8th Faculty Seminar Retreat

Abstracts

4 – 5 December 2020

**Venue: MSE Conference Room, First Floor,
New Academic Building**

MSE
Mentoring Excellence

MADRAS SCHOOL OF ECONOMICS

CHENNAI – 600 025

Program Schedule: MSE Seminar Retreat

*Presenters are marked in **bold l**etters. Each paper is scheduled for 30 minutes out of which 20 minutes are for presentation followed by 10 minutes of discussion.*

Day 1: 4.12.2020 Friday

Registration and Login – 9.00 am – 9.15 am

Inaugural Session: 9.15 am-10.30 am

Welcome address – ***Dr. K R Shanmugam***, *Director MSE*

Keynote Address – ***Dr. C Rangarajan***, *Chairman MSE, Former Governor - RBI and Former Chairman of Economic Advisory Council of PM of India.*

Technical Session 1: Economic Policy (10.30 am- 12.45 pm)

Session Chair: M Suresh Babu

Paper 1: India's Nutrition and Epidemiological Transition with Implications for Post-COVID Times
Brinda Viswanathan *and Archana Agnihotri*

Paper 2: Are India's farm debt waivers an opportunistic political tool and how do they impact government finances?
Sowmya Dhanaraj, *Vidya Mahambare and Pragati*

Tea/Coffee Break: 11.30 am -11.45 am

Paper 3: Poverty, Inequality and Financial Inclusion: A Sub-National Level Analysis from India
Simontini Das and **Amrita Chatterjee**

Paper 4: Political concentration and inefficient representation: Dual problem of the FPTP electoral System Evidence from the Indian States.
Vivek Jadhav

Lunch Break: 12.45 pm- 1.30 pm

Technical Session 2: Credit, Markets and Strategies (1.30 pm- 3.00 pm)

Session Chair: Naveen Srinivasan

Paper 1: The Zombie Story: Credit Boom and Rise of Zombie Firms in the Indian Economy
Saumitra Bhaduri

Paper 2: Technology Licensing and Collusion
Neelanjan Sen, *Priyansh Minocha and Arghya Dutta*

Paper 3: Costly State Verification and Control System Design
Priyodorshi Banerjee, Purusottam Sen and ***P. Srikant***

Tea/Coffee Break: 3.00 pm -3.15 pm

Technical Session 3: Energy and Environment (3.15 pm- 5.15 pm)

Session Chairs: K S Kavi Kumar & Anubhabh Pattanyak

Paper 1: Exploring the Relative Water Scarcity across the Indian Million-plus Urban Agglomerations: An Application of the Water Poverty Index
Aparna Sivaraman Prabha, Ashwin Ram and ***Zareena Begum Irfan***

Paper 2: Determinants of renewable energy adaptation in the SSEA (South and Southeast Asian) region.
Salva K K *and Zareena Begum Irfan*

Tea/Coffee to be served in Conference Hall: 4.15 pm

Paper 3: Application of System Thinking Causal Loop Modelling in Understanding Water Crisis in India: A Case for Sustainable Integrated Water Resources Management across Sectors
S. Ashwin Ram *and Zareena Begum Irfan*

Paper 4: Hazard and Vulnerability in Urban Flood Risk Mapping: A case study of Chennai city, India
Satarupa Rakshit *and Zareena Begum Irfan*

High Tea: 5.15 pm

Day 1 concludes

Day 2: 5.12.2020 (Saturday)

Registration and Login: 9.15 am – 9.30 am

Expert Session: 9.30 am-10.15 am

Keynote Lecture: Changing nature of FDI and its consequences for growth
N S Siddharthan, *Professor Emeritus, Madras School of Economics*

Technical Session 1: Development, Trade and Economy (10.15 am-1.00 pm)

Session Chairs: Brinda Viswanathan & P. Srikant

Paper 1: Need and Scope for Integrating Pandemic Risk with Sustainable Development
K S Kavi Kumar

Paper 2: Weather Shocks and Economic Growth in India
Anubhab Pattanayak*, Medhavi Sandhani, and K.S. Kavi Kumar*

Tea/Coffee Break: 11.15 am -11.30 am

Paper 3: To Look East or to West? An Analysis of India's Trade Policy from Employment Perspective
Devasmita Jena

Paper 4: Efficiency of Commercial Banks in India after Global Financial Crisis
K. Ravirajan *and K. R. Shanmugam*

Paper 5: Zombie Borrowing – Does Corporate Governance Matter?
Saumitra Bhaduri and ***Ekta Selarka***

Lunch Break: 1.00 pm- 1.45 pm

Technical Session 2: Public Policy (1.45 pm- 4.00 pm)

Session Chair: D. K. Srivastava

Paper 1: Effect of Corporate Income Tax on Investment Decisions of Indian Manufacturing Firms
K. R. Shanmugam *and K. Sankarganesh*

