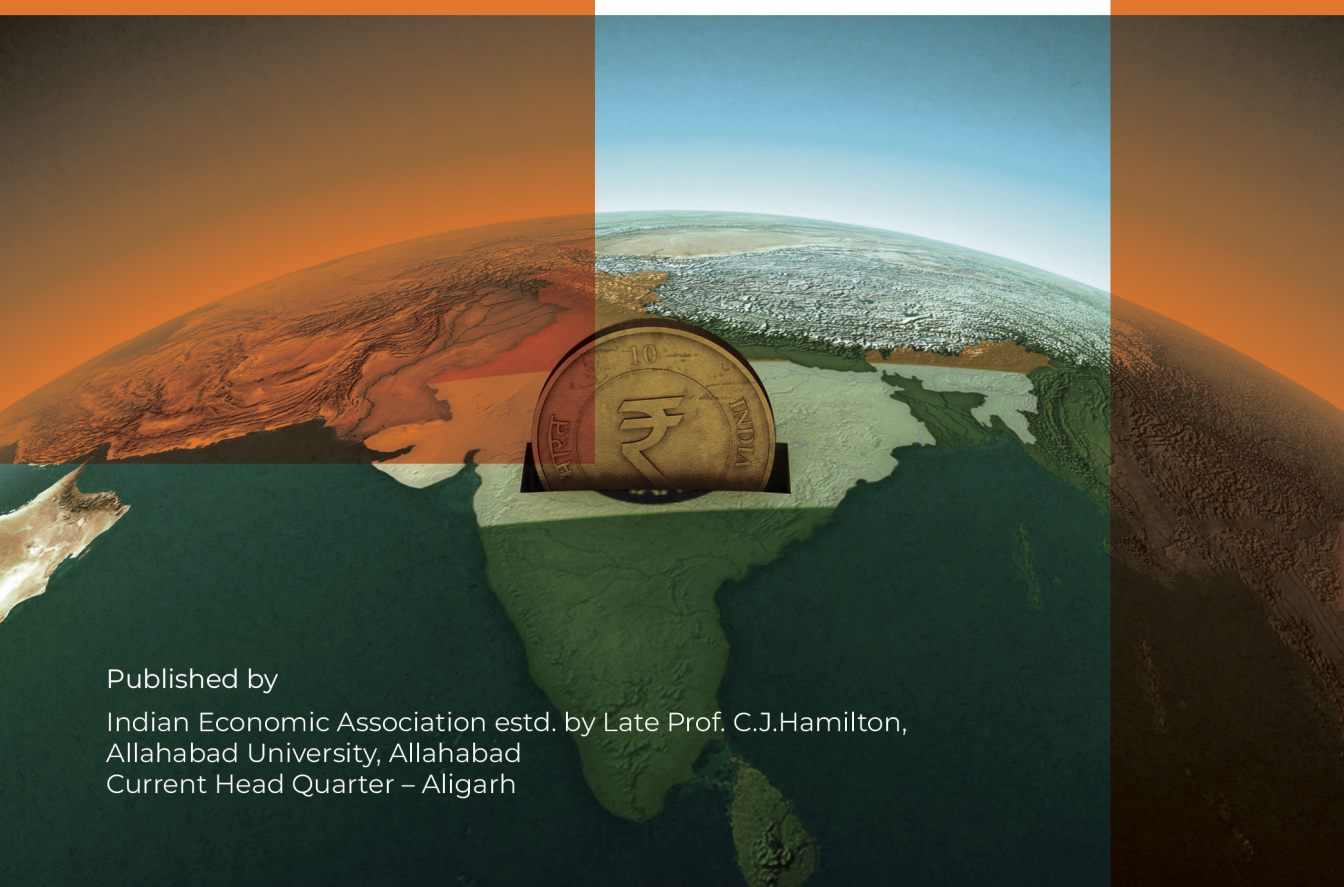
Science
Social Sciences
Economic Sciences
EPISTEMOLOGY
Technology

INDIAN JOURNAL OF ECONOMY AND POLICY



Published by

Indian Economic Association estd. by Late Prof. C.J.Hamilton,
Allahabad University, Allahabad
Current Head Quarter – Aligarh

TABLE OF CONTENTS

PAGE NO

The Journal is Designed and prepared for
Printing by
Jagan Institute of Management Studies Rohini, New Delhi

ABOUT THE JOURNAL

The Indian Journal of Economy and Policy (IJEP) is a peer reviewed / refereed quarterly journal in the discipline of Economics edited for the first time by Dr Shri Prakash. The journal is owned by Indian Economic Association. The executive council of Indian Economic Association in its online meeting held on 7th April 2022 appointed Prof Shri Prakash as editor of the journal. The journal intends to provide researchers, academicians, professionals and practitioners a platform to share knowledge through genuine research in the areas largely pertaining to the problems of the economies and economic policies. The journal is designed to promote high quality original and innovative empirical research, methodological and realistic analysis and provide policy frameworks on existing economic problems. The journal encourages researchers and policymakers to share their thoughts and experience in the area of policy making and spread this knowledge to the academic community. The journal also aims to provide an interface for multidisciplinary research by providing a platform to researchers to share the research findings focusing on economic aspects of social, political, ecological and technological phenomena.

JOURNAL PARTICULARS

Title : Indian Journal of Economy and Policy
Frequency : Quarterly
ISSN : applied for
Publisher : Indian Economic Association
Publisher Address : IEA, 36, Kaveri Enclave phase-1, Ramghat Road Aligarh 202001
Editor : Prof Shri Prakash
Editor Address : C 4B, 226, Janakpuri, New Delhi 110058, India

Starting Year : 2023
Subject : Economics
Language : English
Publication format : Print
Email ID : shriprakash@indianjournalofeconomyandpolicy.com
Mobile Number : 8527045052
Website : indianjournalofeconomyandpolicy.com
Designed and prepared : Jagan Institute of Management Studies Rohini, New Delhi

Vol.2, No.2, July – September, 2024
ISSN No.xxxxxxxxxxxxxxxx

From Guest Editor's Pen

In Economics the classical writers were thoroughly opposed to any kind of government intervention in an economy. But as industrial revolution was maturing problems of unemployment, inequality, poverty rose rapidly. JM Keynes highlighted the role of policy making in 1936 when he demonstrated that various problems of investment and employment are macro in nature and government intervention is necessary for not only guiding the economy passively, but active policy could help in a stable growth. Keynes policies were formed by every part of the world, but by 1970s, it became clear that one shoe does not fit all feet. Therefore, various countries began looking for a different set of macroeconomic variables to be treated differently. India in 1950s opted for an inward looking economy with a dominant public sector as solution of high rate of growth. The policy succeeded in various areas such as creating infrastructure, but growth rate achieved was much lower than expected. (around 4% for first four decades). It was suggested that till private sector also compliments, the public sector growth could not be rapid. Since 1991 economic reforms began, although the growth rate has been faster (6% between 1991 to 2023) but some other problems arose, example unemployment (LPLF around 40%.), Inequality, balance of trade deficit, Social Security, etc. Since new millennium a lot of research is being done to achieve stable, sustainable and equitable growth. The present Journal brings forward many researches in the field of understanding the policy making and its deficiencies. One must remember that policy making is not a way to solve problems, but to understand them, think of various alternative and the limits of resources available at hand. Another problem is the policy making revolves more around political agendas and many times planning takes a back seat. But social scientists need to create a sort of policy, narrative of common issues, free of any agenda, pressure of capture groups, politics, media, and other civil society/organisations. This Journal is one which provides space to all academicians, who wish to enhance the understanding of problems, prioritising them and suggesting various alternatives.

In this edition of the research magazine, there are in total six articles. The first article is 'The theory of Policy' by Amit Sharma and Shri Prakash. This article with the proposition of why, how and in what circumstances a robust economic policy is made? It analyses various stages of policy formulation from identification to initiation of Policy in detail as well as various stakeholder whom policy affects. Exante, expost policy formulation is also discussed in detail

with examples. In short, this article is a complete article on all aspects of policy making as well as causes that may result in policy failure.

Second article by Sumitra Chaudhary is complimentary to the first article. It analyses the importance of serious research before analysing the need, objectives and implementation of any policy. "Effective policies must be based on well informed discussions grounded on empirical study, scientific data, and long-term vision.". Dr Sumitra's opinion is well founded that proper researches by academicians in universities and Institute of higher learning need no government interference. She also analyses gaps between researches(good or bad) and economic policy making and suggests a detailed framework to bridge the gap between research and policy making. It's the divergent between academic research and public research which may lead to unsatisfactory policy implementation she concludes.

The third paper in this issue is by Dr Vikram Chadha. He has discussed opportunities and challenges of Indian economy to emerge as economic powerhouse by 2047, which is the vision of Indian Prime Minister. In this paper, a lot of statistical information has been provided. There is also a lot of information as to what Indian economy has achieved since Independence as well as what the other developed countries have been doing. Discussing the strength of Indian economy Dr. Chadha has given importance to population variable and skilled manpower along with recent development in the area of digitalisation, start-ups, competitiveness of MSME, innovations.

ISSN No.xxxxxxxxxxxxxxxx

Then he analyses the challenges faced by India's economy in terms of population explosion which might end up after 2050, Differences in R & D. He has also discussed non- economic challenges as well such as high consumption, low literacy, quality of education. Finally, he concludes that there is a great chance that India might achieve all its target with better governance.

The next article by DR. Krishna Bajpai and Rebecca Donald is on a specific plan of Dr. Deen Dayal Upadhyay Yojana in development of agriculture. It is a case of study as to how better water management can change the agriculture scenario of U.P. This paper is different in its approach. It starts with understanding of problem of U.P. agriculture and then analyses the schemes of Dr. Deen Dayal Upadhyay, which is basically started to turn barren lands into Greenfields and improving the water table. The paper is based on secondary data and discusses the main features about land (fixed asset) and the percentage of land, which could not be sown and how unfertile land could be used for agriculture development. The paper uses various quantitative techniques such as Annova for conclusion and finding.

The next paper by Ruchi Tyagi is on effect of bilateral trade agreement of India with Malaysia, Japan and South Korea. So many papers have been written on benefits of bilateral agreements and their benefits, but no particular case study with any country has been analysed. In this paper, Dr Ruchi has analysed different types of trade policies before analysing arguments, probably to compare change in Indian Policy since 1991 because the economic reforms led to various comprehensive trade partnership. Ruchi Tyagi has used secondary data (from units) and did very difficult quantitative analysis to arrive at the conclusion that these partnership would not only help in economic growth in India but would provide a great cushion to India's rising unemployment problem. The article in this issue touch upon a variety of issues of economic policy and naturally helped the policy makers to make more robust policy.

- Prof. Manmohan Krishna
Chair Professor, NITI AYOG,
Department of Economics, University of Allahabad.

Bridging the Gap Between Economic Research and Policy Space in India: Need for Introduction of a Research and Policy Collaboration Framework

Sumitra Chowdhury[1]

Abstract

There is a gap between economic research and policy space in India. While Indian universities, research institutions and think tanks produce vast amounts of research, economic policymakers face the challenge of having ready and timely access to the research findings and available knowledge that could serve as evidence-based support for policy formulation. On the other hand, most of the research outcomes produced by academicians remain unutilised/underutilised and the policy recommendations suggested in many research papers go unnoticed. The New Education Policy, 2020 has recommended creating a National Research Foundation. However, economic research is not the focus of the newly created Anusandhan National Research Foundation, which aims to develop synergy and catalysing quality research in science and technology. This paper draws attention to the need for designing and introducing a framework for bridging the gap between economic research and policymaking.

Keywords: *Economic Research, Economic Policy, Framework, Public Policy*

Introduction

1.1. Effective economic policies must be based on well-informed decisions grounded in empirical study, scientific data, and long-term vision for the future. While Indian Universities, Research Institutions, and Think Tanks produce enormous amounts of research and are also the repositories of the same, economic policymakers face the challenge of having ready access to the research findings and available knowledge that could serve as evidence-based support for policy formulation. There appears no urge on the part of the professors of economics, or the academic institutions with which they are associated, to bring their research findings to the notice of the policymakers[2] or to reach out to the policymakers to share their work and thoughts. As a result, most of the research outcomes produced by academicians remain unutilised/underutilised and the policy recommendations suggested in many research papers go unnoticed. An opinion article published in a newspaper in Singapore pointed out that more than 10 people do not read an average paper published in a peer-reviewed academic journal (Biswas and Kirchherr, 2016). It quoted that as many as 1.5 million peer-reviewed articles are published annually of which 82 percent are never cited once, not even by other academics.

1.2. Though the government should not interfere in the autonomy of the universities and the educational processes followed by them, many universities and research institutions receive public funding. They are accountable, *inter-alia*, to generate new knowledge and cutting-edge quality research to address social and economic conditions and welfare of the people.

---

[1] The Author is a retired officer of the Indian Economic Service. Views are personal.

[2] Though elected representatives are ultimately the policymakers, the civil servants and government officials are responsible for the conceptualization and designing of policies following the established processes. In this paper, the term 'policy makers' includes Ministers and civil servants/government officials.

Universities are also responsible for offering advisory services and training future policymakers. Some university professors have brilliant minds but are not influencing policy or contributing to forming public discourse.

1.3. Government is increasingly using investments to help create the evidence base for better decision-making. Private consultancy firms[3] and a few think tanks are occupying this space attempting to demonstrate professional competencies and providing research support on time. The consultancy firms are mostly international, having offices in multiple countries, and are typically associated with industries. As a matter of practice, they continuously and proactively engage in inter-disciplinary research relating to contextual issues and monitor selected macro-indicators, major socio-economic or political developments/events etc. identified by them as relevant for their work. In other words, they keep themselves updated and when called for, can submit inputs and study reports containing the latest information. Besides, they also express their keenness to engage with the policymakers and remain ready to provide necessary inputs and analysis at short notice albeit charging a sizable fee. Further, once a study is commissioned to them, they work in coordination with the departments/policymakers concerned. This results in developing a better understanding of the required deliverables. When studies are commissioned to such consultancy firms, their study reports are found somewhat useful, though most of the time policymakers may have to re-work and judiciously use the same for policy making.

1.4. Policymaking in India is a closed process and is considered "Secret" till a given policy is announced or notified. The officials concerned with policymaking are liable to maintain the secrecy. If information is leaked before the announcement of a specific policy, it attracts punishment for the officials involved. International private consultancy firms may not be bound to maintain such secrecy under their own rules. It is, therefore, not appropriate to engage them in providing policy research support to the Government. Besides, while there is a large number of Indian institutions that are researching multiple subjects, why should the government obtain support from external agencies instead of using the talent pool of national institutions which are funded by the government and are bound by similar ethical bindings and rules as the government departments/ministries are. The homegrown institutions are also expected to have better acquaintances and understanding about the local issues and socio-economic or political dynamics which may be their added advantage for coming up with more realistic and implementable policy recommendations.

1.5. This paper briefly (i) outlines the responsibilities of conducting research in universities, academic institutions, and think tanks, and the recommendations of the New Education Policy, 2020 in this regard; (ii) describes economic policy-making processes followed by the Government of India, (iii) the roadblocks and obstinacy on both sides, namely, the academicians and the economic policymakers, and (iv) suggests introduction of a framework to bridge the gap between economic research and economic policy making in India. The objective of the paper is to stimulate a debate among academicians and policymakers/bureaucrats regarding the need to fill the gap and agree to put in place a digital two-way communication system that would address the issue.

[3] Like McKinsey, Boston Consulting Group, Price Waterhouse Coopers, Ernst &Young, Bain & Co., A.T. Kerney and so on.

Setting up such a system will also eliminate duplication of efforts and costs for conducting studies on the same subject by multiple agencies/institutions[4]. The resources and time thus saved could be made available for undertaking research on other issues for the optimal benefit.

2. Existing responsibilities of conducting research in universities, academic institutions, think tanks, and the recommendation of the New Education Policy, 2020

Universities

2.1. There are 4 types of universities in India as categorised by the University Grants Commission.

a) The Central Universities are established by Act of Parliament and are under the purview of the Department of Higher Education in the Union Human Resource Development Ministry. Central Universities are covered by the Central Universities Act, 2009[5] , which regulates their purpose, powers, governance, etc. Section 5 of the Act states

The objects of the University shall be to disseminate and advance knowledge by providing instructional and research facilities in such branches of learning as it may deem fit; to make special provisions for integrated courses in humanities, social sciences, science and technology in its educational programmes; to take appropriate measures for promoting innovations in teaching-learning process and inter-disciplinary studies and research; to educate and train manpower for the development of the country; to establish linkages with industries for the promotion of science and technology; and to pay special attention to the improvement of the social and economic conditions and welfare of the people, their intellectual, academic and cultural development.

The same Act, in section 6 has listed powers of the Central Universities, which inter-alia, states that the University has the power to make provision for research and advisory services and for that purpose to enter into such arrangements with other institutions, industrial or other organisations, as the University may deem necessary.

b) State Universities are established by a State Legislative Assembly act. These universities are also regulated by the University Grants Commission and have similar objectives and power as Central Universities for disseminating knowledge or undertaking advanced research, except that UGC reserves the right to declare some State Universities fit to receive central/UGC assistance under Section 12(B) of the UGC Act while others are not granted any financial assistance. UGC publishes both the list indicating their status regarding receipt of financial assistance from Centre/ UGC or not and the list is also updated periodically.

---

[4] For e.g. UGC set up a committee to estimate cost of education in India. This was despite the fact that a few studies on the cost of education in different states and a book on Cost of Education in India had been published (Prakash, 1996). It appears officials at the UGC were not aware of these studies when they declared that no study of cost of education in India was available. This becomes all the more glaring if this is put against the fact that MHRD had initiated a Project on cost of Education at Association of Indian Universities(AIU). Not only this, (Prakash-Chowdhury,1994) derived an average cost function from production function of education. The study used panel data of 90 countries and the data set comprised nearly 2000 observations.

[5] https://www.indiacode.nic.in/bitstream/123456789/2080/5/A2009-25.pdf

c) Deemed University, or "Deemed to be University" is a status of autonomy granted by the Department of Higher Education on the advice of the UGC, under Section 3 of the UGC Act. All provisions of the UGC Act are also applicable to the Deemed Universities. Like other universities, they have the autonomy of offering various courses and research facilities in various disciplines such as Health Sciences, Engineering & Technology, Management, Languages, Humanities & Social Sciences, Sciences, Education, Law, Agricultural Sciences, Fisheries, Forestry, Defence Technology, Maritime Education, Yoga, Music & Fine Arts, etc. They design their own syllabus having valid accreditation by the National Assessment and Accreditation Council (NAAC).

d) State Private Universities are established through a State/Central Act by a sponsoring body, namely, a Society registered under the Societies Registration Act 1860, or any other corresponding law for the time being in force in a State or a Public Trust or a Company registered under Section 25 of the Companies Act, 1956. State Private Universities are approved by the UGC and can grant degrees. But they are not allowed to have off-campus affiliated colleges. Available studies of selected private universities reveal that some of the private universities have impressive research output and also good number of citations. Further, they perform well on international collaboration.

2.2. Apart from the UGC, there are 15 Professional Councils and Boards such as AICTE, Indian Council of Agricultural Research, All India Medical Council, the Law Bar Council, and School Education Board etc. which are responsible for the recognition of courses, promotion of professional institutions, and providing grants to undergraduate programmes, and various awards are established, controlling different aspects of accreditation and coordination.

2.3. Universities primarily undertake research as a part of their Ph.D./post-doctoral research programmes aimed at awarding scholastic degrees to students. Besides, university teachers/faculty engage in research on specialised subjects. Research conducted in the universities contributes to the existing knowledge whereby a new theory is developed or existing theories improved upon, or a historical understanding of a given phenomenon is scientifically analysed and deeply understood, or scientific discovery is made. Such research is not necessarily aimed at addressing any pressing contextual issues, but to enrich the existing body of knowledge to achieve academic excellence and can be accessed for reference and use in future studies or for practical application. Such studies fall into the category of basic or fundamental research which is distinguished from applied research. These research outcomes are accepted as universal truth or a theory and are presented as a thesis, or published in the form of books or research papers in journals. Some of these are included in the textbooks/reference materials and become parts of the syllabus.

Autonomous organisations, institutes of national importance, and think tanks

2.4. Apart from universities, there are institutions of national importance like IITs, NITs, IIMs, AIIMs, and many national institutions. These are autonomous institutions permitted to award degrees and undertake research but do not have affiliated colleges under them. They fall under the administrative control of the Department of Higher Education. At present, there are reportedly 127 [6] such institutions. Autonomous institutions research subjects aimed at achieving particular targets to address a current problem relating to the objectives of their institutions. Such problems may refer to the issues of social, economic, political, or scientific development or any other matter.

[6] Lhttps://web.archive.org/web/20101217231810/http://education.nic.in/AutonomousSec.asp

New knowledge generated through such research has immense possibilities in terms of the introduction of new technologies, techniques, and solutions to bring about better ways of living and generating new sources of income. Such research is the fundamental driver for economic development. At times, research is also undertaken to counter falsehood. Since research is independent, these research outcomes and evidence also remain outside the purview of policymaking either due to a lack of vision regarding their larger implications for societal gains or due to less attention given to the dissemination of research outcomes to reach out to wider audiences including the policymakers. On the other side, this may also be due to the indifference on the part of bureaucrats involved in policy making.

2.5. In addition to the universities and autonomous institutions, a large number of Think Tanks have been set up in India. Think tanks are bodies of experts providing advice and ideas on specific economic social or political problems, performing advocacy, providing platforms for debating issues, etc. Most think tanks are non-governmental organisations, some are semi-autonomous agencies, and some work as lobbyists for specific political parties, businesses, or the military. Think tanks are mostly privately funded[7] , but some also receive government grants. Their work is to study specific problems and suggest solutions. They publish articles and study papers on particular policy issues that are used by governments, corporations, media houses, and other interest groups. As per the information available on the open internet, India has the second largest number of think tanks after the US[8]. However, Indian think tanks are not as effective in engaging on policy issues as those in the US. Of late, only a few think tanks are making such contributions.

Recommendation of the New Education Policy, 2020

2.6. The New Education Policy(NEP), 2020, inter-alia, recommended setting up a National Research Foundation(NRF) to develop synergy and catalyse quality research in India. Para 17.11 of the New Education Policy, 2020, inter-alia, states that the primary activities of the NRF will be to act as a liaison between researchers and relevant branches of government as well as industry so that research scholars are constantly made aware of the most urgent national research issues, and so that policymakers are constantly made aware of the latest research breakthroughs which could be optimally brought into policy and/or implementation.

2.7. Following this recommendation of the NEP, 2020, Anusandhan National Research Foundation(ANRF) Bill was prepared and passed in June 2023[9] . The ANRF Act came into existence on 5th February 2024[10]. In the Union Budget 2021-22, an outlay of Rs.50,000 crore over five years has been announced for the National Research Foundation. The ANRF is an apex body, the Governing Board of which is headed by the Prime Minister of India as its President and the Minister of Science & Technology, and the Minister of Education with its Vice Presidents.

---

[7] For example, industrialists like Birla's and Tata's have established research organisations which conduct research on topical issues and such organisations may also fund research by individual researchers of other institutions and exploration of new natural resources like oil, gas and minerals.

[8] The US has the largest number of think tanks who play important role in preparing policy studies, and organising debate on policy issues. Most of them also act as the lobbyist of one or the other political ideologies.

[9] https://www.indiacode.nic.in/bitstream/123456789/19767/1/a2023-25.pdf

[10] https://dst.gov.in/sites/default/files/ANRF%20Gazette%20Notification.pdf

Other members are from NITI Ayog, the Secretary of the Department of Science & Technology, the Secretary of the Department of Scientific and Industrial Research, the Secretary of the Department of Biotechnology, and the Secretary of the Department of Higher Education. The Principal Scientific Advisor to the Government of India is the Member-Secretary. The ANRF is envisaged to provide high-level strategic direction for research, innovation, and entrepreneurship in the fields of natural sciences including mathematical sciences, engineering and technology, environmental and earth sciences, health and agriculture, and scientific and technological interfaces of humanities and social sciences, to promote, monitor and provide support as required for such research and matters connected therewith or incidental thereto. The Foundation shall also, to the extent practicable, either by itself, or through a suitable agency identified on this behalf, undertake an annual survey of outcomes of scientific research in India, to create a central repository, for the collection, interpretation, and analysis of information and data surrounding such research, and the aim of such a repository would include providing information for policy formulation and advising the Central Government and State Governments as well as the private sector.

2.8. Thus, the entire focus of the ANRF is on science and technology and not on economics or on bridging the gap between research and policymaking in the field of economics.

3. Economic policymaking process followed in the government

3.1. Improving well-being of the people by designing and implementing appropriate economic policies is one of the important responsibilities of the government. Effective economic policies are those based on authentic information/data and sound research to understand the problem. In addition, economic policies become effective through successful implementation without leakages and the reaping of expected benefits by the targeted beneficiaries. For policies to be effective, on the supply side, the government is responsible for providing necessary financial support, ensuring governance as also administrative support, while on the demand side, people must have the willingness and ability to participate in improving their own lives.

3.2. Collecting system-wide data relating to the Indian economy and generating authentic information is the responsibility of the various departments of the Government of India and the regulatory bodies. Apart from the Registrar General and Census Commissioner of India, and the Ministry of Statistics and Programme Implementation of the Government of India, being responsible for generating demographic data and statistics relating to major macroeconomic indicators, most of the other government Ministries/Departments have their dedicated in-house Divisions and Wings engaged in the task. These in-house Divisions also compile and monitor certain indicators relevant to the subjects dealt by them. Various international institutions/agencies bring out data on identified indicators which become handy for analysis of international developments and comparison with India. Besides, some private agencies like the Centre for Monitoring Indian Economy (CMIE) and Bloomberg have come up with substantial data on indicators many of which are not generated/collected by the government and the regulators. Of late, many online sources of alternative data have come into existence and are accessible for researchers to use though they supply data on payment. Over and above, researchers and research institutions undertake primary surveys to generate required information for specific studies for which secondary data may not be available. Besides, researchers and research institutions also use projections, interpolation, and extrapolation using scientific methodology to fulfill the data gaps.

3.3. These data are utilised both internally in the government for policymaking, and by the academicians/experts for conducting research and analysis. Within the government departments, internal reports, working papers, policy papers, briefs, etc. are prepared. At times, government departments engage with external experts and institutions to obtain the required research backing. After obtaining essential information and external expert advice/inputs, the policy papers are prepared internally. Such policy papers are prepared on preliminary policy ideas on contextual issues and are used for initial discussions at the official level within the Department. If considered appropriate, these are subsequently processed on file for consideration at the highest level in the Ministry. Once the Secretary and the Minister of the Department concerned give their 'in-principle' approval, a precise Cabinet Note is drafted.

3.4. Policymaking in any central government department takes place according to the Allocation of Business Rules, 1961, and the Transaction of Business Rules, 1961. Allocation of Business Rules allocates the business of the Government of India to the Cabinet Secretariat (which is assigned to the Prime Minister of India). The President may, on the advice of the Prime Minister, allocate the business of the Government of India among Ministers by assigning one or more departments to the charge of a Minister. The Second Schedule of the Allocation of Business Rules specifies the distribution of subjects among the departments. Transaction of Business Rules defines how the transaction of business must take place in the government. The Second Schedule of the Transaction of Business Rules lists the issues/cases that are required to be brought before the Cabinet for a decision[11] .

3.5. To obtain approval of the Cabinet on policy decisions regarding new policies/plans/ programmes/ schemes/projects or any other important initiative of the government, accurate and concise Cabinet Notes are prepared by the Department dealing with the subject. This note facilitates informed decision-making at the highest level of the government. The Cabinet Secretariat has specific instructions[12] for preparation of the Cabinet Notes to ensure that these notes are conceptually clear, lucid, and well-organised. The justification, financial implications, employment generation potential, etc. of the new proposal have to be clearly and accurately worked out and indicated in the Cabinet Notes. Thus, in a way, the Cabinet Note is the final stage policy paper/proposal for consideration by the government and is always treated as a "Secret".

---

[11] These include (a) Cases involving legislation including the issue of Ordinances; (b) Cases involving negotiations with foreign and Commonwealth countries on treaties, agreements and other important matters; (c) Proposals relating to creation of new corporations or companies wholly owned by the Central Government or by a public sector undertaking, setting up of new autonomous bodies, institutes of national importance, Central Universities or deemed to be universities, special purpose vehicles etc. (d) participation by the Central Government or a public sector undertaking in providing 20 share capital to a new or any existing corporation or company involving investments of more than one thousand crore rupees; (e) Increase in the firmed up cost estimates of schemes and projects, procurement and acquisition cases relating to different departments; (f) Proposals relating to creation of all posts in the Pay Matrix at the Level 14 and above; (g) Cases involving financial implications on which the Minister of Finance desires a decision of the Cabinet; (h) Cases in which the Minister-in-Charge of the concerned department desires a decision or direction of the Cabinet in a matter of importance on a subject assigned to his charge.

