give an opportunity for expressing refined and innovative ideas in this field. It is our humble endeavour to provide a springboard to the upcoming specialists and give a chance to know about the latest in the sphere of research and knowledge. We have taken a small step and we hope that with the active co-operation of like-minded scholars, we shall be able to serve the society with our humble efforts.

Our Other Journals