Paper 2: Effect of Corporate Tax on Total Factor Productivity of Indian Manufacturing Firms
K. Sankarganesh *and K. R. Shanmugam*

Paper 3: Empirical Analysis of Sustanability of Public Debt in BRIC Countries
Magulsha George *and K. R. Shanmugam*

Tea/Coffee break: 3.15 pm – 3.30 pm

Paper 4: Determining Fiscal Equalisation Transfers for Elementary Education to Major Indian States
Jyotsna Rosario *and K.R Shanmugam*

Technical Session 3: Business Cycles, Investment and Analytics (4.00 pm-5.30 pm)

Session Chair: Saumitra Bhaduri

Paper 1: Markov Switching Autoregressive Approach to Modelling Business Cycle in India
Mathew Koshy Odasseril *and K. R. Shanmugam*

Tea/Coffee to be served in the Conference Hall: 4.30 pm

Paper 2: Low Risk Multibagger Portfolio – A Simple Strategy
Rupkatha Das and ***Parthajit Kayal***

Paper 3: Algorithms for Text analytics
Rakesh Nigam *and Mohit Pareek*

Vote of Thanks

Day 2 concludes

INDIA'S NUTRITION AND EPIDEMIOLOGICAL TRANSITION WITH IMPLICATIONS FOR POST-COVID TIMES

Brinda Viswanathan and Archana Agnihotri

For over a decade, there has been a rapid nutrition and epidemiological transition among Indian adults with increasing rates of overnutrition and non-communicable diseases while undernutrition rates and communicable diseases are moderately declining but persistent among several underprivileged people.

This study analyses the decadal changes in undernutrition or thinness and overnutrition (overweight and obesity) using Asian cut-off values for BMI based on data from NFHS-3 for 2005-06 and NFHS-4 for 2015-16. The worrisome feature of the findings is that the increases in overnutrition rates have replaced the decline in undernutrition rates more than the increases in normal nutrition rates resulting in its widespread increase across all parts of country, with 50 percent or more among the richest asset quintile, 15 or more years of schooling and more urbanized states of India.

The study finds that by 2015-16, the overnutrition rates have declined marginally for those with 18 or more years of schooling but only for women and not for men. This gendered difference could perhaps be attributed to a far higher sample size for women than for men. Further exploration based on quantile regression estimates show that and in comparison with men, unadjusted estimates for education show that BMI increases with education but controlling for economic status and geographical regions, the highly educated women have somewhat lower BMI values. The data challenges remain in terms of accounting for physical activity pattern while a lacto-vegetarian diet is associated with high BMI values among both men and women.

The recent COVID-19 pandemic brings to the fore a high fatality rate among the obese while exposing the vulnerabilities of the less nourished population from infection and economic lockdown. In this context, the study also provides some insights to address the challenge within the sustainable development framework.

Key words: Quantile Regression, BMI, Gender, Education, Indian Diets

JEL Codes: C21, D12, I12, J16, N35

ARE INDIA'S FARM DEBT WAIVERS AN OPPORTUNISTIC POLITICAL TOOL AND HOW DO THEY IMPACT GOVERNMENT FINANCES?

Sowmya Dhanaraj, Vidya Mahambare, and Pragati

This paper argues that India's farm debt waivers, a popular policy to bail out distressed farmers has no theoretical justifications in terms of relieving the debt overhang of farmers. For the majority of Indian farmers, farming is an unviable activity and a temporary solution of granting loan waivers cannot make it viable. Even as a temporary fix, loan waivers for institutional credit can have only a restricted impact given the exclusion of landless agricultural labourers and high reliance of small farmers on non-institutional credit. The econometric analysis of the determinants of the debt waiver schemes using a random effects logistic model for the period 2001-02 to 2018-19 shows that the timing of waivers is motivated by the state elections scheduled in the same or the year following the waiver announcements. Further, using Generalized Methods of Moments estimation, we show that while loan waivers increase the revenue deficit of the state, they have no bearing on the gross fiscal deficit with the waiver schemes in the year of the waiver announcements resulting in, on an average nearly 1/3rd cut in the capital and development expenditure of states. A reduction in capital expenditure combined with the persistence in its path would, in turn, lower the quality of government expenditure with an adverse impact on the productive capacity of the states and their economic growth potential, lasting more than one year.