[12] https://cabsec.gov.in/writereaddata/handbook/english/1_Upload_3722.pdf

4. Gap between Research and Economic Policymaking – Causes and Roadblocks

4.1. There are various reasons for the existing gap between academic research and policy-making. It is attempted to list a few reasons here.

a) Unawareness of Academicians regarding policymaking processes and policy priorities : Many a times, academicians give policy suggestions which are not implementable. This is because of their unawareness regarding the policy priorities and policy-making processes followed in the Government.

b) No readily available list of subject experts/ academicians : There is no readily available list of subject experts/academicians with their specialties, which could be immediately accessed by the policymakers to identify the most suitable scholar/subject expert when there is a need to consult and obtain advice on an urgent pressing issue. Though UGC possesses a department and university-wise list of professors with their fields of specialization and expertise, UGC is not consulted by government officials. Besides, consulting the UGC would imply adding another layer before an expert could be identified which will require additional time and effort.

c) Academic Research takes much longer time: While academic researchers take much longer time to test and accept or reject the identified hypothesis based on sound research conducted on authentic data and analysing the same following sophisticated scientific methodology and techniques, policymakers look for quality research outcome for policy formulation at a short notice.

d) Indian Professors/Academicians lack research funds and easy access to data : Unlike American and European universities, Indian professors do not have research grants at their disposal. Secondary data-based research becomes old and obsolete by the time research is completed. This difficulty may also be partly accounted by non-accessibility to contemporary data to academicians. Even some public organisations sell data collected by them. This makes research both expensive and difficult for the academicians

e) Unwillingness of policymakers to engage with academicians : Senior Bureaucrats have always their hands full with daily work, clearing files, attending meetings, participating in events, and meeting numerous deadlines. In other words, they are preoccupied with their usual tight schedule of work and do not always find time to reach out to and engage with the academicians. Also, their engagement calendar remains mostly full. Academicians, when trying to approach seeking an appointment with a senior bureaucrat, are therefore mostly disappointed in receiving regrets. It is also a fact that a few bureaucrats who are willing to spare time to engage with researchers/ academicians mostly consider such engagement as unfruitful. Sometimes, the academicians/subject experts are asked to meet junior officials who may or may not have the capacity to go deeper into the nitty gritty of research (as they enter the service through competitive examinations before attaining any research degree), and also, their duties include other administrative responsibilities leaving not much working time which could be spared for the purpose.

f) Research outputs of universities and academic institutions are mostly outdated : Policymaking has to keep pace with the constantly evolving scenario and newer issues faced by the economy and society which need to be addressed through policies. As academicians are not made part of the policy discussions, they have no clue regarding the pressing issues that the government of the day is trying to address. Hence, attempts to obtain inputs from them at short notice, end up receiving inputs having substandard content.

g) Lack of high-quality academic capabilities : Though India has a large number of academic institutions and scholars receiving degrees, there is a dearth of high-quality research capabilities in them. Over the years, there have been brain drains either to foreign countries or to multinational private sectors which offer high-paying jobs and career prospects, leaving behind a limited number of capable people and a larger section of medium-quality performers in academic institutions.
h) Too much importance given to foreign degrees and publications of foreign universities/ institutions : There is a tendency ipso-facto to consider degrees obtained from foreign universities and research papers and books published abroad to be of better quality irrespective of their contents.
i) Inadequate number of faculty : In many institutions and universities, large proportions of faculty positions remain vacant for decades. Positions that fell vacant due to death, retirement, or due to some faculty members leaving the departments to join other universities remain vacant. Institutions like IIMs, IITs, AIIMs, /medical/ engineering colleges remain grossly understaffed.
j) Non-dissemination of research outcome to the relevant departments and policymakers : The research output/thesis/books produced in the academic institutions are disseminated in academic seminars/conferences and through publications in the form of books or papers in journals, but institutions do not make effort to bring their research output to the notice of the policymakers who may be interested in utilising the research findings for policy formulation. Professors and researchers also do not publish much in news media which attracts a larger readership. Some professors/researchers are of the view that leading newspapers have their ideological pet authors and they do not publish opposite views even in the section on letter to the editor.

5. Suggested Framework to Bridge the Gap between Research and Policymaking

5.1. Universities in many countries of the world are renewing their missions targeting to make a public and civic impact. The Stanford Institute for Economic Policy Research (SIEPR) and the Tobin Center for Economic Policy at Yale University are working together to make it easier for academic research to play a role in the regulatory process (Ahmed, S., Goda, G.S., et al. 2023).

5.2. A few academicians in India are also advising government agencies and contributing to policy-relevant research. At present, there is no framework or guidelines regarding how to build collaborative economic policymaking between academics and practitioners. It would be very rewarding to draw such a framework to attract more academicians to participate in economic policy work. The framework must be thoughtfully designed to mitigate the existing gaps and eliminate roadblocks.

5.3. A suggested framework is the following:

a) An electronic platform /portal like https://manthan.gov.in must be jointly designed and launched by academicians and government officials/economic policymakers to provide the necessary collaboration infrastructure. The portal could be hosted by the UGC, or the Institute of Economic Growth, or any other institution deemed fit.
b) Guidelines must be prepared for identifying central universities/national institutions/government-backed think tanks etc. which would work with the Government. The guidelines and list must be maintained digitally on the electronic platform created for the purpose, and updated and modified regularly.

c) The Government must enter into an umbrella agreement with all these institutions to obtain their research inputs for policymaking. The agreement may include the necessary details for collaboration. The agreement must also be uploaded on the electronic platform for ready reference of users.

d) Willing institutions/ academicians fulfilling the eligibility requirements must register themselves in the portal which would help build a ready list of subject experts on a given subject matter.

e) The electronic platform may maintain an electronic library in which all work/books/papers authored by the identified experts must be made available. The experts should regularly add their new work and post updates on the existing work, if any. Recent advancements in economic theory, especially macroeconomic theory may be given appropriate priority in updating, since macroeconomic theories generally constitute the backdrop of policy making.

f) Each government department must also engage with the experts through this portal. The policy-making processes followed in the government and the pressing issues of the time on which a policy formulation is required must be shared by the government with the identified institutions/ universities on the electronic platform seeking their input within a given time frame. In this context, it shall be helpful if each department of the government identifies and designates one or two middle or senior-level officials for this job.

g) Guidelines/handbook must be prepared suggesting the exact format and structure in which information, research details, and findings would be provided by the institutions to the Government. This must be made available in the electronic platform for ready reference by the institutions.

h) At least 3 institutions must be asked to provide their ideas, research details, and policy suggestions on the agenda under consideration. These must be submitted electronically in the given format and must be made accessible to all partner institutions and government departments.

i) The Government department concerned dealing with the issue must have an internal standing committee of 7 members including both from the Government and the academic institutions. This Committee will consider and discuss the inputs submitted by the institutions to fine-tune and integrate the research outcome for use in preparing the policy papers, ensuring authenticity of data, review of available work, and strong scientific methodology used to reach after the study. The outcome of their consultation must be made available on the electronic platform to maintain due transparency. Recent advances in research methodology should be made the subject of training periodically. Both the academicians and officials associated with policy research should be made to acquire proper knowledge of these advances.

j) Government departments and policymakers will further review the recommendations of the Standing Committee to use these inputs and decide policy alternatives, keeping in view probable positive or negative repercussions (like budget availability for implementation, political conflict of interest, hurting cultural norms, etc.), if any. It shall be rewarding if the proposed policy is simulated to generate the consequences of its implementation. This will familiarize the policymakers with the likely consequences of the implementation of the policy in the pipeline.

k) Based on these assessments, the research results and recommendations may be translated into policy and enacted into law if so required. This part of the processing will not be available to the institutions to maintain the Secrecy as required. Once the policy is announced, the same may be made available on the electronic platform.

l) Once the policy is formulated/enacted, the Government will need to ensure that the suggested policies are implemented. There may arise the need for training of stakeholders who would be involved in policy implementation. Creating a module giving step-by-step guidelines for implementation is of immense help for the same.

m) Concurrent evaluation and monitoring of the policy implementation should be an essential part of the policy. Two-way evaluation must be adopted. On the one side, feedback from the target groups must be obtained, while on the other side, feedback from implementing stakeholders must be taken. Based on such feedback, if so required, course correction must be done in between.

6. Conclusion

6.1 The current paper elaborately discusses the divergence and distance between academic research and public research related to policy making. The paper attempts to delineate and determine the current status of the gaps between the research conducted by the academicians and the research inputs needed for policy-making. It highlights the problems and limitations constricting research at academic institutions and the limitations and problems that constitute the roadblocks at the end of the policymakers. The existing mindsets of both the academicians and the policymakers may be an important cause of the existing gaps between academic research and policy research. Besides, the financial crunch may constrain meaningful policy research in academic institutions, while heavy workloads carried by the bureaucrats may be another factor that may account for the indifferent approaches at both ends. The absence of a standard research and policy framework is an important reason for the gap between research and policymaking in India. This paper emphasises the need for putting in place a strong economic policy and research collaboration framework to bridge the gap between economic research and policymaking. A tentative framework for collaborative research has been elaborately suggested in the paper. This may be thrown open for free and frank discussion to carry forward the idea.

References

1. Ahmed, Shagufta. Goda, Gopi Shah. Hahn, Michelle. Hehmeyer, Preeti. (2023). Following the rules: Connecting academic research to policy, Policy Brief, December, Institute for Economic Policy Research(SIEPR), Stanford
https://siepr.stanford.edu/publications/policy-brief/following-rules-connecting-academic-research-policy
2. Biswas, Asit K. and Kirchherr, Julian. (2016). Prof, no one is reading you, The Straits Times, Opinion, HTTPS://WWW.STRAITSTIMES.COM/OPINION/PROF-NO-ONE-IS-READING-YOU
3. Blewden, Michael. Carroll, Penelope. Witten, Karen.(2010). The use of social science research to inform policy development: case studies from recent immigration policy. Kōtuitui: New Zealand Journal of Social Sciences Online Vol.5 No. 1, pp. 13–25. https://doi.org/10.1080/1175083X.2010.498087
4. Bogenschneider, Karen. Corbett Thomas. (2010). Evidence-based policy making: Insights from policy minded researchers and research-minded policymakers. Routledge.
DOI https://doi.org/10.4324/9780203856390
5. Boswell, Christina. Smith, Katherine.(2017). Rethinking policy 'impact': four models of research-policy relations. Palgrave Communications, volume 3, Article no. 44. https://doi.org/10.1057/s41599-017-0042-z

6. Bultitude, Karen. Rodari, Paola. Weitkamp, Emma.(2012). What influences the gap between science and policy: the importance of mutual respect, trust and the role of mediators. Journal of Science Communication Vol. 11 No. 3, pp. 1-4.
https://jcom.sissa.it/article/pubid/Jcom1103(2012)C01/ [Google Scholar]
7. Coburn, Cynthia E. Penuel, William R. Geil Kimberly E. (2013). Research-practice partnerships at the district level: A new strategy for leveraging research for educational improvement. A white paper prepared for the William T. Grant Foundation, New York https://files.eric.ed.gov/fulltext/ED568396.pdf [Google Scholar]
8. Duiveman, Robert. (2020). Making research relevant to policymaking: from brokering boundaries to drawing on practices. Policy Studies, Vol.41 No.1, pp. 23–41. https://doi.org/10.1080/01442872.2018.1539226
9. Erismann, Severine. Pesantes, Maria Amalia. Beran, David. Leuenberger, Andrea. Faenham, Andrea. White, Monica Berger Gonzalez. Labhardt, Niklaus Daniel. Tediosi, Fabrizio. Akweongo, Patricia. Kuwawenaruwa, August. Zinsstag, Jakob. Brugger, Fritz. Somerville, Claire. Wyss, Kasper. Prytherch, Helen. (2021) How to bring research evidence into policy? Synthesizing strategies of five research projects in low-and middle-income countries. Health Research Policy and Systems Vol 19, Article 29. https://doi.org/10.1186/s12961-020-00646-1
10. Green, Lawrence W. (2008). Making research relevant: If it is an evidence-based practice, where's the practice-based evidence? Family Practice Vol. 25, pp. 20–24. doi: 10.1093/fampra/cmn055. [Google Scholar]
11. Ion, Georgeta. Marin, Elena. Proteasa Carmen. (2018). How does the context of research influence the use of educational research in policy-making and practice? Educational Research for Policy and Practice. Vol. 18 No. 2, pp.119–139. doi: 10.1007/s10671-018-9236-4. [Google Scholar]
12. Levin, Ben. (2013). To know is not enough: Research knowledge and its use. Review of Education. Vol. 1 No. 1, pp. 2–31. doi: 10.1002/rev3.3001. [Google Scholar]
13. McGuire, MaryEllen. Perna, Laura W. (2023). Connecting Policymakers with Academic Research to Inform Public Policy. Change: The Magazine of Higher Learning, Vol 55 Issue 6, pp.15–20. https://doi.org/10.1080/00091383.2023.2263188
14. Oliver, Kathryn. Boaz, Annette. (2019). Transforming evidence for policy and practice: creating space for new conversations. Palgrave Communications Vol. 5, Article no. 60. https://nature.com/articles/s41599-019-0266-1 https://doi.org/10.1057/s41599-019-0266-
15. Prakash, Shri. and Chowdhury, Sumitra. (1994). Expenditure on Education: Theory, Models, and Growth. National Institute of Educational Planning and Administration. New Delhi.
16. Prakash, Shri. (1996). Cost of Education: Theoretical Explorations and Empirical Prognostication. Anamika Publishers & Distributors, New Delhi.

India As An Economic Powerhouse For The Global Economy By 2047; Opportunities, Pathways And Challenges

Prof. (Dr.) Vikram Chadha[1]

Abstract

India became the fifth largest economy in the world in November 2022, and is predicted to adorn the status of third largest by 2028. At present it is the fastest growing economy among the largest in the world. Ambitious enthusiasts project that at this rate India may well become the $45 trillion economic powerhouse to energise the whole global economy by 2047 when India completes the centenary of its Independence. India's cautious and calibrated development strategy has held us in good stead and has shielded us from any economic turbulence in the world economy. India has also never given shocks to the global economy, and hence has earned the trust of both the developed and developing economies. In the Amritkal of India's centenary celebrations of independence, the country has acquired innate economic strengths that would enable India to lead the global economy by 2047. Foremost is the vast talent pool available with a strong tradition of scientific and technological base. India has a youthful population that would allow us to reap demographic dividend with skill formation. India is emerging as the global hub of value supply chains which would be reinforced with sound infrastructural and logistics development. India's promise of providing and generating clean energy to ensure climate goals is also a beacon for the world. India is emerging as a resilient knowledge economy empowered with intricate digitalisation of vital sectors. It is emerging as the innovation hub and a start-up repository of the world. Nevertheless the challenges remain, such that the ambitious strides need to be silhouetted with skilling up its vast population; revenue gaps need to be plugged; massive thrust to infrastructural development; rooting out systemic problems as rampant poverty and gnawing inequality; population contraction, and a bourgeoning unemployment rate needs to be arrested.

India As An Economic Powerhouse For The Global Economy By 2047; Opportunities, Pathways And Challenges

In November 2022 India surpassed the British economy as the Fifth largest economy with GDP of $3.17 trillion. At present it is the fastest growing among the largest economies of the world. IMF predicts that by 2028 India will overtake Germany and Japan to become the 3rd largest economy- it'll touch mark of GDP $4.97 trillion by 2027; and $ 5.36 trillion against Japan's $5.17 trillion, by 2028. It is contended that the country has the potential to become $45-50 trillion economy by 2047 when India attains a centenary of its Independence.

But before that the short term aspiration is to achieve the target of $5 trillion economy by 2025. For that the country has to grow at 9% consistently- and with the current population level, per capita income may rise from the current $2475 (nominal) to $3472- but even then it'll still be a middle income country. To be classified as developed country, the PCI has to be a minimum of $13205 (Rangarajan, 2022), which India May take 20 years to achieve with present growth rate of about 6.8%.

[1] Formerly, prof & head Punjab school of economics Gnd university, amritsar

To become a developed nation and the powerhouse for the global economy with GDP of $45 trillion by 2047, India's nominal GDP has to grow by 12% and a deceleration of population growth by 0.01% (China has achieved 0.01% contraction in 2023 and its population has contracted by about 90 lakh). With this rider alone India's per capita GDP of $2475 would grow to $26900 (which is the present level of PCI of Spain, while PCI of the US is $62400)[Banerjee, 2022].

India's overtaking of the British economy as the 5th largest economy of the world vindicates the inexorable macroeconomic foundations of the economy that has catapulted it into the league of elite economies of the world. The Presidency of G20 group of developed and developing countries also is a pointer to the potential of the country in leading the global economy. As a true leader India wants to make this group more inclusive by affording a veritable platform to the global south, and therefore as a prelude to formal proceedings of the G20 deliberations, a Virtual Voice of Global South Summit with the theme Unity of Voice, Unity of Purpose was held on 12-13 January 2023 in which India as global leader involved 125 South countries (Singh, 2023). The world acknowledges the power and promise in India being the vibrant powerhouse on which the global economy can bank upon and thrive.

India's Relentless March On The Road To Progress: India was an economic minnow in the comity of nations in 1947 when it attained independence from colonial rule of over 200 years. None could have visualised the present stature of a fast growing economy having potential to become an important hub in the global value chains and a robust 5th biggest economy in the world. This stature became possible due the sagacious and calibrated approach of our planners and leaders. The resolute march of the economy by imbibing the tenets of a self reliant economy by envisaging economic development strategies based on selective engagement with the world.. Instead of adopting a completely open door policy and falling in the trap of dependent development, we chose to adopt a balanced path of export promotion supplemented with import replacement.

Inspite of myriad constraints on its development, viz. a behemoth of population more so with all the decadent demographic features, viz. malnourished people; skewed gender ratio, illiteracy, poverty and inequality, and slow urbanisation; and many structural, infrastructural and supply side constraints. But India never lost sight of a resolute and sustained march on the path of development, imbued with the ideal goal of attaining self reliance. This approach emboldened us to take up many new initiatives in manufacturing, medicine, agriculture, science and technology, even if it involved greater costs, disproportionate with our resources availability (Chadha, 2001; Chadha; Chadha & Choudhary, 2018)

Inspite of humble growth realisation through 1960s through 1970s and 80s, we never abjured the path of self reliance through calibrated policy initiatives and poised development initiatives. India never believed in adopting aggressive or disruptive stances in its economic resolves. And that's why India has never been instrumental in causing ripples of economic shocks in the global economy- whether in any kind of financial or currency or economic crises, or any debt or recessionary scenarios in the world economy. On the contrary what has been the actual stance of the Indian policy makers and leaders- to help others in a turbulent situation, whether through the supply of medicines/vaccines as in the recent pandemic, or reaffirming support to ensure food security as a sequel to the Ukrainian war in 2022? India has been found to be a dependable link in global value chains in the domain of pharmaceuticals, steel, textiles, gems and jewellery, food and agricultural products, and now human capital; start-ups and digital assets (Chadha, 2022)

From a food deficient country till 1960s, India transformed into an exporter of food grains; from a primarily agricultural economy with over 56% share in GDP, to a service sector dominated economy with over 50% contribution to GDP; from a low literacy economy, India has transformed as a monolithic hub of pooled talented and skilled scientific and technical manpower; from a low connectivity to a rapidly digitalising economy; from a land of snake charmers to a land of taking rapid strides in space and rocket sciences; and from a land with the dead weight of underdevelopment and dependent development of the colonial days, to a self sufficient rapidly developing economy riding on the crest of 'make in India' initiative; from a laggard nation in the comity of nations- to lead the G20 group of developed and developing nations. India is rightfully becoming the beckon of development and the powerhouse of the world's economic growth.

Due to a calibrated and cautious approach, India could insulate its economy and keep afloat against major global economic, financial and currency crises and upheavals, be it the Mexican Currency crisis of 1994; or the Financial crisis of 1997-98; or the American Sub-Prime crisis triggered global melt down of 2008; or the recent pandemic of 2020; and the most recent ongoing Ukrainian war of 2022. Indian economy has always been resilient against economic shocks because of its robust macroeconomic fundamentals.

As a matter of fact, since the opening up of the economy in 1991, India has realised many periods with considerably high growth- above 8% GDP growth in 1999-2000; 2003-04; 2005-08; and 2010-11. Subsequent to the growth plunging to 3% in 2008-09 triggered by the US mortgage and global fuel crisis when the international oil prices skyrocketed to over $140 per barrel, the Indian economy bounced back to 9.8% growth in 2010-11. Similarly as a sequel to demonetisation of 2016, and introduction of GST in 2017, the economy nosedived to 7.04% in 2017 and to 6.12% in 2018 and 4.18% in 2019, and during the pandemic of 2020 when the economy contracted by 6.6% during 2020-21, but due to the strong macroeconomic fundamentals, the economy rebounded by 8.7% growth in 2021-22.

During the ongoing Ukrainian war in 2022, the global economy is mired with inflation due to supply chain disruptions and scarcities of food, fuel, chemicals, fertilizers, cement, pharmaceuticals, steel and so on. In India the CPI based retail inflation had crossed 8%, while WPI based wholesale inflation had exceeded 15%. Only in November 2022, retail inflation had plunged to 5.63% and in December 2022 to 4.57%. Due to supply chain disruptions the whole global economy reeled under intense inflation- in the US it breached 15% mark, in UK it crossed 10%, and in Japan and Germany it was no different.

The monetary and fiscal measures to contain inflation deployed by all countries across the globe have resulted in monetary squeeze, and hence have dented investment plans thus adversely impacting growth scenarios in the forthcoming period. Already the IMF has reduced India's growth forecast from 8.7% in 2021-22, to 6.8% in 2022-23 though RBI is more hopeful at 7.3%..

But in comparison, due to inflation targeting, the US growth is already down to 1.6% and is expected to f all to 1% in 2023-24. Germany's growth is low at 1.5% and is expected to fall to -0.3%. China's growth has also fallen from 8.1% last year to 3.2% now. Global average growth is 3.2% at present, down from 6.2% last year. Next year the global economy is expected to grow at just 2.7%. As per latest projections of the World Bank, recession would constrain the global growth to 1.7%. Thus, due to better economic antecedents, Indian economy doesn't exude as gloomy forebodings as others in the near future.

In this way, in the current scenario, though the whole global economy has been hit hard- first by the Pandemic in 2020-21, and subsequently by the Ukraine conflict, but the impact on the Indian economy is less severe than many developed and developing countries.

Not only India has never jerked the global economic progress through disruptive moves, on the contrary has the capacity to become the catalyst of global economic development and production. That's why during 2000 to 2022, India received FDI inflows of $847 billion, out of which about 40% i.e. $523 billion came only during 2014 to 2022. The highest FDI inflow growth into India indicates the acceptability of India as foreign manufacturing destination due to inexpensive skilled manpower; rising ease of doing business; programmes like 'Make in India', and 'Skill Development Mission'. A sustained GDP growth since 2014 has catapulted the economy from 10th largest to 5th largest economy in 2022. This has motivated our planners to aim at propelling India from a $3 trillion economy to about $45 trillion economy by 2047 when India completes a centenary as independent nation (Goyal, 2022 a).

So what are our strengths that can transform India as the powerhouse of growth for the world economy by 2047 which can sustain and drive the growth of other nations? In other words, what pathways can lead India to become an economic powerhouse to energise the global economy by 2047?

Pathways/Strengths/Strategies To Energise The Global Economy By The Indian Economic Powerhouse By 2047:

1. A Vast Talent Pool And A Rapidly Emerging Knowledge Economy Of India: India has emerged as a high quality manufacturer of valuable goods and services with the skill pool available across sectors including IT, textiles, hospitality, gems and jewellery etc. India has the advantage of a younger and productive population. About 64% of the population is in the working age group of 15-60 years and a lower dependency ration of 8% (Goyal, 2022).

With a labour force participation rate of about 45%, i.e. about 60 crore people, out of which about 9 to 10 crore are highly skilled and professional labour which is already powering the IT and ITES sectors all across the countries- from Silicon Valley in the US- to Europe; South America; Asia, South-East Asia and Africa- and are remitting valuable foreign exchange to India. Almost 50% of India's foreign exchange earnings come from IT exports and no less than 40% employment is generated in this sector. India is already reaping rich dividends from this demographic transition and also energising the global knowledge economy.

About one million doctors, engineers and scientists of the Indian origin are working in the US. During 2003-13 their number increased by 85%. About 3.3% of the scientific researchers in the US are Indian immigrants. Same is the story for Europe and Australia. So India has provided scientific and technical workforce to the whole global economy for its growth. India has the largest stock of Diaspora which transfers the largest foreign remittances. In 2022 India got $100 billion remittance from its immigrants which increased from $89 billion in 2021 and $83 billion in 2020.

Average age of India's technical experts abroad is 38.7 years in comparison to the global average of 43.1 years, which means that they will add to wealth of those countries for a longer period. Out of these 35% are graduates, 54% post graduates and 6% hold Ph.D. Thus highly professional manpower from India is driving growth of the world. Among these experts, 31% are donning senior/special position; 21% are managers, while 26% work in lower or middle level workers.

Among the CEOs of top global companies 12 are Indians including Alphabet (Sunder Pichai); Satya Nadella is heading Microsoft; Parag Aggarwal is helming Twitter; Leena Naik of Chanel; Shantanu Naryan of Adobe Inc. and so on. Top 30 companies of the world have Indian origin CEOs including Pepsi, MasterCard, IBM, Cognizant, Nokia, Google and so on.

So India is the refractory of masterminds that steer the world economy.

2. India As Conserver Of Global Climate And Ecology: India has taken the pledge to save the world from a deteriorating climate and ecology. Clean energy, bio-energy and digital revolution will govern India's transformation from a $3 trillion economy to $45 trillion economy by 2047 (Ambani, 2022). In this regard India has adopted the Clean Energy and Bio-Energy Agenda. India attracts $13 billion FDI in non conventional energy sector. In 2022 alone India could attract about $10 billion investment in renewable energy sector. India has also assumed a target to produce 5 MT of green hydrogen by 2030

India is the 3rd most attractive destination for renewable energy investment and development. India is also 3rd largest energy consuming country in the world. India stands 4th globally in renewable energy installed capacity including hydro; 4th in wind power capacity and 4th in solar power capacity. Thus total renewable energy sources installed capacity is 163 GW (Gega watts) including hydro power.

India has already set a target to reduce carbon intensity of nation's economy by less than 45% by 2030, and achieve net zero carbon emission by 2070, as a pledge at the COP21 Summit in Paris. By achieving 40% energy requirement from non-fossil fuels in 2021 India has shown to the world that growth and climate sustainability can go hand in hand. India has also promoted multilateral initiatives such as International Solar Alliance. India stands for Climate Justice in tackling climate crisis in which the developed world should take the responsibility of climate finance and technology. India has already been ranked amongst 5 top countries in the world and best among G20 countries on climate change performance. India has already garnered biomass energy installed capacity of 10 thousand Mega Watts by 2022. It is most suitable for rural India and to support its drive to clean green energy initiative for overcoming climate crisis. Such initiatives would enable India to increase non-fossil fuel capacity to 40% by 2030.

Thus a clean energy revolution and bio-energy revolution will produce energy sustainability, while digital revolution will enable us to consume energy efficiently. So if India is able to achieve its clean green energy targets it will become a powerhouse for the global economy to preserve climate sustainability which is imminently required for substantial development of the world economy.

3. India's digital revolution empowering india's global march: India has been rapidly digitalising the economy for a fast paced equitable and inclusive development. Between 2005 and 2021, India pulled out 41.5 crore from multidimensional poverty. Over the last decade, India has speedily alleviated poverty through technology and digitalisation. In 2014, India embarked upon the opening of Jan-Dhan bank accounts for about 50 crore poor and underprivileged people, including 26 crore women. With India's digital identity system- including Aadhaar and Unified Payment Interface (UPI), interventions and transfers have been targeted at an individual level. Similarly digitalisation of health initiatives in the form of Ayushman Bharat and PM Jan Aryogya Yojna, benefitting 50 crore people; and also inclusive insurance scheme PM Jeevan Jyoti Bima Yojna giving cover of Rs. 5 lakh to the insurer.

Digital transfer of Direct Benefits to individuals ensured that each penny of the welfare expenditure percolates down to the grass roots without any leakage. In 2020, while the whole world was in the middle of the Pandemic and struggling to sustain the livelihoods of its people, India could secure the livelihoods of the poorest of the poor by making direct targeted cash transfers. Today India's world class digital public infrastructure of identity system and digital payment system is a model for the rest of the world. Even during Covid-19, the vaccine platform CoWin helped India to scale its vaccination effort and administer more than 2 billion doses. This is a model that the developing and developed world can emulate and India can share its experiences and learning with them (Reddy, 2022).

In the times of crisis in the middle of the Pandemic, India provided Covid-19 related medical and other assistance to over 150 countries; and provided 75 million doses of Covid-19 vaccines to 94 countries. During the ongoing Ukraine war, besides evacuating its own 22500 Indian nationals, India evacuated about 150 foreign nationals of 20 countries to safety. India was also willing to export food grains as humanitarian aid to the war ravaged areas to counter supply shocks and rising food prices. India is the cheapest global supplier of wheat and rice- exporting rice to 150 countries and wheat to 68 countries. Farm exports exceeded $50 billion in 2021-22. Thus India's digital transfers besides addressing local needs, also addresses concerns of other countries, which makes India a potential digital leader of the world. (Jha, 2022).

4. India's startup economy- another pathway to economic powerhouse: India's digital economy also manifests in its initiatives in promoting Start-ups. Start ups symbolise innovation, need oriented economic adaptation and growth in a modern digital economy. The global start up economy is about $3 trillion and is growing. Their role in innovation collaboration across borders, assisting achievement of sustainable development goals, and their life saving role in Pandemic was quite evident. They help in job creation; technological advancement; crisis management and long term economic growth.