Keywords: Government expenditure, Welfare programs, Bailouts, Agriculture policy Agriculture credit

JEL Codes: H53, H31, H81, Q18, Q14

POVERTY, INEQUALITY AND FINANCIAL INCLUSION: A SUB-NATIONAL LEVEL ANALYSIS FROM INDIA

Simontini Das and Amrita Chatterjee

The present paper intends to study the impact of financial inclusion on the poverty eradication and reduction in income inequality. For that purpose, a composite index of financial inclusion as well as ICT diffusion are constructed at sub-national level in India. Spread of financial inclusion has homogeneous beneficiary effects to reduce poverty incidence irrespective of rural-urban bifurcation, whereas it has heterogeneous effect on income inequality across the sectors. 15 states are classified into 5 classes as per percentiles of the variable ‘percentage of people below poverty line’. Ordered probit estimation evidently infers that financial inclusion can raise the probability of a state to move in the direction where it would have less percentage of people below poverty line in urban as well as rural area. Moreover, ICT diffusion has a positive role in urban poverty eradication but ineffective in rural area. On the other hand, Income inequality is measured by Gini coefficient. States are clustered according to their value of Gini coefficients into three groups following K-mean methods of clustering, separately for urban and rural area. Higher cluster contains the states with high inequality. Ordered probit analysis concludes that financial inclusion aggravates the severity of urban income inequality, whereas improvement of social infrastructure and physical infrastructure narrows down it by removing the supply side bottleneck of the economy. Unlike urban inequality, spread of financial inclusion reduces the probability of a state to move from low-rural inequality category to high-rural inequality category. That means, financial inclusion has significant beneficial impact to reduce rural inequality. Though availability of social infrastructure does not have influence on rural income inequality, development of physical infrastructure significantly reduces rural inequality. ICT diffusion does not have any direct or indirect effect on the probability of a state to move from low inequality to high-rural inequality strata, both in rural and urban area.

Keywords: Financial Inclusion, Poverty Eradication, Income Inequality, Sub-national Level Analysis

JEL Codes: G21, R51, R58, D63, I3

POLITICAL CONCENTRATION AND INEFFICIENT REPRESENTATION: DUAL PROBLEM OF THE FPTP ELECTORAL SYSTEM EVIDENCE FROM THE INDIAN STATES.

Vivek Jadhav

Democracy across the world has witnessed the evolution of the electoral system. First-Past-The-Post (FPTP) practiced in India does have certain disadvantages like disproportional representation. This paper analyses the representative inefficiency in the Indian state assemblies by constructing the Gallagher Index. This paper also proposes other indices like Gini Coefficient, Generalized Entropy Index to measure the inefficiency in representation which are generally used to measure income inequality. Further, this paper tries to build the association between inefficient representation and concentration of power. It is found that the high-level representative inefficiency preserved in the Indian State Assemblies. The panel data analysis suggests that the given inefficiency has significant impact on the concentration of power at the state government. It is suggested that since FPTP in Indian democracy created the dual problem of inefficiency and concentration, the alternatives to FPTP should be investigated.

Keywords: Inefficient Representation, Gallagher Index, Generalized Entropy Index, Concentration of Power.

JEL Codes: D72, K16, H11, P48

THE ZOMBIE STORY: CREDIT BOOM AND RISE OF ZOMBIE FIRMS IN THE INDIAN ECONOMY

Saumitra Bhaduri

The rise of zombie lendings has always been an area of concern in the economy. In the literature, it has been argued that there exists a strong relationship between the rise of zombie firms and weak capitalized banks which pursue window-dressing of their balance-sheet and delay the process of declaring non-performing assets. Identifying the zombie firms for the Indian economy, using a sample of listed firms over the period 1990-2017, we observe that the share of zombies is much higher depending on industry classification, group-affiliation, source of borrowing, and bank-firm relationship. Exploring the reason behind such rise, we find that the pro-cyclic credit bubble in the pre-crisis period coupled with the global financial crisis in 2008 led to a rise in zombie lending in India in the post-2010 period. During this phase, the zombie firms receive a more than three times higher share of bank borrowings compared to the pre-2010 period. Further, comparing the peak of the credit boom period 2006-07, nearly 45 per cent of the total 'borrowing exuberance' during this period was captured firms that turned out to be zombies in post-2010. Moreover, looking at the persistency, the probability of a zombie firm to remain as a zombie, is also twice more during the post-2010 period compared to the pre-crisis period. This has been further corroborated by the amplified three-year churn rate.

Keywords: Bank Credit, Ever-greening
JEL Codes: G30

TECHNOLOGY LICENSING AND COLLUSION

Neelanjan Sen, Priyansh Minocha and Arghya Dutta

This paper considers technology licensing and tacit collusion between firms that produce homogeneous goods under asymmetric cost structure and compete in quantities. We discuss the possibility of collusion under Grim-Trigger strategies, when the technology may be licensed via fixed fee or royalty or two-part tariff. Irrespective of the type of licensing contract the possibility that a stable cartel is formed is same. In the no-licensing stage, the cartel formation is more likely if the cost difference between the firms is higher. In contrast to Lin (1996), all forms of licensing facilitate (obstruct) collusion, if the initial cost difference between the firms is less (more). Technology will always be licensed in the first stage and the optimal form of licensing is either fixed-fee or royalty or two-part tariff. However, the cartel will be formed if the firms are relatively patient and welfare either increases or decreases in the post-licensing stage.