India's start up ecosystem is the world's third largest with 1072 Unicorns and more than 83000 recognised start ups and ever expanding innovation ecosystem to support them. India aspires to lead the world to develop an inclusive framework to support innovative start up financing models especially for sectors of global importance. India has initiated Start-up 20 Engagement Group under India's G20 Presidency to create a global narrative for supporting start ups and enabling synergies among stakeholders including entrepreneurs, finance, innovation system and corporate. Through this Start up Group, India envisions to lead the world to bring the spirit of One Earth, One Family and One Future by supporting start ups across nations which are inclusive, and help achieve Sustainable Development Goals (SDGs) Vaishnav, 2022.

5. India- A Tenuous Link In The Global Supply Chains: Geopolitical dynamics are propagating India as the emerging manufacturing and logistics hub for the global economy. Supply chains around the world are transforming due to the geopolitical realities. Rapid adoption of e-commerce is triggering opportunities for India to become the leading manufacturing and supply chain hub for the world.

First due to Covid-19 and then the Ukraine war severely disrupted global supply chains, prompting new vistas of diversification of supply sources and manufacturing location. Many companies are intending to relocate their production heads in other countries than China, like in India, which is the 7th largest recipient of FDI in 2020-21 at $64 billion.

India is bound to become a global supply chain leader by 2047 because the Government of India is putting in a concerted effort to develop road, rail, port and transport infrastructure. The PM Gati Shakti National Master Plan has set aside Rs. 19.64 lakh crore in 2021 for implementation, monitoring and support mechanism for infrastructure development, particularly to boost infrastructure productivity. Between 2019 to 2023 the Government is spending some $1.4 trillion in infrastructure. India, US, Israel and UAE launched a quadrilateral economic forum to concentrate on regional infrastructure projects (Jain and Dhar, 2022). India's infrastructure sector is expected to grow at 7% per annum (Iyer, 2023). Particularly with 35% increase in the Capital expenditure at Rs. 10 lakh crore in the Budget 2023-24, that would be mainly spent on bolstering infrastructure.

Under National Logistics Policy, investment in logistics, including eco-friendly water ways; air cargo terminals and cold storage facilities on airports etc. is going to increase from $200 billion to $320 billion over 2020-23 which will strengthen India's supply chains (Das, 2022).

Key sectors where supply chains hubs will come up in India to power the world economy include, pharmaceuticals (3rd largest in the world); telecommunication and Smart phone manufacturing (2nd largest in the world); automotive sector (world's 4th largest); chemicals industry (world's 6th largest) and so on. Other largest supply chains would emerge from software outsourcing; textiles; electronics; consumer durables, and so on.

The supply chains in India are substantially production cost effective and sustainable due to diversified corporate environment, inexpensive and skilled labour, positive demographic dividend, strong macroeconomic fundamentals including, saving and investment rates, export growth, Governance, price stability, large consumer market, improved ranking of ease of doing business, and resource availability and so on. India is emerging as the hub of Asian Supply chains. In 2021, Australia, Japan and India jointly launched Resilient Supply chain Initiative to diversify supply chains by developing industrial clusters and reduce dependence on China. In July 2022, 18 nations including India, US and EU resolved to collectively build long term resilient supply chains. India is always a trusted partner for reinforcing the manufacturing and technological capabilities so as to build alternative supply chains to China, whether through such initiatives as Indo-Pacific Economic Forum (IPEF); or the ongoing negotiations with the US on Initiatives on Critical and Emerging Technologies (ICET). India and the US will exchange latest technologies and expertise in areas like Artificial Intelligence and Quantum technologies, while India has adequate technical talent pool in this domain (Jha, 2023).

India's position as future manufacturing hub has been strengthened by sealing FTA agreements with UAE and Australia and Mauritius, while FTAs with UK, Canada and EU are in the pipeline. Many global companies including Ericsson, Volvo, Apple, Amazon and IKEA, have initiated production in India which showcases global confidence in India as resilient supply chain alternative and a competitive manufacturing hub with a reformed tax system under GST, competitive labour reforms and labour up skilling, and National Infrastructure Pipeline, which will integrate Indian market with global manufacturing (Chadha, 2022).

6. India As The World's Innovation Hub: Over the past few decades, India has been playing the role of innovation powerhouse of the world. India first helped the world to wriggle out of the infamous Y2K crisis to ensure business resilience. Same was India's position during the Covid-19 pandemic when the whole world looked to India's technology industry- one message came out- India is the solution.

India's technology industry has the presence of some 100-150 countries, and India ranks on the top in Asia in the Global Innovation Index 2021. The major player in the innovation game is the Indian start-ups in the West, right up to the Silicon Valley. These forge inclusive public technologies. They do it for the larger good of the society- that attracts global attention. So India has the potential to lead the world in Unified Payments Interface (UPI), and shared learning; technology and service delivery, ease of doing business, world class infrastructure, favourable demography; a vibrant start up eco system, and a vast pool of digital talent, this all allows India to take a position of innovation nerve centre of the world.

Indian tech companies are already well integrated with global economy, e.g. Indian IT contributed $80 billion to the American GDP in 2021, and employed 6 lakh people. During 2017-20, Indian IT companies generated $103 billion revenue and employed 2.7 lakh people.

These employees contributed to the development of vaccines and drugs for Covid-19.
As the world is becoming a knowledge based economy and society, in other words, sectors are moving towards digitalisation of services, the Indian technology industry is well positioned to fill the talent gap required to manage rapidly digitalising knowledge economy all over the world. Indian IT workforce, talent pool of engineers and scientists hold out promise to provide not only services, but software development to man these sectors. These services to the rest of the world are estimated to generate a $1 trillion value by 2030.
So, the world is looking to India for technological solutions of multiple global problems- not only business problems, but societal, sustainability and humanitarian challenges, healthcare services and inclusive digital literacy and so on. Human trouble shooting has become technology centric. Those nations have competitive advantage which has digital talent pool, and India with a vast reservoir of its scientific and technical manpower, has the entire wherewithal's to lead the world as a technological powerhouse in the next 25 years (Ghosh, 2022).

Challenges

Although during 1950s no one could have visualised India transforming from a primarily agricultural economy contributing 56% to GDP, to a service sector driven economy with 50% GDP coming from it; from a life expectancy of merely 39 years to about 70 years; from an infant mortality rate of 133 per thousand, to just 30; from a low connectivity, to a country with a gigantic edifice of physical and social infrastructure over the last 75 years since independence.
Now in the next 25 years, India is poised to become a developed country by 2047, and exceed the per capita income of $26000 which is almost 13 times more than today's PCI. India is a big consumption driven economy with over 65% GDP coming from consumption, and that's why it can become the manufacturing hub and a conduit for global supply chains. India has a young population and a strong scientific and technological base. The economy is rearing to go forward such that by 2047 it has the potential to become the economic powerhouse for the global economy. Nonetheless many challenges remain to stymie it trajectory to be the global economic powerhouse:
i. India has a large population to support. Although over 60% is young population in the age group of 15-64 years, yet in 2023, India is overtaking Chinese population of 1.4 billion, and by 2047, India would become the most populous country with 1.6 billion. Huge expenditure is required to support such monolithic stock of people.
To reap the population dividend, up skilling of the technical workforce is required to make them industry ready for new jobs. They not only have to be employed, but made employable with manufacturing capabilities and technical knowledge including robotics, artificial intelligence; virtual devices and manufacturing chips. High intensity skills need to be formed, e.g. by selecting One District- One Skill consistent with the chosen manufacturing product therein. High efficiencies would need to be forged and internal migration prevented (Sachdeva and Chadha, 2016).
ii. Ample financial resources would be required to up skill the youth to make them employable; R&D investments have to be raised to a minimum of 3% of GDP; infrastructure pipeline investment. But the revenue position is already bleak, the economy is characterised by a low tax buoyancy and a low tax – GDP ratio of just about 16% in comparison to e.g. Spain's 35%; the debt-GDP ratio is as high as high as 83% and the fiscal deficit of 9.3%of GDP. Inflation being already high, how much expenditure could be absorbed in the economy to remain non inflationary. Already fiscal deficit is estimated to be 6.4% of GDP in 2022-23, down from 6.9% in 2021-22; and from 9.2% in 2020-21, which is much above the recommended 3%. India's CAD in 2022-23 is also high at 4.4% of GDP mainly on account of rising fuel imports.

So aggravated expenditure coupled with high debt ratio will further winch up inflationary pressures to subvert growth prospects. To circumvent this problem, the government has embarked upon the asset monetisation scheme to mobilise resources for advance infrastructural investments without impacting the fiscal health of the economy. Similarly infrastructure projects could be provided through raising securities in the stock market, rather than financing through the budgets.

iii. As per World Bank Classification, India with per capita income of about $2320 (nominal) or $8290 (PPP) lies in the category of lower-middle income economy. It is behind Bangladesh and is ranked 142 (125 in terms of PPP). A country becomes developed high income if PCI is over $12000 (the present PCI of USA is $69807; UK $47334; and China $12550). A developed country has high PCI, a high living standard, and a high Human Development Index- with a high score on education, literacy and health.

Not only India's PCI is low, but income inequality is extremely high. India's top 1% population corners 40% wealth, while the lower 50% subsists on 30% wealth. Although since 2014 over 40 crore people have been lifted out of extreme poverty, yet socio-economic standards of development are very regressive. That's why India ranks 107 on Global Hunger Index; and ranks 132 on Human Development Index.

iv. Lack of governance; rampant corruption; unequal and discretionary application of rules; lack of monitoring and serious project evaluation results in wastages and leakages; absence of sanitation and hygiene- resulting in pollution and ecology contaminating practices. Lack of quality consciousness and competitiveness.

v. High unemployment rate of over 8% and low labour participation rate of 42%. Over 90% employed in unorganised sector with pathetic living and working conditions, with low wages and low social security and job security. This was made amply evident during the recent pandemic when the informal labour- mostly migrants- were left to fend for themselves- without work, shelter and food.

vi. Inspite of rising literacy, over 25% of population is still illiterate, which is a big segment. Inspite of rising enrolment ratio, qualitative and state of the art dispensation of education is amiss, resulting in an unemployable human resource, manifesting in high rate of attrition (Sahay, 2022). The latest ASER (Annual Status of Education Report 2022) also indicates serious lapses in learning capabilities of students.

A Dissenting View

In view of the above constraints, one view is that India is unnecessarily trying to assume world leadership, whereas it is struggling to even reach basic development objectives concerning health, poverty alleviation and education. India's growth path has been so erratic that whereas in some years India registered even double digit growth, while in others it even slumped behind but lags behind not only from rich countries, but even minnows like Bangladesh and Vietnam as well. As a matter of fact, in a multi polar world it may be counterproductive to chase prominence on the world stage, the kind of dominance that the US or Soviet Union had enjoyed at one time. China rather carries bigger weight-both economic and political- though since Covid-19 it has got a debilitating drubbing.

India instead of old game of great power competition, should focus relentlessly on domestic development, investment, education, building sustainable future. In this regard, India's renewable energy push to install 500 GW of non-fossil energy by 2030 is truly a pathway to take lead in the world. Similarly there is an overwhelming response from various countries to build solar-generating capacity.

Similarly renewed emphasis on producing hydrogen energy under the National Green Hydrogen Mission (India targets to use at least 30% hydrogen energy component in oil refineries, and 40% in fertilizer manufacturing by 2025) and other new technologies to generate renewable energy would catapult India to the world stage. Similarly, India's digital revolution and pharmaceutical products and diagnostics can catch the fancy of the countries to usher India in to the lead position. So India will have to choose areas of competitive brilliance to show the path to other countries as a veritable leader.

Conclusion

The Indian economy, with its natural shock absorbers has strong macroeconomic fundamentals and therefore is quite resilient. Its financial market resilience owes to the growth of domestic institutional investors that stepped in when foreign institutional investors began exiting with rising US Fed rates. Tax revenue resilience manifesting in rising direct tax collection and GST collections owes to increasing digitalisation and formalisation of the country. India's energy resilience emanates from the growth of renewable including solar power, green hydrogen and ethanol in the energy mix. And lastly consumer base is rendering India's medium and long term economic prowess very strong.

Until recently even the aspiration of India becoming a $5trillion economy by 2023 looked remote, but India's growth trajectory is inevitably making it happen. For India to become a really a mature developed economy, we will need sustained structural reforms; given more traction to services sector; become a global manufacturing hub; reduce human load of agriculture, and make demographic dividend deliver and usher in massive investment in health and education, and broad basing progressive tax regime; banish gender disparities and root out corruption.

References

1. Ambani, M. (2022), "India Will Grow to a $40 Trillion Economy by 2047", https://www.ndtv.com/business, November 22, 2022.
2. Banerjee, R. (2022), "India @2047", www.pwc.in/immersive outlook/India@2047.

3. Chadha, V. (2001), "El Modelo Desarrolo Economico de la India", Mexico yla Cuenca del Pacificio (Mexico), Vol.4, No.14, Sept-Dec, pp72-78.
4. Chadha, V.; N. Chadha & P. Choudhary (2018), "La Transformacion Estructural Y El Imperativo Manufacturero En La India Contemporanea Lineas Cambiantes Del Nuevo Paradigma Del desarrollo", in J.L. Calva (ed.), Estrategias De Desarrollo Economico, (Mexico): Consejo Nacional De Universitarios, Universidad De Guadalajara, pp.161-83.
5. Chadha, V. (2022), "Reviving Post-Pandemic Trade in India Through Recently Negotiated Free Trade Agreements (FTAs): Opportunities and Constraints", SAVASS Journal of Social Sciences, Vol. 10, Special Issue, December, pp.14-26.
6. Das, L. (2022), "India Playing a Major Role in the Global Supply Chain System", The Times of India, April 15.
7. Ghosh, D.(2022), "India Could Play the Catalyst for Technological Innovation Across the World", Mint, 9 August, www.livemint.com
8. Goyal, P. (2022), "India to Become a Powerhouse Driving Global Growth by 2047", Mint, 11 September p.1.

9. Ibid. (2022), "Indian Economy in 2047 will be Like Powerhouse Driving Global Growth", https://www.business standard. Com/article/current affairs, December 14.
10. Iyer, P. (2023), "How PLI is Creating a Growth Ecosystem", The Hindustan Times, January, 31, p.16.
11. Jain, B. and I. Dhar (2022), "Growth of Infrastructure Sector in India", www.thehindu.com, August 3.
12. Jha, P. (2022), "The Next Big Step in India's Digital Story", The Hindustan Times, December 7, p.16.
13. Jha, P. (2023), "With ICET, India and US Open the Tech Gates", The Hindustan Times, February 3, p.10.
14. Rangarajan, C.(2022) ,"At 8-9% Growth India Will Take 20 Years to Become Developed Nation", The Tribune, 25 December, p.12.
15. Reddy, G.K. (2022), "India's 2047 Goals Will Guide G20 Presidency", The Hindustan Times, December 12, p.8.
16. Sachdeva, H. and V.Chadha (2016), "Low Quality and Employability of Workforce in India's ICT Sector: A Theoretical Framework", Anvesak, Vol.46, No.1, pp.47-60
17. Sahay, A. (2022), "Challenges on the Road to India Becoming a Developed Nation By 2047", www.moneycontrol.com, October 20.
18. Singh, G. (2023), "Lending Voice to Global South", The Tribune, 17 January, p.6.
19. Tooze, A. (2023), "Is This Really India's Moment in the World", The Hindustan Times, January 21, p.10.
20. Vaishnav, C. (2022), "How India Aims to Help Start-ups in G20 Nations", The Hindustsan Times, December 12, p.8.

Policy of borrowing capital by electronic Goods Industry in India with reference to Impact of recession on minimum borrowed Capital

Hitesh Kumari[1]

Abstract

The paper examines the minimum capital borrowed by 14 sampled companies of Indian electronic Goods Industry from 1995 to 2020 during 5 phases of recession. Paper focuses on i) whether the distribution of minimum the borrowed capital by the companies during the different pairs of recessionary phases diverges from normal distribution; whether the differences between the means and the medians of minimum borrowed capital are statistically significant; iii) whether the differences between the averages of the minimum borrowed capital during the different pairs of recession are statistically significant; iv) whether the samples of borrowed minimum capital in the different phases of recessionary phases are independent or related; v) whether the minimum borrowed capital between the different phases of recession differ significantly and whether the minimum borrowed capital by each company during all the phases of recession differ significantly between the companies.

The following models/methods of data analysis are used; i) summary statistics; ii) t-tests of the differences between the averages and the median and the difference between the averages; iii) median test; iv) two factor ANOVA without replication) sign and sign rank tests.

The following are the main findings of the study: i) distribution of the minimum borrowed capital by companies significantly diverges from normal distribution; ii) the variation of the minimum borrowed capital is statistically significant between the companies but it does not differ significantly between the different phases of recession; iii) the median test shows that the null hypothesis is not supported by empirical evidence in all the 10 pairs of the phase of recession; iv) median test also shows that the null hypothesis is not supported by empirical evidence associated with the 5 pairs of 5 phases of recession with the companied sample with all 5 recession phases; v) results of sign and sign rank tests also do not support null hypothesis in all the 5 Paris of recessionary phases with combined samples.

Key Words: Recession, impact, electronic goods industry, Minimum, loan Capital, ANOVA, Median Test, t-statistics

Introduction

Most of the business companies operate on public funds. The companies raised funds from stock market, underwriters, promoters, own funds, loans and revenue earned from the sales of output. In most cases loan capital is required and raised for (establishing and initiating business operations, expansion / growth and diversification of business operations and facing financial crises. Therefore, each company has an explicit financial policy.

The author is grateful to Professor Shri Praksh for useful suggestions for improvement. Usual declaimers apply.

[1] Dr. Hitesh, Assistant Professor, Department of Economics, Fairfield Institute of Management and Technology, New Delhi, Email Address: hiteshbsr91@gmail.com,

Financial policies of the company have two parts: raising finance and determination of the pattern of allocation of resources among different lines. The total expenditure of the companies may broadly be classified into capital expenditure and revenue/ operational expenditure. Capital expenditure comprises investment in land and buildings, machinery and equipment, tools and instruments, hiring of labor and managerial services, row materials and intermediate inputs etc. Besides, companies also incurred expenditure on auxiliary capital which comprises transport and communication means instruments, furniture and furnishing etc. There is some fixed and committed expenditure on such items as rent of lands/buildings (actual or imported) electricity and telephone bills, repayment of loans and interest their off. Needless to say that loan capital and loans raised for other purposes play critical role in discharge of responsibilities by the companies. The amount of loan capital may vary between the objectives for which loan is taking and during different points of time depending upon financial needs and own resources of the companies. Obviously, loans are inevitable in part of resources of the companies. It is probably in view of this important of loan capital that Modigliani opines that the financial health of the companies depends on loan capital. Greater the proportion of loan capital in the total stock of capital, better is the health of the companies. Modigliani seems to consider the capability of the companies to raise loan capital and the ability to absorb and utilize effective the same. We may relate is proposition with the theories of the firm. The neo-classical theory of the firm states that the firm is in equilibrium if it earns the maximum profit in the given state of the market. But Baumol proposed the managerial theory of the firm. The modern firms are run and managed by professionals whose career is directly related to the quantum of sales of their respective companies. Therefore, the managerial theory of the firm considers the sales maximization both as the objective and equilibrium of the modern firms. But Williamson disagrees with the both these theories. He opines that the maximization of the growth of output represents the state of equilibrium. In our opinion, the ultimate condition of equilibrium of the firm does not differ among these three theories of the firms. Profits shall be maximum, if the amount of sales recorded by the firm is optimum and the marginal cost and marginal revenue are equal. Besides, the growth of the firm relates to the production of optimum output which is directly related both to the maximum profit and maximum sales. Modigliani's thesis takes the cognizance of the theory of the firm. The maximum growth of output of the firm requires of optimum amount of investment. Hence, the companies/firms may resort to borrow capital in order to fill up the gap between the stock of capital they have and the capital needed for the maximization of the growth of the output. Hence, the realization of the objective of the sales maximization or the objective of the profit maximization may induce the firms for borrowing greater and greater amounts of capital. Interestingly Modigliani does not differentiate between the difference phases of the trade cycles. During the boom phase profits rises, so employment increases and more and more investment is made for which the companies use borrowed capital but during the normal phase, both investment and borrowings decline from the boom phase. During the recessionary phases, low and declining demand for goods envelopes the market. Consequently, demand for investment by the companies decreases substantially. Therefore, the amount of borrowed capital by the companies almost falls to minimum. The capacity of borrowing and absorbing capital also declines. As again this, creditors are also unwilling to lend huge amounts to the companies because of the high probability of loans becoming NPAs. Therefore, it is not surprising that our study does not lend support to the Modigliani hypothesis (Dr. Hitesh, 2023).

A critical question in this context is the concept of the financial health of the companies and the factors which influenced. In our opinion, balance sheets of the companies may be treated as the indicator of the financial health of the companies.

Balance sheets held two parts/sides assets and liabilities. The side of assets shows the total amount of financial resources of the companies, including cash in hand and cash at banks. The financial resources of the companies comprise sales revenue, value of inventories in hand, stock of tools and instruments book values of land buildings machines and equipments, interest received from loans and deposits, appreciation of prices of stocks etc. liabilities include outstanding loans and interest their off, wages and salaries, payments made to suppliers dividend to shareholders and profits etc. If the value of asset is more than the liabilities then the inclusion of the profit among the liabilities in the balance sheet. In case of losses opposite is the case. In view of this, greater is the proportion of profit and dividend is the liability side better is the financial health of the company. It is clear that the financial health is critically depends on the profits and divided which is the part of revenue rather than the greater proportion of loan capital, all the same the paper empirically examines the variation of minimum loan capital during five phases of recession in Indian economy which had also adversely effected the electronic goods industries.

1. **Shri Praksh & Rama Subramanian (2012)** used penal data of 10 companies of electronic goods industry of India which have been involved in mergers and takeover during the period from 2000 to 2010. The used linear difference equation modeling with the constant. They found that i) big bank changes in the prices of stocks is associated with exceptional event which do not occur regularly; ii) the changed in the daily prices of the stock of the 10 companies remain within a narrow range. This finding implies that the general pattern of changes in the prices of stock is gradually. This finding run counter to the general perception that the stock market is characterized by unstable prices and huge amounts involved in the ups and downs ii) the authors concludes that the equilibrium in stock market is as normal as in any commodity market. The price behavior of the stock may be comparable to price behavior of agricultural commodities. The authors also treat prices of the stock of the companies as an important indicator of their financial health.

2. **Shuchita shukla (2019) examined the data** of 10 pharmaceutical companies in a comparative frame work. She focuses on the impact of take over and mergers on the financial health of the sampled companies with special reference to the use of finance. She compared the pre and the post take over and mergers status of the financial of the companies. She used econometric model for analyzing the data relating to different financial variables of these companies. Penal data comprising time series and cross section data of these companies constitute the data base of the study. the main finding of the study is that the financial health of the sampled companies has improved after the takeover and merger.

3. The study of **Mayank Goel (2021)**, titled, "Rational of bad bank for needo- banking in Indian economy" is also reviewed. The large proportion of NPAs in total bank credits not only adversely affects the financial health of the banking industry but the NPAs are also indicator of ill financial health of the companies. The author analyses the proportion of defaulting on repayment of loan and interest to the bank. He finds that needo-banking account for larger share of NPAs than the normal banking. These findings represent the converse of Modigliani hypotheses that the share of loan in total capital represents good financial health of companies.

4. **Ijaz Hussain Bokhari at all (2019)** this paper examines the impact of corporate governance, capital structure, and dividend policy on returns of assets. whereas political instability has been introduced as moderating variable. The authors used 56 listed companies of textile sector of Pakistan and has been selected over the period of 2012-2016 and data collected from the audited annual reports. The result of study concludes that CG, CS, and DP have significant impact on ROA. The results also affirms that political instability moderate the relationship between CG, CS, DP and ROA. This study is not related to Modigliani hypothesis.

5. Sandra Jooste at all (2016) the main objective of this study is to examine empirically relationship between debt levels and total shareholder returns of platinum JES listed companies. The study field comprises annual analyses for 12 companies listed under the Platinum and Precious Metals sector on the JSE Ltd for the 14-year period 2000 to 2013. The result of the study shows that the level of debt and rate of returns to equity capital are significantly related. The finding of the study implies that the return to equity capital is an important indicator of the financial health of the companies which, in turn, enables to the companies to raise loan capital to the desired extent. Thus this finding is contrary to Modigliani hypothesis.

6. The paper titled, "Corporate financial soundness and its impact on firm performance: implications for corporate debt restructuring in Slovenia"authored by Joze P. Damijan (2017) examines the relation between the corporate leverage and the excess to debt market. By the Slovenian firms during the crisis of banking industry of US. This crisis of 2008 has worldwide impact on the growth of economies. The author used Altman Z-score of financial health based on the following five ratios the ratio of working capital to total assets, ratio of retained earnings to total assets, ratio of operating income to total assets, ratio of book value equity to total liabilities and ratio of sales to total assets. The author finds that the small companies suffered relatively more than the large companies. It appears to us that the impact of this crisis was greater on small than large firms because small companies have lower finances available to them and therefore they have smaller leverage compared to the large firms. This militated against the smaller companies to raise debt during the crisis. This study directly related to our study because i) our study also focuses loan capital; ii) our study includes both small medium and large companies and iii) the longer period covered by our study contains more than one sub period of economic crisis.

7. Ying Yang et al. (2015)'s titled "Determinant of Debt Across Sectors: Evidence from Chinese A-Share Listed Firms", analyses the data to find the determinant of debt of the companies in listed in share market of China. The sample data used in the study relates 547 firms which are listed in share market. The study covers the period from 2008 to 2012. Thus, sample comprises 2,735 observations. The author has used fixed variable effect model for analysing panel data. Hausman test of heterosedasticity has also been used to valid the results of regression model. The following are the main findings of the study; i) total debt is mainly dominated by short-term debt, since long term debt is inadequately financial ii) however the short run debt depicts decreasing trend while long run debt shows increasing trend; iii) both short and long term debt are largely determined by the profits and the size of the firm.

This finding is basically inconsonance with our finds that the loan capital is basically determined by the revenue, base of profit and the amount of non-loan capital of the companies.

8. Chi Nguyen Thi Dieu et al. (2019), the author's stud y titled, "Capital Structure and Performance: Empirical Evidence from Vietnam" examines the impact of capital structure on the performance of number of companies which are listed in the share market of Vietnamese. The authors used normal regression analysis for analysing data. The study covers the period from 2010 to 2016. Thus sample comprises 3136 observations. The financial performance of company is measured by rate of return on total assets, rate of return on equity capital. Structure of capital is measured by proportion of total debt to total assets. Empirically results show that the proportion of debt in total assets significantly effects rate of return total assets negatively. But the rate of return on equity capital is affected significantly positively by proportion of debt in total assets.

9. The study of Hariem Abdullah and Turgut Tursoy (2019) examined the relationship between firm performance and capital structure of the non-financial firms of Germany. The study covers the period from 1993 to 2016. The period covered by the study is divided into two sub period. Namely 1993–2004 and 2005–2016. The authors capture moderating impact of capital structure on the non-Financial firms in accordance with IFRS (International Financial Reporting Standards). The panel data of 102 firms have 2448 observations covering a period of 24 years.

Hansen J-statistic has used as diagnostics model and the Arellano-Bond test for autocorrelation. The study has used multivariate regression models for the data analyses. The results confirm the positive relationship between the performance of the firm and capital structure. 60% of the total effect of capital structure on the performance of the firms is attributed to debt. Performance of the firms has increased by 12.8% over the second half of research period. Performance of the firms is represented by return on equity. Thus, the average return on equity during 2005–2016 was greater than the average return on equity during 1993–2004. This study party supports the Modigliani hypothesis that loan capital improves the financial health of the companies.

10. The study of Abdul Basit and Nur Fasirah Irwan (2017) examined the impact of capital structure on the performance of 50 industrial companies of Malaysian. The study covers a period of 5 years from 2011 to 2015. The study has 225 observations contained in panel data. The authors have used descriptive statistics to capture important facts of the variables analysed in the study. The results of descriptive statistics are supplemented by multiple regression equations. Even though data pertains to panel data, the authors have used normal multiple regression models. The performance of the companies is represented by Return on asset, return on equity and earning per respectively each of which is used as the dependent variables in three different regression models. All the three regression equations have used debt to equity ratio, total debt ratio, and total equity ratio as the independent variables. Thus, the model used in the study has three simultaneous equations. However, the authors do not specified whether the equations are treated as independent of each other. Authors have failed to address the problem of identification which an essential part of simultaneous equations modelling. This is a technical flaw of the study. The Results show that i) Debt to equity and total debt to total capital ratios influence return on assets negatively while ratio of equity to total assets positively impact the dependent variable, ii) Ratios of debt to equity and equity to total assets have negative influence on the return on equity while the ratio of debt to total capital excise positive influence on return on equity, iii)the ratio of debt to equity has negative impact on earnings per share while the ratios of debt to equity capital and debt to total assets have positive influence on earning per share.

Thus, this study offers mixed results wis-a-wis Modigliani hypothesis.

11. The study of K.M.R.Magoro and D.K.Y. Abeywardhana (2017) examined the relationship between the capital structure and performance of the South African companies listed in the stock market. The study covers a period of 5 years 2011 to 2015. The authors have used the data of 25 wholesale and retail of trade companies. The panel data comprises 125 observations. The authors have used fixed-effects model of panel data. The performance of the companies is measured by the sales. This represents financial performance of the companies. The authors found that the amount of both the short and long term debt adversely affected the financial performance of the companies. This finding of the study contradicts the Modigliani hypothesis that the loan capital represents the good financial health of the companies. Thus, Modigliani does not distinguish between negative and positive effects of loan capital on financial health of the companies. Above findings is inconsonance with our own findings that loan capital in excess of optimum amount does not contribute to the financial health of loanee.

Shifting paradigm of loan capital from boom to the phase of recession

Business cycles have been an essential part of the capitalist economies. Several theories of the causes and consequences of business cycles have been propounded in the past. The business cycles have three distinct phases; boom, normal and recessionary phases. During the boom phase profits, investment, employment and output grow rapidly. Consequently, inflation generally accomplishes this phase. Consequently, the companies/ firms normally raise the level of investment which is financed both internal and external sources. Raising output / revenue and profits increase both the borrowing and absorbing greater amount of capital. This facet affects all industries, including electronic goods industry of India. Naturally, all the companies - micro, small and medium/large go for the borrowing of maximum capital according to their needs and capability. But the phase begins to wan with laps of 3-4 years after reaching the peak. Subsequently, the phase of recession enters the business orison. Consequently, profits, output/revenue, investment and employment start declining. This reduces both the need for investment for the purpose of expansion and growth. But the companies straggle to retain their respective shares in the market and for initiating the phase of recovery. During such phase companies are able to borrow only the minimum amount of capital for fulfilling above two objectives. This paper focuses on the minimum amount of capital borrowed by 14 sampled electronic goods companies of India during the five phases of recession from which the Indian economy suffered from 1995 to 2020. Each phases of recession lasts over 2 to 5 years. Only the minimum amount of capital borrowed by each of the sampled company is taken into consideration for empirical analysis. The paper concenters on the policy of borrowing by the electronic goods companies during 5 phases of recession.

Research questions;

The following are the research questions answers to which this paper seeks;

1. What are the parameters/ factors that make the minimum borrowed capital differ between different phases of recession?
2. What are the parameters/ factors that make the minimum borrowed capital differ between different companies the given phases of recession?
3. Does the minimum borrowed capital by the companies conform to normal distribution?
4. Do there exist floor and ceiling of the borrowed capital of the companies?
5. Does the minimum borrowed capital of the companies vary between the different phases of recession?
6. Does the borrowed capital by the companies vary among micro, small and medium/ large companies?

Source of data and sampling procedure

The data relating minimum loan capital of 14 companies has been taken from Prowess IQ CMIE New Delhi. The database of the study comprises time series of 26 years of 14 electronic goods companies of India. The electronic goods industry of India has 134 companies which fall in the group of micro, small and medium/large companies which is listed on Prowess IQ. The study uses the definition of Micro, Small and medium size companies given by Ministry of Micro, Small & Medium Enterprises. A stratified systematic random sample of 14 companies has been taken. Stratification has been done according to the size of the companies.

10% units from each group are included in the sample. 39 companies belong to micro group, 69 companies are small, and the remaining companies are medium/large. The sample comprises 4 micro 7 small and 3 medium/large companies. First unit from each of the three groups is selected randomly and the rest of the unit from each group are selected systematically. All companies of each group are allotted 1 number. Micro units are numbered from 1 to 39, small units are numbered from 40 to 108 while medium/ large companies are given numbered from 109 to 134. Proportionality approach is used in the process of selection of unit for the sample company.

Methods/ Models of data analysis

The following methods have been used for analysing the data in hand;

1.Summary/descriptive statistics
2. T- statistics to evaluate whether the distribution normal and whether the values of the mean of each recessionary phase significantly differ from the mean of the composite sample of the all recessionary phases. T statistics has been used to determine whether the distribution of minimum borrowed capital conforms to normal distribution. T-statistics has also been used to determine whether the means values of each sub recession differ from the mean value of minimum borrowed capital during all the sub periods of recession.
3. The above t statistics are supplemented by the application of median test which has low power compared to the t test of the means
4. The study uses sign and sign rank test to determine whether the minimum borrowed capital by different companies vary between the sub periods and among the micro, small and medium/ large companies.

Median test

Median test is also a nonparametric test like sign, sign rank test, rank correlation test, Mann. Whitin u test and fisher's expect probability test etc. but median test is weak in power in comparison to ANOVA/ ANCOVA. Besides, application of median test is based on the assumption that the two samples have been drawn independently from each other either from same or two different populations.

Sign and sign rank test

Both these tests are more powerful than the median test. As the application of median test involves the use of chai square distribution, chia square distribution has been basically developed for large samples. As against this, t , sign and sign rank tests may be used both in small and large samples. Median, sign and sign rank tests are used step wise with the view of avoid inference in-built in a particular method/model.

Discussion of empirical results

Empirical results are discussed sequentially as follows;

1. As the paper uses time series data and non-stationary time series data may not furnish appropriate results. Therefore, first of all data analysis examines whether the inter-temporal distribution of minimum loan capital among the sampled companies conforms to normal distribution. The paper also examines the nature of distribution of minimum borrowed capital among the sampled companies in each phase of recession separately. The T- statistics is used for this purpose (See, Shri Praksh, et al. , 2023). It is assumed that the divergence of the distribution from the normal distribution may be an indicator of the fact that the time series is non-stationary. But the data analysis in the paper in not based on continuous time series and the regression model is also not used. Therefore, analyses of non-stationary nature of time series and its remedial measures are not relevant.
2. The t statistics has also been used to analyzed the statistical significance of the differences between the means of minimum borrowed capital in the different phases of recession and also the difference between means of individual and the means of combine phases of recession.
3. The above are followed by the results of the application of the median test and results of application of relatively more powerful two factor ANOVA without replication.
4. Last part discussion of the results of the application of the sign and sign rank tests.

The use of multiple methods and models has been prompted by the following two factors; i) each methods/ models has its own strengths and weakness. Therefore, relying on a single or two methods of data analysis may yield otiose or spurious results; ii) the analysis of empirical results bases on the different models/methods is designed to provide answers to the research questions listed in the paper; and iii) the discussion generally moves from the results of the weak methods/models to the results of more powerful methods/models.

Table – 1

Summary of descriptive Statistics and t-statistics of five recessionary and combined phases						
Periods	Mean	Median	Standard Error	Kurtosis	Skewness	t-statistics
PD-1	1013.71	191.75	466.887	5.83	2.33	6.11
PD-2	1796.45	509.05	1161.207	13.09	3.58	3.85
PD-3	4494.43	409.60	3746.880	13.79	3.70	3.78
PD-4	12603.92	538.40	8778.737	9.41	3.04	4.77
PD-5	20470.76	408.35	15493.814	12.10	3.43	4.49
Combined phases	8075.85	447.35	3652.18	33.77	5.52	17.21

Note: last row of the table shows values of t-statistics of different phases of recession and combined phases

Source: Author Own Calculation

The table shows that;
Calculated values of the coefficient of kurtosis of all phases of recession exceed the upper critical value of 3 at 0.05 probability. It implies that the high values of the minimum borrowed capital in all the recessionary phases are concentrated in and around the narrow space of mode.it is an indicator of the existence of high degree of inequality in the distribution of the minimum borrowed capital among the companies. Besides, the coefficients of skewness for all six phases are statistically significant either at 0.01 or 0.05 probability. Thus, the distribution of the minimum borrowed capital is highly positively skewed in all six cases. These coefficients suggest that the distribution of the minimum borrowed capital among the sampled companies is likely to diverge from the normal distribution. This inference is further tested more rigorsly by t-statistic; t= |M-ME|/se$\sqrt{}$N-2 where m and me are mean and median respectively and SE is the standard error of the mean. Null hypothesis is based on the assumption that the distribution is the normal. In normal distribution, values of mean and median are equal. If the difference between these two parameters is statistically significant, null hypothesis is rejected (shri prakash et al 2023).

The calculated values of t-statistics are much greater than the critical value 1.96. Therefore, the null hypothesis is rejected on this evidence. Above results show that the inference based on the values of coefficients of kurtosis and skewnees are strongly supported by t- statistics.

It may therefore be finally concluded that the distribution of minimum borrowed capital significantly differs between the sampled companies in all six cases. These results supply to research questions 1and 2 .

Discussion of results of application of t statistics to determine the significance of the difference between the means of samples/sub samples

The following table contains the values of t of the differences of the paired means of samples; table2; values of the t of the differences of the means

Paired t-statistics of the recessionary phases for normal distribution										
Period	P_1-P_2	P_1-P_3	P_1-P_4	P_1-P_5	P_2-P_3	P_2-P_4	P_2-P_5	P_3-P_4	P_3-P_5	P_4-P_5
Means/ difference	782.74	3480.71	11590.21	19457.04	2697.98	10807.47	18674.31	8109.49	15976.33	7866.84
t-statistics	1.16	1.71	2.45*	2.33*	1.28	2.27*	2.23*	1.58	1.86	2.76*

Note; i-j, i =1,2,3,4,5; j= 1,2,3,4,5, refer to periods of recession
Source: Author Own Calculation,

The above table shows that;

1. 5 out of 10 paired of differences of the means are statistically significant and the remaining 5 differences paired means are statistically not different from zero;
2. Statistical significance of the difference of the paired means implies that the intensity of the impact of recession on the borrowing capability and the ability to effectively used the borrowed capital have been affected highly differently among the sampled companies. These pairs of recessionary phases are 1 and 4; 1 and5; 2 and 4: 2 and 5; 4 and 5. Thus, greater is the laps of time between the pairs of the phases of recession, greater are the difference between the intensity of recession on the borrowing capacity of the companies.

3. The non-significance of the differences between the paired means of 5 paired means show that these recessionary phases did not differ in intensity much.
4. The table shows that the intensities of recession phase 1 and 2; 1 and 3; 2 and 3; 3 and 4; 3 and 5 have been more and less similar. It may imply that smaller is the laps of time between the two phases of recession, similar are the degree of intensity of recession on the borrowing capability of the companies.
The above results relate to the research question 3 and 4.

Discussion of results of the application of median test of the differences between pairs of the phases of recession

The table 3 contains the calculated values of $\chi 2$ of the differences of the pairs of the phases of recession

Calculated values of $\chi 2$ of the test of the differences of medians of the paired phases of recession

Table – 3

Periods/ values	**Above Median**	**Below Median**
Period 1	5	9
Period 2	9	5
Calculated value of $\chi 2$	**1.285**	
Periods/ values	Above Median	Below Median
Period 1	6	8
Period 3	9	5
Calculated value of $\chi 2$	**0.571**	
Periods/ values	Above Median	Below Median
Period 1	5	9
Period 4	9	5
Calculated value of $\chi 2$	**1.285**	
Periods/ values	Above Median	Below Median
Period 1	5	9
Period 5	8	6
Calculated value of $\chi 2$	**0.571**	
Periods/ values	Above Median	Below Median
Period 2	8	6
Period 3	6	8

Calculated value of χ2	**0.142**	
Periods/ values	Above Median	Below Median
Period 2	6	8
Period 4	8	6
Calculated value of χ2	**0.142**	
Periods/ values	Above Median	Below Median
Period 2	7	7
Period 5	7	7
Calculated value of χ2	**0.142**	
Periods/ values	Above Median	Below Median
Period 3	6	8
Period 4	8	6
Calculated value of χ2	**0.142**	
Periods/ values	Above Median	Below Median
Period 3	7	7
Period 5	7	7
Calculated value of χ2	**0.142**	
Periods/ values	Above Median	Below Median
Period 4	7	7
Period 5	7	7
Calculated value of χ2	**0.142**	

Source: Author Own Calculation

The results of the application of the median test to the pairs of the 5 phases of recession, contain in table 3, show that the calculated values of chai square in all 10 cases are much lower than the critical value 3.82 at 0.05 probability for the samples of 14 observations each. These results imply that the intensity of 5 recessionary phases does not differ significantly between the phases of recession. Therefore, it may be inferred that the adverse effects of recession on the minimum borrowed capital by 14 sampled companies are more or less similar over the years. These results furnish answer to the research question 4.

Discussion of results of applications of median test to the paring of the five phases of recession with the combined all five recession phases

Table – 4, given below, contains the calculated values of χ2 of all individual phases of recession with the combined samples

Periods/ values	Above Median	Below Median
Period 1	4	10
Combined Period	35	35
Calculated value of χ2	**1.378**	
Periods/ values	Above Median	Below Median
Period 2	8	6
Combined Period	35	35
Calculated value of χ2	**0.039**	
Periods/ values	Above Median	Below Median
Period 3	7	7
Combined Period	35	35
Calculated value of χ2	**0.086**	
Periods/ values	Above Median	Below Median
Period 4	9	5
Combined Period	35	35
Calculated value of χ2	0.935	
Periods/ values	**Above Median**	**Below Median**
Period 5	7	7
Combined Period	35	35
Calculated value of χ2	**0.086**	

Source: Author Own Calculation

The values reported in table 4 show that the calculated values of chia squares in all the 5 cases are much less than the critical value 3.841 at 0.05 probability. Therefore, it may be inferred that the individual samples of each phase of recession belong to the same population from which all the samples have been taken. Consequently, impact of intensity of recession on the minimum borrowed capital does not differ significantly from the minimum borrowed capital during the combined sample.

Discussion of results of ANOVA

Since the median test is low in power and has larger sample required, the data have also been subjective to the application of the relatively more powerful test of ANOVA.
The results reported given below

Table - 5

Results of two factor ANOVA without replication						
Source of Variation	SS	df	MS	F	P-value	F crit
Rows	38677570.2	4	9669392.551	1.720	0.1595	2.550
Columns	313322121	13	24101701.62	4.288	0.0001	1.913
Error	292246463.8	52	5620124.303			
Total	644246155	69				

Source: Author Own Calculation

The table 5 shows that

1. Calculated value of F is much less than the critical value at 0.05 probability. Therefore, the variation between the rows is not statistically significant. It lends empirical support to the conclusions drawn from the results of median test. Hence, the results of median test cannot be attributed to the low power of the test. However, the calculated value of F, corresponding to the variation between the columns, is much greater than its critical value at 0.05 probability. Thus, the variation between the columns is highly significant statistically. It means that the minimum borrowed capital significantly differs between the companies during all the five phases of recession. Whereas the non-significant between the rows implies that the inter-temporal variation for all the companies taking together is not significant. These results furnish answers to the research questions 5 and 6 respectively.

Discussion of results of sign test

The sign test has been used to examine whether the responses of individual companies of electronic goods industry of India respond similarly or differently to the recessionary phases. In other words, the sign test is used to find whether there exists any relationship in the responses of the companies to recession.

Condition of application of sign test is that the samples are jointly rather than independently drawn. This makes the sign test different from the median and other tests used in the paper. The test focuses on whether the scores/ values of the two samples are systematically related or the differences between the scores are unrelated and randomly distributed. The data base of this test is like the data base of other tests that is examination of the differences between the scores of two phases of recession taken at a time. The focus of the test is the statistical examination of the negative and positive signs of the scores of the same company during the 2 phases of recession. The null hypothesis is that the negative and positive signs of difference of the amounts of borrowed capital during 2 different phases of recession by the same companies are equal and randomly distributed. So, the probability of both positive and negative signs of the differences between the amounts of borrowed capital by the same company during 2 phases of recession is 0.5. As the total number of companies in each recession phase is 14, the expected numbers of positive and negative signs is 7. The calculated probability of the minimum number of the signs is test to the differences may be compared with the expected probability 0.5. Alternatively, the minimum number of signs (negative or positive) is compared with the critical number in the table of sign test at 0.05 probability for the given sample size. In this case, n=14. If any difference in scores is zero, it is overlooked and the sample size is reduced by the number is zero.

The table 6 contains the results of application of sign test to the differences of scores in 10 different pairs based on the paring of two recessionary phases at a time.

The table 6, results of the application of the Sign test to 10 pairs of signs of differences between minimum borrowed capital by each company

Table - 6

Reces-sionary periods	positive differ-ences of scores	negative differenc-es of scores	Total sings	Critical number of less signs at 0.05	Compari-son actual with crit-ical less signs	Calculat-ed prob-ability of less signs	Conclu-sion
P1-P2	5	9	14	3	5>3	0.358 <0.5	H_0 rejected
P1- P3	7	7	14	3	7>3	0.5=0.5	H_0 rejected
P1-P4	4	10	14	3	4>3	0.286<0.5	H_0 rejected
P1-P5	4	10	14	3	4>3	0.286<0.5	H_0 rejected
P2-P3	8	6	14	3	6>3	0.429<0.5	H_0 rejected
P2-P4	8	6	14	3	6>3	0.429<0.5	H_0 rejected
P2-P5	8	6	14	3	6>3	0.429<0.5	H_0 rejected
P3-P4	5	9	14	3	5>3	0.358<0.5	H_0 rejected
P3-P5	4	10	14	3	4>3	0.285<0.5	H_0 rejected
P4-P5	8	6	14	3	6>3	0.429<0.5	H_0 rejected

Source: Author Own Calculation

1. The table 6 shows that in 5 cases positive signs are less than 7 and in reaming 5 cases negative signs are 7 or more than 7.
2. In one case, both the positive and negative signs are equal to 7;
3. In that pairs of 1 and 3 both positive and negative signs are 7 and probability of both positive and negative signs equals 0.5. Therefore, the negative and positive differences of signs the minimum borrowed capital are randomly distributed. So, there is no relationship between the minimum borrowed amount of capital in phase 1 and 3 of recession

4. In five cases positive signs are less than 7. These phases of pairs of recession are 1-2, 1-4, 1-5, 3-4, and 3-5. It means that the intensity of recession phases 2, 4, 5, 4 and 5 has been less than the corresponding intensity of recession in 1, 1, 1, 3 and 3.
5. The calculated probabilities of positive signs in these 5 cases are 0.358, 0.286, 0.286, 0.358 and 0.286 which are less than the expected probability 0.5. Hence, the null hypothesis is rejected in all theses 5 cases. The minimum borrowed capital in these 5 pairs of recessions are prosily interrelated;
6. The critical value of lesser signs is 3 at 0.05 probability. Thus, alternative approach of application of sign test also leads to the same conclusion as above in point number 5.
7. However, negative signs are less than 7 in 4 cases. In all these cases, calculated probabilities 0.429, 0.429, 0.429 and 0.429 are less than 0.5. Besides, the less number of negative signs of the differences of minimum borrowed capital is greater than in critical number 3 at 0.05 probability. Therefore, in all these four cases also the minimum amounts of borrowed capital may be taken to be related.

Discussion of results of sign rank test

The table 7, results of the application of the Sign rank test are shown in table 8.
The sums of negative and positive ranks are reported in column 2nd and 3rd respectively. The lesser sums of ranks negative and positive rank are shown in column 2 and greater sums of ranks shown in columns 3. The total sum of the ranks of the difference of the pairs of sample size 14 is 14*15/2 = 105. There is no zero difference in any pairs. The 50% of the rank sums obviously 52.5. The critical lower sums of ranks for n=14 is 21 at 0.05 probability. The procedure of the test is to compare the calculated lower sum of ranks, irrespective of whether the lower rank sum is negative or positive. The calculated probability of lower rank sum may be compared with the expected probability at 0.5 and the calculated lower sum of ranks is compared with critical lower sum 21. If the calculated probability of lower sum of ranks is less the 0.5, null hypothesis that sum of the ranks are equal distributed between negative an positive sums is rejected. Similarly, if the calculated lower sum of rank is greater than 21, then the null hypothesis is rejected.

The table 7 contains the results of application of sign rank test

Table - 7

Recessionary periods	Sum of positive ranks	Sum of negative ranks	Total sum of rank	Critical number of less rank at 0.05	Comparison actual with critical less sum of ranks	Calculated probability of less sum of ranks	Conclusion
P1-P2	37	68	105	21	37>21	0.352<0.5	H_0 rejected
P1- P3	38	67	105	21	38>21	0.362<0.5	H_0 rejected
P1-P4	27	78	105	21	27>21	0.257<0.5	H_0 rejected
P1-P5	29	76	105	21	29>21	0.276<0.5	H_0 rejected

P2-P3	45	60	105	21	45>21	0.429<0.5	H_0 rejected
P2-P4	42	63	105	21	42>21	0.400<0.5	H_0 rejected
P2-P5	39	66	105	21	39>21	0.371<0.5	H_0 rejected
P3-P4	22	83	105	21	22>21	0.210<0.5	H_0 rejected
P3-P5	25	80	105	21	25>21	0.238<0.5	H_0 rejected
P4-P5	46	59	105	21	46>21	0.438<0.5	H_0 rejected

Source: Author Own Calculation

First of all, the results of 4 pairs of recession phase 1 are discussed. The table 7 shows that in all the 4 cases sum of positive ranks is less than 52.5 but greater than the critical lower sum of rank 21. So, on this count, the null hypothesis that the sums of positive and negative ranks are equal stands rejected. Besides, the calculated probabilities of lower rank sums reported in columns 7 are much less than the expected probability 0.5. So, null hypothesis is rejected also on this count. It means that the intensity of 1 phase of recession has been more than the intensity of 2, 3, 4, 5, recession phases. Thus, these results are inconsonance with the results of sign test.

For The 3 pairs of recession phase 2 the lower ranks sums are also positive and the calculated sums are less than 52.5 (50% of total sum) and these are much greater than the critical lower sum 21 at 0.05 probability. Hence, null hypothesis is rejected. The results indicate that the intensity of 2 phase of recession has been much greater than the other 3 phases of the recession. As against this the larger sum of negative ranks may suggest that the intensity of 3,4 and 5 phases of recession is more than the intensity phase 2. But the differences are not statistically significant.

In the 2 pairs of recession phase 3 with recession 4 and 5, the positive less ranks sums are 22 and 25 respectively which much lower than the 50% sum of ranks 52.5 but both these sums are greater than the critical lower sums of rank 21 at 0..05 probability. Therefore, the null hypothesis is rejected on both the criteria of the test. So, the intensity of 3 phase of recession is also greater than the corresponding recession phase 4 and 5.

For last pair of recession phase 4 and 5 the lower positive sum of ranks is less than 52.5 and it is much greater than the critical lower sum ranks of 21 at 0.05 probability.

The all above results show that there is a systematic pattern followed by the sum of ranks of the differences between all the 10 pairs of 5 phases of recession. The intensity of each preceding phases of recession is greater than the succeed phase of recession. Probably remedial measures adopted by the companies to mitigated adverse effect on their capacity and absorption of borrowed capital helps them in containing adverse effect on borrowed capital in a decreasing order. This may suggest that the companies learn the lessons from their learning curves.

Conclusions and findings

The following are the main conclusions and results of the study;
1.The coefficient of kurtosis and skewness show that calculated values of the coefficient of kurtosis of all phases of recession exceed the upper critical value of 3 at 0.05 probability. It means that the high values of minimum borrowed capital are concentrated in the narrow space of mode.

So, there is empirical evidence to suggest that the distribution of minimum borrowed capital is significantly different among the companies in each phases of recession.
2. The coefficients of skewness for all 5 the phases of recession and combined samples of all phases are statistically significant as the calculated coefficients are associated with the greater than the upper tail of the critical value either at 0.05 probability.

Both these results indicate the distribution of the borrowed capital to be significantly different form the normal distribution.

The results of t-tests show that
i) The difference between the averages and the medians are statically significant for all the 6 sub and combined samples. This lends support to the inference drawn above from the results of the coefficients of kurtosis and skewness.
ii) The results of t-test of the difference between the averages of the individual 5 phases of recession and combined samples for all phases the calculated vale of t –test greater than the critical value at 1.96 at 0.05 probability. So the differences between the averages of all 6 cases are statistically different from zero. So it in inferred that there are significant differences between the minimum borrowed capital in difference phase of recession. This indicates the intensity of recessionary phases to be different. Incidentally, these results may be basically different from the inferences drawn from other tests.
iii) The results of ANOVA show that the variation between the different phases of recession is not statistically significant. Thus, the results of more powerful test of ANOVA is at variation with the results furnished by the t-test of the differences between the averages;
iv) But the results of ANOVA show that the variation between the minimum amounts of capital bowed by each of the 14 sampled companies in all 6 cases is statistically significant. Therefore, it may be inferred that the minimum borrowed capital differs significantly among since micro, small and medium/ large companies of samples are differentially impact of recession.

The following conclusions are drawn from the median test which is the least powerful test among all the methods used in the study; null hypothesis that the minimum borrowed capital is randomly distribution among all 10 pairs of 5 phases of recession as well as the 5 pairs of individual phase of recession with the combined sample is rejected at 0.05 probability. It implies that the minimum borrowed capital has a system etic pattern of distribution among the different recessionary phases;

This inference differs from the conclusion based on ANOVA. The results of NOVA is accepted because it is more powerful than the median test

The following conclusions and inferences are based on the results of sign and sign rank test;
I. The null hypothesis of sign test that the sub samples of 5 recessionary phases independently are drawn and are random in nature is rejected. Alternative hypothesis that the sub samples of 5 phases of recession are jointed in nature is accepted;
II. The null hypothesis sign rank test that the sub samples of 5 recessionary phases are independently drawn and are random in nature is rejected. Alternative hypothesis that the sub samples of 5 phases of recession are jointed in nature is accepted. The above results and inferences based on the same suggest that the micro, small and medium/large companies should use their own strengths and weaknesses to withstand the adverse effect of recession through the polies based on their capacity

of borrowing and the absorption of the borrowed capital during adversity. The company belonging to above three groups should also be guided by their own objectives of growth and diversification rather than being guided by the so called best practices used by the companies belonging to the groups of larger companies. This inference diverges from the oft repeated slogan among the corporate houses. What is best for the medium and large companies even the small companies may not be the best for micro companies of the industry.

Our study radically diverges from the Modigliani's hypothesis that the financial health of the companies depends on the larger the share of the borrowed capital better is the health of the company. Modigliani ignores the different behaviour and policies followed by the companies belonging to different size groups during the recession and boom phase of trade cycles.

References

1. Abdul Basit and Nur FasirahIrwan, "The Impact of Capital Structure on Firms Performance: Evidence From Malaysian Industry Sector –A Case Based Approach", International Journal of Accounting & Business Management, Vol. 5, Issue 2, November, 2017

2. Chi Nguyen Thi Dieu et all, "Capital Structure and Performance: Empirical Evidence from Vietnam" Journal of Emerging Issues in Economics, Finance and Banking (JEIEFB), 2019 Vol 8, Issue 1.

3. Hariem Abdullah and Turgut Tursoy, "Capital structure and firm performance: evidence of Germany under IFRS adoption", Review of Managerial Science, 18 June 2019.

4. Hitesh, "Share of Debt Capital in Total Capital Stock as an Indicator of Financial Health of Indian Electronic Goods Companies since 1991" Ph.D. thesis in Kumaon University, Uttrakhand.

5. Ijaz Hussain Bokhari at all "Corporate Governance, Dividend Policy, Capital Structure and Firm Financial Performance with moderating role of Political Instability",Pakistan Journal of Social Sciences (PJSS) ,Vol. 39, No. 1 (2019), pp. 109-126

6. Joze P. Damijan, "Corporate financial soundness and its impact on firm performance: implications for corporate debt restructuring in Slovenia",VoL. 30, no. 2, 156–192 12 May 2017

7. K.M.R.Magoro and D.K.Y. Abeywardhana, "Debt capital and financial performance: A study of South African companies" , International Journal of Scientific Research and Innovative Technology, Vol. 4, issue No. 4; April 2017

8. Mayank Goel, "Rational of bad bank for needo- banking in Indian economy", Varta journal, Vol. XLII, oct. 2021.

9. Sandra Jooste at all ,"The Relationship Between Debt Levels and Total shareholders Returns of JSE Listed Platinum Companies",Risk governance & control: financial markets & institutions , Volume 6, Issue 1, 2016

10. Shri Prakash &Rama Swami, 2012. Impact of mergers and takeover on the equity prices of companies, finance India.

11. Shri Prakash et al, "Use of t – Statistics for Evaluating Whether Distribution of a Variable is Normal", Indian Journal of Economy and Policy, Vol.1, No.1, April – June, 2023

12. Suchita Sukla (2019). Comparative Financial Analysis of 10 Selected Indian Pharmaceutical Companies in Pre and Post-Merger Periods. Ph.D. thesis in Management of Jeevaji University, Gwalior.

13. Ying Yang et all, "Determinant of Debt Across Sectors: Evidence from Chinese A-Share Listed Firms", The Journal of Developing Areas, Vol. 49, No. 4, 2015, pp. 391-405.

Growth Effect Of Bilateral Trade Agreements Of India With Select Countries With Reference To Exports To Malaysia, Japan And South Korea

Ruchi Tyagi*, Sudhir Sharma**

Abstract

This paper focuses on the growth effect of net global exports and exports to the trade partners Japan Malaysia and Korea under comprehensive economic agreement. The paper also examines the growth gains to Indian economy from the economic cooperation agreement.

The study covers the period from 2000 to 2020. The following are the core variables of data analysis: GDP of India, global exports net of exports to countries covered by economic agreement, exports to the countries covered by economic co-operation and exchange rate. The paper has also examined the shift of the functional relation by in-corporation of shift parameter and dummy variable technique is used for estimating growth effect of comprehensive economic agreement on Indian economy.

The following method/ models are used for data analysis: summary statistics, t and chi-square statistic for evaluating the nature of the distribution of the core variables. Growth curves are used to estimate the growth of four core variables. Random Walk model is used to highlight the stationarity property of core variables and further examined by Dicky- Fuller and/or Engel Granger test of co-integration and besides, the paper has also used regression for evaluating the relationship between the GDP and its selected determinants. For testing the dependence or the independence of the parameters of the two equations the differences of the estimated values of GDP by two equations are regressed on the difference between the NGEXPTS and Sum of Exports to comprehensive agreement countries.