Keywords: Technology licensing; Oligopoly; Cartel; Grim-Trigger Strategy; Competition
JEL Codes: L 24, L 13, D 24

COSTLY STATE VERIFICATION AND CONTROL SYSTEM DESIGN

Priyodorshi Banerjee, Purusottam Sen and P. Srikant

A costly state verification or inspection situation arises when a subordinate is better informed than a manager about an outcome, and has incentives to misreport the outcome; and the manager can choose to determine, at some cost, whether the report was true or not. Simons (1994) proposes that the distinct functions of management control systems in an organization can be conceptualized as four different levers of control - belief, boundary, diagnostic and interactive control systems. Diagnostic controls correspond to deterministic inspection, and interactive controls to a probabilistic inspection game. This article reports experimental results on i) how players play the basic in spection game ii) how managers try to choose control systems to minimize the costs of misreporting by subordinates. For the basic inspection game, our findings are that the player behaviors are somewhat in line with the theoretically predicted mixed strategy Nash equilibrium - while predictions on the levels of misreporting and verification are not supported, most comparative static effects are in line with theoretical predictions. For ii) we frame the choice of alternative control mechanisms as follows : Managers are given a choice of making an investment in a technology that prevents misreporting, or playing the basic inspection game. We find that managers often choose to retain interactive control even when it is more efficient to invest in boundary or diagnostic control. Also, when managers choose to opt for interactive control, subordinates are likelier to misreport and managers are likelier to verify than the theoretical benchmarks. These findings have far-reaching implications for the design of real world control systems.

Keywords: Costly State Verification, Levers of Control, Management Control Systems
JEL Codes: D02, L14, C91

EXPLORING THE RELATIVE WATER SCARCITY ACROSS THE INDIAN MILLION-PLUS URBAN AGGLOMERATIONS: AN APPLICATION OF THE WATER POVERTY INDEX

Aparna Sivaraman Prabha, Ashwin Ram and Zareena Begum Irfan

India is on the verge of an impending serious water crisis and the drastic decline in per capita water availability raises questions about the effectiveness of the prevailing governance regime used to manage the limited resource. Indian cities are rapidly expanding and with increase in migration the country is expected to witness unprecedented urbanization in the coming decade. In this context, it is important to take a holistic and realistic view of the challenges faced by Indian cities with respect to water so as to prepare and formulate policies that prompts for sustainable use of water resources and makes cities water resilient. Based on secondary data, this study evaluates the extent of water scarcity across forty-two million-plus Indian urban agglomerations incorporating Water Poverty Index(WPI). WPI combines the physical water availability with the people's capacity to access the resource, in order to assess the water scarcity. The purpose of the index is to offer a single composite value which plays a vital role in prioritizing the work related to water. The index captures the vulnerability or risk facing Indian cities to water scarcity based on five critical dimensions viz; resource, capacity, access, use and environment. As index creation is subjected to lose essential information and in order to address this technical issue and minimize the loss of information we have developed the WPI using three different methods viz; additive with no weights, additive with weights and multiplicative. The results of the aggregation methods indicates that there is a strong correlation between the WPI rankings of all the three approaches. It also highlights the fact that the scale of multiple values is lower than its counterparts. The study concludes WPI computed by multiplicative method is superior than other additive methods as it reduced the spillover effects of high components unlike the additive WPI. The study has also revealed that urban agglomerates from the state of Kerala were the forerunners to be least vulnerable with high WPI values. On the other hand, Kanpur and Allahabad were the most at risk with low WPI values.

Keywords: Water Scarcity, Urban Agglomerates, Domestic Water Security, Water Management; Water Poverty Index.

JEL Codes: Q25, Q53, C43, O13, E22

DETERMINANTS OF RENEWABLE ENERGY ADAPTATION IN THE SSEA (SOUTH AND SOUTH EAST ASIAN) REGION

Salva K K and Zareena Begum Irfan

Energy related CO 2 emission makes up two-third of global Green House Gas (GHG) emission and is mainly driven by developing countries especially, Asia. The transition to Renewable Energy (RE) by these countries contribute much towards climate change mitigation. In order to examine the determinants affecting RE generation in South and South East Asia (SSEA), the authors utilized the share of RE in total primary energy supply as dependent variable with environmental and economic characteristics as explanatory variables. Data availability and statistical tests directed towards running a parsimonious Panel Corrected Standard Errors (PCSE) model with the data of 12 countries for 15 years. The authors inferred from the present study that growing energy demand and energy intensity have made developing countries of SSEA to think about sustainable energy but their increased CO2 emission has not yet provide the incentive to switch to RE, RE has not become competitive to imported energy, and fossil based energy generation is an obstacle for RE expansion. Even though developing countries of SSEA have started to meet their growing energy demand through renewable energy production, further effort is required to ensure energy security through climate resilient and environmentally sustainable manner.