Three year moving average and log transformation are used as measures of data massaging. The following are the findings of the study: 1) the distribution of GDP, net global exports and exports to comprehensive economic agreement countries diverges from normal distribution both according to and chi-square statistics, 2) exchange rate significantly diverges from normal distribution at 0.01 probability according to t-statistics, and it is shown to significantly diverge from normal distribution at 0.05 probability according to chi-square; 3) first three variables grow significantly on year on year basis. Annual compound rate of growth are 4+ %; 4) exchange rate has declined significantly during the period of study; 5) the GDP as a function of net global exports and time is adversely afflicted by significant auto correlation and the variables are not co-integrated. Re-estimated function after adjustment of auto-correlation furnishes satisfactory result and variables are found to be properly co-integrated in the function, the GDP as a function of exports to cooperation countries and dummy variables is revealed to be highly satisfactory and the variables are well co-integrated in the relation. The t-statistic of the intercept and the regression co-efficient of the function of the differences of the estimated values and the differences of the two independent variable of the two regressions are not statistically significant. Therefore, both equation 17 and 18 are equally efficient for explaining and predicting the values of GDP precisely. So both equation are equally valid.

Keywords: *Growth, Effects, comprehensive trade agreements*

Introduction

International trade has been envisaged as the propellant of growth of national economies, especially the exports. Mercantilists proposed that exports of the exportable surpluses of the national economies will fetch those coins of precious metals (gold & silver). This will increase the wealth of nations. However, Alfred marshal (1892 / 1962) corrected the exclusive emphasis is on promotion of growth as the measure of growth. Marshall enunciated the cherry of international trade as a whole to be an important source of economic growth. Consequently Marshall included both exports and imports as the means of prosperity of the economies involved in trade. Exports lead to expansion of the market of the exports goods which results in expansion of demand of export goods. Thus, trade is the means of the creation of extra demand for the nationally produced goods which in term led to the growth of national economy. As against the exports, imports perform the following three functions :- 1) provide extra supplies of the goods in the national economy which results in lower prices due to enhanced competition. This function of imports is related exclusively to competitive imports. Competitive imports may also enhance the quality of the trade goods; 2) noncompetitive imports fill up the gaps in the production structure of the economy; such imports comprise consumer goods, intermediate inputs and capital goods which are not produced within the economy. 3) Imports constitute the payment / liability side of the trade since imports bills have to be paid in international currency. But exports are the means of earning international currencies. If import exceeds exports, it represents adverse imbalance in trade and vice-versa. 4) The balance of trade directly affects balance of payments status. However, in and outflows of investment may also be treated as a part of international trade.

P.N. Mathur (1979/1987) suggests that the growth effect of international trade may be enhanced by regional groupings like EU, SAARC, and ASEAN he used strout –leontif gravity model for data analysis. But input–output model provided the basic framework of analysis in a step wise manner it showed that as the size of the market increases by regional grouping growth effects of trade increases. Mathur used population size as the proxy of the market size.

Above discussion highlights the fact that growth effect of trade policy is positive but it tends to increase with an increase in the size of population of the countries concerned. Besides, greater the stage of development already achieved by the countries involved in trade, greater is the growth effect of trade.

Role of trade policy is directly involved in Mathur's postulates trade policy plays critical role in the determination of the growth effect of trade so, growth effect of trade may vary between the policies pursued by the trade partners The trade policy of any country is multi-dimensional and multi directional since both the composition and direction of trade exercise decisive influence on the growth gains of trade. The commodity composition of trade and the directions of trading are important aspects of trade. The larger the number of commodities involved in trading and greater is the number of trade partners; the greater is the growth effects of trade (Rekha Sharma), 2014.

It may be inferred that larger the number of commodities involved in trade and the greater the number of countries with whom bilateral trade agreements are made, greater are likely

to be the growth gains from bilateral trade agreements revolved round the number of commodities include in the positive list; gains also depends on the nature and number of imported commodities greater the number of commodities non-competitive imported commodities greater is likely to be the growth gain. Increase in the number of trade partner covered by bilateral trade partners, both exports and imports tend to get a push. However, the bilateral trade agreements should be designed to create more trade rather than divert trade.

Types of Trade Policies:

Trade policy may be broadly classified into groups: free trade policy and restricted and controlled trade policy. The received knowledge indicates that the group effect of trade is much greater under free trade policy then under restricted and controlled trade policy. The trade policy of any county comprises following elements of international trade: export policy, import policy, policy relating to foreign investment including both FII and FDI foreign direct investment and foreign exchange policy. Trade policy may be classified as free trade policy may have the following variants: totally free trade policy in which each component of trade policy is left free without any public interference this is probably the ideal state of free trade. National economies often have following variants of free trade policy: free trade policy with respect to exports but restrictive import policy. For example, India had discriminating policy of protection of sugar industry. Consequently, imports of sugar were highly restricted by the imposition of high tariffs on imports but other imports were not restricted. Another variant of this policy was in operation in post-independence India from 1951 onwards. Imports of most of the commodities which were greatly restricted by high tariff, quantitative restrictions. But the imports of the capital goods and basic and heavy industries products were not restricted if the domestic supply of basic and heavy goods was in adequate, another variant of free trade policy may restrict foreign investment partially or totally depending on the requirements of national economy. Foreign institutional investment is footloose while FDI makes the investors tide to recipient country. the example of foot looseness is provide by the Indian stock market from which a large proportion of foreign investors sold their stocks in a small period of about a week in 2009 due to which Indian stock markets crashed heavily. These FIs with-drawn money from Indian markets and invested money in shanghai and other Chinese stock markets. Consequently, Chinese stock market boomed. However, after a month the same FIs return to the Indian stock markets (Shri Prakash, 2010). In case of FDI, investors become the partner in management of the company if his/her stock possession is 10% or more of the total stock of the company exchange rate policy may also be fully or partially restricted. There are two variants of this policy –revenue account payments in foreign exchange may not be restricted but capital account payments may be restricted or vice-versa. Besides, supply of foreign exchange for foreign travel may also have quantitative restrictions. Under free trade policy, different measures for the promotion of exports may be in operation. Besides, dual pricing policy of export commodities in domestic and international markets.

Non-free trade policies shield the domestic market from global competition through the use of tariff and non-tariff tools, like free trade policy, restricted or controlled policy may also have some variants. In a totally closed economy, foreign trade is completely restricted/ banned. In such cases, the countries rely only on their own resources for production, including technology. Consumption is not normally limited its domestic output. The demand for several goods may remain surpassed. This may also be treated as a theoretical

possibility because no country can live by itself, most of the centrally planned economies and mixed economy like India have followed the policy of keeping their economies closed. Howver, both centrally planned economies and mixed economies could not restrict the foreign trade fully. In centrally planned economies like that of USSR, China, North Korea and the members of COMECON group used such trade policies. Foreign travel was highly restricted, imports of non-essential goods were not allowed.

The process of liberalization privatization and globalization has resulted in revolutionary changes in the trade policies of both centrally planned economies and developing mixed economies. By the end of the decade of the 1980s (LPG) have enveloped the entire global economy.

Brief Historical Backdrop:

With the adoption of the New Economic Policy in 1991, India opened up its economy. The acceleration of the globalization, privatization and liberalization process is at the fore front of the principles of global economy. The WTO was established in 1995, and while this was largely regarded as a turning point for global trade policy but not after its inception, the WTO 'liberalization of multilateralism has slowed down. The WTO sluggish progress forced India to adopt the bilateral trade policy. Faced with multiple problems India took two drastically different pathways in response to numerous political and economic issues: the external policy path of look East policy and the domestic path of economic liberalization and globalization.

India signed Comprehensive Economic Partnership Agreement with Japan and south-Korea in 2011 and with Malaysia in 2010 in the second phase of the look east policy after liberalization. Japan being the most developed economy in Asia. Trade relations between Japan & India date back to the cold war and post World War II periods, when India adopted a mixed economy. With the export of iron from India, Japan was able to recover from the Second World War tragedy. Japan paid India back for this favour in 1958 by giving the country's government the first ever yen loans. Since, then Japan has been India's top source of aid. Japan was able to create a sizeable middle class as well as an economy centered on technology and its budding automobile sector, which would go on the rule the market for many years.

Asia has emerged as the global economic growth hub. After China & Japan, South-Korea and India are the third and fourth largest economies in the region (World Bank 2008). At the start of the five year period, South Korea pursued economic strategies that were focused outward economic development strategy in 1962, which led to rapid expansion and global economic integration for Korea. South-Korea become one of the high income economies in Asia as a result of its subsequent strong and steady economic expansion.

Malaysia's economy was primarily centered on agriculture and commodities until it gained independence in 1957. However, the country has successfully diversifies its economy to include strong manufacturing & service-sectors, which have helped it rise to prominence as an exporter of electrical appliance, parts and components.

India exported only a few manufactured goods upto 1995 change in trade policy has resulted the diversification of exports baskets, even though the composition of India's trade with Japan, South Korea & Malaysia has almost remained same. Similar over the study period, the percentage proportion of semi-finished or secondary items has generally increased over time although the share of primary commodities in India's export is highest. Although the amount of two-way trade has grown over time, but India always had a negative trade balance with Malaysia, Japan and South-Korea.

Research Questions:

The chapter attempts to find empirical answers to the following research questions:

1. Are the core variables of the study normally distributed?
2. Are the distributions of the variables under study skewed and show high degree of concentration of high values in narrow space of Mode?
3. As the study uses the time series data , the question about stationary or non-stationary nature of time series data is an important question
4. What are the magnitudes and directions of inter-temporal changes in the values of GDP, NGEXPTS and exchange rate between the years?
5. What is the magnitude and nature of relation of GDP with the net global exports? Does this relation remains fixed or shifts up and downward during the period of study?
6. Does GDP of India depend on exports to Malaysia, Japan, and South Korea?
7. Has the comprehensive economic agreement with Malaysia south- Korea and Japan played some role in the growth of Indian economy?

The choice of method / models of data analysis has been guided by the above research questions on the one hand, and the nature and expanse of time series data and strengths and weaknesses of the chosen method/ Models.

Sources of Study:

All the data have been taken from WITS. The original data have been transformed into logarithm terms. The author have been induced to resort to this transformation because of the following advantages; 1) log values are much smaller than the original values in the original value of such variable as GDP, sum of exports of comprehensive economic agreement, NGEXPTS and exchange rate. Original values of these variables contains as many as 9 digits; 2) log transformation smoothies the data series. It generally eliminates outliers and many transform non-stationary time–series; 3) the log linear function former yields direct estimates of elasticity co-efficient which is calculated in terms of rates/ proportion/ percentage terms; 4) reduction in the large values facilitates economy of time and labor involved in the calculations.

In order to eliminate the impact of periodic recessionary phased during the period of study three years moving average have been taken of all variables this is also expected to have resulted in the reduction of the variables of the probability of time series data of the core variables being found to be non-stationary. This adjustment generally also lead the occurrence of significant auto-correlation. However, neither 3 years moving average nor log transformation is the perfect method

of ensuring the removal of non-stationary character or the probability of significance autocorrelation.

Methods/ Models

The study does not depend on the use of one single methods/models of data analysis. Data of each variable has its own properties, strengths and limitations. Similarly, each methods/models has its own assumptions, limitations and strength, limitations and strength. Therefore, the chosen method/model should be appropriate for the analysis of data under consideration. Sometimes, the chosen method/ model may lead to otiose type of results due to either mismatch between the method or the data or limitations of either of these two. Therefore, the study has used multiple methods/models for data analysis. The choice of method /model has been guided by the objectives of the study, strength and limitations of methods /model and its appropriateness for the data to be analyzed. The following methods/models have been used in the study: summary statistics, t and chi-square statistic for evaluating the nature of the distribution of the core variables. Growth curves are used to estimate the growth of four core variables. Random walk model is used to highlight the stationary property of core variables and further examined by Dicky fuller test of stationarity and/ or Engel Granger unit root test of the residuals of the chosen regression model. Besides, the paper has also used regression for evaluating the relationship between the GDP and the net global exports and time. The second function relates to the relationship between GDP and the sum of exports to comprehensive economic agreement partner countries and the degree and direction of the influence of the comprehensive agreements with the specified countries.

Discussions of Empirical Results:

The empirical results are discussed sequentially. Summary statistics are analyzed. Results relating to the nature of distribution are discussed net. This is followed by the discussion of the growth curve, discussion of the Dicky-Fuller test of stationarity and Granger Engel test. Finally results relating to interrelations between specified variables are taken up for discussions.

lnGDP	
Mean	9.13232646
Standard Error	0.0562298
Median	9.204229887
Mode	#N/A
Standard Deviation	0.245100015
Sample Variance	0.060074017
Kurtosis	-1.018512897
Skewness	-0.519029486
Range	0.747582597
Minimum	8.689501186
Maximum	9.437083783
Sum	173.5142027
Count	19

Ln Global Exports	
Mean	8.206416
Standard Error	0.067552
Median	8.3328
Mode	#N/A
Standard Deviation	0.294454
Sample Variance	0.086703
Kurtosis	-0.68691
Skewness	-0.86125
Range	0.847342
Minimum	7.627499
Maximum	8.474842
Sum	155.9219
Count	19

lnsum of exports of partner countries	
Mean	6.946987
Standard Error	0.060844
Median	7.081646
Mode	#N/A
Standard Deviation	0.265213
Sample Variance	0.070338
Kurtosis	-0.88963
Skewness	-0.84427
Range	0.727603
Minimum	6.464059
Maximum	7.191663
Sum	131.9928
Count	19

lnE.R.	
Mean	4.890099
Standard Error	0.014344
Median	4.873391
Mode	#N/A
Standard Deviation	0.062524
Sample Variance	0.003909
Kurtosis	-1.11911
Skewness	0.521169
Range	0.196367
Minimum	4.811715
Maximum	5.008082
Sum	92.91187
Count	19

Discussions of Results of Summary Statistics:

The mean value of GDP is as high as US$ thousands* (the antilog value in Indian rupees after conversion is extremely high) but the GDP has been varying among the years at 2.68% per annum. If we consider the study period as a whole, the GDP has varied as high as 50.92.

Both the coefficients of kurtosis and skewness are negative, but the values are not statistically significant. This may suggests that the distribution of GDP between the years is nominally negatively skewed and values may not be highly concentrated in and around the narrow space of mode. This implies that the values are free from wild swings between the years. So it may be inferred that the GDP of India has been moving smoothly along its growth path during the period of study. This may probably be attributed to the regulation of business cycles and by public policy.

However, the t-statistics relating to the difference between Mean and Median values of GDP as high as a value of 5.56 which is highly significant statistically even at 0.01 probabilities. This may indicate that the distribution of GDP between the years significantly diverges from normal distribution. This inference is further tested by fitting chi-square distribution to the data. The calculated value of chi-square is as high as 1407. This value is highly significant statistically. So the results also lend empirical support to the inference drawn from t –statistic (shri. Prakash et al, 2024) these results may suggest that the time series of GDP may not be stationary.

The mean value of the sum of exports of India to Japan, Malaysia and South- Korea is as high as USD thousands but the total exports to these countries have been varying among the years at 3.81% per annum. If we consider the study period as a whole, the total exports of these countries has varied as highly as 72.39.

Both the co-efficient of kurtosis and Skewness are negative, but the values are not statistically significant. This may suggests that the distribution of GDP between the years is nominally negatively skewed and high values may not be highly concentrated in and around the narrow space of mode. This implies that the values are free from wild swings between the years. So it may be inferred that

the sum of the total exports to these countries have been moving smoothly along its growth path during the period of study.

However, the t-statistics relating to difference between Mean and Median value of the sum of exports to Japan, Malaysia and South-Korea is as high as 9.59 which is highly significant statistically even at 0.01 probability level. This may indicate that the distribution of exports between the years significantly diverges from the normal distribution .this inference is further tested by fitting chi-square distribution to the data. The calculated value of chi-square is as high as 808.65. This value is highly significant statistically. This result also lend empirical support to the inference drawn from t statistic. These results may also suggest that the time-series of the sum of exports to the partner countries may not be stationary.

The mean value of net global exports of India is as high as US$ thousands but the net world exports of India have been varying among the years at 3.59% p.a. if we consider the study period as a whole, the net global exports of India have varied as high as 68.02.

Both the co-efficient of Skewness and kurtosis are negative, but the values are not statistically significant. This may suggests that the distribution of NGEXPTS between the years nominally negatively skewed and high values may not be highly concentrated in and around the narrow space of mode. This implies that the values are free from wild swings between the years. So it may be inferred that the NGEXPTS of India have been moving smoothly along its growth path during the study period.

However t-statistics relating to difference between Mean and Median values of NGEXPTS is as high as 8.14 which is highly significant statistically even at 0.01 probability. This may indicate that the distribution of NGEXPTS between the years significantly diverges from normal distribution. The inference is further tested by fitting chi-square distribution to the data. The calculated value of chi-square is as high as 460.94. This value is highly significant statistically. So this results also lend empirical support to the inference drawn from t- statistic. These results may also suggests that the time-series of GDP may not be stationary.

The mean of Exchange rate is 4.89 and the exchange rate is varying among the years at 1.28% per annum. If we consider the study as a whole, the E.R has varied as 24.32.

The co-efficient of kurtosis is negative. The value is not statistically significant this may suggest that the high values may not be highly concentrated in and around the narrow space of mode. It implies that the distribution of exchange rate is not greatly different.

Co-efficient of skewness has a value of 0.5211, hence it is not statistically significant, and it implies that between the years distribution of GDP is positively skewed.

However, the t-statistics relating to difference between Mean and Median values of E.R 1.75 which is statistically significant even at 0.01 probability. This may indicate that the distribution of E.R diverges from normal distribution. This inference has further tested by fitting chi-square distribution to the data. The calculated value of chi-square is 330.36. This value is highly statistically significant. So this results also lend empirical support to inference drawn from t- statistic.

Discussions of Results of Growth Curves:

The ordinary least square (OLS) estimates of growth curves fitted to the data of GDP, sum of exports to Japan, Malaysia and Korea with whom the comprehensive agreements were made , global exports net of exports to agreements countries and annual exchange arte in terms of US $ thousands are given below:

LnGDPt = 8.705, 0.042 T, R2 = 0.9620, F = 430.78, P = 1.15E-34 ...1
(t = 370.9), (t = 20.75)

ln Sum of CAPEXPTS = 6.517, 0.0429 T, R2 = 0.8305, F = 83.35, P = 1.983E-26...2
(t = 121.49), (t = 9.12)

Ln NGEXPTs = 7.72 + 0.0483 T, R2 = 0.8528, F = 98.17, P = 2.04E-27 ...3
(t = 138.92), (t = 9.907)

Ln E.R = 4.94 – 0.0054 T, R2 = 0.9685, F = 5.46, P = 0.0319 ...4
(t = 184.98), (t = 2.336)

The OLS estimates of curve of GDP show that; 1) the growth curve fits the data well. The estimate curve explains 96.20% of the total variations of GDP among the years; 2) the intercept is highly significant statistically even at 0.01 probability level. Intercept captures the impact of such variables are excluded from the regression. Investment and public policy are two important variables that influence the growth of an economy. Alternatively, consumption multiplier and Hicksian accelerator are two important factors of growth. Hence, the significance of the intercept may either be attributed to investment and public policy or alternatively it may attributed to consumption multiplier and investment accelerator operating in Indian economy during the period covered by this chapter ; 3) the coefficient of time is also highly significant at 0.01 probability. The value of the coefficients show that the GDP of India has been increasing at an annual compound rate of 4.27%. As this is compound rate of growth, it indicates that the Indian Economy has been growing at a rapid rate during the first two decades of the 21st century. Besides, the significant intercept suggests that public policy might have also been an important factor of growth of Indian economy during this period. This inference shall be further examined empirically; 4) the growth curve of the sum of exports to the countries of comprehensive agreements fits the data well. The calculated value of coefficient of determination is as high as 0.08306. Thus, the equation explains 83.06 % of the year on year variation in the sum of exports to Japan, Malaysia and Korea; 5) the intercept is highly significant statistically as the value of t is 121.49. it implies that the exclusion of such variables as the prices of exports, fluctuations in exchange rate and the demand for Indian exports in the importing countries are important determinants of exports to these countries; 6) elasticity co-efficient of time is also statistically significant as value of t is 9.12. The exports to japan, south –Korea and Malaysia grow at an annual compound rate of 4.29%, interestingly, these exports have grown virtually at the same rate at which the GDP of India has grown during the period of study. Thus, the growth of exports have kept pace with the growth of GDP; 7) the growth curve fits the data of net global exports also very well. The coefficient of determination is 0.08523. The growth curve explains 85.23% of total variations on year on year on net world exports. Thus the growth curve of NGEXPTS fits the data slightly better than the fits of the growth curve to the exports of comprehensive agreements

countries; 8) the intercept of this curve is statistically significant. It means that the net global exports of India are also influenced by the fluctuations of exchange rate, public policy of promoting exports of India and the global demands for Indian exports. Incidentally, the basket of Indian exports have also been continuously diversifies in terms of commodity composition and direction of trade; 9) the elasticity coefficient of time is highly statistically significant and the net global exports have grown at an annual compound rate of 4.87%. It is interesting to note that the net global exports have grown slightly more rapidly than the GDP and the sum of exports to the Japan, south-Korea and Malaysia; 10) the growth curve of annual exchange rate fits the data reasonably well. The coefficient of determination is statistically significant at practically zero probability. But the curve explains only 24.31% of total annual change in exchange rate; 11) the intercept is statistically significant in this case also. The exchange rate of Indian rupees is allowed to fluctuate according to the global market conditions each year. However, whereas the demand for Indian imports varies according to the requirements for different purposes, the demand for Indian exports is influenced not only by the conditions of demand in international markets but also on the import policies of the importing countries; 12) the elasticity coefficient of time is negative and statistically significant at 0.03 probability. The negative elasticity coefficient implies that the value of Indian rupee relative to US$ has been continuously declining at an annual compound rate of 5.4%. This may be attributed to the adverse merchandise balance of trade of India with most of the countries.

Dicky Fuller Test of Stationarity of Time Series of Core Variables:

According to Y.A. Yule (1927) non-stationary time series tend to furnish spurious results but Engel Granger developed the test of co- integration for validating the results of non-stationary time series based regressions. They opined that the regressions containing one or more non-stationary data of variables may be an expression of co-integrated variables if the residuals satisfied the Dicky fuller test of stationary time–series, the regression function may be treated as the set of co-integrated variables in a linear function.

All three versions of random walk Model (RWM) have been estimated for each variable. These equations are given below:

$$\text{h}\ GDP_{y} = \beta\,\text{h}\ GDP_{y-1} + u \qquad \ldots 5$$

$$\text{h}\ GDP_{y} = \alpha + \beta + \text{h}\ GDP_{y-1} + u \qquad \ldots 6$$

$$\text{h}\ GDP_{y} = \alpha + \beta\,\text{h}\ GDP_{y-1} + \Delta T + \text{u} \qquad \ldots 7$$

$$\text{h}\ CEXPTS_{y} = \beta\,\text{h}\ CEXPTS_{y-1} + u \qquad \ldots 8$$

$$\text{h}\ CEXPTS_{y} = \alpha + \beta\,\text{h}\ CEXPTS_{y-1} + u \qquad \ldots 9$$

$$\text{h}\ CEXPTS_{y} = \alpha + \beta\,\text{h}\ CEXPTS_{y-1} + \Delta T + u \qquad \ldots 10$$

$$\text{h}\ NWEXPTS_{y} = \beta \text{h}_{y-1} + u \quad \ldots 11$$

$$\text{h}\ NWEXPTS_{y} = \alpha + \beta \text{h}_{y-1} + u \quad \ldots 12$$

$$\text{h}\ NWEXPTS_{y} = \alpha + \beta \text{h}_{y-1} + \Delta T + u \quad \ldots 13$$

$$\text{h}\ E.R._{y} = \beta \text{h}\ E.R._{y-1} + u \quad \ldots 14$$

$$\text{h}\ E.R._{y} = \alpha + \beta \text{h}\ E.R._{y-1} + u \quad \ldots 15$$

$$\text{h}\ E.R._{y} = \alpha + \beta \text{h}\ E.R._{y-1} + \Delta T + u \quad \ldots 16$$

The OLS estimates of these equations are reported below:

ln GDPyt = 1.0048yt–1, R2 = 0.9999, F = 1742582, P = 3.78E–20
t = 1320.054
ln GDPyt = 0.4416 + 0.9563, R2 = 0.9951, F = 1434.88, P = 2.32E–09
(t = 1.923), (t = 37.87)
ln GDPyt = 0.2926 + 0.9735yt–1 – 0.0016T, R2 = 0.9951, F = 616.162, P = 1.14E–07
(t = .209), (t = 6.027), (t = 0.108)
ln Sum of CAPEXPTSyt = 1.0061yt–1, R2 = 0.9999, F = 362901.2,
(t = 602.41) P = 9.17E–18
ln Sum of CAPEXPTSyt = 0.3733 + 0.9522, R2 = 0.9865, F = 513.77,
(t = 1.28), (t = 22.66) P = 8.24E–08
ln Sum of CAPEXPTSyt = 0.8817 + 1.024yt–1 – 0.0080T, R2 = 0.9875,
(t = –0.1177), (t = 8.81), (t = –0.6740) F = 237.08, P = 1.95E–06
ln NGEXPTSyt = 1.007yt–1, R2 = 0.9999, F = 96138.61, P = 9.58E–16
(t = 310.06)
ln NGEXPTSyt = 1.4516 + 0.8299, R2 = 0.9682, F = 213.12, P = 1.69E–06
(t = 3.13), (t = 14.59)
ln NGEXPTSyt = 1.99 + 0.7576yt–1 + 0.0097T, R2 = 0.9693, F = 94.97,
(t = 1.62), (t = 4.67), (t = 0.4805) P = 2.87E–05
ln E.R.yt = 1.001, R2 = 0.9999, F = 143286.11, P = 2.37135E–16
(t = 378.53)
ln E.R.yt = 0.744 + 0.8489, R2 = 0.6738, F = 14.464, P = 0.0066
(t = 0.682), (t = 3.803)
ln E.R.yt = 1.171 + 0.766yt–1 – 0.00493T, R2 = 0.709, F = 7.336, P = 0.0244
(t = 0.96), (t = 3.10), (t = –0.861)

All three version of RWM fit the data well; 1) the values of the coefficient of determination are as high as 9999, 0.99, 0.99 respectively and these co-efficient are statistically significant; 2) RWM with drift shows the positive intercept is statistically significant at 0.09 probability but it is not significant at 0.05 probability. So it may be inferred that the intercept is as good as zero statistically; 3) RWM with drift and systematic trend in errors shows the positive intercept and negative

co-efficient of time in equation are not statistically significant. Besides, the result shows that the residuals/errors are not characterized by systematic trend; 4) the above results highlight that the time series of GDP of India is trapped in unit root circle. It may therefore, inferred that the time series of GDP is non-stationary. Therefore, the regression equations containing GDP will require validation by co-integration test by Engel Granger; 5) all three versions of RWM fit the data of the sum of exports to Japan, Korea and Malaysia well. The values of the co-efficient of determination is as high as 0.99, 0.99, 0.99 respectively and the co-efficient are statistically significance; 6) RWM with drift shows that positive intercept is statistically significant; 7) RWM with drift and systematic trend shows that the negative intercept and negative co-efficient of time are not statistically significant; 8) the above results highlight that the series of sum of CAPEXPTS of India is trapped in unit root circle. It may be inferred that time series of the sum of CAPEXPTS is non- stationary. The regression equation containing the sum of CAPEXPTS will require validation by co-integration test of Engel Granger; 9) all three versions of RWM fit the data of NGEXPTS well. The values of the co-efficient of determination are as high as 0.9999, 0.9639, 0.9693 respectively, and these co-efficient are statistically significant; 10) RWM with drift and systematic trend in errors shows positive intercept and positive co-efficient of times which are not statistically significant; 11) All the versions of RWM fit the data well of exchange rate. The values of co-efficient of determination are 0.9999, 0.6738, 0.7097 respectively, these co-efficient are statistically significant; 12) The RWM with drift and systematic trend shows the positive intercept and negative co-efficient of time in equation are not statistically significant besides, the result shows the residuals/errors are not characterized by system trend; 13) The above result highlight that the time-series of exchange rate trapped in unit root circle. It may therefore inferred that the time-series of exchange rate is non-stationary. Therefore, the regression equation containing exchange rate will require validation by Engel-granger test of co-integration.

Functional relations between exports and GDP:

It is hypothized that the global exports of India has been positively influencing the growth of Indian economy. This proposition is in consonance with the Marshall's thesis that international trade is an engine of growth but trade comprises both exports and imports. This paper exclusively focuses on the impact of exports on growth. The hypothesis on which the functional relation is formulated implies India has been following partially the export led growth strategy. Shri Prakash and Sonia Dhir concluded that Indian exports comprised largely primary and mining products as the total reserved of mining products is limited and the growth of primary production is also limited by the ceilings.

Therefore, export led growth strategy, may not be technically feasible and economy viable for India unless the basket of exports is greatly diversify. Therefore, GDP is treated as the function of net global exports and time the following is the regression equation of this functional relation:[1]

[1] Note-1 the equation 17 and 18 are assumed to be independent of each other. If the equations were interdependent, identification of each of the two equation would have been necessary.
Initially, GDP is treated as the function of Net Global exports, exchange rate in USD and time T the co-efficient of exchange rate is found to be negative. As fluctuations of Exchange rate make exports earning also fluctuates. So, both these variables are closely interrelated theoretically and empirically, this facet is empirically examined critically step by step regression. Multicollinearity is found to be seriously significant therefore, exchange rate is dropped from the reported equation. This step accounted by the fact that the paper focuses on growth effects of exports.

ln GDP = α + β1 ln NGEXPTS + β2 T + Ut

This relation takes explicit cognizance of the shift in the function during the study period. Both internal and external conditions affect the year on year growth of GDP. If the net global exports continuously rise through time then, growth of GDP will continue to grow at expected rate if, however, growth of exports fluctuates between the years, the growth effects of exports will also fluctuate but b1 elasticity co-efficient of exports represents average growth effect of net global exports on GDP. (NGEXPTS) show global exports of India net of exports to japan, South Korea and Malaysia (J. M S.K). This adjustment of exports is dictated by the need for evaluating the growth effect of exports to (J M.SK) under the comprehensive agreements. β2, the coefficient of shift measures the rate of up and downward change in the functional relation between the years. this function is dynamic in nature and quite a bit innovative in so far as it takes cognizance of the shift in the location of the function .the location will remain fixed only if β2 = 0 statistically. The OLS estimates of equation 17 show that 1) the function fits the data well. the coefficient of determination explains 99.62% of the total variation between in GDP between the yeas .besides, the coefficient of determination is statistically significant virtually at 0 probability; the intercept is highly significant which implies that the excluded variables like consumption multiplier, investment accelerator, domestic policy of export promotion and the conditions of demand in export markets may also influence the growth of GDP; 3) the elasticity coefficient of NGEXPTS is positive and statistically significant . Corresponding to 1 % increase in net global exports, GDP of India increases at 4.01% per annum. Thus, the growth effect of net global exports is 4 times more than the increase in exports.

But the results of the above functions require validation by Engel Granger test of co integration since the individual variables included in the function have been found to be a part of non–stationary time series.

The following OLS estimates based on Engel granger test are reported below:

Ut = 0.006 + 0.764ut–1, R2 0.614, F = 12.53, P = 0.009, 17.1

(t = 1.93), (t = 3.54)

The Engel Granger test shows that the coefficient of auto correlation is highly significant according to value of F = 12.53 at 0.01 probability. However, autocorrelation is generally tested by Durbin Watson d statistic: d = 2 (1 – 0.801) =

2 × 0.199 = 0.398, d = 0.398 this also shows autocorrelation to be statistically significant. Thereof, equation 17 requires re-estimation after adjustment of the variables included in the function for auto-correlation.

ln GDP = f (ln NGEXPTS and time) ...17.2

We re-estimated equation 17 including GDPt and the time variable. The estimates of equation 17.2 are reported below:

GDPt = 0.296 + 0.0062, R2 = 0.856, F = 44.589, P = 4.9E–07

t = (2.75), t = (7.278)

To see if the residuals from the regression are stationary we need to validate the results by Engel Grander test of co-integration. The following is the regression equation of residuals:

Ut = α + β ut-1 + et ...17.3

The OLS estimates of the equation associated with Engel Granger test are reported below:
Ut = 0.0022 + 0.0104ut-1, R2 = 0.0004, Multiple R = 0.0201, F = 0.0028
(t = 0.59), (t = 0.053)

The Engel Grander test shows that the co-efficient of auto- correlation is not significant statistically because F statistic is not statistically significant at 0.5 probability and the Durbin-Watson d statistic is = 2(1 – 0.0201) = 1.96. The calculated value of d statistic is greater than the upper table value 1.391 at 0.5 probability. Therefore, the modified variables of equation 17 are very well co-integrated in equation 17.2 so, the results are revealed to be valid and acceptable.

Equation 17.2 may be reorganized as follows:
ln GDPt = 1.299 + 0.801 ln GDPt-1 + 0.295 ln NGEXpts – 0.2362 ln NGExpTSt-1 + T

This estimated equation based on the transformed data fits the data well: (1)The co-efficient of determination is statistically significant practically at 0 probability and the function explains as much as 85.60% of total variations in GDP between the years;2) the intercept continues to be significant as in equation 18 ;3) corresponding to 1 % increase in the value of lagged GDP, current GDP increase by 80.1 % generally greater the current GDP, greater is the consumption expenditure and greater are savings/ investment. This makes future growth of GDP accelerate; 4) the coefficient of NGEXPTS is statistically significant. Corresponding to 1 % increase an global exports, current GDP increase by 29.6%; 5) but the co-efficient of NGEXPTS is statistically significant corresponding to 1 % increase in global exports, current GDP increase by 29.6%; 6) but the co-efficient of the lagged exports is negative it implies that corresponding to 1 % increased I exports of preceding years the current GDP may declining by -23.6 %. This implies that the high level of previous year exports may make growth of current exports sluggish; 7) shift parameter is also statistically significant. Its value shows that 0.1 value of the shift parameter shows that the function shifts upward towards the right by 1 % approximately. This implies that the Indian economy has been moving smoothly and consistently along its growth path during the period of study.

Several reasons cause autocorrelation coefficient to be significant. Misspecification of the function or the functional form is an important reason of the significance adjustment of significant auto correlation has resulted in the correction of the misspecification of the autocorrelation coefficient. The specification of the function 18 is erroneous. Either we should have selected distribution lag model or we should have selected the model which has either dependent, or the independent or both the variables to require inclusion of lagged value among the determinants. So the adjustment for significant autocorrelation has resulted in the correction of the misspecification of the function. Consequently lag values of both the dependent and independent variables occur among the determinants of GDP.

The second function relates to the relationship between GDP and the sum of exports to partner countries and the degree and direction of the influence of the comprehensive agreements with the specified countries. The following is the regression equation of the functional relation.
ln GDP = α + β2 ln CEXPTS + β2 DT + ut ...18

The equation contains two intercepts– α and β2, alpha contains the influence of such excluded variables as consumption Multiplier, investment accelerator, exports and other economic policies of India. However β2 captures the influence on GDP of the cooperation agreements. D is the dummy variables which is assumed to capture the influence of such variables on GDP as positive list of commodities, agreements about FDI, and agreements about non- competitive imports etc. as the comprehensive agreements have been made 2010/2011 with these countries, the dummy variable has been assigned 0 values till 2011 and value 1 thereafter.

The OLS estimate of Equation 18 show that; 1) equation fits the data well. It explains 95% of total year on year variation of GDP. The coefficient of determination is statistically significant practically at 0 probability; 2) intercept is highly significant at 0.01 probability, which indicates that variables like consumption multiplier, investment accelerator and growth strategy influence GDP significantly; 3) the elasticity co-efficient of the sum of exports to Japan, Malaysia and s. Korea is highly significant at 0.01 probability. Corresponding to 1% increase in sum of exports, GDP of India increases by as highly as 75.30%. Increase in GDP in response to one % increase in sum of exports 75 times more relative to the increase in exports thus, the exports to the countries of comprehensive agreements plays highly important role in the growth of the Indian economy. Interestingly the growth impact of the exports to countries of economic co-operation is only 3.40% lower than the growth impact of net global exports; 4) the coefficient of dummy variable is statistically significant at 0.05 probability. Besides, the functional relation 18 show that the co-operation agreement with 3 selected countries exercises the positive influence of the growth of Indian economy. The value of the coefficient of the dummy variable shows that corresponding to 1 unit increase in the value of D leads to an increase of 0.1 unit in GDP approximately.it implies that as the comprehensive economic agreement moves from initial stage unit by unit towards maturity , it growth effect becomes more and more pronounced . it may be imputed to progress of joint production , recipient of increased FDI, access to noncompetitive specialized goods such as special steel, semi-conductor , etc. and transfer of technology to India from south Korea and Japan . In other words, an increase of one unit in the values of the D, the GDP of India increases by 1000 US$. Thus, it may be inferred that the comprehensive economic agreements place an important role in the growth of Indian Economy.

As the variables in the equation are the part of non-stationary time series, results need to validated by Engel grander test of co-integration. The OLS estimates of the equation associated with the Engel grander test are reported below:

$$Ut = 0.038 - 0.011\ ut{-}1,\ R2 = 0.0002,\ F = 0.002,\ P = 0.96 \qquad \text{.....18.2}$$

$$(t = 2.97),\ (t = -0.04)$$

$$D = 2(1 - 0.16) = 1.19$$

The F statistic and d statistic show the autocorrelation to be zero statistically. Besides, the coefficient of the lagged value of the error is negative and statistically not significant. It implies that all the variables included in regression function 18 are well co-integrated in the set of regression function. Therefore, the results and inference drawn from regression relation 18 are valid and acceptable.

Questions regarding further validation of empirical results furnished by equation 17 and 18.

As the given equation are simultaneous in tone and tenor, following questions arrives: (1) is each of the 2 equations identifiable? 2) are these equations free from simultaneity bias ? ; 3) both these equations have exports as the common determinant of GDP and the parameter of the shift of the function and the co-efficient of dummy are loaded on time, the 2 equations could have been combined together for estimation.;4) are the interprets and the co-efficient of exports and other determinants of the equations are statistically independent?

Answers:

Equation 17 and 18 are exactly identifiable. Total number of variables contained in these equations is five (GDP, NGEXPTS, sum of exports to comprehensive agreements countries, Time, Dummy Variable.

The number of variables excluded from equation 17 are sum of exports to comprehensive agreements countries and the dummy. Thus the number of excluded variables is 2, hence the equations is identifiable. So, there is no problem in estimating each of these equations.

The dependent variable of equation 17 is not an independent variable in equation 18 and the independent variables of equation 17are not included in equation 18.

If both these equations combined together for estimation, results would have been afflicted by multicollinearity. So the validity of that equation would have been compromised.

For testing the dependence or the independence of the parameters of the 2 equations. The differences between the predicted values of GDP by equation 2 are regressed on the difference between the NGEXPTS, sum of exports to comprehensive agreement countries.

OLS estimates of differences of Y on X
lnGDPt = - 0.327+ 0.261, Multiple R= 0.2345, R2= 0.055, F= 0.9900, sig F= 0.33 ……19
t= (-0.989), (0.995)
p= (0.336), (0.333)

The differences of the estimated values are required on the differences of the two independent variable of the 2 regressions because the predicted/ estimated value encompass the impact of the intercept of the other regression co-efficient of each equation. However, the t statistic of the intercept and the regression co-efficient of the equation 19 reveal these to be not significant statistically. As the intercept and the regression coefficient of equation 19 are not statistically significant this implies that the predicted values of GDP by both 17 and 18 equations do not significantly differ from each other. Therefore, it may be inferred that both equation 17 and 18 are equally efficient for explaining and predicting the values of GDP precisely. So both these equation are equally valid.

The main Findings and conclusions of the study are given below:
1. The calculated value of t statistics of the difference between mean and median of all the core variables is revealed to be significant so, it is inferred that the distribution of these four variables GDP, NGEXPRTS, sum of exports of the comprehensive partner countries

and exchange rate significantly diverges from normal distribution and the chi square test empirically supports the conclusion reached from the t-statistic.

2. The negative co-efficient of skewness and kurtosis of GDP, sum of exports to comprehensive economic agreement countries, NGEXPTS and exchange rate are significant and hence the distribution of these variables is negatively skewed and high values are substantially concentrated in and around the narrow space of mode but the negative coefficient of kurtosis of exchange rate is not significant. So, high values may not be concentrated in and around the area of mode. The positive coefficient of skewness of exchange rate is not significant. It may probably be explained by the fact that fluctuation of exchange rates are generally low.

3. Interestingly the estimated growth curves of GDP, sum of exports to comprehensive economic agreement partners, net global exports grow significantly at an annual compound rate of 4+. If low differences between these rates are overlooked, all three variables have grown at similar annual compound rates.

4. Exchange rate in USD has been significantly declining between the years. The value of Indian Rupee relative to US$ has been continuously declining. This may be attributed to the adverse merchandise balance of trade of India with most of the countries. The replacement of administered price policy by market based pricing of Indian rupee may also account for this.

5. The function of relating GDP to net global exports and time is revealed to be adversely afflicted by significant auto correlation; this makes the function lack of co-integration of the variables in the equation.

6. The function of GDP adjusted for auto correlation is found to be satisfactory. The GDP of India increase by 29.5% in response to an increase of 1% in NGEXPTS. This high response of GDP to the changes in global exports is further re-enforced by the significant shift in the function between the years. All the variables are well co- integrated in this functional relation, and

7. The functional relation between GDP and the sum of exports to the comprehensive economic partners is highly satisfactory. The variables in this function are well co-integrated and the coefficient of dummy reveals the growth effect of economic cooperation with chosen partners to have played important role in the growth of Indian economy. This highlights the importance of comprehensive economic cooperation in the process of growth.

The Theory of Policy

Amit Sharma, Shri Prakash

Abstract

Various factors enabling the success of the policy and it also extensively analyses the impact of the factors that militate against the successful implementation of the policy at the grassroots. The paper elaborately illustrates each concept and definitions with empirical examples that relate to the policies of the central governments as well as the governments at the states and local self-governments. Thus, the paper furnishes an elaborate and exhaustive discussion of the various aspects of the conceptual framework and the empirical aspects of the policy making and policy implementation. An interesting aspect of the paper is that it attempts to explain the process and the procedure of policy making at the different levels of the government.

The paper focuses on the conceptual differences among law, principle, and theory. The paper distinguishes the conceptualization of the theory of the paper distinguishes between the eccentric and exposed conceptualization of the theory of policy on the one hand, and it differentiates between the concept of the deduction-based concept. It differentiates the deduction based concept of the theory of policy from the induction based concept of the theory of policy. The paper profusely describes the policymakers and their types at different layers and levels of the policymaking at the grassroots. The paper also analyses the role and functions of the implementers of the policy at different levels of the administrative structure.

Keywords: *theory, policy, accent, exposed, deduction, induction, makers, implementers, enabling factors, debilitating factors of implementation.*

Introduction

Theories or policies do not occur in the vacuum. Ideas precede actions. So, theories precede formulation of policies. To the best of my knowledge, the theory of policies is among the least researched areas of social sciences. Although there are many variants of economic policies, yet a unified general theory of economic policy may be enunciated. Jan Tinbergen is among the few contributors to the general theory of economic policy. Theories comprise concepts, assumptions and causal relations. Theories may be based either on deductive or inductive method of analysis. According to Popper, the scientific theory relates the cause or causes to their consequences. The scientific theory should have the property or the capability of making prediction on the basis of available evidence. But the scientific theory can be approved and accepted only if it is tested repeatedly with new facts or new data and it is found to be empirically valid. Then and only then the scientific theory can finally be approved and accepted (1933/1969). Thus, Karl Popper disagreed with the deductive approach to scientific theory and he supports inductive approach to theory. So, theories are highly ideas oriented.

JK Mehta disagrees emphatically with the view of Karl Popper. Mehta opines that scientific theory is the statement of a causal relationship which may be arrived at by the method of deduction. But

neither the real theory needs to be verified and validated by empirical evidence nor the theory can ever be falsified by empirical evidence (see Shri Prakash, 2024).

Theory is an elaborate expression and explanation of an idea that embodies causal relationship, concepts and assumption.

But policies are associated either with the problems or with the realization of some objective and hence target oriented. Problems are of two types: Contemporary but transitory which tend to vary over space and time. Second category comprises perennial problems relating to employment, inflation, poverty, inequalities of income and wealth and development and its regional variations. These problems always confront all the economies of the world in larger or smaller manner.

The Macro policies relating to production, consumption, prices, income and wealth distribution, welfare, and the equitable sharing of development benefits among the regions are only a few examples of the various types of policies that exist.
"Theory" and "Policy" are the two components that make up the term "theory of policy." The Concept of policy and the Concept of theory are the two notions that make up the title “Theory of Policy”. There are three stages in the development of theory:

1. Formulation of the hypothesis is the first stage of the development of theory. A hypothesis is an assertion that requires empirical testing and validation, or it can be characterized as a conjectural statement;
2. A hypothesis becomes a law if it has undergone repeated empirical testing and it is found to be consistent with empirical evidence. Therefore, the second stage of development of theory is the transformation of the hypothesis into law. Alfred Marshall (1892–1962) asserted that "the law is the statement of a general tendency."
The adjective "general" qualifies tendency; it means that in repeated trials or the occurrence of similar conditions, the same outcome is observed to materialise. It is possible for laws to not be universally true, meaning they may not always be applicable or functional in all situations or locations.

One can use the law of gravitation as an example, which states that any object thrown into the air will be drawn back towards the earth at a speed of thirty-two miles per second.
Consequently, whatever is tossed into the air will inevitably descend to the earth's surface. But as an exception to this rule, flying birds, helicopters, and airplanes do not come to rest. Similarly if the price of a commodity increased fifty times in a market and its demand decreased 45 out of 50 times, it may be taken as the general tendency/behaviour of demand in response to changes in price. If however a sentiment of increasing scarcity of the good prevails, then people may purchase both quantities at higher prices. This will be an exception of the law of demand. Accordingly, there may be a few exceptions to the general laws of economics, political science, or sociology;

3. If a particular law holds repeatedly through time and across space under different levels of empirical evidence, it will graduate into ‘principle’ (Alfred Marshal 1892–1962). There are fewer exceptions to the principles than there are exceptions to the law. In a similar vein, once a principle passes several empirical validation tests, it can eventually advance to the status of theory. Therefore, theory is the refined variant of the principle (Karl Popper 1966). In our opinion this concept of theory is induction based and empirical in orientation.

The theory may be deduced both from deduction and induction. The deductively deduced theory is the articulation of a causal relation between two or more variables/factors on hypothetical basis. Ricardo's theory of rent and John Von Neumann's theory of balanced growth are example of deductive theory. Theory therefore makes an effort to ascertain the effects of the stated causes. On the other hand, theory identifies the source or causes of the specified result or observed outcome.

There are multiple dimensions and directions to the theory of policy. The theory of policy is the particular but an important category of theories and it exclusively focuses on causal relation entrapped in the given policy. The theories of macro policies may be distinguished from the theory of micro policies. A single production unit, an industry, or a collection of industries may be the subject of theory of micro policy. Sugar industry has been provided protection even during the British rule. The theoretical articulation of benefits from the production of sugar industry is an example of theory of micro policy ; it may also have to do with the advancement of welfare of the people. Theory of policy may have bearings on people with lower incomes and the prevailing disparities of wealth in the society.

A single unit, such as a governmental or private sector firm, health care facility, or educational institution, might be the subject of theories of micro policies. In addition, theory of policy may have connections to the political, social, and cultural spheres as well as to economics and social organization. Because of this, the theory of policy can be characterized or thought of as a multifaceted, multidirectional phenomenon. It is also possible to classify the theories of policies into micro and macro categories as has been pointed out earlier.

Following are the Research questions under focus in this paper:

1. What is policy?
2. What is theory of policy?
3. How policies are made?
4. How policies are implemented?

Answers to these questions are attempted in the ensuing pages.

Concept and Need for Policy

The following sections discuss various aspects of policy making: What does the word "policy" mean generally? We believe that a policy is a statement of an action plan relating to intent and purpose for achieving a previously selected aim or goal.

The formulation of policy is warranted by:

1. Attainment of desired objective/goal/target;
2. For finding solution either for newly emerged problem or for solving some persistent problem; and
3. For course correction of an existing policy which has not delivered the desired results.

The policy formulation comprises several stages:

1. First stage is the identification of the problem or the objective to be realised by the policy implementation;

2. Diagnosis of the causes underlying the problem under consideration or the identification of the bottlenecks and the hurdles that may obstruct the realisation of the goal/objective;

3. Preparation of action plan for mitigating the bottlenecks and the hurdles and the smooth implementation of the policy;

4. Matching the expected outcome(s) of policy implementation and the various aspects/targets of the objectives being achieved. For instance, if the goal of the policy is to encourage economic growth, the ultimate outcome should be the realization of the intended rate of economic growth within the allotted time frame;

5. Initiating the process of the formulation of and policy and the application of the method of its implementation.

For successful implementation of the policy, actions need to be taken, stage, times of action, prevailing Circumstances at special units and the mechanism of correction of possible errors should also be included in the policy. In short, time and space horizon are an essential part of the policy. The logic underlined the above is the temporal and spatial distances between the policy makers and the implementers which may result in communication gaps.

Thus, the policy is composed of the following parameters:

i. Idea;
ii. Theory;
iii. Intent and purpose;
iv. Policy makers and implementers;
v. Program for implementation;
vi. Policy enablers and motivators, bottlenecks and roadblocks are important parameters which account for the success or the failure of the policy. A metrics, comprising both positive and negative parameters may be prepared for assessment of full or partial success or total or partial failure of the policy.

The field of policy, or policy operation, refers to the subsequent results of a policy that are located in space and time. These results can include both direct and indirect effects that a policy's implementation has on the people for whom it was designed and also the people who are indirectly affected by it. For example, free/subsidised supply of electricity, water, HYV seeds, fertilisers and other inputs to farmers directly benefit them. Besides, huge amount of procurement of food grains at annually increasing MSP confer huge growth benefits for farmers. But ever rising MSP is one of the most important causes of food inflation on the one hand, and ever increasing prices of agro waste industries on the other.

Concepts of Theory and Theory of Policy

According to Marshal (1892/1962) Theory is the statement of some general tendency. If the same outcome occurs time and again under a given set of conditions, such outcome may be defined as general tendency. It may be inferred from the above that theory is the statement of causal relation. Theories either determines the result of causal factors in operation or it seeks to discover cause(s) of the given result at the given place and time.

Therefore, the theory of policy may be defined as the statement of causal relation between the factors that constitute the base of policy and its outcomes. Policy may also be defined as the statement of the problem(s) or the objective for the solution or the realization of which the policy is formulated. The problem related policy is empirical in nature and it may be associated with the transitory or the perennial problems of the economies. Unemployment, inflation and growth are the perennial problems of all the economies of the world. But the transitory problems are temporary in nature and hence these are short lived. For example RUUSO – Ukrainian war has disrupted several supply chains. Transitory problems of policy may relate to tax rates, subsidies, measures for the promotion of exports, substitution of imports by domestic production, exchange rate, interest rates, and measures for the promotion of savings/investment and consumption etc.

Approaches to the Conceptualisation and Formulation of Theory of Policies

The concept of the theory of policy may be considered from Ex-Ante and Ex-Post Approaches. The theory and policy may also be treated either from Top-Down or Bottom-Up approach. It may also be considered both from deductive and inductive reasoning. The definition of theory of economic policy is actually Ex-Ante in nature and it is formulated deductively. Ex- Ante approach based theory of policy is conceptualized deductively which follows the classical lead. This also conforms to J.K. Mehta's concept of the theory. According to Mehta the theory does not need verification and validation by empirical evidence and in fact the theory cannot be disproved by any empirical evidence. This may be illustrated by the following example: A pitch dark cat is put in a pitch dark room which has only one exit/entry door. The room is located in a thick forest and this is the no moon night and the entire area is pitch dark. This statement/theory, that a black cat in the room cannot be disproved. As soon as the room is opened, the cat may run away unsighted. So this deductive theory cannot be falsified. (Shri Prakash 2024) Karl Popper (1966/1932) disagrees with the classical approach to scientific research, and hence classical concept of theory of policy. He opines that theory requires to be tested and verified repeatedly by new evidence before final approval and acceptance.

Alternatively, Ex-Post approach to the theory of policy is empirical in nature and it is based on inductive reasoning. So, it is defined as the causal relation between the policy measures already executed and the consequences/results that have flowed from it.

Top-down and Bottom-Up approaches are other two alternative approaches to theory of policy making.

Top-down approach to policy making refers to the policy making by the highest authorities of the country/States. For example, Five Year plans of development of India and related policies were formulated by the Planning Commission. Similarly, Plans of development of the Sates and related policies were formulated by the State planning Boards. Once the policy has been made at the top, orders are issued for its implementation by the lower order functionaries at different layers and levels of the governments/ organization/administration. These policies are generally based on most common facts and features of the problem (s) that exists over lager areas of the country/ states. The minute/small differences and distinctions among spatial unit are over looked. The basic assumption underline the plans is that the benefits of development will percolate autonomously to the masses. This assumption has been falsified by experience. Carping criticism pointed out that the rich became richer and the poor became poorer; planners sitting in Yojna Bhawan either

overlooked the problems at the grassroots or there were not even aware of the same. So, the state planning boards were created in 1971 to overcome this limitation of the grossly Top Down Approach. It was assumed that the authorities at the state levels know their states and their problems better than the members of Central Planning Commission. Obviously, Top Down Approach is based on the centralisation of power to make decisions for the formulation of policies.

Bottom –Up approach is based on decentralisation of power to make decisions of policy making. But it has varied strands and streams of thoughts. Decentralisation may be:
1. From centre to State;
2. States to Districts;
3. Districts to Blocks;
4. From Blocks to cities/town and Villages. Local Self Government, under this system makes decisions and formulates policies. The motto is 'Let millions of buds flowers and seeds grow into trees. But two different way may be distinguish: All the policies make by different authority operate in their areas of influence. Alternatively, central authority synthesised and coordinates policies made by numerous authorities into fewer unified policies.

Bottom-Up approach refers to the process of making of the policy at the lowest layer of the government/ organization. The assumption is that the employees/administrators at the lowest level know the problems at the grass-roots better than those belonging to the top echelons of administration. In pursuance of this approach, State Planning Boards were established and the district magistrate (DM) was made responsible to make the district plan of development and was accountable for its implementation. Introduction of Panchyati Raj further pushed the policy formulation to the villages.

However, neither these two approaches is full proof guarantee of success unless the leakages and seepages are eliminated from implementation and efficiency and productivity are pushed into the centre stage.

India copied the Soviet Union's material balanced approach of centralised planning of development with some corrective measures. Mixed economy was adopted as the distinguishing feature of Indian planning. But several limitations and imperfection entered the Indian system. In Soviet Union, the Central Authority used material balances approach to planning. Detailed information and data were collected from each unit/organization at the grassroots levels; Central Plan Authority continued to revise plan targets till outputs and inputs of all production activities came in perfect balance. This approach was the mixture of Top-Down and Bottom –Up Approaches to policies/planning.

New economic policy (NEP) replaced the policy of planned development in 1991 because growth rate could not cross 3.5%. NEP involved liberalisation, privatization and globalisation. But the main focus was on reduction on taxation rates, especially taxes on imports, banking reforms and labour reforms. And attempt was made to introduce the policy of higher and fire. But it encompassed only third and fourth class employee. Appointments were to made only on the recommendation of employment exchange for period of 3 months. Same person coul not be re-appointed in the same organisation and these employees did not get any benefit other than salary. In 1990-91, 91% of total employment was accounted by government and public sector; this share came down to less than 60% by 2007-08. So called golden handshake policy was used for retrenchment. In one

stroke more than 5000 engineers lost their jobs in 1991in Directorate of Employment and Training. The economy registered jobless growth at low rates during the period from 1991 to 1997-98. The Nadir (worst scenario) occurred during global economic slowdown in 2008-09 when thousands of persons got pink slips every Friday. The targets of reforms were third and fourth class employees; people could be appointed only for three months without right to any leave. The same person could not be re-appointed after three months. For appointment 3 to 5 persons were recommended by employment exchange. Corruption flourished at the exchanges as well as the place of appointments.

Exchange rate in 1947-48 was 1 rupee = 1US$ = 1 British £. But periodic de-valuations of Indian rupee in 1956 -57, 1966-67 and 1991 pushed down its value to 40 rupees = 1$ and 1£ = approx. 60₹. The price of petrol was rupees 0.067 per litre in 1967 and now it sells at about 99₹ per litre. The government of Narsimha Rao withdrew subsidy from oil and petrol products and linked the oil prices to international markets. Milk was sold 0.50₹ per litre in 1950-60s and now it is 55-56₹ per litre. All these changes have occurred under NEP.

The basic reason is that administered exchange rate policy was replaced by market based rate and similarly domestic prices of petrol were also linked to international markets. Imperfect knowledge erroneous implementation, leakages and seepages never allowed realisation of the targets of planned development (P.Rajan, 1977)

MAKERS OF THE POLICIES:

The makers of the policy vary among the entities for which the policies are made. The following are the main public authorities who make policies in India:

1. The Government of India and the governments of the states and union territories and the local governments;
2. Public sector enterprises of the central government and the state governments;
3. Institutions and organizations- socio-economic institutions and organizations under this category-educational institutions- universities, colleges, research institutes, schools, organizations dealing with the health services- hospital and clinic, hospitality organizations-tourist's corporation, and hotels, guest houses, electricity boards, water supply organizations, railway authorities, authorities controlling metro, metro services, government transport organizations who run buses, truck operators, taxis, three wheelers, and e-rickshaws, cultural and entertainment organizations, communication authorities, and public sector enterprises dealing with a specific public sector industries like bank and insurance etc., Corporate houses and the firms and companies within them, trading houses and professional associations like, CII, IEA, IES, IEC , PHD etc. Punjab, Haryana and Delhi industries, which is an association of the industrialists belonging to these areas etc. however, all the policy makers have to honour the prevailing legal framework within which the policies of individual policy makers have to operate.

Indian Constitution has classified various subjects and departments in three distinct categories:

i. The areas and departments/ subjects falling within the jurisdiction of central government: ii. Areas and subjects which fall within the purview of the governments of the state and union territories and the areas and subjects which fall in the domain of local self-governments. In addition to these some subjects like health, education, agriculture etc. are in the concurrent list of both the central and state governments.

The Policy Makers May Be Classified Into The Following Categories:

1. Policy makers who quickly respond to an emergent problems or new objectives: those policy makers who introduce new initiatives, to transform given structure of the economy and for mapping new directions of development. Makers of policies relating to anti-dowry law and NEP examples of this. The system of dowry adversely affected education of the girls (V.K.R.V Rao 1953, quoted from Shri Prakash, 1977). The problem of poverty in India, raised by Dr. Ram Manohar Lohia in Parliament in 1966 evoked the response of then government which formulated poverty eradication program of 14 points (also see V.M. Dandekar and N. Rath, 1971, Shri Praksh and Amit Sharma, 2010-11). However, the problem of poverty persists in India due to inappropriate policies and their implementation. Relative poverty always exists in all countries at all times.