Keywords: Renewable energy, Energy intensity, Energy import, Energy consumption, Energy security

JEL Codes: Q42, O53

APPLICATION OF SYSTEM THINKING CAUSAL LOOP MODELING IN UNDERSTANDING WATER CRISIS IN INDIA: A CASE FOR SUSTAINABLE INTEGRATED WATER RESOURCES MANAGEMENT ACROSS SECTORS

S. Ashwin Ram and Zareena Begum Irfan

India is on the verge of a serious impending water crisis and is one among the high risk countries susceptible to water stress. In addition to population growth, rapid industrialization and unplanned urbanization, climate change is further expected to exacerbate the problem resulting in more frequent and prolonged periods of intense drought. Water is considered as a wicked problem and hence relying on a linear and reductionist approach is no longer relevant in solving such complex systems. In this context, this paper adopts a system thinking principle to understand various water management challenges across sectors. System thinking has its roots in mental models and has been evolving and increasingly being used to understand Complex Dynamic Systems. System thinking can be viewed as a language of communicating the various processes and interrelationship of complex system in a nutshell so as to aid effective decision making process. Based on a systematic review of literature, the present study has developed a series of Causal Loop Diagrams (CLDs) capturing key variables pertaining to water sector. The CLDs are believed to create a broader and holistic understanding of the water management challenges by clearly exhibiting the relationship between the key variables. The CLDs are broadly classified into i) water demand supply model ii) water governance model iii) water economy and environment model. The proposed CLDs serve as a decision making tool to understand the challenges of integrated water resources management through the complex interactions of the variables between balancing and reinforcing loops. The CLDs highlights the existing water related challenges in India and proposes a pathway for sustainable management of water resources across agriculture, industry and domestic sectors.

Keywords: Water Security, Water Scarcity, Water Use Efficiency, System Thinking, Causal Loop Diagrams

JEL Codes: Q20, Q25, Q28, Q51, Q53

HAZARD AND VULNERABILITY IN URBAN FLOOD RISK MAPPING: A CASE STUDY OF CHENNAI CITY, INDIA

Satarupa Rakshit and Zareena Begum Irfan

Chennai has been the centre of trade and commerce from ages. But with the recent high urban growth rates the damages have outweighed the gains. The city is witnessing floods very frequently and this has encouraged us to take up the study to create the risk zones within the city. The present study aims to generate the hazard, vulnerability and the risk profile maps of the city at ward level using remote sensing and GIS techniques. The analysis shows that land use land cover change caused by urban expansion increased the flood risks of Chennai. Furthermore, the authors observed that urbanization increases the exposure to flooding and flood depth in the study area which plays a greater role in flood risk. However, the present trend shows that land development is being done through artificial infilling of some natural drainage or their sprawling inside the floodplains resulting in the decrease in the area where the flood water could spread. These processes evidently have a detrimental impact on flooding and thereby aggravate the flood risk. In order to curb the losses better land management plans and developmental policies need to be implemented by the government.

Keywords: Chennai, floods, urbanization, hazard, vulnerability
JEL Codes: Q20, Q25, Q28, Q51, Q53

NEED AND SCOPE FOR INTEGRATING PANDEMIC RISK WITH SUSTAINABLE DEVELOPMENT

K.S. Kavi Kumar

The world is in the midst of a pandemic that has already wreaked havoc on the economy and livelihoods, and has the potential to have lasting impact on economic growth. COVID-19 has exposed fragile public health care systems in many countries including India. The pandemic has also brought into sharp focus the misplaced priorities in budget allocations in many countries, and continued neglect of the public health care infrastructure and environment. In the backdrop of growing concerns about the adverse impacts of COVID-19 and the policy responses adopted by the global community on the sustainable development goals, this paper explores the linkages between pandemic risk and sustainable development. In particular the paper focuses on three inter-related aspects in an attempt to study the relationship between pandemic risk and sustainable development: (a) The economic growth and disease vector transmission; (b) economics of pandemic prevention; and (c) sustainability of recovery policies. Identifying climate risk management as an important means for achieving sustainable development in the context of current day climate risks as well as potential risks due to climate change, the paper highlights the need for integrating pandemic risk with climate risk management. Such integrated approach, the paper argues, will also meet the mandate by the Sendai Framework.

Keywords: Pandemic; Health Risk; Climate Risk Management; Sustainable Development
JEL Codes: I10; Q54; Q56

WEATHER SHOCKS AND ECONOMIC GROWTH IN INDIA

Anubhab Pattanayak, Medhavi Sandhani, and K.S. Kavi Kumar

This study examines climate change impact on economic growth in the Indian context. Using state and district level data on climate variables and growth rate of per capita real GDP, the present study evaluates the short- as well as medium-run effects of climate change on growth. The results based on state-level analysis are suggestive of negative effects of rising temperature on growth during 1980-2019. These aggregate level results are further reinforced by the results from district-level analysis. First, higher temperatures have significant negative impact for poorer districts with a 1°C rise in temperature leading to nearly 4.7 percent fall in growth rate of district per capita income. Second, higher temperatures not only have level effects, but also growth effects, especially for richer districts. Credit access, electrification and urbanization and increased roads and market network may play a significant role in mitigating the negative impact of climate change.

Keywords: Regional Growth; Climate Change; India
JEL Codes: E23, O13, Q54, R11

TO LOOK EAST OR TO WEST? AN ANALYSIS OF INDIA'S TRADE POLICY FROM EMPLOYMENT PERSPECTIVE

Devasmita Jena

In the face of mounting protectionist sentiments, aggravated further due to COVID-19, India is redefining its trade policy. This is evident from the fact that India has decided to not join the mega-trade deal, Regional Comprehensive Economic Partnership (RCEP), giving in to the concern of massive trade deficit with China and other countries of the Association of South East Asian Nations (ASEAN). This stance is complete opposite to India's "Look East Policy". Parallelly, India is looking for closer trade ties with the United States (US) and the European Union (EU). In this context, this paper evaluates the performance of India's trade, in general, as well as with its eastern (ASEAN, China, RCEP) and western partners (US and EU), on its industrial sector employment. Employment is a better measure than trade deficit because employment gives a picture of both growth and distributional aspects of trade-effects. Using a dynamic econometric model in a panel framework, it is found that, in general, while export intensity had favorable impact, import penetration had a detrimental impact on industrial sector employment during 1996-97 to 2016-17. Region wise analysis shows that trade with ASEAN has been employment enhancing while that with China had a negative impact on employment. On the east vs. west looking trade policy debate, analysis suggests that the long run impact of exports, to both the west (EU plus USA) and the east (RCEP) partners, on employment is positive. Also, contrary to the mainstream view, the negative effects of imports, on industrial sector employment, from RCEP appears to be insignificant than that associated with imports from the EU plus USA. Thus, trade agreements with the EU and the US cannot be a substitute for dis-engaging with the resilient eastern partners. Rather, India should strengthen its trade prospects with its east Asian partners and simultaneously look for export market in the west to enhance its employment creation.

Keywords: Trade, Trade Policy, Employment, KLEMS, PMG Estimation

JEL Codes: F13, F14, F4, J2

EFFICIENCY OF COMMERCIAL BANKS IN INDIA AFTER GLOBAL FINANCIAL CRISIS

K. Ravirajan and K. R. Shanmugam

This study contributes to the bank efficiency literature by estimating the technical efficiency of banks in four different ownership groups in India during the post global financial crisis period, 2009-2018 utilizing the operating approach and technical efficiency effects model for panel data. It finds that despite the consolidation of information technology efforts, the efficiency of Indian banking industry deteriorated during the post global financial crisis period. This may be due to the mounting pile of non-performing assets. Interestingly, the public banks seem to be more efficient than their private counterparts. The results also indicate that banks with lager capital adequacy ratio or older banks or banks with more branches are less inefficient in generating interest income. It is our hope that findings of this study would be useful to international agencies and other stakeholders in evaluating and improving the performance of Indian banks.

Keywords: Stochastic frontier, Technical efficiency effect, Panel data, Indian banks, Financial crisis

JEL Code: CG30

ZOMBIE BORROWING – DOES CORPORATE GOVERNANCE MATTER?

Saumitra Bhaduri and Ekta Selarka

This study extends the literature on credit misallocation by investigating the corporate governance of firms which are classified as *zombies*. This comes in the backdrop of recent rise in such firms which continued to receive bank credit despite their inability to service debt payments. Using a random effects logistic model on a sample of listed firms between 2010-2017, we find that multiple banking relationships, higher promoter control on board in group affiliated firms, small board are significant characteristics that increase the likelihood of a firm obtaining a zombie loan. While governance mechanisms like board independence and bank nominee directors have no impact on the likelihood of zombie borrowing, external monitoring mechanisms that are found to reduce the probability of zombie borrowing are mutual fund ownership and relationship with SBI. The findings of this paper also provide initial evidence on internal and external corporate governance mechanisms that are effective in the context of zombie borrowing by listed firms in India.