2. Policy makers may either be leaders of the change or the followers of the leaders of the change or the adopters of change. D.R.Gadgil, then Vice Chairman Planning Commission introduced change in development policies by shifting emphasis from heavy and basic industries to development of agriculture and small scale industries;

3. The policy makers may be the inventors or the innovators or the experimenters' of new ideas. Establishment of Suratgarh Cooperative farm and the initiation of the green revolution technology in 14 selected district of India are examples of such innovative policies. Establishment of the Atomic Energy Commission and Indian Space Research Organization (ISRO) are also example of this;

4. Such policy makers as consider all the pros and cons, costs and benefits, and advantages and disadvantages that may flow from the implementation of the proposed policy before the policies are formulated and finalised. They carefully evaluate the outcomes of research relating to the consequences of the policy before its finalization and implementation of the policy.

IMPLEMENTERS OF POLICIES

Implementers of the policies vary between the policies makers and the entities for which policies are made.

a. The bureaucrats/civil servants in the service of central government are responsible to implement all the policies passed by the central government. Such civil servants are located in different departments of government of India across the countries.
b. The bureaucrats/civil servants in the services of state governments, UTs and local governments are responsible to implement all the policies passed by these governments.

The preparation of the Program of Action (POA) precedes the process of implementation of policies at all levels in order to furnish guidelines to the implementers so that no confusion or misunderstanding jeopardise the implementation of the policy. POA comprises well-

defined sequential steps for the purpose of helping the employees of the central and the state governments to implement the policies in a proper and effective way.

INSTRUMENTS OF IMPLEMENTATION OF POLICIES

The annual budgets of central, state and local governments are the instruments of implementing the fiscal and social/welfare policies. Budgets highlight sources of revenue, items of expenditure, policies of borrowing funds, subsidies, grants and fines etc.

Finance Commissions are appointed periodically at the interval of five years and the finance commissions determine and recommend the parameters for the distribution of funds by the central government among state/UT governments. The finance commission may recommend additional grants to the states on the basis of the status of development of health and education as an incentive for better performance. The commission may also recommend additional grants from the Centre to the legging states in the development race. Under certain special circumstances a state can also be granted the status for special grants.

Formulation and implementation of monetary policy falls within purview of RBI. The following instruments are used and the functions are performed by RBI for the implementation of monetary policy:

1. RBI functions as the Banker of the banks, central and state governments.

2. RBI uses interest rate policy to regulate the demand for and supply of money. REPO Rate is the basic instrument for this purpose. Generally, Reserve Bank of India announces the interest rate policy twice a year. There is a committee having representatives of RBI and central government for the formulation and regulation of the implementation of monetary policy.

3. NABARD has been established to supplement the functions of RBI. NABARD focuses on financial and monetary policies relating to agriculture and rural development.

Factors Determining Success Of Policies

The success of any policy depends on the following factors:

1. Relevance to the subject/ problem of the policies;

2. Appropriateness to the prevalent and emergent conditions;

3. Blocks and bottlenecks and the factors conducive to the success of the policy: India is a highly diversified country. Therefore conditions differ greatly among the regions/states and even districts. Therefore, it is extremely difficult to evolve concepts to suits universally. For example, the policies of helping marginal and small farmers faced the conceptual difficulty. In Meghalaya, land is distributed according to the families side, and hence , there is no marginal farmers as such. Similarly, small farmers need their land to rich farmers and work as labourers on their own field. But in M.P., small farmers take land on lease from big farmers;

4. Degree and direction of efficiency and effectiveness of implementation: this may also differ between the states. For example, North East India faced man power shortages in general and technical and engineering manpower in particular. So, a twelve class passed school graduate could become junior engineer without technical qualification on the basis of experience (T. Lawma, 1986)

5. Control over leakages and seepages: corruption has become extremely wide spread in India. At one time, Mr. Rajiv Gandhi, then Prime Minister opined that 6o- 80 paise out of one rupee are reserved by intermediaries in the process of development expenditure and last

6. Timely intervention to change direction in case of mal-functioning. If corrective action is delayed too much, things will go out of hand. The degree of success of the policies also depends on the process through which it is implemented. The efficiency and effectiveness of any policy depends on the least efficient/marginal employee in the chain of implementers. But the distance between the makers of the policy and the last person in chain of implementer at the grass roots is extremely long. There is high probability of miss conception or miss understanding of the real thrust of the policy. This point is illustrated by the examples cited below:

There may also be some conceptual illusion about the centrally formulated policies at the grass roots. For example, the central government formulated a policy to help marginal farmers in the country. In Meghalaya, a betel nut shopkeeper was given help under the scheme. In the process of monitoring the policy it was found that this shopkeeper was given 1 kg wheat and few grams urea. As he did not have any land, he consumed wheat and threw away the fertilizers. The norm was to give 5 kg of HYV seeds of wheat and 1quintal urea to be used in cultivation.

The small/ marginal farmers of Punjab possessing land holding of 2 or less than two hectares earned an annual income more than Indian Per Capita Income in late 70's and early 80's. (Indu Bala Tripathi, 1982) But marginal/small farmers of UP and MP hold land area of 2 to 5 bighas and 1 bigha has 8 hundred square yard of area. Naturally their incomes are much lower than the income of marginal farmers of Punjab. The states like Gujarat, Maharashtra and Rajasthan are not so richly endowed with the water resources as of Punjab, Haryana, and Gangetic Plains of Uttar Pradesh, Bihar and West Bengal. Besides, Assam and its adjoining states have high rainfall and rivers like Brahmaputra. These variations in the conditions in different states make the implementation of such agricultural policies difficult. Thus, the centrally evolved concept of marginal/ small farmers is not applicable uniformly across the country.

The implementation of policy begins only after its notification in gazette. The chief secretaries of the concerned departments issue orders for the implementation of the policies. This process is top /down process.

7. Similarly, the policy that succeeds in a country at a time will not succeed at another time, since the success of the policy alters the conditions at the grass-root. For example, coal mining was treated as the leading factor of growth in U.K. in initial stage of industrialization. Subsequently cotton textiles industry emerged as the leading sector of growth in UK. But agriculture and forestry propelled the growth of the economies of Australia and Scandinavian countries like Switzerland and Sweden etc.

Agriculture emerged as the driving sector of development of the economies of Punjab and Haryana. So, the policy should be formulated according to the prevailing conditions at the given time and space. This factor may be illustrated by the role of slave labour in the development of US economy. Slave labour no more exists in any country now (D. C. North…..). Similarly, Smith's theory of subsistence wages (1774) does not hold now since workers do not produce more children due to higher wage income than subsistence. The minimum wage legislation in countries like India make such wage policy is irrelevant.

8. The policy formulated to eradicate an existing problem will be irrelevant if the causes underline the problem are removed by the implementation of the policy. Example is that of the development policy based on the theory of growth enunciated by Colin Clark and then by Arthur Lewis (1954, 1962). The development policy based on this theory ensures transfer of resources from low productivity agriculture to higher productivity industries. When India started its planned development in 1951, agriculture constituted 59% of GDP. Now agriculture accounts for around 14% of GDP only. However, Indian growth has been led by rapid growth of tertiary sectors rather than the secondary sectors.

9. The success of any given policy depends on the absence of divergence between the skill and educational and skills endowment of manpower entrusted with the task of development and education and skill required for the performance of the task. This aspect is related to the fact that development involves induction of new technology in the production processes. So the manpower should be adequately trained for the operation of new technology.

10. The implementing workforce should also have proper understanding of the concept and the design of the policy, its objectives and the contents of the action plan.

11. The people for whom the policy is made should be mentally and otherwise prepared to accept the changes involved in the policy. For example despite the legal ban on child labour, child marriages and anti-dowry law these practices still persist in India because the persons at the grassroots are not prepared fully to accept these laws in practice.

12. The policies of welfare and development required the implementers of the policies to implement with honesty, integrity and proper understanding of the objectives. No policy can confer equal benefits on all segments of the population of all sectors of the economy. For example, mechanization of agriculture in Punjab eliminated the demand for ploughman, sowers, carpenters, blacksmiths etc. and created demand for drivers of tractors, harvesters. The use of chemical fertilizer, diesel and electricity created demand for these inputs and the users have to know the proper application of these.

THE PROCESS OF THE FORMULATION OF THE POLICY

The objective of the policy should be properly and adequately explained along with the steps involved in its implementation. Centrally formulated policies are generally explained in English/ Hindi. But most of the states used state languages as the language of administration. This may create difficulty in understanding. The same process is followed by the States/UTs and local self-government. The approach of the formulation of the policies may either be top-down, or bottom-up or even the mixture of the 2 approaches. The Prime with its cabinet colleagues may start the process

of formulating polices by clearly explaining the objective and targets to be achieved at the end of the roadmap. This may reflect the ideological, social or economic commitments of the ruling party. The views of the PM are communicated to the members either in the cabinet meeting or through PMO or during the meetings of Planning Commission/Niti Ayog. The members of cabinets may communicate their well-considered and deliberated views to the Prime Minister during the meetings. In some cases, views of the general public and the members of the think tank may also be solicited. All suggestions and proposals received from different resources may then be discussed in the meeting of the cabinet. For example, before the finalisation of the budget, Finance Minister discusses proposals and seeks opinions of the members, Confederation of Indian Industries (CII), economists, members of Prime Minister's economic council and others.

Once the policy is finalized at the cabinet level, it is placed before the Parliament for approval. Sometimes, parliament may decide to refer the proposed policy to the select parliamentary committee. Once the policy is approved and passed by the lower house, it is forwarded to the upper house/ Rajya Shabha for further discussion and final approval. Once the policy is passed by the upper house, it is sent to the President of India who may sign it or send back to the house with suggestion for amendment. Once the policy is signed by the President it is notified in the gazette. The Cabinet may receive proposals from Planning Commission/Niti Ayog, RBI and public enterprises.

In case of the Bottom - UP approach of policy formulation, policy proposals are sent by the ministers to the prime minister. The rest of the process is same as above. In the real Bottom –UP approach to policy formulation, Block Development Officers send the policy proposals to the DM. After detailed discussion with the departmental heads and relevance section of the population DM send the policy proposals to the Chief Minister of the concerned State/ UTs. These proposals are collated and finalised at the level of the state. The States send their proposals to the Central Government for finalisation and implantation.

Factors Responsible For Failure Of Policies

The following are the major factors that militate against the success or account for the failure of policies:

1. Diversity of agro-climatic conditions lends use practices, customs and socio-economic conditions across state/UTs: These differences require dove tailing of polices framed at the centre to take cognizance of the diversities and the differences among the areas/regions/states.

2. The mismatch between the concepts and policies evolved and the conditions at the grass-roots necessitate adaptability of the policies to the conditions or vice-versa. The different conditions in different areas/states play critical role in agriculture, rural development, location of industries, especially mineral based industries.

3. Proper understanding of the concepts and contents of the policy and the process of Implementation of the policies at the grass-root level play an important role in the achievement/failure of the objective of the policy.

4. Balance between the achievement of monetary and physical targets- this balance is required

to eliminate possible money illusion. For example brick lining of irrigation channels in Punjab consistently failed to achieve the physical target. The policy makers deliberately underestimated prices for fixing larger physical targets with a view to obtain higher financial education (Proceedings of Committee on concurrent monitoring of progress of projects, 1980-8, Punjab)

5. Linkage of new technology/innovations from laboratory to the fields and the farms: the movement/ dissemination of technology/innovations from laboratory to the fields and the farms involve lot of imperfections and divergence from the desired conditions, this adversely affects performance. Introduction of new technology without adequate training to the workers entrusted with the task of operation of the same leads to mal- functioning. Several times UGC and such other funding organizations provide funds for the induction of new machines/ equipment without training laboratory staff and without any fund for repair or maintenance.

6. Far too ambitious and unrealistic monetary or physical targets which are not in consonance with the prevailing conditions may jeopardize the success of the policy. An important example is that of the failure of the policy of the universalization of elementary education (UEE).Target dates were often revised and shifted to future since 1951 to 2011. (Shri Prakash, 1977, 1998).

7. Totally absent or inadequate database, facts at grassroots and intent and purpose of policy should not be disjoint: For example, NEHU Shillong had economy of northeast India as a compulsory paper in MA previous but hardly any data were available for teaching it in 1977. Another example is that of the propagation of green revolution technology in areas states like MP and Maharashtra which suffers with inadequate irrigational facility.

Another example is that of three hundreds families of cobblers in district Roopnagar (Punjab) who were given two hectares of land. But the land was wasteland which needed investment of rupees 2 Lakhs for making it fit for cultivation. Consequently beneficiaries leased the land to rich Sikh farmers.

8. Leakages and Seepages in the implementation of plan projects: the three hundred families of cobblers were also given a pair of Jersey cow as part of rehabilitation scheme: the beneficiaries did not know much about the up-keep of these cows. All the cows were reported to have died within 6 months due to some mysterious disease. In fact, cows were given only on paper.
Another example is that of Meghalaya. An owner of Paan (Betle leaves) was given about 200gms of fertilizer and 1kg HYV seeds of wheat for cultivation. He had no land. And the beneficiaries were supposed to receive 1 Quintal of fertiliser and 50kg of seeds for cultivation. These are instances of both flawed policy and corruptions in implementation.

9. There could be errors in the policy's design as well. A flawed policy design will inevitably lead to failure. In selected districts For example, government of Madhya Pradesh decided to implement green revolution technology for cultivation of wheat and paddy in selected districts. Fertilisers were given to district Panna which has abondened irrigation water but HYV seeds were not given to it. Sagar district was enabled with IMF loan to give Bore wells. The district was given HYV seeds of wheat but fertilisers were not supplied. Thus, package of green revolution technology was split in both districts and the policy failed to realise the objective. Similarly, HYV seeds of Paddy and fertilisers were given to the tribal farmers living in districts bordering Gujarat. The farmers sold both the inputs in black to the farmers of adjourning bordering Gujarat.

Conclusion

Following may be cited as the important conclusions of this paper;

1. The concept of law differs from the concept of principle and the concept of principle differs from the concept of theory.
2. The paper profusely explains the differences in the conceptual framework of Ex-Ante and Ex-Post theory of policy on the one hand and it delves deeper into the differentiating features of the policy and the theory of policy based on deduction and the theory of policy based on induction.
3. It explains the role and functions of policymakers at different layers of public administration as well as private organizations.
4. The role and functions of the implementers of the policy at the grassroots is elaborately explained.
5. Role and importance of the factors that facilitate the successful implementation of the policy and the impact of the factors that militate against the success of the policy are elaborated in the study.
6. The procedure and method of policy formulation is explained in simple terms.

There is great need for research relating both to the theoretical aspects of policy making as well as the empirical aspects relating to the consequences that flow from policy measures. There is not much research relating to Policy and theory of Policy in India.

Research Referees

1. Adam Smith (1774) , The nature and Causes of The Wealth of the Nation
2. Arther Livews (1962), the theory of economic growth, Landon
3. Alfred Marshall (1892/1962), Principles of Economics, McMillan, London
4. Colin Clark (1954), The Conditions of Economic Progress, Landon
5. Concurrent evaluation and Monitoring committee, state Planning board, Punjab (1982/1983) , Proceeding of The Meetings of CEMC, SPBP, Chandigarh
6. Committee on Concurrent Monitoring and Evaluation of Plan Projects (CMEPP): Proceedings of Committee on concurrent monitoring of progress of projects, 1980-81
7. D.C. North (19…) The Slave Labor in The Growth Of US Economy
8. Indu Bala Tripathi (1982), Marketed and Marketable Surplus and Agricultural Prices in Punjab Since 1904, M.Phil. Thesis Punjabi University, Patiala
9. Jan Tinbergen (1936/1938), The Theory of Economic Policy, Amesterdam
10. Karl Popper (1933/1969), Logic of Scientific Discovery
11. P.Rajan (19978), Planned Targets of Development and Acual Achievement in the state of M.P., P.hD Thesis, Sagar University, Sagar.
12. Shri Prakash (1977), Educational System – An Econometric Study, Concept
13. Shri Prakash (1994), Liberalization Privatization and Globalization and the relevance of Nehu-Mahalanobis Strategy of Development. In Ajit K.Shina (Editor)
14. Shri Praksh and Amit Sharma (2010-11), Concepts and Types of Poverty and Solution of the Problem, Journal of UA Economic Association.

15. Shri Prakash (2024), Economics of J.K. Mehta in Retrospect, Forthcoming
16. (T.Lawma,1986), Divergence between the desired and actual qualifications of manpower in North East India, Ph.D. theses NEHU, Shilong
17. V. K. R. V Rao (1954), employment- unemployment among the Graduates of Delhi University. E.N.C. E.R.T Project Report
18. V.M. Dhandekar and N. Rath, (1971), poverty in India, Project Report Funded by Forth Foundation US.

The Role of Pandit Deendayal Upadhyay Plan in the Development of Agriculture in UP

Dr.Krishna Bajpai[1], Dr. Rebecca Donald[2]

Abstract

The paper focuses on the development of agriculture in the state of U.P. The study emphasises the role of tanks (Jalashay), wells and bawaris as the sources of irrigation. Tanks (Jalashay), wells and bawaris used to be important sources both for drinking water and irrigation in U.P but due to continue negligence these sources became defunct. The D.D. Upadhyay Plan is designed to revise these sources to supplement rivers, canals and other waterways and subsidiaries are granted under the plan for this purpose. This scheme has increased the cultivable and irrigated area by reclaiming waste and usar land. This has resulted in an increase in output/income and productivity of land. The following are the achievements of the plan: 1, 57,190 hectare land has been treated under Plan. The incomes of the farmers have also increased by 48.53%.
t statistics of mean differences, two factor ANNOVA without replication and coefficient of contingency are used as the tools of data analysis.

Keywords: *Deen Dayal Upadhyay Scheme, Cultivable area, irrigation, output, ANNOVA, t statistics, coefficient of contigency*

Introduction

Agriculture plays an important role in Uttar Pradesh Economy. Agriculture is the main source of the livelihood of the people of U.P. Approximately 66% people derives their incomes from agriculture and related activities. Wheat, corn, paddy, potato, sugarcane, pulses and oil seeds are the major crops of U.P. As many as 12 crops of fruits are grown in the plantation of U.P. Among the fruits mangoes have occupied an important place as large proportion of its output and are exported to other states. Besides, potatoes among lady finger, root, carrot, spinach etc are grown and exported to some areas of Delhi Capital Region. About 21% of the total output of food grains of India is produced in U.P. U.P. occupies the 6th place among the food grains producing States. But it is the first and second biggest producer of Wheat and Rice in India. However, U.P. ranks fourth and seventh respectively in India with respect to per hectare yield of these crops. Agriculture accounted for 24.1 % of Gross State Domestic Product in U.P. in 2020- 21. But U.P. is the largest state in India with respect to population as it accounts for 17.7% of total population of India.

As the population of the states has been increasing continuously and the total cultivated is more or less fixed currently and the total land area of the state is almost permanently fixed, it is incumbent to raise the proportion of the cultivated area on the one hand and increase the yield rates of all agricultural crops in the state. The proportion of cultivable area may be increased by reclaiming waste, marshy land banjar and bihad usar/fellow and other uncultivable lands. Pandit Deendayal upadhyay plan has been evolved mainly for this purpose,

[1] The Author is Associate Professor,Sri Tika Ram Kanya Mahavidyalaya, Aligarh.
[2] Faculty of Economics, IGNOU, Noida

though some secondary objectives are also to be achieved by the implementation of this plan in U.P. Secondly, raising the yield rates of the crops also hold the key rate to increase the agriculture output substantially on the sustainable basis.

FACTORS ADVERSELY AFFECTING AGRICULTURE IN U.P.

The following may be stipulated as the factors adversely affecting growth of agriculture in U.P.

1. The total land area of the state more or less permanently fixed. Consequently, the area under cultivation and the possible cultivable area are also fixed. As against this, the population of the state has been increasing. Besides, cultivable and forest land are continuously being transferred from agricultural to non-agricultural uses due to industrialization and urbanization. In U.P. 40 to 50 thousand hectare agriculture is annually transfer to no- agricultural uses. The limits of urban areas have been increasing by rural areas in general and incorporation of rural and cultivated land into urban centres to meet ever increasing demand for land in order to provide houses to the people, development of the markets, construction of roads and other infrastructural requirements (Shri Prakash 2010). In view of this there is urgent need to raise per hectare yield of the crops and bring waste, marshy land banjar and bihad usar/fellow and other under cultivation. Individual farmers especially small and marginal farmers do not have resources required for investment either for raising yield or reclaiming non agriculture land - waste, marshy land banjar and bihad usar/fellow under cultivation land. The policy under investigation has been designed to meet this purpose specifically.

2. Under increasing population pressure and demand for land for non-agricultural uses area under cultivation has been continuously declining in U.P. The net cultivated area in the year 2001-02 was 16812 which declined to 16538 thousand hectare in 2018- 19. Thus, the cultivated area has decreased by 274 thousand hectares. Thus the cultivated area has declined by 16.11 thousand hectare per annum. Thus net cultivated area has declined during this period by 1.63%. This amounts to a decrease in net cultivated area by 0.095% or 0.1 % per annum. This constitutes a dilemma of rising population to be fed by annually declining cultivable area in U.P. This is vicious circle needs to be broken by increasing cultivable area and the rising yield of the crops.

3. The area of the fellow and a land area unfit for cultivation are 830 thousand hectares. In view of this huge. Thus this usar, banjar and marshy land constitutes 5.09% of the net cultivated area in 2018 -19. Pt. Deendayal Upadhayay Plan/ Scheme for reclamation of this land for cultivation was launched in 2017 – 18, the year in which BJP came to power in U.P. under the leadership of Yogi Adityanath. Under this scheme various land improvement projects have been launched. Initially this scheme was launched for a period of five years from 2017-19 to 2021-22; the plan has now been extended up to 2022-23 to 2026-2027.

4. Even more important problem hampering the growth of agriculture in U.P. is the small size of holdings. This limits the farm income which in its turn acts as a bottleneck for raising resources for investment in agriculture.

5. The low farm income due to low farm holdings is further accentuated by relatively low crop yields per hectares.

The twin problems of small farm size and low farm incomes, associated with low crop yields require public investment in agriculture. Pt. Deendayal Upadhayay Plan/ Scheme has been launched to partially addressed these problems along with the objective of increasing net cultivated area. The projects under this scheme focus on the raising of agriculture production and the crop yields per hectare part of this scheme aims to transform bihad, banjar and marshy land into cultivable area.

DISTINCTIVE FEATURES OF PT. DEENDAYAL UPADHYAY PLAN/ SCHEME

1. The scheme focuses on transforming barren into cultivable land and raises its productivity with a view to empower farmers by raising their farm incomes.

2. The basic objective is to continuously increase the area under cultivation by reclamation of uncultivable land.

3. An important facet of this scheme is to raise output of food grains so that the state can increase its share in total exports of food grains to other states of India and other countries. Currently Punjab and Haryana have largest share than that of U.P. in the export of food grains.

4. The scheme also focuses on raising the level of underground water. The level of underground water has been continuously going down in urban areas due to increasing population pressure and more intensive use of underground water for irrigation in rural areas. Such crops as Sugarcane, HYV varieties of paddy and wheat crops are extremely water intensive crops which are raised in large tracts of land in U.P. in fact these crops dominate the agriculture in western U.P.

In 2018-19 the total area report 68.4 % of total area was under cultivation. The remaining 31.6 % of total area is not under cultivation since this area is accounted by fellow, barren, marshy and hilly tracts which are presently not fit for cultivation. The government is giving 2500rs per hectare to the farmers for reclaiming land of this category (31.6%) so that the net cultivated area may be increased and the incomes of the farmers may be raised under Deendayal Scheme. This amount of the subsidy is directly transferred into the accounts of beneficiary farmers. The small, marginal and other farmers belonging to SC/ST categories are the main beneficiaries of this scheme. Besides such farmers who are not able to reap the benefits of high yield crop rates are also included among the beneficiaries of this scheme. Such farmers are helped by the provision of yield raising inputs so that their farm incomes could be raised.

According to Doctor S.P. Singh, Deputy Director, land protection Section, Department of Agriculture, Govt of U.P. " the problem of fellow, barren, marshy and land along the banks of drains and rivers does not affect the U.P. alone as substantial proportion of land area is covered by this particular trait which makes such land uncultivable. In U.P. such land is been brought under cultivation by the help of the government subsidy to the farmers under the said scheme".

As this policy has been designed to transform infertile, bihad, marshy and other uncultivated land into fertile and cultivable holdings, most of such pieces of land do not have facilities of irrigation. Therefore, the U.P government initiated Amrit Sarovar Policy for rejuvenation of extinct tracks and creation of new tanks in Janpad of the states so that the holdings created under D. D. Upaddhyay Plan could also get an access to irrigational facilities. This plan is known as Amrit Sarovar Plan which was launched in 2022.

The landholdings of the farmers selected for rejuvenation under D.D. Upadhaya Plan are first levelled, boundaries are created, CheckDams and tanks are made and farmers are encouraged to engage in keep plantation and horticulture so that their incomes may be increased. Amritsarovar Plan is helpful in the realization of this purpose. 50% of the total expenditure incurred in the performance of above tasks is given to the farmers as subsidy. This is further the implementation of the D.D. Upadhhyay Plan is made even more effective by linking following under the jurisdiction of the Upadhhyay Plan linked to MNREGA and 100% subsidy is provided for achieving the fixed target of converting Bihad, marshy and other such land into cultivable and fertile holdings. And additional advantage of linking the Upaddhyay Plan with MNREGA is that the labourers and farmers are getting employment. Thus, the farm incomes are further increased by this link.

During the period from 2017 -2022 1,57,190 hectare land has been treated under D.D. Upadhyay Plan which has been made fertile holding for boosting production and productivity. Rs.332.00 Crores have been spent under Upaddyay Plan for covering above mentioned area under the scheme. As the consequence of the implementation of Upaddhyay plan, productivity/yield per hectare has increase by as much as 8.58 quintal. The incomes of the farmers have also increased by 48.53%. This enhancement made in farm incomes is only slightly less than half of the earlier income. Thus, implementation of Upadhyay Plan appears to have mitigated the poverty of the beneficiary farmers this may be consider as a very significant achievement. Besides, the underground water level has also increased by 1.42mtr. Thus it will be quite helpful in future attempts to increase the proportion of irrigated area in U.P. In coming years, 2, 19,250 hectare of Bihad, Banjar, and infertile, marshy rocky land will be covered by this plan.

RESEARCH QUESTIONS/ OBJECTIVES

The paper seeks answers to the following research questions:

Questions relating to table 1

1. Does the mean of each row differ significantly from the means of other row?
2. Does the mean of each row differ significantly from the grand mean?

Answers to both these questions are sought from the data contain with the tables consideration.

3. Does the sum of squares differ significantly between the 7 rows?
4. Does the sum of squares differ significantly between the 4 columns?

Questions relating to table 2

1. Does the sum of squares differ significantly between the 5 rows?
2. Does the sum of squares significantly between the 4 columns?
3. The differences between the sums of squares of the rows related to type/category of land. The type/category of land is an attribute though the area under each type of land is cardinally measurable as against this; the differences of sum of squares between the columns refer to inter – temporal variations under area of all categories of land.

The answers to the above questions do not reflect whether different types of land have any relationship among them and the degree of relationship between different types of land. Answers to this aspects of investigation is sought from the coefficient of contingency

VARIABLES AND SOURCES OF DATA

The paper examines the achievement realised from the implementation of Pandit Deendayal Upadhyay Scheme of U.P. The underlined current of the data is the reclamation and rejuvenation of ponds, tanks wells and baoris which had dried due to non-use and continuous negligence over the years. So, the purpose is to create additional irrigational facilities to increase the yield of cultivated agricultural land and output. But the area available for cultivation is directly affected adversely by the existing stock of non-cultivable land, falling in different categories, and changes there in between the years.

The data are organised in table 1 and 2 are important in this study:

Table 1

Item	2001 – 02	2009 – 10	2017 – 18	2018- 19
The total reported area	24202	24170	24170	24170
Forest	1689	1662	1671	1714
Barren and uncultivable land	595	494	444	442
Land used other than farming	2514	2801	3163	3169
Land unfit for agriculture	518	431	389	388
Permanent Pasture and other grazing lands	71	65	66	70
Land of other trees and bushes etc.	355	360	283	269

Source: Economic Survey of Uttar Pradesh, 2021 - 22

The following are types and categories of land reported in table 1:

(i) The total reported area; (ii) Forest; (iii) Barren and uncultivable land; (iv) Land used other than farming; (v) Land unfit for agriculture; (vi) Permanent Pasture and other grazing lands; (vii) Land of other trees and bushes etc.

TABLE 2

item	2001 – 02	2009 – 10	2017 – 18	2018- 19
Current Fallow	1026	1232	1061	986
Other Fallow	624	537	552	594
Net sown area	16812	16589	16542	16538
Crop intensity	0	0	162.4	162.41
Total sown area	25447	25440	26864	26859

Source: Economic Survey of Uttar Pradesh, 2021 - 22

The following are types and categories of land reported in table 2:
(i) Current Fallow; (ii) Other Fallow; (iii) Net sown area; (iv) Crop intensity; (v) Total sown area

As the typology of land area suggests all these categories are attributional in nature. Attributes are not amenable for cardinal measurement since only the presence or absence of attributes may be observed and noted. But the frequencies/area under each category is cardinally measurable.