Keywords: Zombie firms, Corporate governance, Board structure, Ownership structure
JEL Codes: G21, G30

EFFECT OF CORPORATE INCOME TAX ON INVESTMENT DECISIONS OF INDIAN MANUFACTURING FIRMS

K. R. Shanmugam and K. Sankarganesh

This study is an attempt to empirically analyse the effect of corporate income tax on investment of manufacturing firms in India during 2005-2019, using the standard static panel model estimation techniques. It is found that the effective corporate tax rate has a negative and significant impact on the corporate investment. Moreover, the estimated effective tax elasticity is relatively low as compared to the magnitude found in other countries. Our analysis also indicates that the adverse impact of tax on investment is higher in private firms than in public firms and higher in pre-economic crisis period than in after crisis period. Both depreciation and deduction rate have positive impact on investment while interest-debt ratio and leverage ratio have a negative impact. The effective rate increases with age and size of firms. It is our hope that these results will be useful to policymakers and other stakeholders to take appropriate strategies to design the corporate tax policy such that it will not hinder business investment in India.

Keywords: Investment, Effective corporate tax rate, Indian manufacturing firms, Panel data Methods

JEL Codes: D21, E22, E51, H25, C23.

EFFECT OF CORPORATE TAX ON TOTAL FACTOR PRODUCTIVITY OF INDIAN MANUFACTURING FIRMS

K. Sankarganesh and K. R. Shanmugam

This study empirically analyses the effect of corporate income tax on Total Factor Productivity (TFP) of manufacturing firms in India during 2005-2019. In the first stage of the analysis, it employs the Woolridge (2009) methodology to estimate the TPF of each firms in the sample during the study period, while in the stage, it uses the standard two-way fixed effects model estimation technique to analyze the impact of effective corporate tax rate on productivity of manufacturing firms. It is found that the effective corporate tax rate has a negative and significant impact on the TFP. Moreover, the estimated effective tax elasticity is relatively low as compared to the magnitude found in other countries. Our analysis also reveals that the adverse impact of tax on TFP is higher in public firms than in private firms and higher in pre-economic crisis period than in post-economic crisis period. Our analysis also indicates that the export sales, imported raw material consumption, R&D expenses have a positive impact on TFP. The average effective tax rate increases with age and size of firms. We hope that these results will be useful to policymakers and other stakeholders to take appropriate strategies to design the corporate tax policy such that it will not affect the productivity of Indian manufacturing firms.

Keywords: Total Factor Productivity, Effective tax rate, Corporation income tax, Panel data Methods

JEL Codes: D24, H25, C23.

EMPIRICAL ANALYSIS OF SUSTAINABILITY OF PUBLIC DEBT IN BRICS COUNTRIES

Magulsha George and K. R. Shanmugam

After the Euro Sovereign Debt Crisis in the end of 2009, the public debt sustainability has become an important issue in almost all nations. Particularly, this issue is important for developing economies, including the BRICS countries. In general, the BRICS nations are criticized due to their dysfunctional public finances, poor government sustainability and high levels of socio-economic inequalities. They also place increased emphasis on investment in human capital to attract foreign investments, technology transfers and developing indigenous innovative capabilities. Such social investment spending would, in turn, require increased government revenues, which could potentially lead to high levels of public debt in these countries.

It would thus be interesting for policymakers, other academicians and even financial analysts to know as to whether or not the public debt is sustainable in BRICS countries. Therefore, this study empirically tests for the BRICS countries whether the public debt has been sustainable for the period 2007 to 2018, using the Bohn framework for panel data and a penalized spline technique. Results of the study indicate that in all BRICS nations except India, the primary surplus reacts positively to public debt, indicating debt sustainability in these nations. Interestingly, for all BRICS nations, the reaction coefficient has not stayed constant over time, i.e., it is time invariant, but time-varying. It is our hope that these results will be useful to policymakers and other stakeholders in such a way that their strategies will improve the debt position of India and make it sustainable.

Keywords: Sustainable Debt, Bohn Model, Penalized Spline.
JEL Codes: E62, H63

DETERMINING FISCAL EQUALISATION TRANSFERS FOR ELEMENTARY EDUCATION TO MAJOR INDIAN STATES

Jyotsna Rosario and K.R Shanmugam

This study attempts to determine the fiscal equalisation transfer requirement for elementary education to major Indian states based on the Australian Transfer Mechanism. Using the panel data on major Indian states, it initially estimates the expenditure function based on the major determinants of per student public expenditure on elementary education and uses it to determine the fiscal equalisation transfers for elementary education to the Indian states. Expenditure gap has been assessed based on two benchmarks- all states' average and top three states' average. The results indicate that states with higher fiscal capacity tend to spend more on elementary education. However there is no flypaper effect. There is presence of intergenerational competition in the allocation of public resources. Despite the implementation of special programs for the schedule caste and schedule tribe communities, states with higher percentage of students from such communities tend to spend less on elementary education. Bihar, West Bengal, Jharkhand, Madhya Pradesh, Odisha, Punjab and Uttar Pradesh have extremely large expenditure gap. These states among other lagging states must receive equalisation grants to enable them to provide comparable level of services. These findings may be useful to policymakers and other researchers to ensure horizontal equity in the provision of elementary education in India.

Keywords: Fiscal Equalization, Australian Transfer Mechanism, Elementary Education, Public Education Expenditure, Indian States, Panel Data

JEL Codes: I22, H52, H72, H77, J18

MARKOV SWITCHING AUTOREGRESSIVE APPROACH TO MODELLING BUSINESS CYCLE IN INDIA

Mathew Koshy Odasseril and K. R. Shanmugam

One of the major characteristic of any market economy is the periodic recurrence of the business cycles. Business cycles are often observed to exhibit cyclical asymmetry whereby economy behaves differently over the expansion and recession phases. Whether a business cycle is specified by the existence of well-defined turning points, as well as the identification of transition of an economy from a given regime to another in a meaningful way has always been an area of interest in the literature of macro modeling. Although all of the preceding research in the mainstream has produced contributions to our understanding, they also share a possible shortcoming of the assumption that the growth rate of real GDP is a linear stationary process. The Markov-Switching Auto Regressive approach overcomes this difficulty in modeling the asymmetry in the fluctuations in the economic cycles, and is an extension of the AR (p) model to the nonlinear case. The MS-AR model overcomes the difficulty of modeling the asymmetry as it considers a regime shift of the parameter, accounts for the residuals change, and allows for different behavior indifferent states of nature.

In this paper, a Markov Regime Switching model was estimated for the Indian economy using the quarterly data for the period 1981Q1 through 2020Q1. , quarterly gross domestic product (GDP) data for the period 1981Q1 (i.e. April– June of 1981) through 2020Q1 have been used. New GDP data (base year 2011–2012) are available from 2011Q1 to 2020Q1 and the back series annual GDP at factor cost data (base year 2011-12) are available from 1950 onwards. Therefore, the annual GDP data prior to 2011 is converted into quarterly frequency for the period 1981Q1–2010Q4 employing Chow–Lin method and using quarterly index of industrial production as an indicator. This helps in overcoming one of the major impediments in the history of macro model estimation in India: the unavailability of long high frequency data. The output indicates that the average growth rate of real gross domestic product of India during expansions is 7.8% and during recessions is 4.2%, with each state being persistent. Based on the filtered probabilities for recession and expansion, dating of Indian business cycles was also attempted. Fifteen growth cycles of various durations have been identified and it is observed that the probability of expansion is higher than the probability of contraction and the average duration of expansion is higher at 5 quarters as compared to contraction at 4 quarters. The average duration of whole cycle is 11 quarters.

Since this study stands as the first attempt to use the back series data, comparing the estimated results with the previous works on identifying business cycles in India has limited scope at this juncture. Yet, a majority of the business cycle turning points identified by the model supports the earlier studies. Future studies in this direction could take into consideration more than two regimes which can distinguish between high growth and slow growth phases. Also attempts to incorporate more variables like exchange rate, interest rate etc. in multivariate Markov models keep a wide scope open for future studies.

Keywords: Business Cycles
JEL Code: E32

LOW RISK MULTIBAGGER PORTFOLIO – A SIMPLE STRATEGY

Rupkatha Das and Parthajit Kayal

Every long term investor aspires to earn extraordinary returns with a minimum risk exposure. This paper examines different strategies and carefully constructs a class of portfolios using constituent stocks of the NIFTY500 index to earn the best risk-adjusted returns. We identify a simple and profound strategy that generated an extraordinary rate of compounded average annual returns (CAGR) over more than two decades in the past. Further, we also show that this strategy produces superior performance in different market states and investment periods. Our result contradicts the value-investment arguments. This work has direct implications for portfolio managers and retail investors.

Keywords: Book-to-Market; Gross profit; Book value

JEL Codes: G10, G12, G14

ALGORITHMS FOR TEXT ANALYTICS

Rakesh Nigam and Mohit Pareek

In this talk we compare various algorithms for extracting topics from text data. With the advent of big data, documents need to be automatically classified into various topics. This is especially useful for text summarization. The main challenge is that topics are latent and need to be assigned. Each document consists of a collection of words, which need to be assigned to different topics. Using this framework, words are related to topics and topics are related to documents. This leads to the development of several generative algorithms.

Keywords: Generative Algorithm, Text Analytics, Big Data, Latent Topics
JEL Codes: C110, C460, Y80.