SOURCE OF DATA: The data reported in table 1 and 2 have been taken from the Economic Survey of Uttar Pradesh 2021 – 22.

The total reported land area of U.P. reported in Economic analysis of U.P. in different years is given in the above table. The table shows that the reported area has declined from 2001-02 to 2009-2019

METHODS OF DATA ANALYSIS IN THE STUDY:

The choice of the methods of data analysis has been constrain by the following limitation of the data and the assumptions and the nature of methods selected/ not selected. The paper uses following methods for analysing the data:
1. Descriptive Method by means of which pen portrait the data is painted, is used;
2. t statistics is used to determine the significance of the differences between the pairs of average of different category of land reported in tables 1 and 2 respectively.
3. Two factor ANNOVA without replication is used to estimate the significance of the differences of sums of squares of different categories of land and inter – temporal variation of all categories of land taken together between the years; and
4. The degree of interrelation between the categories of is determined by the coefficient of contingency.
5. It may be noted that the methods used in the study are chosen as these methods are appropriate for qualitative variable/ordinaly measured attributes.
6. The coefficient ranges between 0 and 1 and is statistically significant and cannot be tested directly. But the coefficient involves the use of Chi square which is appropriate to be used only in case large samples. But the concept of large sample is not associated with any particular number. For example t test considers the sample which has 30 or more than 30 observations as large. Whereas Mule & Kendall treat any sample as large if the number of observation contain in it are 50 or more than 50. In some cases, the sample having 20 or more observations can also be considered to be large.

Therefore, the coefficient of contingency may appropriately use in both the se cases. As the coefficient of contingency uses Chi square in the numerator, it implies that greater the value of Chi square greater shall be the value of coefficient of contingency. If the calculated value of Chi square is found to be statistically significant, this may also be suggest the coefficient of contingency is statistically different from 0. This nature of data and accessibility to only data of 4 years makes the expense of data highly restricted; which rules out the use of methods like econometric modelling.

7. The database used in this study comprises two tables, 1 table has 28 observations which are organised or reported in a matrix of 7 rows and 4 columns, whereas the second table contains 20 observations which are organised in a matrix of 5 rows and 4 columns.

DISCUSSION OF EMPIRICAL RESULTS:

Empirical results have been discussed here under in the same order in which the methods of data analysis are listed.

Descriptive Portrayal of selected observed facts – this section portrays description of selected data which display some important features of the observed facts about the consequences of implementation of Deen Dayal Upadhhaya scheme.

Empirical results relating to application of t – test to determine significance of the paired arithmetic means of data reported in Table 1.

The following table contains the calculated values of t- statistics of the pairs of arithmetic mean of the rows of the data of table 1

Table 1, t- Values of Rows

The total reported area	t_{r11}	t_{r12}	t_{r13}	t_{r14}	t_{r15}	t_{r16}	t_{r17}
	24879	17458.1	8053.51	18670.3	38229.4	20674.4	1502.75
Forest	t_{r21}	t_{r22}	t_{r23}	t_{r24}	t_{r25}	t_{r26}	
	844.585	-460.17	943.224	2192.33	1124.77	-197.49	
Barren and uncultivable land	t_{r31}	t_{r32}	t_{r33}	t_{r34}	t_{r35}		
	-55956	1705.77	12240.5	4903.02	-27838		
Land used other than farming	t_{r41}	t_{r42}	t_{r43}	t_{r44}			
	336.347	390.041	352.836	-91.831			
Land unfit for agriculture	t_{r51}	t_{r52}	t_{r53}				
	113.175	34.2114	-284.3				
Permanent Pasture and other grazing lands	t_{r61}	t_{r62}					
	-203.74	-319.58					
Land of other trees and bushes etc.	t_{r71}						
	-294.56						

Source: Author's own calculation

The above table shows that:

1. The Arithmetic mean of the Total reported area significantly differs from the arithmetic mean of forest, Barren and uncultivable land, Land used other than farming, Land unfit for agriculture, Permanent Pasture and other grazing lands and Land of other trees and bushes etc respectively. Since the calculated values are much greater than the critical value of t at 0.05 probability;
2. The calculated values of t – statistics of the differences of the arithmetic mean of the second category of the land – forestry and the arithmetic of the five categories exceed the critical value of t at 0.05 probability greatly;
3. The calculated values of t – statistics of the differences of the arithmetic mean of the third category of the land – Barren and uncultivable land, and the arithmetic of the four categories exceed the critical value of t at 0.05 probability greatly;
4. The calculated values of t – statistics of the differences of the arithmetic mean of the fourth category of the land – Land used other than farming, and the arithmetic of the three categories exceed the critical value of t at 0.05 probability greatly;

5. The calculated values of t – statistics of the differences of the arithmetic mean of the fifth category of the land – Land unfit for agriculture and the arithmetic of the two categories exceed the critical value of t at 0.05 probability greatly;
6. The calculated values of t – statistics of the differences of the arithmetic mean of the third category of the land – Permanent Pasture and other grazing lands, and the arithmetic of the Land of other trees and bushes etc exceed the critical value of t at 0.05 probability greatly;
7. The calculated values of t – statistics of the differences of the arithmetic mean of the last category of the land – Land of other trees and bushes etc, also exceed the critical value of t at 0.05 probability greatly. Hence, all these differences are statistically significant;

The following table contains the calculated values of t- statistics of the pairs of arithmetic mean of the columns of the data of table 1

	Table 1, t Values of Column			
2001 – 02	tc11	tc12	tc13	tc14
	-0.5429	-3.3686	-3.8699	-1.9738
2009 – 10	tc21	tc22	tc23	
	-2.8295	-3.3314	-1.4248	
2017 – 18	tc31	tc32		
	-0.5021	1.44676		
2018- 19	tc41			
	1.95621			

Source: Author's own calculation

The calculated values of the t statistics of the column of 1st table are here under:
1. The table shows that t statistics of the mean difference of column one with column 3,4 and grand mean are greate than 2, and hence, these mean differences are statistically significant. It may thefore be infer that the Land used pattern in years 3, 4 an all the ears taken together has significantly changed. But the lnd used pattern between the year 1 and 2 has virtually remain the probabily the lapse of time between these two years has not been adequate to change the land use pattern;
2. The land used pattern of year 2 significantly differs from the land used pattern if all other years are considered together. But the land used pattern between the years 2,3 and 4 has remained constant;
3. The mean value of the land used pattern in year three does not differs significantly from the mean values of year 4 and the grand mean ;
4. The calculated value the t statistics of the differences of the mean of the fourth year for the grand mean is approximately 2 which is statistically significant.

Thus out of the 10, 6 values of the t statistics are found to be statistically significant while other 4 value are not significant.

Empirical results relating to application of t – test to determine significance of the paired arithmetic means of data reported in table 2.

The following table contains the calculated values of t- statistics of the pairs of arithmetic mean of the rows of table 2:

Table 2, t- Values of Rows					
Current Fallow	t_{r11}	t_{r12}	t_{r13}	t_{r14}	t_{r15}
	283.421	-6951.05	483.1438	-5684.2	-514.334
Other Fallow	t_{r21}	t_{r22}	t_{r23}	t_{r24}	
	-8502.23	210.7411	-5365.87	-548.875	
Net sown area	t_{r31}	t_{r32}	t_{r33}		
	7631.912	-2037.6	506.851		
Crop intensity	t_{r41}	t_{r42}			
	-5956.51	-580.119			
Total sown area	t_{r51}				
	1099.03				

Source: Author's own calculation

The above table shows that:

1. The Arithmetic mean of the Current fallow differs from the arithmetic mean of Other Fallow, Net Sown Area, Crop Intensity, and Total Sown Area respectively. Since the calculated values are much greater than the critical value of t at 0.05 probability;
2. The calculated values of t – statistics of the differences of the arithmetic mean of the second category of the land – Other Fallow, and the arithmetic of the other three categories exceed the critical value of t at 0.05 probability greatly;
3. The calculated values of t – statistics of the differences of the arithmetic mean of the third category of the land – Net Sown Area, and the arithmetic of the two categories exceed the critical value of t at 0.05 probability greatly;
4. The calculated values of t – statistics of the differences of the arithmetic mean of the fourth category of the land – Crop Intensity, and the arithmetic of the Total Sown Area exceed the critical value of t at 0.05 probability greatly;
5. The calculated values of t – statistics of the differences of the arithmetic mean of the fifth category of the land – Total Sown Area also exceed the critical value of t at 0.05 probability greatly. Hence, all these differences are statistically significant.

Thus if we consider all the years together it is found that the nature of the land used pattern relating to different categories land differ significantly.

The following table contains the calculated values of t- statistics of the pairs of arithmetic mean of the columns of table 2:

	Table 2, t Values of Column			
2001 – 02	tc11	tc12	tc13	tc14
	1.296717	-12.05503382	-10.06148807	-7.094
2009 – 10	tc21	tc22	tc23	
	-16.0087	-12.62920665	-8.421868147	
2017 – 18	tc31	tc32		
	0.480801	7.923755575		
2018- 19	tc41			
	7.430017			

Source: Author's own calculation

The above table shows that:
1. The calculated values of the t statistics of the mean 1st year / column from the mean value of columns 3, 4 and of all the years taken together are statistically significant at 0.05 probability. But the t statistics of the mean difference of the year one and two is not statistically significant;

2. The calculated values of the t statistics of the difference between the means of year 2and 3, 2 and 4, 2 and all years are statistically significant;

3. The t statistics of the difference between the year 3 and 4 is not statistically significant while the t statistics of the difference of the year 3 and all other years taken together are statistically significant;

4. The calculated value of t statistics of the mean of the year 4 and all years taken together is statically significant.
The above results suggest that land used pattern between year 1 and 2 and the years 3 and 4 have remained constant. But the t statistics of the mean differences of the all other years are statistically significant. It may therefore be infer that the change in the land used pattern involves much greater time than the time that lapses between two adjacent years. This inference holds true for the results of both the tables 1 and 2 respectively.

In order to avoid the probability of subscribing to an inference that may emerge from the strength or weakness of a particular method of data analysis two factor ANNOVA without replication has also been used to re-examine inferences drawn from t statistics.

Empirical results of two factor ANNOVA without replication of table 1 and table 2 respectively.
The results of application of ANNOVA to the data of table 1 and table 2 respectively are reported here under:

Table 1

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	1868537905	6	3.11E+08	17141.44	8.46E-33	2.661304523
Columns	8464.107143	3	2821.369	0.155295	0.924908	3.15990759
Error	327021.1429	18	18167.84			
Total	1868873390	27				

The ANNOVA results of table 1 show that

(i) Calculated value of F corresponding to the differences between the rows is extremely high which is statistically significant at practically 0.05 probability. It means that the variation of the area under each category of land during all the four years taken together differs significantly from the corresponding variations of the area under all other categories of land during these four years taken together. It means that the land used pattern has remained practically the same during the period of the study;

(ii) However the calculated value of F statistics for the variations between the columns/ years is very low and it is not statistically significant at 0.05 probaility. Therefore, inter - temporal variation of the pattern of land used has remained constant. It is obvious that the Deen Dayal Upadhyay Scheme of rejuvenation and reclamation of ponds and tanks has not been successful in altering the reported pattern of land used. It may be accounted by the fact that the area under these seven categories of land is too vast to be catered by the pools and tanks the area under which is relatively small. Such vast land mass requires huge investment for being converted into cultivable land area. This may be amenable only for reclamation and transformation by means of big rivers Ganges, Yamuna etc. The Deen Dayall Upaddyaya scheme has been successful only in the beautification of the adjoining land area which has also benefitted from the availability of water supply maid feasible by the implementation of the Upadhaya scheme;

The results of ANNOVA based on data on table 2

Table 2

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	2262039002	4	5.66E+08	3802.5	1.67903E-18	3.259167
Columns	343008.5518	3	114336.2	0.7688	0.533270631	3.490295
Error	1784644.082	12	148720.3			
Total	2264166655	19				

1. The calculated value of F statistics corresponding to the variation between the rows for all the four years taken together is extremely high and it is statistically significant at 0.05 probability. It means that the total land area under each of the five categories of land for the four years taken together has varied significantly between the rows/categories. It implies that the variations have been extremely high for the land used pattern during the period covered by studies;

2. However, the calculated value of the F statistics for the variation between the years is low and statistically not significant at 0.05 probabilities. It implies that the land are under five categories during one year has not significantly changed during other three years.

These results may suggest that the government of U.P. should intensify efforts to raise production and productivity by:
(i) Increasing the area under cultivation;
(ii) Increasing the irrigated area under cultivation and
(iii) Utilisation of new technology and inputs required for raisng productivity and output so that the food requirements of ever increasing population are adequately met.

Discussion of Empirical results of application of co-efficient of contingency.

The results of t statistics and ANNOVA focus on the means and the variances of the nature of land used patter n over the years in state of U.P. these results do not tell us whether the different categories of land have any relationship with each other. For this purpose coefficient of contingency has been used. The co-efficient of contingency has been applied to the data contain by table and table 2 respectively. Table 1 has 28 observations which are arranged in 7 rows and 4 columns.

The calculated value of the coefficient of contingency, based on data contained in table 1, has as high value as 0.93 which is as a first approximation equals to 1. This implies that the relationship between the nature and tropology of the various categories of land and pattern of utilisation of different categories of land are almost perfectly related to each other. This lends empirical evidence to support the rational of the criteria and the factors on which the land has been classified into different categories. The calculated value of the Chi square in this case is also as high as 180.703 which is statistically significant even at 0.01 probability. This significant value of Chi square value implies that the coefficient of contingency based on data of table 1 is statistically different from 0 and it is nearly equal to 1. The coefficient cannot be tested for statistical significance directly. But as the coefficient involves the Chi square, the significance of Chi-square may be taken to indicate the significance of coefficient of contingency.

The calculated value of the coefficient of contingency, based on data contained in table 2, is as high as 0.98 which is also nearly equal to 1. Thus, the coefficient implies that the relationship between the attributes of the land, its nature and uses to which various category of land are put very closely related to each other. This also furnishes empirical evidence to support the criterion/ factors on the basis of which the categories of land contain in table 2 has been classified. The calculated value of Chi square is also as high as 407.521which is statistically significant at 0.01 probability. Hence, this coefficient may also be taken to suggest that the coefficient is statistically different from 0.

CONCLUSION AND FINDINGS

The following may be considered as important findings of this research paper:
1. The total cultivable area in U.P. has increased as the consequence of the implementation of Upaddhyaya Plan ;

2. Infertile, Fellow, Bhihad, Ujad, rocky, marshy land which were treated as unuseful area earlier has been transform into highly useful pieces of land which have become usable by the implementation of the plan;

3. Output and yield, incomes and hence, incomes of the beneficiary farmers have been substantially increase by this Plan;

4. The plan have also raised the underground water level which may be useful resource in future for increasing the proportion of irrigated area in U.P. the linking of the plan with MNREGA has ensured that labourers and farmers getting employment under this plan perform useful productive work;

5. Those who get employment under the joint implementation of Upa ddhyay and MNREGA plans succeed in raising their income;

6. The supplementation of Upadhyaya plan by Amrit Sarovar Plan has created additional opportunities of employment, increased in income, tree plantation and horticulture.

Following are the important findings based on application of t test, two factor ANNOVA without replication and the coefficient of contingency;

7. The calculated values of 28 t statistics of the differences of the rows are statistically significant.
8. The calculated values of 6 out of 10 are found to be statistically significant. The mean differences of the tears 1 and 2, and 3 and 4 are not statistically significant which means that change in land used pattern or transfer of land from 1 to another category requires more time than the time involved in two adjacent years.
9. The results of ANNOVA show that the variation between the rows of both the tables is highly significant statistically. This implies that the differences between of the means of both tables and the corresponding variances of both the tables are statistically significant. It may therefore be concluded the distribution of the values of the attributes of the land of different category significantly diverges from each other. This conclusion justifies the choice of t statistics and ANNOVA as tools of data analysis.
10. The results of coefficients of contingency of both the tables are approximately equal to 1 which implies that the land used pattern and the nature of different category of land are almost perfectly related with each other.

Research Referees

Shri Prakash (2010) Presidential address to the annual conference of UPEA held at Aligarh

Deendayal Upadhyay (2016) The Two Plans: Deendayal Upadhyaya's Vision for India's Development, Prabhat Prakashan

Dr. Manjula Upadhyay (2018), ECONOMIC THOUGHT OF DEEN DAYAL UPADHYAY, International Journal of Innovative Social Science & Humanities Research

https://translate.google.com/translate?u=https://www.researchgate.net/publication/309786077THE_WASTELANDS_ININDIA&hl=hi&sl=en&tl=hi&client=srp&prev=search

https://vvgnli.gov.in/cites/default/files/Agriculture%20Report%20Hindi.pdf

https://rajbhasha.gov.in/Sites/default/files/lekh1st_hin.pdf

https://updes.up.nic.in/esd/reports/arthik%20samikcha%202020-21.pdf

https://updes.up.nic.in/updes/data/arthik/samiksha/arthik%20samiksha_2021_22.pdf

https://rural.nic.in

https://pdduuksy.icar.gov.in/

https://upagriculture.com/

https://www.abplive.com/agriculture/farmers-will-get-financial-help-forfarming-in-the-barren-areas-of-beehad-of-chambal-2154528/amp

https://www.kisantak.in/amp/sarkari-yojana/uttar-pradesh/story/yogigovernment-scheme-barren-land-will-now-become-fertile-500908-2023-01-21

https://www.tractorjunction.com/sarkari-yojna-news/kisan-samridhi-yojnagovernment-will-spend-rs-600crore/?amp=1

https://hindi.economictimes.com/kheti-kisani/yogi-sarkar-scheme-up-govt-willdevelop-unproductive-land-to-agriculture-know

Editorial Team

Prof Shan Shengjiang is currently the Dean of the School of Digital Commerce and the director of the Digital Commerce research center at Zhejiang Yuexiu University (ZYU), China. He served as the vice president of the university, director of the foreign language research center of the university, and the director of the center for Sino-European economic and cultural Studies from 2000 to 2016. Prof. Shan is an expert member of the committee at the Industry and Education Collaboration Promotion Center of Commercial Industry of China, Council for the Promotion of International Trade.Prof.

Prof Cungki Kusdarjito earned his PhD in (Economics) geography and planning from the University of Queensland, Brisbane, Australia, Master in Agricultural Economics from Gadjah Mada University, Yogyakarta, Indonesia. His research interests are in the implementation of soft computing in economic and social sciences and supply chain management. He has authored a book chapter published by Budapest Business School, Hungary in 2016 and 2017 and Zhejiang Yuexiu University of Foreign Language in 2023 and as a visiting lecturer at Warren Wilson College, Asheville, North Carolina in 2023. In 2018, he worked as an event analyst with ASEAN Foundation. In addition, he has served in various managerial roles, such as at the Private University Association in Yogyakarta from 2015 to 2019 for university cooperation, at the Board of Yogyakarta Education Council from 2018-now, and a founder of the Indonesian Reformer Scientist in 2019. He was also ViceRector and Rector of Janabadra University in Yogyakarta, Indonesia from 2006 to 2018 and he is currently serving as a Vice Dean for academic affairs at the Faculty of Agriculture, Janabadra University, Yogyakarta, Indonesia from March 2023 to 2028. He was also certified as a Marketing Analyst (CMA), Certified Supply Chain Analyst (ASCA), and Certified in Agribusiness Management (MAB).

Dr. Anikó Magasházi holds a PhD in economics from the Corvinus University of Budapest. She became involved in research following twenty years of business management experience in regional development and the financial sector in Hungary and Austria.
She is a senior researcher in the Institute of Acvanced Studies in Kőszeg, where she also manages the Institute's international relations. Her research interest include Globalization and Regional Development in particular in the Southeast-Asian and the Central and Eastern European region. She lectures at conferences and university programs as well as publishes and participates in projects in both regions.

Prof Amit Sharma is an Associate Professor of Management & Economics at Zhejiang Yuexiu University (ZYU), China. A former Vice Dean, he is a distinguished member of ZYU's Academic Research Committee and the Sino-European Studies and Culture Center at the College of International Business. Dr. Sharma has published 32 research papers in esteemed journals, presented at international conferences, chaired sessions, and served as an editor for reputable peer-reviewed scholarly journals, showcasing his commitment to academic excellence.

Prof Shalini Singh Sharma has more than 28 years of teaching, research, training & administration experience. She consistently has a first class academic career throughout and has earned two University Medals for standing first in B.A. Economic Hons. and M.A. Economics from Punjabi University, Patiala. She was awarded Ph.D. in Economics in 2004 from Aligarh Muslim University , Aligarh under the guidance of Prof. Ashok Mittal. The overseas examiner of her thesis was Prof. Anne Carter of Harvard University, student of Nobel Laureate W.W.Leontief. Her area of research is Development Economics. She has authored/co-authored more than 51 research papers in reputed Indian and foreign professional journals and has presented more than 75 research papers in various conferences individually/jointly. She has also worked on various research projects sponsored by UNESCO, World Bank, Northern India Manufacturers Association and Panacea Biotech. Several Ph.D thesis have been awarded under her supervision. She has also organised various National/ International conferences. While working with National Power Training Institute (An autonomous body under Ministry Of Power) as Principal Fellow she conducted various training programmes for Power grid, IPGCL, Evonik, Ratnagiri power Corp., DTL, BHEL, HPGCL etc. and was also involved with power audit along with EVONIK group for the Ministry. Institution Building has been her forte. Presently she is heading the training and banking research vertical of EGROW Foundation. She has developed the School of Economics & Public Policy while working as Dean School of Economics & School of Public Policy with MIT WPU, Pune. Structured Amity School of Economics while working as Director, Amity School of Economics, Noida. Integrated the programs of humanities and social sciences and management while working as Dean Galgotias University and Acting Dean School of Business Management, Sharda University respectively.

Dr. Urjaswita Singh is presently working as assistant professor, at Mahatma Gandhi Kashi Vidyapith Varanasi Uttar Pradesh. She had a brilliant academic career with throughout first division. Her field of specialization is International development Economics. She has been closely associated with Teaching profession in various reputed institutions. She has following achievements to her credit : awardee of Post- Doctoral Fellowship for women from UGC and From ICSSR on the topic entitled “Institutional Approach To Intra Industry Trade: The Indian Experience. "; minor Research Project on the topic entitled" Integral Humanism of Pandit Deen Dayal Upadhyay and Sarvoday OF Gandhi ji :A Comparitive Study " ; one approved patent of the work entitled *smart Agriculture Landscape Monitoring Device*402310-001 by ministry of commerce and industry. Apart from this, she has presented about 40 research papers in various national/international seminars/conference, particularly she has a credit about 23 of her research publications in refereed national/international journal, some of them are"Impact of volatality of stock market on foreign investment and growth of Indian Economy-A study in input output framework "Sao Paulo, BRAZIL in July 2009,widening regional disparity and FDI (with special reference to India And China), Patters of FDI in South Asian Countries, Coordination Failure :A reason for underdevelopment, Towards more sustainable development with higher education etc. Along with these she has been closely related to the life membership of various journals. She has been continuously providing consultancy/orientations/ lectures to the various reputed institutions of India and abroad.

Dr. Rebecca Donald has more than 18 years of experience in academics. She is holding PhD in Economics; M.Phil. (Eco); M.A. (Eco) and PGDBA in HR. Currently she is working with IGNOU Study Centre, Noida as an Academic Counsellor of Economics. She has worked as an Associate Professor in HIMT, Greater Noida and was also managing Corporate Resource Interface Cell. In her work tenure she has been awarded as Best Coordinator and also recruited number of students in different companies like Vodafone, ICICI, HDFC, Airtel etc. She has worked as a Guest Lecturer in Chitkara University, Chandigarh. Dr. Rebecca has been invited as a resource speaker and delivered sessions on various topics some of them are "Role of Universities and Government in Supporting Students Pursuing Entrepreneurship" at IIMT, Greater Noida; Foreign Direct Investment in India" at Government P.G College, Noida. As a keen researcher she has attended and presented papers across prestigious institutions like Amity International Business School & Amity Global Business School, Noida; JK Business School, Gurgaon; Jiwaji University, Gwalior at their national/international conferences. Her research area is Healthcare and contributed research papers on "Role of Public and Private Sector in Health Care Industry"; "Human Resource Health Policy and Investment in Health Care Sector; "Urban Poverty: Health Issues of Urban Poor in India" and many more. Being an active member of Indian Economic Association she holds the position of Associate Managing Editor in Indian Journal of Economy and Policy.

Invitation to Authors for Submission of Research Papers

A special issue on policy is planned to be brought out. Authors are invited to submit their research papers on the following themes:

1. Procedure of formulation of economic and financial policies of the states and the govt of India
2. Procedure of formulation of monetary policy of India
3. Process of Formulation of Budgetary Proposals and It's Finalisation by the Indian Parliament
4. Formulation of State Budgets
5. Impact Analysis
6. Evaluation of Impact / Effect of Budgets, Agriculture Policy, Industrial Policy, Trade Policy
7. Impact of Growth Welfare Projects and Programs
8. Analysis of Formulation and Impact of Information Policy

Papers are also welcome on other themes to be published in general issues

Indian Journal of Economy and Policy

Subscription form

Sr.No.	Membership	Year	Price
1	Institutions	1 year	Rs 5000
2	Institutions	2 years	Rs 9000
3	Institutions	3 years	Rs 12000
4	Institutions	10 years	Rs 15000
5	Individuals	1 year	Rs 2000
6	Individuals	3 years	Rs 5000
7	Research Scholars	1 year	Rs 500
8	Foreign Nationals	1 year	$35

Life members of IEA will get 30% discount in subscription fees for the journal. Annual members of IEA and others will have to pay full fees as per subscription rates.

Bank: Indian Overseas Bank
Account No: 175901000006816
IFSC Code: IOBA0001759
Account Holder: Shri Prakash

Those who wish to pay through bank draft, the draft may be drawn in favour of Chief Editor Indian Journal of Economy and Policy.

To become a regular subscriber, please complete and mail this form

Individual
Institutional
Research Scholar
Foreign National

I enclose cash/ draft/ banker's cheque in favour of Chief Editor-Indian Journal of Economy and Policy, payable at New Delhi, for Rs……

Name of the subscriber…….
Name of the organization…….
Address……

City…….state…….pin code……..
Phone…….email…….

Return this form by post to :

Shri Prakash
C-4B, 226
Janakpuri
New Delhi

Or send scanned copy of duly filled form with payment details to the following email: info@ indianjournalofeconomyandpolicy.com

No Plagiarism Certificate from Authors

Certified that the paper titled, ……
……
……is free from any material based on plagiarism. Wherever, ideas of others are used in the text, references have been given both in the text and in the list of references.

Author's Name…….

Signature……..

Date……

Author Guidelines

1. Indian Journal of Economy and Policy (IJEP) invites theoretical, methodological, empirical and policy related research papers.
2. IJEP attaches high importance to such papers as innovative or involve some originality with regard to extension and modification of existing theory or methods of research or new interpretations of given dataset or results or include either new facts or transform common into scientific facts.
3. The contents of the paper should not exceed 7000 words.
4. Research notes should be helpful to the emerging scholars and such notes should generally deal with newly emerging theory or methodological aspects of research.
5. All papers will be anonymously evaluated by two referees.
6. Submission fees of Rs 500/- is to be paid for each paper at the time of submission.
7. Life members and institutional members will be exempt from submission fees.
8. Annual members shall get 50% discount in submission fees.
9. Research scholars without job or fellowship shall be exempt from submission fees.
10. The submission fees can be remitted directly to the account of the journal.
11. The decision of the chief editor or managing editor shall be final.
12. Authors will receive free copy of the journal.
13. If any author is found to have indulged in plagiarism, she/he shall be debarred from submitting any paper or communication for life.
14. Length of abstract should not exceed 350 words.
15. There should not be more than 5-7 keywords
16. Author should mention the nature and typology of research to which the paper belongs. Refer JEL codes.
17. The journal follows APA guidelines for referencing. View the APA guidelines to ensure your manuscript conforms to this reference style.
18. Copyright Form duly signed to be submitted.
19. Authors are advised to include the title of the paper followed by author (author's name and organisational affiliation, mobile number, email address and postal address) and acknowledgement if any and date of submission of the paper. The next page should include title of the paper, abstract and other contents of the paper first page onwards. There should be no mention of the name of the author, organisation or any other affiliation etc.

Permissions: Please also ensure that you have obtained any necessary permission from copyright holders for reproducing any illustrations, tables, figures or lengthy quotations previously published elsewhere.

Formatting guidelines: The preferred format for the manuscript is MS Word in Times New Roman Font with a font size of 12.

Title Page: Papers should be submitted with the cover page bearing only the title of the article, author/s' names, designations, official addresses, phone/fax numbers, and email addresses. Author/s' name should not appear on any other page.

The title page must clearly indicate the name of corresponding author who will handle communications at all stages of refereeing and publication, also post-publication.

About IEA
IEA is a registered body of Indian Economics Professionals, established way back in 1917, with the objective of providing a forum for debate and discussion of theoretical and policy oriented issues of Economic Science.
Visit: indianeconomicassociation.in
Email : indianeconomicassociation@gmail.com
Address: IEA, 36, Kaveri Enclave phase-1, Ramghat Road Aligarh-202001

Journal website: indianjournalofeconomyandpolicy.com

Printed by Mr. Sanjay Sharma
Printed at M/s Balaji Offsets, 1/1184, Ulhanpur, New Shahdra, Delhi-110032

Designed and prepared for printing by Jagan Institute of Management Studies Rohini, New Delhi